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PRODUCT : Preinsulated junction sleeves.

Test report	: Electrical ageing
Report number	: 9309060
Product brand	: SICAME
Product type	: MJPB 25 CG
Project n°	: E 0900330
Batch number	: 08-93

Demander of the test : SICAME DER

Starting date ot the test : 08/09/1993

Report emission date : 19 SEP. 2000

According to standard : HN 33-E-61 (August 1985)

This report contains : 7 Pages Annexe(s)

Conclusion : The SICAME preinsulated junction sleeves type MJPB 25 CG conform to the HN 33-E-61 standard (August 1985).

This is an English translation.
The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

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ВЯРНО С ОРИГИНАЛА

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SICAME DER	EQUIPEMENT USED DURING ELECTRICAL AGEING TEST STANDARD : HN 33-E-61	SUP ER 1130 INDEX B

Test number : 9309060

Product brand : SICAME

Product type : MJPB 25 CG

A - Computer

IBM PS2 N°UT : 88 93 06 Hard disc 112 MEGABYTES
Analogical / digital card
Digital / Analogical card
RS232 card on OS2

IBM 4029 020 N°UT : 92 03 30 laser printer

B - Electrical ageing machines

N°4 N°UT : 85 01 26 — Transformer 1200A/7V or 1200A/10V thyristor units used for the primary transformers. Thermal regulation by eurotherm.

Program planner cycles : 1 second.
Minimum accuracy : 1 min programming. Stabilised continuous current source - SAEME - 0 to 30 Amps measured by shunt 3.3 Megaohms. Current adaptator except n° 3

C - Electrical and thermal measurements machines

Scanner N°1 N°UT : 91 03 31 — Temperature scanners multi-channel. Constant copper thermocouples (type T). Scale used : - 200 to + 300° C, 1° C accuracy.

Numeric calibrator N°UT : 88 05 14 AOIP JN 5303B (tension drop)

Buzzer SICAME N°UT : 92 04 20

D - Other materials

Digital caliper N° UT : 92 00 91 DIGIROCH

Electronic torque wrench N°UT : 92 03 31 POWELL DUFFRYN
Accuracy 1%

Calibrated ruler N°UT : 93 00 83 ROCH

На основание чл. 2
от ЗЗЛД

"ВАК - 02" ООД
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ВЯРНО С ОРИГИНАЛА

SICAME DER	ELECTRIC AGEING TEST ACCORDING TO HN 33E61 STANDARD ON SICAME CONNECTORS TYPE MJPB25CG	SUPER 620 INDICE C

TEST : 9309060 **DATE** : 08/09/93

A - PROCEDURE

Installation of testing bench

The testing bench is arranged in the interior in one local protected from air, in such a way that the ageing test takes place in a calm atmosphere.

The following minimal distances are observed :

- between 2 parallel conductors : 20 cm;
- between any conductor and any vertical wall of the local : 30 cm;
- between the horizontal plane of the connectors on one hand and the horizontal surfaces of the local on the other hand : 60 cm.

B - SETTING OF THE TEST

The loop of the test is formed by four identical groups composed of one conductor of section S1, one conductor, one conductor of section S2.

S1:25mm²Alu
S2:25mm²Alu

S1: Diam.over cent.Cable: 6.18 mm Diam.over sheath : 8.92 mm
Nb of strands : 7

S2: Diam.over cent.cable: 6.18 mm Diam.over sheath : 8.92 mm
Nb of strands : 7

The crimping die is E140 (5 mm).
Test according to HN 33E61 standard.

C - REFERENCE LENGTH CALCULUS

The loop of the test includes a reference conductor of L' length of the center cable S2 : 25mm²Alu .

L1 = 182 mm L2 = 182 mm h = 50 mm

Theoretical reference length L' = 414 mm

Potential plugs

Each connector is mounted between two potential plugs, wich are welded, and are necessary to the measures of resistance. The potential plugs are placed at a lambda distance, reckoned up to the ends of the connector.

Main lambda = 150 mm Tap lambda = 150 mm

Su

На основание чл. 2
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ELECTRIC AGEING TEST CONNECTOR SICAME TYPE MJPB25CG NUMBER OF CONNECTORS TESTED :4 CONNECTOR 1	TEST NUMBER: 9309060 STANDARD: HN 33E61 MAIN CABLE SECTION : 25mm²Alu TAP CABLE SECTION : 25mm²Alu NUMBER OF CYCLES REQUIRED:200

N° CYCLE	T AMB (°C)	T REF (°C)	T RAC (°C)	RO E-6 Ohm	R E-6 Ohm	K
0	20.7	119.8	67.9	487.504	368.000	0.755
25	20.7	120.6	70.4	487.428	371.900	0.763
50	20.8	120.2	67.4	487.515	372.300	0.764
75	21.0	119.6	66.4	487.364	372.500	0.764
100	20.6	121.7	71.1	486.940	372.700	0.765
125	21.8	120.6	68.1	487.312	372.700	0.765
150	20.9	120.4	70.9	487.414	372.500	0.764
175	20.9	120.8	74.9	487.119	372.900	0.765
200	20.8	120.7	69.1	486.533	373.700	0.768

TEST RESULTS :

- K; VALUE LESS THAN 1
- CONNECTOR TEMPERATURE LOWER THAN TEMPERATURE OF REFERENCE CABLE
- DK = K(200) - K(25) = 0.0051 LESS THEN 0.05

LEGEND :

- T AMB °C --> AMBIENT TEMPERATURE IN °C
- T REF °C --> REFERENCE CABLE TEMPERATURE IN °C
- T RAC °C --> CONNECTOR TEMPERATURE DURING HEATING CYCLE IN °C
- RO E-6 OHM --> RESISTANCE OF REFERENCE CABLE AT 20°C (MILLI-OHM)
- R E-6 OHM --> RESISTANCE OF CONNECTOR AT 20°C (MILLI-OHM)
- K --> COEFFICIENT OF R/RO

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ELECTRIC AGEING TEST SICAME CONNECTOR TYPE MJPB25CG NUMBER OF CONNECTOR TESTED:4 CONNECTOR 2	TEST NUMBER: 9309060 STANDARD HN 33E61 MAIN CABLE SECTION : 25mm²Alu TAP CABLE SECTION : 25mm²Alu NUMBER OF CYCLES REQUIRED:200

N° CYCLE	T AMB (°C)	T REF (°C)	T RAC (°C)	RO E-6 Ohm	R E-6 Ohm	K
0	20.7	119.8	65.7	487.504	366.700	0.752
25	20.7	120.6	71.2	487.428	371.200	0.762
50	20.8	120.2	70.3	487.515	371.800	0.763
75	21.0	119.6	68.1	487.364	372.100	0.764
100	20.6	121.7	71.2	486.940	372.300	0.765
125	21.8	120.6	70.7	487.312	372.500	0.764
150	20.9	120.4	72.5	487.414	372.400	0.764
175	20.9	120.8	73.3	487.119	372.300	0.764
200	20.8	120.7	72.1	486.533	373.100	0.767

TEST RESULTS :

- K; VALUE LESS THAN 1
- CONNECTOR TEMPERATURE LOWER THAN TEMPERATURE OF REFERENCE CABLE
- DK = K(200) - K(25) = 0.0054 LESS THAN 0.05

LEGEND :

- T AMB °C --> AMBIENT TEMPERATURE °C
- T REF °C --> REFERENCE CABLE TEMPERATURE °C
- T RAC °C --> CONNECTOR TEMPERATURE DURING HEATING CYCLE IN °C
- RO E-6 OHM --> RESISTANCE OF REFERENCE CABLE AT 20°C (MILLI-OHM)
- R E-6 OHM --> RESISTANCE OF CONNECTOR AT 20°C (MILLI-OHM)
- K --> COEFFICIENT OF R/RO

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ВЯРНО С ОРИГИНАЛА

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ELECTRIC AGEING TEST SICAME CONNECTOR TYPE MJPB25CG NUMBER OF CONNECTORS TESTED : 4 CONNECTOR 3	TEST NUMBER : 9309060 STANDARD : HN 33E61 MAIN CABLE SECTION : 25mm²Alu TAP CABLE SECTION : 25mm²Alu NUMBER OF CYCLES REQUIRED:200

N° CYCLE	T AMB (°C)	T REF (°C)	T RAC (°C)	R0 E-6 Ohm	R E-6 Ohm	K
0	20.7	119.8	59.4	487.504	370.900	0.761
25	20.7	120.6	60.8	487.428	373.900	0.767
50	20.8	120.2	60.2	487.515	373.800	0.767
75	21.0	119.6	60.1	487.364	374.300	0.768
100	20.6	121.7	63.3	486.940	374.900	0.770
125	21.8	120.6	61.3	487.312	375.400	0.770
150	20.9	120.4	63.1	487.414	375.400	0.770
175	20.9	120.8	63.5	487.119	375.600	0.771
200	20.8	120.7	61.8	486.533	375.800	0.772

TEST RESULTS :

- K; VALUE LESS THAN 1
- CONNECTOR TEMPERATURE LOWER THAN TEMPERATURE OF REFERENCE CABLE
- DK = K(200) - K(25) = 0.0053 LESS THAN 0.05

LEGEND :

- T AMB °C --> AMBIENT TEMPERATURE °C
- T REF °C --> REFERENCE CABLE TEMPERATURE °C
- T RAC °C --> CONNECTOR TEMPERATURE DURING HEATING CYCLE IN °C
- R0 E-6 OHM --> RESISTANCE OF REFERENCE CABLE AT 20°C (MILLI-OHM)
- R E-6 OHM --> RESISTANCE OF CONNECTOR AT 20°C (MILLI-OHM)
- K --> COEFFICIENT OF R/R0

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ELECTRIC AGEING TEST SICAME CONNECTOR TYPE MJPB25CG NUMBER OF CONNECTORS TESTED : 4 CONNECTOR 4	TEST NUMBER : 9309060 STANDARD : HN 33E61 MAIN CABLE SECTION : 25mm²Alu TAP CABLE SECTION : 25mm²Alu NUMBER OF CYCLES REQUIRED:200

N° CYCLE	T AMB (°C)	T REF (°C)	T RAC (°C)	R0 E-6 Ohm	R E-6 Ohm	K
0	20.7	119.8	57.6	487.504	369.800	0.759
25	20.7	120.6	59.6	487.428	372.600	0.764
50	20.8	120.2	59.9	487.515	373.700	0.767
75	21.0	119.6	53.4	487.364	374.000	0.767
100	20.6	121.7	59.2	486.940	374.300	0.769
125	21.8	120.6	58.8	487.312	374.600	0.769
150	20.9	120.4	60.8	487.414	373.800	0.767
175	20.9	120.8	61.3	487.119	374.300	0.768
200	20.8	120.7	59.4	486.533	375.500	0.772

TEST RESULTS :

- K; VALUE LESS THAN 1
- CONNECTOR TEMPERATURE LOWER THAN TEMPERATURE OF REFERENCE CABLE
- DK = K(200) - K(25) = 0.0074 LESS THAN 0.05

LEGEND :

- T AMB °C --> AMBIENT TEMPERATURE °C
- T REF °C --> REFERENCE CABLE TEMPERATURE °C
- T RAC °C --> CONNECTOR TEMPERATURE DURING HEATING CYCLE IN °C
- R0 E-6 OHM --> RESISTANCE OF REFERENCE CABLE AT 20°C (MILLI-OHM)
- R E-6 OHM --> RESISTANCE OF CONNECTOR AT 20°C (MILLI-OHM)
- K --> COEFFICIENT OF R/R0

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от ЗЗЛД

EST

02" ООД
САМОКОВ

ВЯРНО С ОРИГИНАЛА

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЈРВ 25

1. **№ на тест 9309060** - Тест за стареене под въздействие на електричеството.

Съставил

На основание чл. 2 от ЗЗЛД

ВЗЯТО С ОРИГИНАЛА

"ВАК - 02" ООД САМОКОВ

sicame

Laboratoire d'essais
Direction Etudes et Recherches

PRODUCT: Preinsulated junction sleeves

Test report	: Dielectric
Report number	: 9304220
Product brand	: SICAME
Product type	: MJPB 16-4
Project n°	: E 0900324
Batch number	: 2-92

Demander of the test: DER SICAME

Starting date ot the test : 21/09/1993

Report emission date : 06 SEP. 2000

According to standard : NF C 33-021 (January 1993)

This report contains : 3 Pages 0 Annex(es)

Conclusion : The SICAME preinsulated junction sleeves type MJPB 16-4 conform to the NF C 33-021 standard of january 1993 sub-clause 2.4.1.

This is an english translation. The original french test report is the only reference version.

На основание чл. 2
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ВАК - 02 ООД
САМОКОВ

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SICAME DER	DIELECTRIC TEST EQUIPMENT ACCORDING TO STANDARD: NF C 33-021	SUP ER 1460 INDICE B

Test number : 9304220

Product brand : SICAME

Product type : MJPB 16-4

A - Computer equipment

IBM PS2 (Inv N°: 89 90 84) Hard disk 60 MB
Analog/Digital interface card
Digital/Analog interface card
RS232 on OS2

IBM 4029 020 (Inv N°: 92 03 30) Laser printer

B - Equipment for Dielectric test

Dielectric test equipment (Inv N°: 91 02 69) Bouchet 10 kV - 100 mA
3 settable thresholds
(10 mA, 100 mA delaye

C - General Equipment

Digital caliper (Inv N°: 92 00 91)

Calibrated Ruler (Inv N°: 93 00 83) ROCH

Stopwatch (Inv N°: 92 02 82) HANHART

Electro-hydraulic compression tool ED50 (5 tons) N°UT: 91 01 29

Die E140 nominal width 5 mm

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

На основание чл. 2
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SICAME DER	DIELECTRIC TEST ACCORDING TO STANDARD: NF C 33-021	SUP ER 740 INDICE B

Test number : 9304220 Date:21/09/1993 Ambient Temperature :23.5°C

Manufacturer : SICAME Humidity : 42 %

Product : MJPB 16-4

A- Test Procedure

Two samples of the batch are crimped on appropriate cable and put in water.

The assembly is placed in a water tank, the water level is 30 cm above the uppermost part of the connector.
After the assembly has been immersed for 30 minutes, the assembly is subjected to the dielectric test. The potential difference applied between the water and the conductor being 6 kV - 50 Hz, for the duration of 1 minute.

The potential difference is applied at a rate of 1 kV/s.
The maximum leakage current for the interruption (triggering of circuit breaker) of the HT supply is 10 mA.

B- Results

CONNECTOR N°	Cable sizes used (mm^2)
1	16 Alu / 4 Cu
2	16 Alu / 4 Cu

N° CONNECTOR	6kV/1mn After 30 min in water	Triggening value with I=10mA (KV)	OBSERVATIONS
1	OK	> 10	
2	OK	> 10	

Generals observations:

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

3/11

sicame

Laboratoire d'essais
Direction Etudes et Recherches

Test report	**: Endurance test under mechanical and thermal stresses**
Test number	**: 00 11 311 indice 1**
Product brand	**: SICAME**
Product type	**: MJPB 16-4**

Demander of the test	: DER
Starting date of the test	: 06/11/2000
Report emission date	: 26 FEV. 2003
According to standard	: NF C 33-021 § 2.9 (june 98)
This report contains	: 5 page et 0 annex
Conclusion	: The preinsulated junction sleeves type MJPB 16-4 conform to the requirements of NF C 33-021 § 2.9 (june 98) standard.

This is an English translation. The original French test report is the only reference version

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД

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1. Equipment used during test.

1.1 Equipment used :

N° U.T.	Designation	Characteristic
93 05 48	Crimping machine	50 kN
94 03 10	Traction bench 3 tons	Class 1
95 00 87	Electrical ageing machine n°9	/
92 04 55	Scanner	Accuracy ± 2°C
91 02 69	Dielectrimeter Bouchet	Accuracy 0,5 mA and 200V
92 02 82	Stop watch	Accuracy 1s
99 00 41	Conductimeter	Accuracy 30µS/cm
95 01 75	Calibrated ruler	Accuracy ± 1 mm

1.2 Cables :

Sections	16/4
Nature	Aluminium
From	Malaisia
Identification n°	9901
Conditioned on	01/07/1999 (1h00 at 120°C)

2. Product tested.

Désignation : MJPB 16-4

Number : 4

Project number : E 0900324

Identification : 1, 2, 3 and 4

Reception date at the laboratory : on the 06/11/2000

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
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3. Test.

Preinsulated junction sleeves are tested according to NF C 33-021 § 2.9 (june 98) standard.

3.1 Test procedure.

The test is carried out on 4 joint sleeves.

The free length of core between two adjacent joint sleeves is (1,0 ± 0,1) m and the free length of core between the anchoring and the extremity joint sleeves is at least 1 m.

The test consists in performing heat cycles combined with the mechanical stresses on the conductors connected by a joint sleeve. These mechanical stresses are applied on the stripped cores extremity by an appropriate anchoring equipment. The number of cycles is 500.

Thermocouples are placed to the central conductive part of the two joint sleeves located at both ends of the test assembly.

The reference temperature is measured in the middle of a stripped of (1,0 ± 0,1) m located at the outer side of the anchoring equipments, not less than 1 m from any supporting or connecting components.

Thermal cycles of a duration of 90 min are applied to the test assembly.

For the first 45 minutes of the cycle, the temperature rise is created by current flowing. The reference temperature of the conductor is maintained at (90 ± 3)°C. This temperature is reached within 5 min to 15 min at the beginning of the cycle.

For the last 45 min, the test assembly is naturally cooled down to (25 +/- 3)°C. The temperature is then maintained at this value until the end of the cycle.

Once in 24 h, at the end of the 90°C heating period, the two temperatures reached by the two joint sleeves are recorded.

An increasing tensile strength is applied for about 1 min up to a value equal to 60 % of the minimum strength indicated in the standard.

This strength is then maintained for 10 min using a manual or automatic continuous control. The assembly is left to self stabilize mechanically for 24 h without any control.

After stabilization, thermal cycles are applied. At the end of the first cycle, the tensile strength is set at 33 % of the minimum strength indicated in the standard.

Then, at least once in 24 h, tensile strength is adjusted at 33 % of the minimum strength indicated in the standard.

ВЯРНО С ОРИГИНАЛА

"RAK - 02" ООД
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На основание чл. 2
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3.2 Preparation

A 9 mm wide dies for groove E140 is used.

4. Requirements and results.

- **Cycles :**

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 25°C Between 25 % et 75 % HR	22°C 39 %HR
Rate of the tensile (N/min)	720 in 1 min	720
Strength value maintained for 10 min (N)	720	720
After 24 h, the strength is set at 33 % of the minimum strength (N)	400	400
Thermal stress	45 min at 90°C	45 min at 90°C
Number of cycles	500	500

- **Temperature measurements :**

Date	Cycle	Reference temperature (°C)	Connector 2 temperature (°C)	Connecto. temperature (°C)
06/11/2000	1	90,1	48,1	51,0
07/11/2000	14	90,1	48,2	51,3
08/11/2000	28	90,2	48,3	51,6
09/11/2000	42	89,9	47,9	51,8
10/11/2000	56	89,8	47,9	51,9
13/11/2000	100	90,0	48,3	51,8
14/11/2000	114	90,3	48,2	51,3
15/11/2000	128	90,2	48,5	51,7
16/11/2000	142	89,7	49,0	51,6
17/11/2000	156	89,9	49,3	51,2
20/11/2000	200	90,5	49,6	51,4
21/11/2000	214	90,2	49,5	51,0
22/11/2000	228	90,1	49,2	51,3
23/11/2000	242	90,4	49,4	51,6
24/11/2000	256	90,1	49,3	51,7
27/11/2000	300	89,7	49,6	51,9
28/11/2000	314	90,1	49,8	52,4
29/11/2000	328	90,4	49,5	52,1
30/11/2000	342	89,9	49,0	51,6
01/12/2000	356	90,0	49,5	51,9
04/12/2000	400	90,3	49,5	52,0

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД САМОКОВ

На основание чл. 2
от ЗЗЛД

Date	Cycle	Reference temperature (°C)	Connector 2 temperature (°C)	Connector 4 temperature (°C)
05/12/2000	414	90,4	49,5	51,3
06/12/2000	428	89,6	49,6	51,8
07/12/2000	442	89,9	49,7	51,7
08/12/2000	456	90,5	49,3	51,4
11/12/2000	500	90,3	49,6	51,6

↳ Connectors temperatures are always lower than reference temperature.

- **Mechanical and flashover tests :**

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	21°C 41 % HR
Water resistivity	< 200 Ωm	78,7 Ωm
6 kV during 1 min in metallic balls	No flashover	Connector n°1 : No flashover Connector n°3 : No flashover
1 kV during 1 min in water after 30 min in water	No flashover	Connector n°1 : No flashover Connector n°3 : No flashover
Rate of the tensile (N/min)	Between 1000 et 5000	Connector n°1 : 3000 Connector n°2 : 3000 Connector n°3 : 3000 Connector n°4 : 3000
Strength value maintained for 1 min (N)	600	Connector n°1 : 600 Connector n°2 : 600 Connector n°3 : 600 Connector n°4 : 600
Strength value applied without breakdown (N)	1200	Connector n°1 : 1200 Connector n°2 : 1200 Connector n°3 : 1200 Connector n°4 : 1200

↳ No flashover and no slippage are observed.

5. Conclusion

Tested connectors conform to the the requirements of NF C 33-021 § 2.9 (june 98) standard.

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

На основание чл. 2
от ЗЗЛД

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП MJPB 16-4

1. **№ на тест 9304220** - Диелектричен тест;
2. **№ на тест 0011311** - Тест за издръжливост под механичен и топлинен натиск.

Съставил:

На основание чл. 2
от ЗЗЛД

"ВАК - 02" ООД
Г. САМОКОВ

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sicame

Laboratoire d'essais
Direction Etudes et Recherches

PRODUCT: Preinsulated junction sleeves

Test report	: Dielectric
Report number	: 9309320
Product brand	: SICAME
Product type	: MJPB 16-6
Project n°	: E 0900324
Batch number	: 2-92

Demander of the test: DER SICAME

Starting date ot the test : 21/09/1993

Report emission date : 06 SEP. 2000

According to standard : NF C 33-021 (January 1993)

This report contains : 3 Pages 0 Annex(es)

Conclusion : The SICAME preinsulated junction sleeves type MJPB 16-6 conform to the NF C 33-021 standard of january 1993 sub-clause 2.4.1.

This is an english translation. The original french test report is the only reference version.

На основание чл. 2
от ЗЗЛД

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SICAME DER	DIELECTRIC TEST EQUIPMENT ACCORDING TO STANDARD: NF C 33-021	SUP ER 1160 INDICE B

Test number : 9309320

Product brand : SICAME

Product type : MJPB 16-6

A - Computer equipment

IBM PS2 (Inv N°: 89 90 84) Hard disk 60 MB
Analog/Digital interface card
Digital/Analog interface card
RS232 on OS2

IBM 4029 020 (Inv N°: 92 03 30) Laser printer

B - Equipment for Dielectric test

Dielectric test equipment (Inv N°: 91 02 69) Bouchet 10 kV - 100 mA
3 settable thresholds
(10 mA, 100 mA delaye

C - General Equipment

Digital caliper (Inv N°: 92 00 91) ROCH

Calibrated Ruler (Inv N°: 93 00 83) HANHART

Stopwatch (Inv N°: 92 02 82)

Electro-hydraulic compression tool ED50 (5 tons) N°UT: 91 01 29

Die E140 nominal width 5 mm

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД САМОКОВ

На основание чл. 2
от ЗЗЛД

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SICAME DER	DIELECTRIC TEST ACCORDING TO STANDARD: NF C 33-021	SUP ER 720 INDICE B

Test number : 9309320 Date:21/09/1993 Ambient Temperature :23.5°C

Manufacturer : SICAME Humidity : 42 %

Product : MJPB 16-6

A- Test Procedure

Two samples of the batch are crimped on appropriate cable and put in water.

The assembly is placed in a water tank, the water level is 30 cm above the uppermost part of the connector.
After the assembly has been immersed for 30 minutes, the assembly is subjected to the dielectric test. The potential difference applied between the water and the conductor being 6 kV - 50 Hz, for the duration of 1 minute.

The potential difference is applied at a rate of 1 kV/s.
The maximum leakage current for the interruption (triggering of circuit breaker) of the HT supply is 10 mA.

B- Results

CONNECTOR N°	Cable sizes used (mm²)
1	16 Alu / 6 Cu
2	16 Alu / 6 Cu

N° CONNECTOR	6kV/1mn After 30 min in water	Triggening value with I=10mA (KV)	OBSERVATIONS
1	OK	> 10	
2	OK	> 10	

Generals observations:

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД САМОКОВ

На основание чл. 2
от ЗЗЛД

sicame

Laboratoire d'essais
Direction Etudes et Recherches

Test report	**: Endurance test under mechanical and thermal stresses**
Test number	**: 00 11 370 indice 1**
Product brand	**: SICAME**
Product type	**: MJPB 16-6**

Demander of the test	: DER
Starting date of the test	: 06/11/2000
Report emission date	: 26 FEV. 2003
According to standard	: NF C 33-021 § 2.9 (june 98)
This report contains	: 5 page et 0 annex
Conclusion	: The preinsulated junction sleeves type MJPB 16-6 conform to the requirements of NF C 33-021 § 2.9 (june 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

B.P. N° 1 - 19231 POMPADOUR - CEDEX - FRANCE - Tél (33) 05 55 73 89 00 - Fax (33) 05 55 73 63 12 - Email info@sicame.fr

1. Equipment used during test.

1.1 Equipment used :

N° U.T.	Designation	Characteristic
93 05 48	Crimping machine	50 kN
94 03 10	Traction bench 3 tons	Class 1
95 00 87	Electrical ageing machine n°9	/
92 04 55	Scanner	Accuracy ± 2°C
91 02 69	Dielectrimeter Bouchet	Accuracy 0,5 mA and 200V
92 02 82	Stop watch	Accuracy 1s
99 00 41	Conductimeter	Accuracy 30µS/cm
95 01 75	Calibrated ruler	Accuracy ± 1 mm

1.2 Cables :

Sections	16/6
Nature	Aluminium
From	Malaisia
Identification n°	9901
Conditioned on	01/07/1999 (1h00 at 120°C)

2. Product tested.

Désignation : MJPB 16-6

Number : 4

Project number : E 0900324

Identification : 1, 2, 3 and 4

Reception date at the laboratory : on the 06/11/2000

ВЯРНО С ОРИГИНАЛА

ВАК - 02 ... САМОКОВ

Supervisor of the test

3. Test.

Preinsulated junction sleeves are tested according to NF C 33-021 § 2.9 (june 98) standard.

3.1 Test procedure.

The test is carried out on 4 joint sleeves.

The free length of core between two adjacent joint sleeves is (1,0 ± 0,1) m and the free length of core between the anchoring and the extremity joint sleeves is at least 1 m.

The test consists in performing heat cycles combined with the mechanical stresses on the conductors connected by a joint sleeve. These mechanical stresses are applied on the stripped cores extremity by an appropriate anchoring equipment. The number of cycles is 500.

Thermocouples are placed to the central conductive part of the two joint sleeves located at both ends of the test assembly.

The reference temperature is measured in the middle of a stripped of (1,0 ± 0,1) m located at the outer side of the anchoring equipments, not less than 1 m from any supporting or connecting components.

Thermal cycles of a duration of 90 min are applied to the test assembly.

For the first 45 minutes of the cycle, the temperature rise is created by current flowing. The reference temperature of the conductor is maintained at (90 ± 3)°C. This temperature is reached within 5 min to 15 min at the beginning of the cycle.

For the last 45 min, the test assembly is naturally cooled down to (25 +/- 3)°C. The temperature is then maintained at this value until the end of the cycle.

Once in 24 h, at the end of the 90°C heating period, the two temperatures reached by the two joint sleeves are recorded.

An increasing tensile strength is applied for about 1 min up to a value equal to 60 % of the minimum strength indicated in the standard.

This strength is then maintained for 10 min using a manual or automatic continuous control. The assembly is left to self stabilize mechanically for 24 h without any control.

After stabilization, thermal cycles are applied. At the end of the first cycle, the tensile strength is set at 33 % of the minimum strength indicated in the standard.

Then, at least once in 24 h, tensile strength is adjusted at 33 % of the minimum strength indicated in the standard.

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

На основание чл. 2
от ЗЗЛД

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3.2 Preparation

A 9 mm wide dies for groove E140 is used.

4. Requirements and results.

- **Cycles :**

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 25°C Between 25 % et 75 % HR	22°C 39 %HR
Rate of the tensile (N/min)	720 in 1 min	720
Strength value maintained for 10 min (N)	720	720
After 24 h, the strength is set at 33 % of the minimum strength (N)	400	400
Thermal stress	45 min at 90°C	45 min at 90°C
Number of cycles	500	500

- **Temperature measurements :**

Date	Cycle	Reference temperature (°C)	Connector 2 temperature (°C)	Connector temperature (°C)
06/11/2000	1	90,1	48,1	51,0
07/11/2000	14	90,1	48,2	51,3
08/11/2000	28	90,2	48,3	51,6
09/11/2000	42	89,9	47,9	51,8
10/11/2000	56	89,8	47,9	51,9
13/11/2000	100	90,0	48,3	51,8
14/11/2000	114	90,3	48,2	51,3
15/11/2000	128	90,2	48,5	51,7
16/11/2000	142	89,7	49,0	51,6
17/11/2000	156	89,9	49,3	51,2
20/11/2000	200	90,5	49,6	51,4
21/11/2000	214	90,2	49,5	51,0
22/11/2000	228	90,1	49,2	51,3
23/11/2000	242	90,4	49,4	51,6
24/11/2000	256	90,1	49,3	51,7
27/11/2000	300	89,7	49,6	51,9
28/11/2000	314	90,1	49,8	52,4
29/11/2000	328	90,4	49,5	52,1
30/11/2000	342	89,9	49,0	51,6
01/12/2000	356	90,0	49,5	51,9
04/12/2000	400	90,3	49,5	52,0

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

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Date	Cycle	Reference temperature (°C)	Connector 2 temperature (°C)	Connector 4 temperature (°C)
05/12/2000	414	90,4	49,5	51,3
06/12/2000	428	89,6	49,6	51,8
07/12/2000	442	89,9	49,7	51,7
08/12/2000	456	90,5	49,3	51,4
11/12/2000	500	90,3	49,6	51,6

↳ Connectors temperatures are always lower than reference temperature.

- **Mechanical and flashover tests :**

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	21°C 41 % HR
Water resistivity	< 200 Ωm	78,7 Ωm
6 kV during 1 min in metallic balls	No flashover	Connector n°1 : No flashover Connector n°3 : No flashover
1 kV during 1 min in water after 30 min in water	No flashover	Connector n°1 : No flashover Connector n°3 : No flashover
Rate of the tensile (N/min)	Between 1000 et 5000	Connector n°1 : 3000 Connector n°2 : 3000 Connector n°3 : 3000 Connector n°4 : 3000
Strength value maintained for 1 min (N)	600	Connector n°1 : 600 Connector n°2 : 600 Connector n°3 : 600 Connector n°4 : 600
Strength value applied without breakdown (N)	1200	Connector n°1 : 1200 Connector n°2 : 1200 Connector n°3 : 1200 Connector n°4 : 1200

↳ No flashover and no slippage are observed.

5. Conclusion

Tested connectors conform to the the requirements of NF C 33-021 § 2.9 (june 98) standard.

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЈРВ 16-6

1. **№ на тест 9309320** - Диелектричен тест – тест;
2. **№ на тест 0011370** - Тест за издръжливост под механичен и топлинен натиск.

На основание чл. 2 от ЗЗЛД

Съставил:

"ВАК - 02" ООД САМОКОВ

sicame
Laboratoire d'essais
Direction Etudes et Recherches

PRODUCT: Preinsulated junction sleeves

Test report	:	Dielectric
Report number	:	9101320
Product brand	:	SICAME
Product type	:	MJPB 16-10
Project n°	:	E 0900324
Batch number	:	2-92

Demander of the test: DER SICAME

Starting date ot the test : 21/09/1993

Report emission date : 06 SEP. 2000

According to standard : NF C 33-021 (January 1993)

This report contains : 3 Pages 0 Annex(es)

Conclusion : The SICAME preinsulated junction sleeves type MJPB 16-10 conform to the NF C 33-021 standard of january 1993 sub-clause 2.4.1.

This is an english translation. The original french test report is the only reference version.

На основание чл. 2
от ЗЗЛД

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SICAME DER	DIELECTRIC TEST EQUIPMENT ACCORDING TO STANDARD: NF C 33-021	SUP ER 1200 INDICE B

Test number : 9101320

Product brand : SICAME

Product type : MJPB 16-10

A - Computer equipment

IBM PS2 (Inv N°: 89 90 84) Hard disk 60 MB
Analog/Digital interface card
Digital/Analog interface card
RS232 on OS2

IBM 4029 020 (Inv N°: 92 03 30) Laser printer

B - Equipment for Dielectric test

Dielectric test equipment (Inv N°: 91 02 69) Bouchet 10 kV - 100 mA
3 settable thresholds
(10 mA, 100 mA delayed

C - General Equipment

Digital caliper (Inv N°: 92 00 91)

Calibrated Ruler (Inv N°: 93 00 83) ROCH

Stopwatch (Inv N°: 92 02 82) HANHART

Electro-hydraulic compression tool ED50 (5 tons) N°UT: 91 01 29

Die E140 nominal width 5 mm

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
Superv.
САМОКОВ

На основание чл. 2
от ЗЗЛД

SICAME DER	DIELECTRIC TEST ACCORDING TO STANDARD: NF C 33-021	SUP ER 720 INDICE B

Test number : 9101320 Date:21/09/1993 Ambient Temperature :23.5°C

Manufacturer : SICAME Humidity : 42 %

Product : MJPB 16-10

A- Test Procedure

Two samples of the batch are crimped on appropriate cable and put in water.

The assembly is placed in a water tank, the water level is 30 cm above the uppermost part of the connector.
After the assembly has been immersed for 30 minutes, the assembly is subjected to the dielectric test. The potential difference applied between the water and the conductor being 6 kV - 50 Hz, for the duration of 1 minute.

The potential difference is applied at a rate of 1 kV/s.
The maximum leakage current for the interruption (triggering of circuit breaker) of the HT supply is 10 mA.

B- Results

CONNECTOR N°	Cable sizes used (mm^2)		
1	16 Alu / 10 Cu		
2	16 Alu / 10 Cu		
N° CONNECTOR	6kV/1mn After 30 min in water	Triggening value with I=10mA (KV)	OBSERVATIONS
1	OK	> 10	
2	OK	> 10	

Generals observations:

Sup

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД САМОКОВ

На основание чл. 2 от ЗЗЛД

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sicame

Laboratoire d'essais
Direction Etudes et Recherches

Test report	**: Endurance test under mechanical and thermal stresses**
Test number	**: 00 11 100 indice 1**
Product brand	**: SICAME**
Product type	**: MJPB 16-10**

Demander of the test	: DER
Starting date of the test	: 06/11/2000
Report emission date	: 26 FEV. 2003
According to standard	: NF C 33-021 § 2.9 (june 98)
This report contains	: 5 page et 0 annex
Conclusion	: The preinsulated junction sleeves type MJPB 16-10 conform to the requirements of NF C 33-021 § 2.9 (june 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

1. Equipment used during test.

1.1 Equipment used :

N° U.T.	Designation	Characteristic
93 05 48	Crimping machine	50 kN
94 03 10	Traction bench 3 tons	Class 1
95 00 87	Electrical ageing machine n°9	/
92 04 55	Scanner	Accuracy ± 2°C
91 02 69	Dielectrimeter Bouchet	Accuracy 0,5 mA and 200V
92 02 82	Stop watch	Accuracy 1s
99 00 41	Conductimeter	Accuracy 30µS/cm
95 01 75	Calibrated ruler	Accuracy ± 1 mm

1.2 Cables :

Sections	16/10
Nature	Aluminium
From	Malaisia
Identification n°	9901
Conditioned on	01/07/1999 (1h00 at 120°C)

2. Product tested.

Désignation : MJPB 16-10

Number : 4

Project number : E 0900324

Identification : 1, 2, 3 and 4

Reception date at the laboratory : on the 06/11/2000

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

На основание чл. 2
от ЗЗЛД

3. Test.

Preinsulated junction sleeves are tested according to NF C 33-021 § 2.9 (june 98) standard.

3.1 Test procedure.

The test is carried out on 4 joint sleeves.

The free length of core between two adjacent joint sleeves is (1,0 ± 0,1) m and the free length of core between the anchoring and the extremity joint sleeves is at least 1 m.

The test consists in performing heat cycles combined with the mechanical stresses on the conductors connected by a joint sleeve. These mechanical stresses are applied on the stripped cores extremity by an appropriate anchoring equipment. The number of cycles is 500.

Thermocouples are placed to the central conductive part of the two joint sleeves located at both ends of the test assembly.

The reference temperature is measured in the middle of a stripped of (1,0 ± 0,1) m located at the outer side of the anchoring equipments, not less than 1 m from any supporting or connecting components.

Thermal cycles of a duration of 90 min are applied to the test assembly.

For the first 45 minutes of the cycle, the temperature rise is created by current flowing. The reference temperature of the conductor is maintained at (90 ± 3)°C. This temperature is reached within 5 min to 15 min at the beginning of the cycle.

For the last 45 min, the test assembly is naturally cooled down to (25 +/- 3)°C. The temperature is then maintained at this value until the end of the cycle.

Once in 24 h, at the end of the 90°C heating period, the two temperatures reached by the two joint sleeves are recorded.

An increasing tensile strength is applied for about 1 min up to a value equal to 60 % of the minimum strength indicated in the standard.

This strength is then maintained for 10 min using a manual or automatic continuous control. The assembly is left to self stabilize mechanically for 24 h without any control.

After stabilization, thermal cycles are applied. At the end of the first cycle, the tensile strength is set at 33 % of the minimum strength indicated in the standard.

Then, at least once in 24 h, tensile strength is adjusted at 33 % of the minimum strength indicated in the standard.

3.2 Preparation

A 9 mm wide dies for groove E140 is used.

4. Requirements and results.

- **Cycles :**

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 25°C Between 25 % et 75 % HR	22°C 39 %HR
Rate of the tensile (N/min)	720 in 1 min	720
Strength value maintained for 10 min (N)	720	720
After 24 h, the strength is set at 33 % of the minimum strength (N)	400	400
Thermal stress	45 min at 90°C	45 min at 90°C
Number of cycles	500	500

- **Temperature measurements :**

Date	Cycle	Reference temperature (°C)	Connector 2 temperature (°C)	Connecto. temperature (°C)
06/11/2000	1	90,1	48,1	51,0
07/11/2000	14	90,1	48,2	51,3
08/11/2000	28	90,2	48,3	51,6
09/11/2000	42	89,9	47,9	51,8
10/11/2000	56	89,8	47,9	51,9
13/11/2000	100	90,0	48,3	51,8
14/11/2000	114	90,3	48,2	51,3
15/11/2000	128	90,2	48,5	51,7
16/11/2000	142	89,7	49,0	51,6
17/11/2000	156	89,9	49,3	51,2
20/11/2000	200	90,5	49,6	51,4
21/11/2000	214	90,2	49,5	51,0
22/11/2000	228	90,1	49,2	51,3
23/11/2000	242	90,4	49,4	51,6
24/11/2000	256	90,1	49,3	51,7
27/11/2000	300	89,7	49,6	51,9
28/11/2000	314	90,1	49,8	52,4
29/11/2000	328	90,4	49,5	52,1
30/11/2000	342	89,9	49,0	51,6
01/12/2000	356	90,0	49,5	51,9
04/12/2000	400	90,3	49,5	52,0

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

На основание чл. 2
от ЗЗЛД

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Date	Cycle	Reference temperature (°C)	Connector 2 temperature (°C)	Connector 4 temperature (°C)
05/12/2000	414	90,4	49,5	51,3
06/12/2000	428	89,6	49,6	51,8
07/12/2000	442	89,9	49,7	51,7
08/12/2000	456	90,5	49,3	51,4
11/12/2000	500	90,3	49,6	51,6

↳ Connectors temperatures are always lower than reference temperature.

- **Mechanical and flashover tests :**

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	21°C 41 % HR
Water resistivity	< 200 Ωm	78,7 Ωm
6 kV during 1 min in metallic balls	No flashover	Connector n°1 : No flashover Connector n°3 : No flashover
1 kV during 1 min in water after 30 min in water	No flashover	Connector n°1 : No flashover Connector n°3 : No flashover
Rate of the tensile (N/min)	Between 1000 et 5000	Connector n°1 : 3000 Connector n°2 : 3000 Connector n°3 : 3000 Connector n°4 : 3000
Strength value maintained for 1 min (N)	600	Connector n°1 : 600 Connector n°2 : 600 Connector n°3 : 600 Connector n°4 : 600
Strength value applied without breakdown (N)	1200	Connector n°1 : 1200 Connector n°2 : 1200 Connector n°3 : 1200 Connector n°4 : 1200

↳ No flashover and no slippage are observed.

5. Conclusion

Tested connectors conform to the the requirements of NF C 33-021 § 2.9 (june 98) standard.

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД

На основание чл. 2
от ЗЗЛД

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП MJPB 16-10

1. **№ на тест 9101320** - Диелектричен тест;
2. **№ на тест 0011100** - Тест за издръжливост под механичен и топлинен натиск.

Съставил:

На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД САМОКОВ

sicame

Laboratoire d'essais
Direction études et recherches

TEST REPORT : Dielectric test.

PRODUCT: Preinsulated junction sleeves.

Report number	: 2501424
Product brand	: SICAME
Product type	: MJPB 10
Project n°	: E 0900332
Batch number	: 98M708380

Demander of the test: SICAME D.E.R.

Starting date ot the test : 28/01/1999

Report emission date : 28/01/1999

According to standard : NF C 33-021 (june 1998)

This report contains : 3 Pages Annexe(s)

Conclusion : The SICAME preinsulated junction sleeves type MJPB 10 comforms of standard NF C 33-021 (june 1998) ∫ 2.4.

На основание чл. 2
от ЗЗЛД

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ВЯРНО С ОРИГИНАЛА

ВАК 02 ЗЗЛД
САМОКОВ

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SICAME DER	DIELECTRIC TEST EQUIPMENT ACCORDING TO SPECIFICATION: NF C 33-021	SUP ER 1160 INDICE B

Test number : 2501424

Product brand : SICAME

Product type : MJPB 10

A - Computer equipment

IBM PS2 (Inv N°: 88 93 06) Hard disk 115 MB
Analog/Digital interface card
Digital/Analog interface card
Disk Operating System: DOS 5.1 IBM

IBM 4029 020 (Inv N°: 92 03 30) Laser printer

B - Equipment for Dielectric test

Dielectric unit (Inv N°: 91 02 69).

C - General Equipment

crimping machine (Inv N°: 93 05 48)

Calibrated Ruler (Inv N°: 95 01 75) ROCH

Stopwatch (Inv N°: 92 02 82) HANHART

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

ВАК - 02 ООД САЪОКОВ

SICAME DER	DIELECTRIC TEST ACCORDING TO SPECIFICATION: NF C 33-021	SUP ER 720 INDICE B

Test number : 2501424 Date:28/01/1999 Ambient Temperature : 22.9 °C

Manufacturer : SICAME Humidity : 37 %

Product : MJPB 10

A- Test Procedure

Two samples of the batch are crimped on appropriate cable and put in water.

The assembly is placed in a container of water, the water level must be 30 cm above the uppermost part of the connector.
After the assembly has been immersed for 30 minutes, the assembly is subject to the dielectric test. The potential difference applied between the water and the conductor being 6 kV - 50 Hz, for the duration of 1 minute.

The potential difference is applied at a rate of 1 kV/s.
The maximum leakage current for the interruption (triggering of circuit breaker) of the HT supply is 10 mA.

B- Results

CONNECTOR N°	Cable sizes used (mm²)
1	10 Cu / 10 Cu
2	10 Cu / 10 Cu

N° CONNECTOR	6kV/1mn After 30 min in water	Tripping value with I=10mA (KV)	OBSERVATIONS
1	OK	> 10	
2	OK	> 10	

Generals observations:

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

ООД
САМОКОВ

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЈРВ 10

1. **№ на тест: 2501424** - Диелектричен тест.

Съставил:

На основание чл. 2
от ЗЗЛД

"ВАК - 02" ООД
САМОКОВ

sicame

Laboratoire d'essais
Direction études et recherches

TEST REPORT : Dielectric test.

PRODUCT: Preinsulated junction sleeves.

Report number	: 2501222
Product brand	: SICAME
Product type	: MJPB 25-6
Project n°	: E 0900332
Batch number	: 98M708380

Demander of the test: SICAME D.E.R.

Starting date ot the test : 28/01/1999

Report emission date : 28/01/1999

According to standard : NF C 33-021 (june 1998)

This report contains : 3 Pages Annexe(s)

Conclusion : The SICAME preinsulated junction sleeves type MJPB 25-6 comforms of standard NF C 33-021 (june 1998) ∫ 2.4.

На основание чл. 2
от ЗЗЛД

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ВЯРНО С ОРИГИНАЛА

ВАК - 02[illegible]ОД
САМОКОВ

3/0

SICAME DER	DIELECTRIC TEST EQUIPMENT ACCORDING TO SPECIFICATION: NF C 33-021	SUP ER 1160 INDICE B

Test number : 2501222

Product brand : SICAME

Product type : MJPB 25-6

A - Computer equipment

IBM PS2 (Inv N°: 88 93 06) Hard disk 115 MB
Analog/Digital interface card
Digital/Analog interface card
Disk Operating System: DOS 5.1 IBM

IBM 4029 020 (Inv N°: 92 03 30) Laser printer

B - Equipment for Dielectric test

Dielectric unit (Inv N°: 91 02 69).

C - General Equipment

crimping machine (Inv N°: 93 05 48)

Calibrated Ruler (Inv N°: 95 01 75) ROCH

Stopwatch (Inv N°: 92 02 82) HANHART

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

02° ООД САМОКОВ

341

SICAME DER	DIELECTRIC TEST ACCORDING TO SPECIFICATION: NF C 33-021	SUP ER 720 INDICE B

Test number : 2501222 Date:28/01/1999 Ambient Temperature :22.9°C

Manufacturer : SICAME Humidity : 37 %

Product : MJPB 25-6

A- Test Procedure

Two samples of the batch are crimped on appropriate cable and put in water.

The assembly is placed in a container of water, the water level must be 30 cm above the uppermost part of the connector.
After the assembly has been immersed for 30 minutes, the assembly is subject to the dielectric test. The potential difference applied between the water and the conductor being 6 kV ~ 50 Hz, for the duration of 1 minute.

The potential difference is applied at a rate of 1 kV/s.
The maximum leakage current for the interruption (triggering of circuit breaker) of the HT supply is 10 mA.

B- Results

CONNECTOR N°	Cable sizes used (mm^2)
1	25 Alu / 6 Cu
2	25 Alu / 6 Cu

N° CONNECTOR	6kV/1mn After 30 min in water	Tripping value with I=10mA (KV)	OBSERVATIONS
1	OK	> 10	
2	OK	> 10	

Generals observations:

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

02" ООД
САМОКОВ

342

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЛРВ 25-6

1. **№ на тест: 2501422 -** Диелектричен тест.

На основание чл. 2 от ЗЗЛД

Съставил:

"ВАК - 02" ООД САМОКОВ

343

sicame

Laboratoire d'essais
Direction études et recherches

TEST REPORT : Dielectric test.

PRODUCT: Preinsulated junction sleeves.

Report number	: 2501425
Product brand	: SICAME
Product type	: MJPB 25-10
Project n°	: E 0900332
Batch number	: 98M708380

Demander of the test: SICAME D.E.R.

Starting date ot the test : 28/01/1999

Report emission date : 28/01/1999

According to standard : NF C 33-021 (june 1998)

This report contains : 3 Pages Annexe(s)

Conclusion : The SICAME preinsulated junction sleeves type MJPB 25-10 comforms of standard NF C 33-021 (june 1998) ∫ 2.4.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
ДОБРИЧ

19230 POMPADOUR - FRANCE - Tél. (33) 55 73 89 00 - Fax (33) 55 75 63 12 - Télex 590 192 SAMOKOB

SICAME DER	DIELECTRIC TEST EQUIPMENT ACCORDING TO SPECIFICATION: NF C 33-021	SUP ER 1160 INDICE B

Test number : 2501425

Product brand : SICAME

Product type : MJPB 25-10

A - Computer equipment

IBM PS2 (Inv N°: 88 93 06) Hard disk 115 MB
Analog/Digital interface card
Digital/Analog interface card
Disk Operating System: DOS 6.1 IBM

IBM 4029 020 (Inv N°: 92 03 30) Laser printer

B - Equipment for Dielectric test

Dielectric unit (Inv N°: 91 02 69).

C - General Equipment

crimping machine (Inv N°: 93 05 48)

Calibrated Ruler (Inv N°: 95 01 75)

Stopwatch (Inv N°: 92 02 82)

На основание чл. 2 от ЗЗЛД

На основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

34J

SICAME DER	DIELECTRIC TEST ACCORDING TO SPECIFICATION: NF C 33-021	SUP ER 720 INDICE B

Test number : 2501425 Date:28/01/1999 Ambient Temperature :22.9°C

Manufacturer : SICAME Humidity : 37 %

Product : MJPB 25-10

A- Test Procedure

Two samples of the batch are crimped on appropriate cable and put in water.

The assembly is placed in a container of water, the water level must be 30 cm above the uppermost part of the connector.
After the assembly has been immersed for 30 minutes, the assembly is subject to the dielectric test. The potential difference applied between the water and the conductor being 6 kV - 50 Hz, for the duration of 1 minute.

The potential difference is applied at a rate of 1 kV/s.
The maximum leakage current for the interruption (triggering of circuit breaker) of the HT supply is 10 mA.

B- Results

CONNECTOR N°	Cable sizes used (mm²)
1	25 Alu / 10 Cu
2	25 Alu / 10 Cu

N° CONNECTOR	6kV/1mn After 30 min in water	Tripping value with I=10mA (KV)	OBSERVATIONS
1	OK	> 10	
2	OK	> 10	

Generals observations:

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП MJPB 25-10

1. № на тест 2501425 - Диелектричен тест;

Съставил:

На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД
САМОКОВ

347

sicame

Laboratoire d'essais
Direction études et recherches

TEST REPORT : Dielectric test.

PRODUCT: Preinsulated junction sleeves.

Report number	: 6601465
Product brand	: SICAME
Product type	: MJPB 25-16
Project n°	: E 0900332
Batch number	: 98M708380

Demander of the test: SICAME D.E.R.

Starting date ot the test : 28/01/1999

Report emission date : 28/01/1999

According to standard : NF C 33-021 (june 1998)

This report contains : 3 Pages Annexe(s)

Conclusion : The SICAME preinsulated junction sleeves type MJPB 25-16 comforms of standard NF C 33-021 (june 1998) ∫ 2.4.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

19230 POMPADOUR - FRANCE - Tél. (33) 55 73 89 00 - Fax (33) 55 75 63 12 - Télex 590 122

"ВАК - 02" ООД
САМОКОВ

SICAME DER	DIELECTRIC TEST EQUIPMENT ACCORDING TO SPECIFICATION: NF C 33-021	SUP ER 1160 INDICE B

Test number : 6601465

Product brand : SICAME

Product type : MJPB 25-16

A - Computer equipment

IBM PS2 (Inv N°: 88 93 06) Hard disk 115 MB
Analog/Digital interface card
Digital/Analog interface card
Disk Operating System: DOS 6.1 IBM

IBM 4029 020 (Inv N°: 92 03 30) Laser printer

B - Equipment for Dielectric test

Dielectric unit (Inv N°: 91 02 69).

C - General Equipment

crimping machine (Inv N°: 93 05 48)

Calibrated Ruler (Inv N°: 95 01 75)

Stopwatch (Inv N°: 92 02 82)

На основание чл. 2 от ЗЗЛД

На основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

SICAME DER	DIELECTRIC TEST ACCORDING TO SPECIFICATION: NF C 33-021	SUP ER 720 INDICE B

Test number : 6601465 Date:28/01/1999 Ambient Temperature :22.9°C

Manufacturer : SICAME Humidity 37 %

Product : MJPB 25-16

A- Test Procedure

Two samples of the batch are crimped on appropriate cable and put in water.

The assembly is placed in a container of water, the water level must be 30 cm above the uppermost part of the connector.
After the assembly has been immersed for 30 minutes, the assembly is subject to the dielectric test. The potential difference applied between the water and the conductor being 6 kV - 50 Hz, for the duration of 1 minute.

The potential difference is applied at a rate of 1 kV/s.
The maximum leakage current for the interruption (triggering of circuit breaker) of the HT supply is 10 mA.

B- Results

CONNECTOR N°	Cable sizes used (mm^2)
1	25 Alu / 16 Alu
2	25 Alu / 16 Alu

N° CONNECTOR	6kV/1mn After 30 min in water	Tripping value with I=10mA (KV)	OBSERVATIONS
1	OK	> 10	
2	OK	> 10	

Generals observations:

ВЯРНО С ОРИГИНАЛА

На основание чл. 2 от ЗЗЛД

...-02" ООД САМОКОВ

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЛРВ 25-16

1. **№ на тест: 6601465** - Диелектричен тест.

На основание чл. 2 от ЗЗЛД

Състави:

"ВАК - 02" ООД
САМОКОВ

sicame

Laboratoire d'essais
Direction études et recherches

TEST REPORT : Dielectric test.

PRODUCT: Preinsulated junction sleeves.

Report number	: 9901410
Product brand	: SICAME
Product type	: MJPB 35-25
Project n°	: E 0900332
Batch number	: 98M708380

Demander of the test: SICAME D.E.R.

Starting date ot the test : 28/01/1999

Report emission date : 28/01/1999

According to standard : NF C 33-021 (june 1998)

This report contains : 3 Pages Annexe(s)

Conclusion : The SICAME preinsulated junction sleeves type MJPB 35-25 comforms of standard NF C 33-021 (june 1998) ∫ 2.4.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
ГАБРОВО
САМОКОВ

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SICAME DER	DIELECTRIC TEST EQUIPMENT ACCORDING TO SPECIFICATION: NF C 33-021	SUP ER 1160 INDICE B

Test number : 9901410

Product brand : SICAME

Product type : MJPB 35-25

A - Computer equipment

IBM PS2 (Inv N°: 88 93 06) Hard disk 115 MB
Analog/Digital interface card
Digital/Analog interface card
Disk Operating System: DOS 6.1 IBM

IBM 4029 020 (Inv N°: 92 03 30) Laser printer

B - Equipment for Dielectric test

Dielectric unit (Inv N°: 91 02 69).

C - General Equipment

crimping machine (Inv N°: 93 05 48)

Calibrated Ruler (Inv N°: 95 01 75)

Stopwatch (Inv N°: 92 02 82)

На основание чл. 2
от ЗЗЛД

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

2° ООД
САМОКОВ

353

SICAME DER	DIELECTRIC TEST ACCORDING TO SPECIFICATION: NF C 33-021	SUP ER 720 INDICE B

Test number : 9901410 Date:28/01/1999 Ambient Temperature :22.9°C

Manufacturer : SICAME Humidity : 37 %

Product : MJPB 35-25

A- Test Procedure

Two samples of the batch are crimped on appropriate cable and put in water.

The assembly is placed in a container of water, the water level must be 30 cm above the uppermost part of the connector.
After the assembly has been immersed for 30 minutes, the assembly is subject to the dielectric test. The potential difference applied between the water and the conductor being 6 kV ~ 50 Hz, for the duration of 1 minute.

The potential difference is applied at a rate of 1 kV/s.
The maximum leakage current for the interruption (triggering of circuit breaker) of the HT supply is 10 mA.

B- Results

CONNECTOR N°	Cable sizes used (mm²)
1	35 Alu / 25 Alu
2	35 Alu / 25 Alu

N° CONNECTOR	6kV/1mn After 30 min in water	Tripping value with I=10mA (KV)	OBSERVATIONS
1	OK	> 10	
2	OK	> 10	

Generals observations:

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ ЗА МАНШОН тип MJPB 35/25

1. **№ на тест: 9901410** - Диелектричен тест.

На основание чл. 2
от ЗЗЛД

Съставил:

"ВАК - 02" ООД
САМОКОВ

SICAME

R & D DEPARTMENT

MECHANICAL TESTS

PRE-INSULATED JUNCTION SLEEVES

- MJPT 35 (CG) -> 9212290
- MJPT 50-25 (CG) -> 9212300
- MJPT 50-35 (CG) -> 9212310
- MJPT 50 (CG) -> 9212320
- MJPT 70-35 (CG) -> 9212330
- MJPT 70-50 (CG) -> 9212340
- [illegible]
- MJPT 150 (CG) -> 9212370
- MJPT 150-70 (CG) -> 9212380

PRE-INSULTAED LUGS

. BIMETALLIC LUGS

- CPTAU70A -> 9502080
- CPTAU150A -> 9502100

. ALUMINIUM LUGS

- CPTA70A -> 9502090

SUP ER 160
INDICE A

LABORATOIRE SICAME
ESSAI
FOLIO 1/10 | VISA

EQUIPMENT USED DURING MECHANICAL TESTS

A - Computer

HP 9826 N°UT : 88 91 93

HP 3497A N°UT : 88 05 58 Data recording

HP 7470 N°UT : 88 91 90 Plotter

IBM PS2 N°UT : 88 93 06 Hard disk 112 Megabytes
Analog/digital card - Digital/analog card
DOS system used

IBM 4029 020 N°UT : 92 03 30 Laser printer

B - Electrical and thermal measurement equipment

HP 3456 N°UT : 88 05 17 Voltmeter

C - Equipment for mechanical tests

Traction bench (for junction sleeves) N°UT : 89 01 34
10 Tons HP 9826 driven
Load cell N°UT 920245 - FGP INSTRUMENTATION -

LHOMARGY DY 36 N° UT 92 04 23 (for pre insulated lugs)

Digital caliper N°UT : 93 06 07 - MITUTOYO -

Electronic torque wrench N°UT : 92 03 31 - POWELL DUFFRYN - Précision 1%

Standard ruler N°UT : 93 00 83 -ROCH-

Power supply FONTAINE N°UT : 92 02 79

Compression tool ED50 (5 tons) N°UT : 91 01 29

Pneumatic compression head U13 (13 tons) N°UT : 91 00 55

E215 die with 9 mm for 150 et 150-70 sleeves and lugs

E173 die with 9 mm for other sleeves and lugs

LABORATOIRE SICAME
ESSAI
FOLIO 2/10 VISA

SICAME DER	MECHANICAL TEST ACCORDING TO STANDARD : HN 33S66	SUP ER 730 INDEX A

Test number :9212290 Date:04/12/92 Ambient temperature : 22 °C

Product brand : CEGERS Humidity : 45 %

Product type : MJPT 35-35

A - SETTING OF THE TEST

A junction is set up with a core area adapted to the capacity of the sleeve.
A static load is applied on the conductive part of the cable.
It must be continuously increasing (the load increase must have a value between 1000 & 5000 N/mn) up to 50% of the minimum load value indicated in the standard.
The load is maintained during 1 minute.
Then, the load increase is repeated up to the breaking of the junction or the sliding of the conductor.

B - TEST RESULTS

N° of the sleeve	Value of the tensile strength required during 1 mn (N)	Breaking value (N)	Comments
1	1250	3820	wire breaking
2	1250	3960	wire breaking

General comments : Satisfactory

LABORATOIRE SICAME
ESSAI 9212290
FOLIO 3/10 VISA

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД САМОКОВ

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SICAME DER	MECHANICAL TEST ACCORDING TO STANDARD : HN 33S66	SUP ER 730 INDEX A

Test number :9212300 Date:04/12/92 Ambient temperature : 22 °C

Product brand : CEGERS Humidity : 45 %

Product type : MJPT 50-25

A - SETTING OF THE TEST

A junction is set up with a core area adapted to the capacity of the sleeve.
A static load is applied on the conductive part of the cable.
It must be continuously increasing (the load increase must have a value between 1000 & 5000 N/mn) up to 50% of the minimum load value indicated in the standard.
The load is maintained during 1 minute.
Then, the load increase is repeated up to the breaking of the junction or the sliding of the conductor.

B - TEST RESULTS

N° of the sleeve	Value of the tensile strength required during 1 mn (N)	Breaking value (N)	Comments
1	900	3120	wire breaking
2	900	2940	wire breaking

General comments : Satisfactory

LABORATOIRE SICAME
ESSAI 9212300
FOLIO 4/10 VISA

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

379

SICAME DER	MECHANICAL TEST ACCORDING TO STANDARD : HN 33S66	SUP ER 730 INDEX A

Test number :9212310 Date:04/12/92 Ambient temperature : 22 °C

Product brand : CEGERS Humidity : 45 %

Product type : MJPT 50-35

A - SETTING OF THE TEST

A junction is set up with a core area adapted to the capacity of the sleeve.
A static load is applied on the conductive part of the cable.
It must be continuously increasing (the load increase must have a value between 1000 & 5000 N/mn) up to 50% of the minimum load value indicated in the standard.
The load is maintained during 1 minute.
Then, the load increase is repeated up to the breaking of the junction or the sliding of the conductor.

B - TEST RESULTS

N° of the sleeve	Value of the tensile strength required during 1 mn (N)	Breaking value (N)	Comments
1	1250	4410	wire breaking
2	1250	4300	wire breaking

General comments : Satisfactory

LABORATOIRE SICAME
ESSAI 9212310
FOLIO 5/10 VISA

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД

SICAME DER	MECHANICAL TEST ACCORDING TO STANDARD : HN 33S66	SUP ER 730 INDEX A

Test number :9212320 Date:04/12/92 Ambient temperature : 22 °C

Product brand : CEGERS Humidity : 45 %

Product type : MJPT 50-50

A - SETTING OF THE TEST

A junction is set up with a core area adapted to the capacity of the sleeve.
A static load is applied on the conductive part of the cable.
It must be continuously increasing (the load increase must have a value between 1000 & 5000 N/mn) up to 50% of the minimum load value indicated in the standard.
The load is maintained during 1 minute.
Then, the load increase is repeated up to the breaking of the junction or the sliding of the conductor.

B - TEST RESULTS

N° of the sleeve	Value of the tensile strength required during 1 mn (N)	Breaking value (N)	Comments
1	1750	5860	wire breaking
2	1750	5960	wire breaking

General comments : Satisfactory

LABORATOIRE SICAME
ESSAI 9212320
FOLIO 6/10 VISA

"BAK - 02" ООД
САМОКОВ

SICAME DER	MECHANICAL TEST ACCORDING TO STANDARD : HN 33S66	SUP ER 730 INDEX A

Test number :9212330 Date:04/12/92 Ambient temperature : 22 °C

Product brand : CEGERS Humidity : 45 %

Product type : MJPT 70-35

A - SETTING OF THE TEST

A junction is set up with a core area adapted to the capacity of the sleeve.
A static load is applied on the conductive part of the cable.
It must be continuously increasing (the load increase must have a value between 1000 & 5000 N/mn) up to 50% of the minimum load value indicated in the standard.
The load is maintained during 1 minute.
Then, the load increase is repeated up to the breaking of the junction or the sliding of the conductor.

B - TEST RESULTS

N° of the sleeve	Value of the tensile strength required during 1 mn (N)	Breaking value (N)	Comments
1	1250	4250	wire breaking
2	1250	4350	wire breaking

General comments : Satisfactory

LABORATOIRE SICAME
ESSAI 9212330
FOLIO 7/10 VISA CB

SICAME DER	MECHANICAL TEST ACCORDING TO STANDARD : HN 33S66	SUP ER 730 INDEX A

Test number :9212340 Date:04/12/92 Ambient temperature : 22 °C

Product brand : CEGERS Rumidity : 45 %

Product type : MJPT 70-50

A - SETTING OF THE TEST

A junction is set up with a core area adapted to the capacity of the sleeve.
A static load is applied on the conductive part of the cable.
It must be continuously increasing (the load increase must have a value between 1000 & 5000 N/mn) up to 50% of the minimum load value indicated in the standard.
The load is maintained during 1 minute.
Then, the load increase is repeated up to the breaking of the junction or the sliding of the conductor.

B - TEST RESULTS

N° of the sleeve	Value of the tensile strength required during 1 mn (N)	Breaking value (N)	Comments
1	1750	4950	wire breaking
2	1750	5400	wire breaking

General comments : Satisfactory

LABORATOIRE SICAME
ESSAI 92 12 34 0
FOLIO 8/10 VISA CB

SICAME DER	MECHANICAL TEST ACCORDING TO STANDARD : HN 33S66	SUP ER 730 INDEX A

Test number :9212350 Date:04/12/92 Ambient temperature : 22 °C

Product brand : CEGERS Humidity : 45 %

Product type : MJPT 70-70

A - SETTING OF THE TEST

A junction is set up with a core area adapted to the capacity of the sleeve.
A static load is applied on the conductive part of the cable.
It must be continuously increasing (the load increase must have a value between 1000 & 5000 N/mn) up to 50% of the minimum load value indicated in the standard.
The load is maintained during 1 minute.
Then, the load increase is repeated up to the breaking of the junction or the sliding of the conductor.

B - TEST RESULTS

N° of the sleeve	Value of the tensile strength required during 1 mn (N)	Breaking value (N)	Comments
1	2500	8570	wire breaking
2	2500	8620	wire breaking

General comments : Satisfactory

LABORATOIRE SICAME
ESSAI 9212350
FOLIO 9/10 VISA

"BAK - 02" ООД
GABROVO

SICAME DER	MECHANICAL TEST ACCORDING TO STANDARD : HN 33S65	SUP ER 730 INDEX A

Test number :9212370 Date:04/12/92 Ambient temperature : 22 °C

Product brand : CEGERS Humidity : 45 %

Product type : MJPT 150-150

A - SETTING OF THE TEST

A junction is set up with a core area adapted to the capacity of the sleeve.
A static load is applied on the conductive part of the cable.
It must be continuously increasing (the load increase must have a value between 1000 & 5000 N/mn) up to 50% of the minimum load value indicated in the standard.
The load is maintained during 1 minute.
Then, the load increase is repeated up to the breaking of the junction or the sliding of the conductor.

B - TEST RESULTS

N° of the sleeve	Value of the tensile strength required during 1 mn (N)	Breaking value (N)	Comments
1	5500	13560	wire breaking
2	5500	14010	wire breaking

General comments : Satisfactory

LABORATOIRE SICAME
ESSAI 9212370
FOLIO 10/10 VISA UB

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
г. САМОРОВ

365

SICAME

Laboratoire d'essais
de la Direction Etudes et Recherches

Rapport d'essai : **Essai de montage à basse température**
Test report : ***Installation test at low temperature***

Rapport d'essai n°	**: 12 04 124**	***Test report n.***	***: 12 04 124***
Constructeur	**: SICAME**	***Product brand***	***: SICAME***
Référence produit	**: MJPT 35**	***Product type***	***: MJPT 35***
Demandeur de l'essai	**: SICAME S.A.**	***Test applied by***	***: SICAME S.A.***
Date d'essai	**: Du 17 au 18 avril 2012**	***Date of the test***	***: 17 to 18 April 2012***
Date d'émission du rapport	**: 15 mai 2012**	***Report emission date***	***: 15 May 2012***

Essais réalisés suivant : NF EN 50483-4 (07/2009), § 8.2.4
Tests carried out in accordance with

Ce rapport comprend : **9 pages**
This report contains

Conclusion : Les manchons de jonction préisolés SICAME de type MJPT 35 soumis à essai satisfont aux exigences du § 8.2.4 de la norme NF EN 50483-4 (07/2009).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion : *The tested SICAME insulated splicing sleeves MJPT 35 comply with the requirements of clause 8.2.4 of NF EN 50483-4 (07/2009) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
от ЗЗЛД

B.P. N° 1 - 19231 POMPADOUR - CEDEX - FRANCE - Tél (33) 05 55 73 89 00 - Fax (33) 05 55 73 63 12 - Email : info@sicame.fr

1 Echantillons soumis à essai / *Samples under test*

Type : Manchon de jonction préisolé
Insulated splicing sleeve

Désignation / *Designation* : MJPT 35

Matière de la jupe / *over molding material* : KEPITAL

Fabricant / *Manufacturer* : SICAME

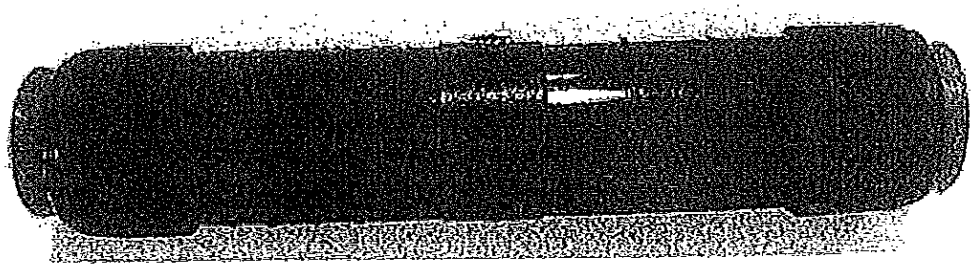
Numéro de lot / *Batch number* : Tête de série / *Head of series*
Echantillons suivant le plan E0700610
Samples in accordance with drawing n. E0700610

Classes du produit selon NF EN 50483-1 (§ 9.3) *Classes of product in accordance with NF EN 50483-1 (§ 9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐	Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 2

Repérage / *Identification* : 1, 2

Date de réception au laboratoire : 3 avril 2012
Reception date at the laboratory : *03 April 2012*



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2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir *Compression tool*	5 tonnes *5 tons*
/	Matrices *Dies*	E173 largeur 9 mm *E173 width 9 mm*
99 01 48	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
10 03 21	Chambre froide *Low temperature chamber*	Précision 1°C *Accuracy 1°C*
99 00 41	Conductimètre *Conductimeter*	Précision 30 µS/cm *Accuracy 30µS/cm*
04 00 30	Thermomètre étanche *Watertight thermometer*	Précision 1°C *Accuracy 1°C*
03 02 56	Chronomètre *Stop watch*	Précision 1 s *Accuracy 1s*
94 03 09	Banc de traction 3 tonnes *Tensile test machine 3 tons*	Classe 1 *Class 1*
91 02 69	Diélectrimètre BOUCHET (10 kV) *Dielectrimeter BOUCHET (10 kV)*	Précision 0,5mA et 200V *Accuracy 0,5mA and 200V*

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2.2 Câbles / *Cables*

N° Lot / *Identification*	08006					
Norme / *Standard*	NF C 33-209					
Provenance / *From*	France / *France*					
Section / *Cross section*	35 mm²					
Matériau de l'âme / *Conductor material*	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme / *Conductor type*	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☑	Rétreinte *Compacted*	☐	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme / *Conductor shape*	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins / *Number of wires*	7					
Ø sur âme / *Ø on conductor*	7,05 mm					
Matériau de l'isolant *Insulation material*	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / *Ø on insulation*	10,45 mm					
Conditionnement *Conditioned on*	1h00 à 120°C *1h00 at 120°C*					
Référence du câble HD626 *HD626 conductor reference*	6 E-1					
Charge de rupture minimale *Minimum breaking load*	4 200 N					

3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 8.2.4 de la norme NF EN 50483-4 (07/2009).

L'essai est effectué sur deux manchons pour chaque section.

Les raccords, le conducteur et les outillages sont au préalable pré-conditionnés jusqu'à la température d'essai (-10 ± 3) °C, ensuite ils sont assemblés à cette température dans la chambre froide.

Au moins 3h à température ambiante après la sortie de la chambre froide, les manchons sont soumis à :

- <u>l'essai de tenue diélectrique dans l'eau, conformément au § 8.2.3 :</u>

L'ensemble, raccord et conducteurs, est placé au fond d'un bac d'eau. Pendant le déplacement de l'ensemble, il peut être maintenu pour s'assurer qu'il n'y ait pas de courbure du conducteur ou de mouvement inutile des éléments. Le raccord est placé horizontalement. La profondeur de l'eau est mesurée à partir de la partie supérieure du raccord. Les conducteurs émergent suffisamment de l'eau pour éviter un claquage. Le courant de fuite maximum est égal à (10 ± 0,5) mA. La résistivité de l'eau est ≤ 200 Ωm. L'eau est à température ambiante. On effectue la montée progressive en tension à une vitesse d'environ 1 kV/s. Après une durée d'immersion de 30 min, une tension alternative de 6 kV est appliquée à l'échantillon pendant 60 s.

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- l'essai mécanique, conformément au § 8.2.2. :

L'ensemble est soumis à un effort de traction appliqué sur l'âme conformément à la figure 8 de la norme. Les efforts de traction sont appliqués sur les âmes, la montée en charge est conforme à la NF EN 50483-1, § 9.1.4. (vitesse entre 1000 N/min et 5000 N/min)
Un effort de traction est appliqué sur l'âme jusqu'à atteindre les valeurs exprimées en % de la CRM du Tableau 1 :

Tableau 1 – Efforts initiaux exigés pour le marquage

Système de torsade	*Sections*	*Efforts*	*Essai*
Système autoporté	4 mm² à 16 mm² Cuivre	10 % de la CRM pendant 60 s	☐
	16 mm² à 25 mm² Aluminium	20 % de la CRM pendant 60 s	☑
	35 mm² à 150 mm² Aluminium	**Pleine traction :** 20 % de la CRM pendant 60 s	☐
		Traction allégée : 5 % de la CRM pendant 60 s	☐
Système à neutre porteur	**Phases :** 16 mm² à 150 mm² Aluminium	30 % de la CRM pendant 60 s	☐
	Neutre : 25 mm² à 95 mm² alliage d'aluminium	60 % de la CRM pendant 60 s	☐

Un marquage est réalisé sur le câble à l'endroit où il sort du raccord.

Les efforts sont ensuite augmentés jusqu'aux valeurs exprimées en % de la CRM du Tableau 2 :

Tableau 2 – Efforts d'essai

Système de torsade	*Sections*	*Efforts*	*Essai*
Système autoporté	4 mm² à 16 mm² Cuivre	20 % de la CRM pendant 60 s	☐
	16 mm² à 25 mm² Aluminium	1 200 N ou 40 % de la CRM, la plus grande des deux valeurs pendant 60 s	☑
	35 mm² à 150 mm² Aluminium	**Pleine traction :** 85 % de la CRM pendant 60 s	☐
		Traction allégée : 10% de la CRM pendant 60 s	☐
Système à neutre porteur	**Phases :** 16 mm² à 150 mm² Aluminium	60 % de la CRM pendant 60 s	☐
	Neutre : 25 mm² à 95 mm² alliage d'aluminium	95 % de la CRM pendant 60 s	☐

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Connectors are tested in accordance with NF EN 50483-4 (07/2009) §8.2.4 standard.
Two samples are tested of each equal cross section.
The connectors, conductor and tools are further pre-conditioned until they reach the test temperature of (-10 ± 3) °C before they are assembled. Assembly is made in the cold temperature chamber, at (-10 ± 3)°C.
At least 3 h after having been removed from the cold chamber, the sleeves are subjected to :

- *dielectrical voltage test in water, according to clause 8.2.3:*

The assembly, of connector and cores, is placed at the bottom of a water tank. During the movement of the assembly it may be supported to ensure no bending of the core or unnecessary movement of the component parts. The connector is placed horizontally. The depth of water is measured from the upper part of the connector. The cores are sufficiently above the water level to prevent flashover. The maximum leakage current is equal to (10 ± 0,5) mA. The resistivity of the water is ≤ 200 Ωm. The water is at ambient temperature. The a.c. voltage is applied to a rate of approximately 1 kV/s. After 30 min under water, the voltage test is applied to the sample with 6 kV a.c. for 60 s.

- *mechanical testing, according to clause 8.2.2:*

The assembly is subjected to a tensile load applied to the conductor in accordance with Figure 8 of the standard.
Tensile test loads are applied to conductors, the rate of increase is in accordance with § 9.1.4 of NF EN 50483-1. (speed between 1000 N/min and 5000 N/min)

A tensile test load is applied to the conductor until it reaches the values of Table 1:

Table 1 – Initial loads required for marking

Bundle System	Cross sections	Loads	Test
Self supporting system	4 mm² to 16 mm² Copper	10 % of MBL for 60 s	☐
	16 mm² to 25 mm² Aluminium	20 % of MBL for 60 s	☑
	35 mm² to 150 mm² Aluminium	**Full tension :** 20 % of MBL for 60 s **Partial tension :** 5 % of MBL for 60 s	☐ ☐
Neutral messenger system	**Phases :** 16 mm² to 150 mm² Aluminium	30 % of MBL for 60 s	☐
	Neutral : 25 mm² to 95 mm² Aluminium alloy	60 % of MBL for 60 s	☐

The cable is marked at the point at wich it leaves the connector.

The load then is increased up to the values of Table 2:

Table 2 – Test loads

Bundle System	*Cross sections*	*Loads*	*Test*
Self supporting system	*4 mm² to 16 mm² Copper*	*20 % of MBL for 60 s*	☐
	16 mm² to 25 mm² Aluminium	*1200 N or 40 % of MBL whichever is the greater for 60 s*	☑
	35 mm² to 150 mm² Aluminium	***Full tension :*** *85 % of MBL for 60 s*	☐
		Partial tension : *10 % of MBL for 60 s*	☐
Neutral messenger system	***Phases :*** *16 mm² to 150 mm² Aluminium*	*60 % of MBL for 60 s*	☐
	Neutral : *25 mm² to 95 mm² Aluminium alloy*	*95 % of MBL for 60 s*	☐

3.1 Exigences supplémentaires du demandeur de l'essai
Additional requirements of the applicant for the test

Néant
None

3.2 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences *Requirements*	**Relevés** *Results*
Température ambiante et humidité *Ambient temperature and humidity conditions*	15 °C ≤ T° ≤ 35 °C 25 % ≤ HR ≤ 75 %	22 °C 30 %HR
Temps de conditionnement *Conditioning time*	-	1 h 23 min
Température de la chambre froide *Low temperature chamber*	(-10 ± 3)°C	-11,0 °C
Temps à température ambiante après la sortie de la chambre froide *Ambient temperature time after out of cold chamber*	> 3 h	3 h 21 min
Température de l'eau *Water temperature*	Température ambiante *Ambient temperature*	21,5 °C
Résistivité de l'eau *Water resistivity*	≤ 200 Ωm	34,01 Ωm
Temps d'immersion (minutes) *Immersion time (minutes)*	30	30
Vitesse de montée en tension *Voltage increase rate*	≈ 1 kV/s	≈ 1 kV/s

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3.3 Configuration des échantillons / *Samples configuration*

Echantillon n° *Sample n.*	Section / *Cross section* (mm²)		Système de torsade *Bundle system*
1	35	35	Système autoporté *Self supporting system*
2			

4 Résultats / *Results*

Echantillon n° *Sample n.*	6 kV pendant 1 min *6 kV for 1 min*	
	Exigences *Requirements*	Résultats *Results*
1	Pas de claquage *No breakdown*	Pas de claquage *No breakdown*
2		Pas de claquage *No breakdown*

Echantillon n° *Sample n.*	Vitesse de montée programmée *Planned increase rate* (N/min)	
	Exigences *Requirements*	Résultats *Results*
1	1000 ≤ ... ≤ 5000	3000
2		3000

Echantillon n° *Sample n.*	Effort pour marquage pendant 1 minute *Strength for marking during 1 min* (N)		Effort pendant 1 minute *Strength during 1 min* (N)	
	Exigences *Requirements*	Résultats *Results*	Exigences *Requirements*	Résultats *Results*
1	20 % CRM *MBL* ⇔ 600	600	40 % CRM *MBL* ⇔ 1200	1200
2		600		1200

5 Conclusion / *Conclusion*

Aucun claquage ou contournement ne s'est produit (déclenchement du générateur de tension).
No breakdown or flashover occurred (tripping of voltage generator).

Aucun glissement ou rupture ne s'est produit.
No slippage or breakage occurred.

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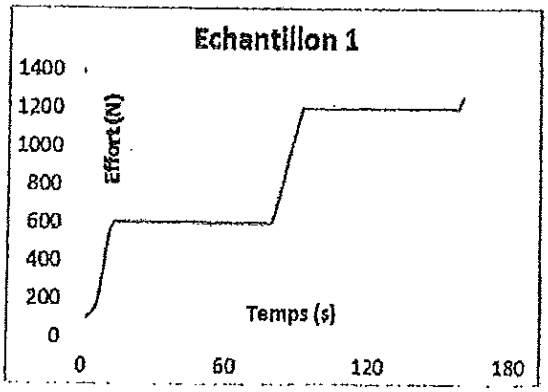
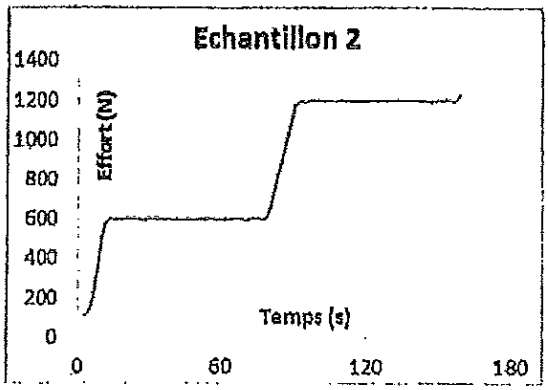
6 Courbes / *Curves*





FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

ВЯРНО С ОРИГИНАЛА

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от ЗЗЛД

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЛРТ 35

1. **№ на тест: 9212290** - Механичен тест;
2. **№ на тест: 1204124** - Тест за инсталиране при ниска температура.

Съставил:

На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД
САМОКОВ

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SICAME

Laboratoire d'essais
de la Direction Etudes et Recherches

Rapport d'essai : **Essai de montage à basse température**
Test report : ***Installation test at low temperature***

Rapport d'essai n°	: 12 04 121	***Test report n.***	***: 12 04 121***
Constructeur	: SICAME	***Product brand***	***: SICAME***
Référence produit	: MJPT 50	***Product type***	***: MJPT 50***
Demandeur de l'essai	: SICAME S.A.	***Test applied by***	***: SICAME S.A.***
Date d'essai	: Du 17 au 18 avril 2012	***Date of the test***	***: 17 to 18 April 2012***
Date d'émission du rapport	: 15 mai 2012	***Report emission date***	***: 15 May 2012***

Essais réalisés suivant : NF EN 50483-4 (07/2009), § 8.2.4
Tests carried out in accordance with

Ce rapport comprend : 9 pages
This report contains

Conclusion ; Les manchons de jonction préisolés SICAME de type MJPT 50 soumis à essai satisfont aux exigences du § 8.2.4 de la norme NF EN 50483-4 (07/2009).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion ***: The tested SICAME insulated splicing sleeves MJPT 50 comply with the requirements of clause 8.2.4 of NF EN 50483-4 (07/2009) standard.***
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
от ЗЗЛД

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ВЯРНО С ОРИГИНАЛА

ВАК - ЗЗЛД
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1 Echantillons soumis à essai / *Samples under test*

Type : Manchon de jonction préisolé
Insulated splicing sleeve

Désignation / *Designation* : MJPT 50

Matière de la jupe / *over molding material* : KEPITAL

Fabricant / *Manufacturer* : SICAME

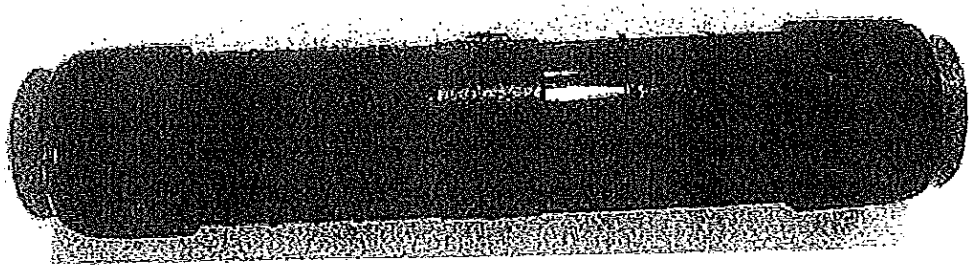
Numéro de lot / *Batch number* : Tête de série / *Head of series*
Echantillons suivant le plan E0700610
Samples in accordance with drawing n. E0700610

Classes du produit selon NF EN 50483-1 (§ 9.3) *Classes of product in accordance with NF EN 50483-1 (§ 9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐	Classe B *Class B*	; raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	; raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	; raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 2

Repérage / *Identification* : 1, 2

Date de réception au laboratoire : 3 avril 2012
Reception date at the laboratory : *03 April 2012*



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2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir *Compression tool*	5 tonnes *5 tons*
/	Matrices *Dies*	E173 largeur 9 mm *E173 width 9 mm*
99 01 48	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
10 03 21	Chambre froide *Low temperature chamber*	Précision 1°C *Accuracy 1°C*
99 00 41	Conductimètre *Conductimeter*	Précision 30 µS/cm *Accuracy 30µS/cm*
04 00 30	Thermomètre étanche *Watertight thermometer*	Précision 1°C *Accuracy 1°C*
03 02 56	Chronomètre *Stop watch*	Précision 1 s *Accuracy 1s*
94 03 09	Banc de traction 3 tonnes *Tensile test machine 3 tons*	Classe 1 *Class 1*
91 02 69	Diélectrimètre BOUCHET (10 kV) *Dielectrimeter BOUCHET (10 kV)*	Précision 0,5mA et 200V *Accuracy 0,5mA and 200V*

2.2 Câbles / *Cables*

N° Lot / ***Identification***	07021					
Norme / ***Standard***	NF C 33-209					
Provenance / ***From***	France / *France*					
Section / ***Cross section***	50 mm²					
Matériau de l'âme / ***Conductor material***	☐	Cuivre / *Copper*	☑	Aluminium	☐	Alliage d'aluminium / *Aluminium alloy*
Type d'âme / ***Conductor type***	☐	Massive / *Solid*	☑	Câblée / *Stranded*		
	☐	Rétreinte / *Compacted*	☑	Non rétreinte / *Non compacted*	☐	Souple / *Flexible*
Forme d'âme / ***Conductor shape***	☑	Ronde / *Circular*	☐	Sectorale / *Sector-shaped*		
Nombre de brins / ***Number of wires***	7					
Ø sur âme / ***Ø on conductor***	9,00 mm					
Matériau de l'isolant / ***Insulation material***	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / ***Ø on insulation***	11,45 mm					
Conditionnement / ***Conditioned on***	1h00 à 120°C *1h00 at 120°C*					
Référence du câble HD626 / ***HD626 conductor reference***	4 E-1					
Charge de rupture minimale / ***Minimum breaking load***	3 000 N					

На основание чл. 2
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3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 8.2.4 de la norme NF EN 50483-4 (07/2009).

L'essai est effectué sur deux manchons pour chaque section.

Les raccords, le conducteur et les outillages sont au préalable pré-conditionnés jusqu'à la température d'essai (-10 ± 3) °C, ensuite ils sont assemblés à cette température dans la chambre froide.

Au moins 3h à température ambiante après la sortie de la chambre froide, les manchons sont soumis à :

- <u>l'essai de tenue diélectrique dans l'eau, conformément au § 8.2.3 :</u>

L'ensemble, raccord et conducteurs, est placé au fond d'un bac d'eau. Pendant le déplacement de l'ensemble, il peut être maintenu pour s'assurer qu'il n'y ait pas de courbure du conducteur ou de mouvement inutile des éléments. Le raccord est placé horizontalement. La profondeur de l'eau est mesurée à partir de la partie supérieure du raccord. Les conducteurs émergent suffisamment de l'eau pour éviter un claquage. Le courant de fuite maximum est égal à (10 ± 0,5) mA. La résistivité de l'eau est ≤ 200 Ωm. L'eau est à température ambiante. On effectue la montée progressive en tension à une vitesse d'environ 1 kV/s. Après une durée d'immersion de 30 min, une tension alternative de 6 kV est appliquée à l'échantillon pendant 60 s.

- l'essai mécanique, conformément au § 8.2.2. :

L'ensemble est soumis à un effort de traction appliqué sur l'âme conformément à la figure 8 de la norme. Les efforts de traction sont appliqués sur les âmes, la montée en charge est conforme à la NF EN 50483-1, § 9.1.4. (vitesse entre 1000 N/min et 5000 N/min)
Un effort de traction est appliqué sur l'âme jusqu'à atteindre les valeurs exprimées en % de la CRM du Tableau 1 :

Tableau 1 – Efforts initiaux exigés pour le marquage

Système de torsade	*Sections*	*Efforts*	*Essai*
Système autoporté	4 mm² à 16 mm² Cuivre	10 % de la CRM pendant 60 s	☐
	16 mm² à 25 mm² Aluminium	20 % de la CRM pendant 60 s	☑
	35 mm² à 150 mm² Aluminium	**Pleine traction :** 20 % de la CRM pendant 60 s	☐
		Traction allégée : 5 % de la CRM pendant 60 s	☐
Système à neutre porteur	**Phases :** 16 mm² à 150 mm² Aluminium	30 % de la CRM pendant 60 s	☐
	Neutre : 25 mm² à 95 mm² alliage d'aluminium	60 % de la CRM pendant 60 s	☐

Un marquage est réalisé sur le câble à l'endroit où il sort du raccord.

Les efforts sont ensuite augmentés jusqu'aux valeurs exprimées en % de la CRM du Tableau 2 :

Tableau 2 – Efforts d'essai

Système de torsade	*Sections*	*Efforts*	*Essai*
Système autoporté	4 mm² à 16 mm² Cuivre	20 % de la CRM pendant 60 s	☐
	16 mm² à 25 mm² Aluminium	1 200 N ou 40 % de la CRM, la plus grande des deux valeurs pendant 60 s	☑
	35 mm² à 150 mm² Aluminium	**Pleine traction :** 85 % de la CRM pendant 60 s	☐
		Traction allégée : 10% de la CRM pendant 60 s	☐
Système à neutre porteur	**Phases :** 16 mm² à 150 mm² Aluminium	60 % de la CRM pendant 60 s	☐
	Neutre : 25 mm² à 95 mm² alliage d'aluminium	95 % de la CRM pendant 60 s	☐

Connectors are tested in accordance with NF EN 50483-4 (07/2009) §8.2.4 standard.
Two samples are tested of each equal cross section.
The connectors, conductor and tools are further pre-conditioned until they reach the test temperature of (-10 ± 3) °C before they are assembled. Assembly is made in the cold temperature chamber, at (-10 ± 3)°C.
At least 3 h after having been removed from the cold chamber, the sleeves are subjected to :

- *dielectrical voltage test in water, according to clause 8.2.3:*

The assembly, of connector and cores, is placed at the bottom of a water tank. During the movement of the assembly it may be supported to ensure no bending of the core or unnecessary movement of the component parts. The connector is placed horizontally. The depth of water is measured from the upper part of the connector. The cores are sufficiently above the water level to prevent flashover. The maximum leakage current is equal to (10 ± 0,5) mA. The resistivity of the water is ≤ 200 Ωm. The water is at ambient temperature. The a.c. voltage is applied to a rate of approximately 1 kV/s. After 30 min under water, the voltage test is applied to the sample with 6 kV a.c. for 60 s.

- *mechanical testing, according to clause 8.2.2:*

The assembly is subjected to a tensile load applied to the conductor in accordance with Figure 8 of the standard.
Tensile test loads are applied to conductors, the rate of increase is in accordance with § 9.1.4 of NF EN 50483-1. (speed between 1000 N/min and 5000 N/min)

A tensile test load is applied to the conductor until it reaches the values of Table 1:

Table 1 – Initial loads required for marking

Bundle System	*Cross sections*	*Loads*	*Test*
Self supporting system	*4 mm² to 16 mm² Copper*	*10 % of MBL for 60 s*	☐
	16 mm² to 25 mm² Aluminium	*20 % of MBL for 60 s*	☑
	35 mm² to 150 mm² Aluminium	***Full tension :*** *20 % of MBL for 60 s*	☐
		Partial tension : *5 % of MBL for 60 s*	☐
Neutral messenger system	***Phases :*** *16 mm² to 150 mm² Aluminium*	*30 % of MBL for 60 s*	☐
	Neutral : *25 mm² to 95 mm² Aluminium alloy*	*60 % of MBL for 60 s*	☐

The cable is marked at the point at wich it leaves the connector.

На основание чл. 2
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The load then is increased up to the values of Table 2:

Table 2 – Test loads

Bundle System	*Cross sections*	*Loads*	*Test*
Self supporting system	*4 mm² to 16 mm² Copper*	*20 % of MBL for 60 s*	☐
	16 mm² to 25 mm² Aluminium	*1200 N or 40 % of MBL whichever is the greater for 60 s*	☑
	35 mm² to 150 mm² Aluminium	***Full tension :*** *85 % of MBL for 60 s*	☐
		Partial tension : *10 % of MBL for 60 s*	☐
Neutral messenger system	***Phases :*** *16 mm² to 150 mm² Aluminium*	*60 % of MBL for 60 s*	☐
	Neutral : *25 mm² to 95 mm² Aluminium alloy*	*95 % of MBL for 60 s*	☐

3.1 Exigences supplémentaires du demandeur de l'essai
Additional requirements of the applicant for the test

Néant
None

3.2 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences *Requirements*	**Relevés** *Results*
Température ambiante et humidité *Ambient temperature and humidity conditions*	15 °C ≤ T° ≤ 35 °C 25 % ≤ HR ≤ 75 %	22 °C 30 %HR
Temps de conditionnement *Conditioning time*	-	1 h 23 min
Température de la chambre froide *Low temperature chamber*	(-10 ± 3)°C	-11,0 °C
Temps à température ambiante après la sortie de la chambre froide *Ambient temperature time after out of cold chamber*	> 3 h	3 h 21 min
Température de l'eau *Water temperature*	Température ambiante *Ambient temperature*	21,5 °C
Résistivité de l'eau *Water resistivity*	≤ 200 Ωm	34,01 Ωm
Temps d'immersion (minutes) *Immersion time (minutes)*	30	30
Vitesse de montée en tension *Voltage increase rate*	≈ 1 kV/s	≈ 1 kV/s

На основание чл. 2
от ЗЗЛД

3.3 Configuration des échantillons / *Samples configuration*

Echantillon n° *Sample n.*	Section / *Cross section* (mm²)		Système de torsade *Bundle system*
1	50	50	Système autoporté *Self supporting system*
2			

4 Résultats / *Results*

Echantillon n° *Sample n.*	6 kV pendant 1 min *6 kV for 1 min*	
	Exigences *Requirements*	Résultats *Results*
1	Pas de claquage *No breakdown*	Pas de claquage *No breakdown*
2		Pas de claquage *No breakdown*

Echantillon n° *Sample n.*	Vitesse de montée programmée *Planned increase rate* (N/min)	
	Exigences *Requirements*	Résultats *Results*
1	$1000 \leq \ldots \leq 5000$	3000
2		3000

Echantillon n° *Sample n.*	Effort pour marquage pendant 1 minute *Strength for marking during 1 min* (N)		Effort pendant 1 minute *Strength during 1 min* (N)	
	Exigences *Requirements*	Résultats *Results*	Exigences *Requirements*	Résultats *Results*
1	20 % CRM *MBL* ⇔ 600	600	40 % CRM *MBL* ⇔ 1200	1200
2		600		1200

5 Conclusion / *Conclusion*

Aucun claquage ou contournement ne s'est produit (déclenchement du générateur de tension).
No breakdown or flashover occurred (tripping of voltage generator).

Aucun glissement ou rupture ne s'est produit.
No slippage or breakage occurred.

На основание чл. 2
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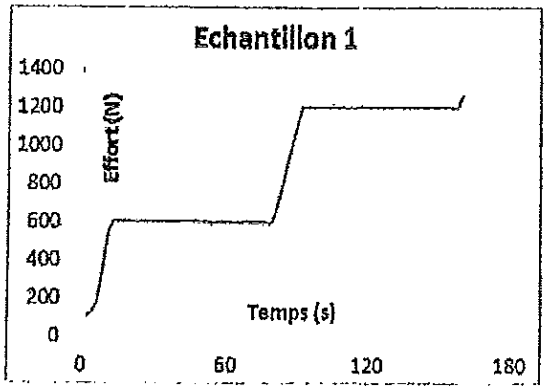
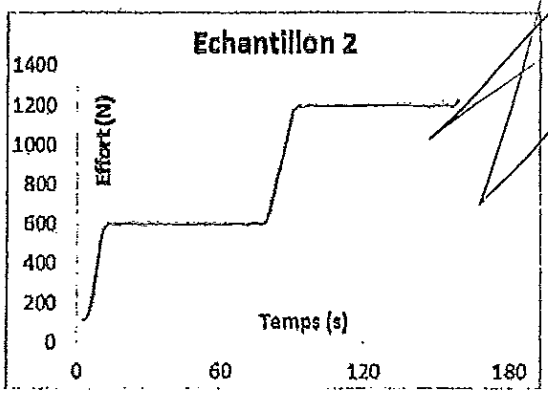
6 Courbes / *Curves*





FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

На основание чл. 2
от ЗЗЛД

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЈРТ 50

1. **№ на тест: 9212320** – Механичен тест;
2. **№ на тест: 1204121** - Тест за инсталиране при ниска температура.

На основание чл. 2 от ЗЗЛД

Съставил:

"ВАК - 02" ООД САМОКОВ

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SICAME

Laboratoire d'essais
LABEP

Rapport d'essai : **Essai d'endurance sur conducteur de phase**
Test report : ***Endurance test on phase conductor***

Rapport d'essai n°	: 12 09 301	***Test report n.***	*: 12 09 301*
Constructeur	: SICAME	***Product manufacturer***	*: SICAME*
Référence produit	: MJPT70	***Product reference***	*: MJPT70*
Demandeur de l'essai	: SICAME S.A.	***Test applied by***	*: SICAME S.A.*
Date d'essai	: du 10 octobre au 13 novembre 2012	***Date of the test***	*: 10 October to 13 November 2012*
Date d'émission du rapport	: 15 novembre 2012	***Report issue date***	*: 15 November 2012*

Essais réalisés suivant : NF EN 50483-4 (07/2009), § 8.2.7
Tests carried out in accordance with

Ce rapport comprend : 9 pages
This report contains

Conclusion : Les manchons de jonction préisolés SICAME de type MJPT70 soumis à essai satisfont aux exigences du § 8.2.7 de la norme NF EN 50483-4 (07/2009).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion *: The tested SICAME insulated splicing sleeves MJPT70 comply with the requirements of clause 8.2.7 of NF EN 50483-4 (July 2009) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
от ЗЗЛД

B.P. N° 1 - 19231 POMPADOUR - CEDEX - FRANCE - Tél (33) 05 55 73 69 00 - Fax (33) 05 55 73 63 12 - Email : info@sicame.fr

"ВАК - 02" ООД
САМОКОВ

ВЯРНО С ОРИГИНАЛА

1 Echantillons soumis à essai / *Samples under test*

Type : Manchon de jonction préisolé
Insulated splicing sleeve

Désignation / *Designation* : MJPT70

Fabricant / *Manufacturer* : SICAME

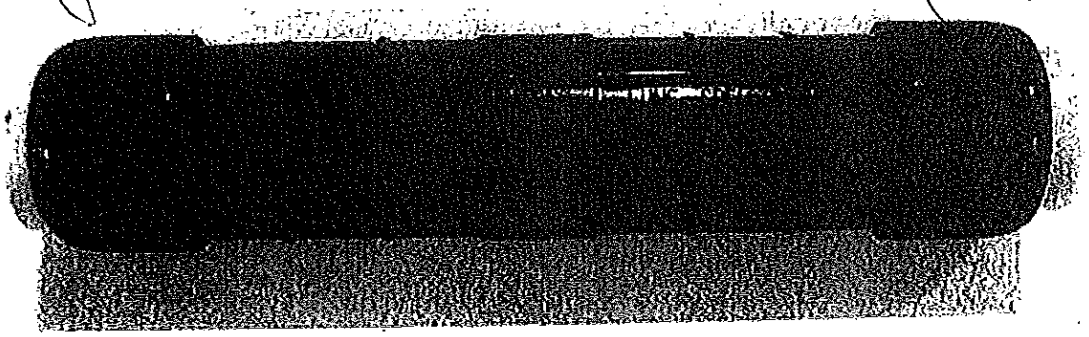
Numéro de lot / *Batch number* : Tête de série / *Head of series*
Echantillons suivant le plan E0700640
Samples in accordance with drawing n. E0700640

Classes du produit selon NF EN 50483-1 (§ 9.3) *Classes of product in accordance with NF EN 50483-1 (§ 9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐	Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 4

Repérage / *Identification* : 1, 2, 3, 4

Date de réception au laboratoire : 25 septembre 2012
Reception date at the laboratory : *25 September 2012*



ВЯРНО С ОРИГИНАЛА

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2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir avec matrices E173 *Compression tool with dies E173*	5 tonnes *5 tons*
02 01 76	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
04 00 30	Thermomètre étanche *Watertight thermometer*	Précision 1°C *Accuracy 1°C*
12 03 03	Conductimètre *Conductimeter*	Précision 30 µS/cm *Accuracy 30µS/cm*
03 02 56	Chronomètre *Stop watch*	Précision 1 s *Accuracy 1s*
91 02 69	Diélectrimètre BOUCHET (10 kV) *Dielectrimeter BOUCHET (10 kV)*	Précision 0,5mA et 200V *Accuracy 0,5mA and 200V*
95 00 87	Armoire électrique n°9 *Electrical rack n°9*	Transformateur 1200A/7V commandé par unité thyristor au primaire et régulateur de température PID *Transformer 1200A/7V thyristor control unit used in the primary circuit and PID temperature controller*
05 00 34	Enregistreur Eurotherm *Eurotherm data recorder*	Mesure et enregistrement de température par thermocouple type T *Measurement and recording of temperatures by T-type thermocouples*
94 03 09	Banc de traction 3 tonnes *Tensile test machine 3 tons*	Classe 1 *Class 1*

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
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2.2 Câbles / *Cables*

N° Lot / *Identification*	11029					
Norme / *Standard*	WT-92/K-396					
Provenance / *From*	Pologne / *Poland*					
Section / *Cross section*	70 mm²					
Matériau de l'âme *Conductor material*	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme *Conductor type*	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☑	Rétreinte *Compacted*	☐	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme *Conductor shape*	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins *Number of wires*	19					
Ø sur âme *Ø on conductor*	10,0 mm					
Matériau de l'isolant *Insulation material*	Polyéthylène réticulé *Cross-linked polyethylene*					
Ø sur isolant *Ø on insulation*	13,1 mm					
Conditionnement *Conditioned on*	1h00 à 110°C *1h00 at 110°C*					
Référence du câble HD626 *HD626 conductor reference*	/					
Charge de rupture minimale (CRM) / *Minimum Breaking Load (MBL)*	11242 N					

3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 8.2.7 de la norme NF EN 50483-4 (07/2009).

L'essai est effectué sur quatre manchons pour chaque section.

La charge, pour le type de système approprié, doit être appliquée aux extrémités du conducteur et ajustée comme demandé durant l'essai.

Des cycles thermiques, d'une durée de 90 min, doivent être appliqués au montage d'essai.

500 cycles doivent être réalisés.

Pendant les 45 premières minutes de chaque cycle, le courant traversant l'ensemble doit créer l'élévation de température.

La température de référence du conducteur doit être maintenue à la température normale de service dans un intervalle de ± 3 K comme indiqué dans l'Annexe C de la EN 50483-1. Cette température est atteinte dans un temps de 5 min à 15 min en début de cycle.

Pendant les 45 dernières minutes, de chaque cycle, le montage en essai doit être refroidi à (25 ± 3) °C. La température doit ensuite être maintenue à cette valeur, jusqu'à la fin du cycle.

A intervalle de 24h, à la fin de la période de chauffage à la température normale de service, les températures atteintes par les deux manchons doivent être enregistrées.

На основание чл. 2
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ВЯРНО С ОРИГИНАЛА

Insulated splicing sleeves are tested in accordance with NF EN 50483-4 (07/2009) §8.2.7 standard.

The test is carried out on 4 Insulated splicing sleeves for each cross-section.

The load, for the appropriate type of system, shall be applied to the extremities of the core and varied as required throughout the test.

Thermal cycles, with duration of 90 min, shall be applied to the test assembly.

There shall be 500 cycles.

For the first 45 minutes of every cycle, current flowing through the assembly shall create the temperature rise.

The reference temperature of the conductor shall be maintained at the normal operating temperature within an interval of ± 3 °C a shown in Table B.1 of Annexe B. this temperature shall be reached within 5 min to 15 min at the beginning of the cycle.

For the last 45 min, of each cycle, the test assembly shall be cooled to (25 ± 3) °C. The temperature shall then be maintained, at this value, until the end of the cycle.

At 24 h intervals, at the end of the normal operating temperature heating period, the temperatures reached by the two sleeves shall be recorded.

La figure 1 décrit un exemple typique de dispositif d'essai. La configuration peut différer de ce montage du moment qu'elle rescpecte les longueurs du conducteur de phase

Figure 1 shows a typical test arrangement. The test configuration can differ from this arrangement as long as it complies with the phase conductor.

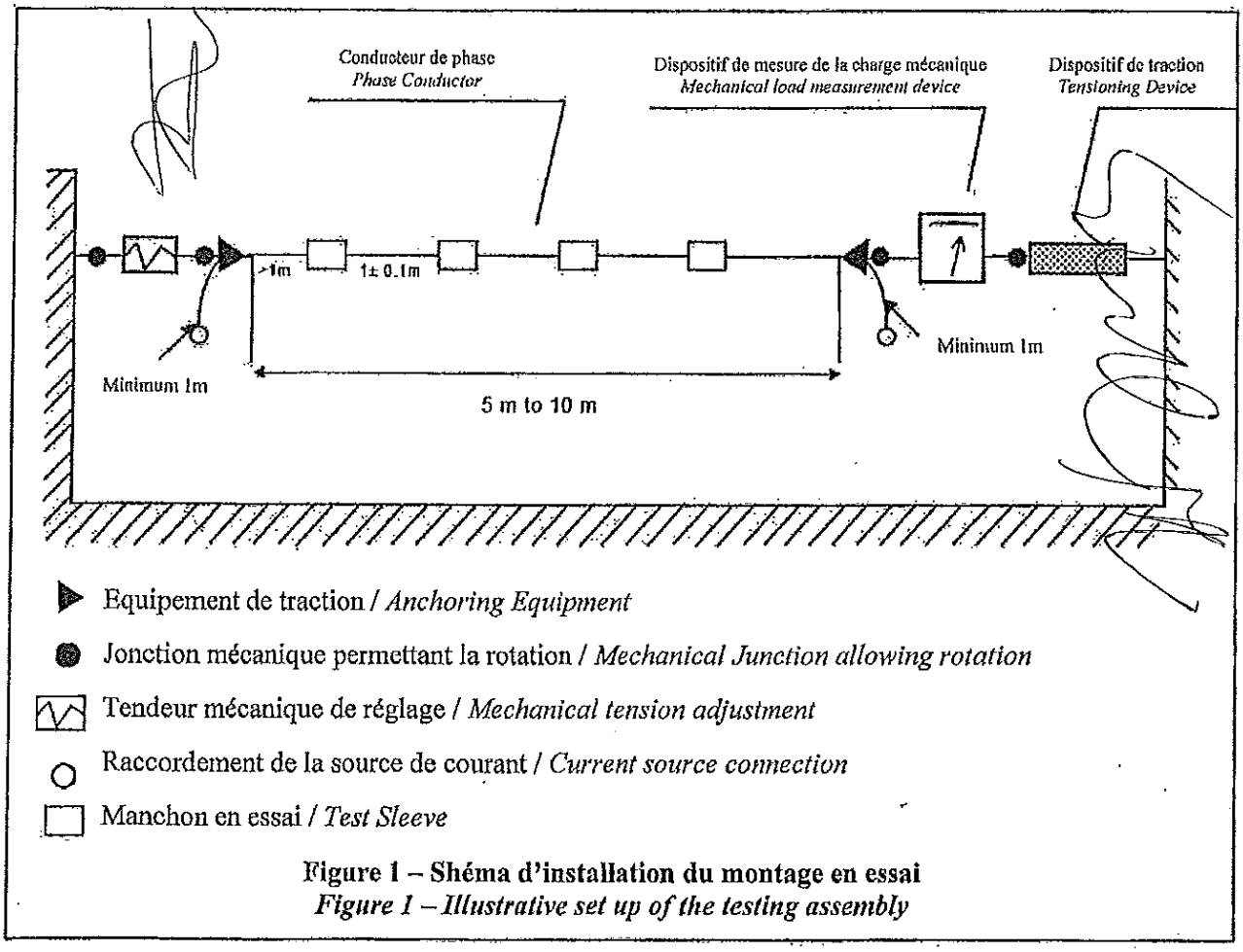


Figure 1 – Shéma d'installation du montage en essai
Figure 1 – Illustrative set up of the testing assembly

La variation de la charge mécanique et de la température est décrite sur le diagramme de la Figure 2.

Un effort de traction doit être appliqué jusqu'à une valeur égale à 35 % de la CRM du câble. Cette valeur doit être atteinte approximativement en 1 min.

La charge doit ensuite être maintenue pendant 10 min par un réglage permanent manuel ou automatique. On doit laisser l'ensemble se stabiliser mécaniquement pendant 24 h sans aucun réglage.

Une fois l'ensemble stabilisé les cycles thermiques doivent commencer. A la fin du premier cycle, l'effort de traction doit être réglé à 20 % de la CRM du câble.

Au moins une fois par 24 h, l'effort de traction doit être ajusté à 20 % de la CRM du câble.

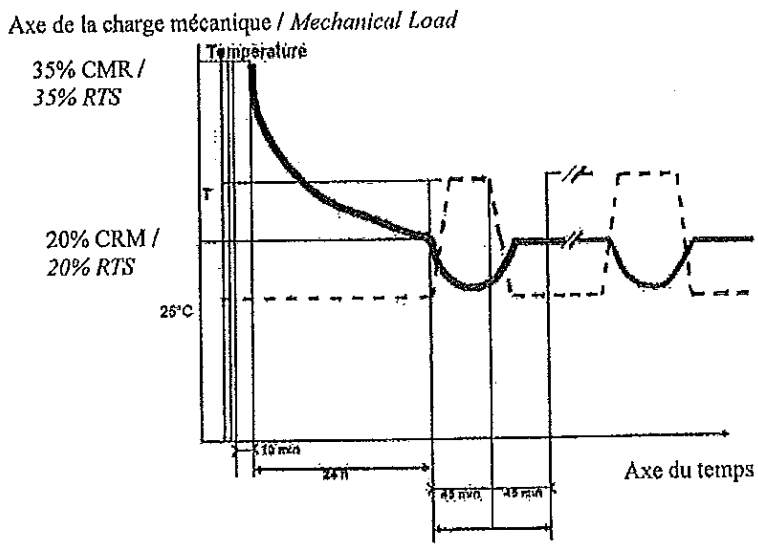
The variation in mechanical load and temperature is shown, diagrammatically, in Figure 2.

A tensile load shall be applied until a value equal to 35 % of the MBL is reached. This value shall be achieved in approximately 1 minute.

The load shall then be maintained for 10 min using a manual or automatic continuous adjustment. The assembly shall be left to self stabilize mechanically for 24 h without any adjustment.

Once the assembly has stabilized the thermal cycles shall be started. At the end of the first cycle, the tensile load shall be set at 20 % of MBL.

At least once every 24 h, the tensile load shall be adjusted to 20 % of the MBL.



Variation de la charge mécanique / *Mechanical Load Variation*

Température du conducteur / *Conductor temperature*

T Température normale de service / *Normal Operating Temperature*

Figure 2 – Diagramme des cycles thermiques et des contraintes mécaniques appliqués sur le conducteur de phase

Figure 2 – Diagram of thermal cycles and mechanical stresses applied on phase conductor

Tableau 1 – Effort de traction appliqué
Table 1 – Applied tensile load

20 % de la CRM du câble *20 % of MBL* 2248 N	35% de la CRM du câble *35 % of MBL* 3934 N

La température normale de service du câble est de 80° C.
The rated operating temperature of the cable is 80° C.

A la fin de la période de chauffage, la température des manchons doit être inférieure à la température du conducteur de référence.

Les manchons de Classe 1 et de Classe 2 doivent satisfaire aux exigences de l'essai de tenue diélectrique dans l'air, 8.2.3.1.3.2.

Pour les manchons de Classe 1, l'ensemble formé par le raccord et les conducteurs doit être ensuite retiré des billes métalliques, sans contrainte mécanique, et doit satisfaire aux exigences de l'essai de tenue diélectrique dans l'eau, comme indiqué au 8.2.3.1.3.1, mais avec une tension de 1 kV.

Les quatre manchons doivent satisfaire aux exigences de l'essai mécanique du § 8.2.2.

At the end of the heating period, the sleeves' temperatures shall be lower than the temperature of the reference core.

The Class 1 and the Class 2 sleeves shall meet the requirements of the Dielectrical Voltage Test in Air, Clause 8.2.3.1.3.2.

For Class 1 sleeves the assembly formed by the connector and the cores shall then taken out of the metallic balls, without any mechanical stress, and shall meet the requirements of the dielectrical voltage test in water, Clause 8.2.3.1.3.1 but with a voltage of 1 kV.

The four sleeves shall meet the requirements of the mechanical test Clause 8.2.2.

3.1 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences ***Requirements***	**Relevés** ***Results***
Température ambiante et humidité ***Ambient temperature and humidity conditions***	15 °C ≤ T° ≤ 35 °C 25 % ≤ HR ≤ 75 %	20 °C 39 %HR
Température de l'eau ***Water temperature***	-	20,2 °C
Résistivité de l'eau ***Water resistivity***	≤ 200 Ωm	39,9 Ωm
Temps d'immersion ***Immersion time***	≥ 30 min	31 min
Vitesse de montée en tension ***Voltage increase rate***	≈ 1 kV/s	≈ 1 kV/s

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

3.2 Configuration des échantillons / *Samples configuration*

Echantillon n° *Sample n.*	Section / *Cross section* (mm²)	
	Câble principal *Main cable*	Câble dérivé *Tap cable*
1	70	70
2		
3		
4		

4 Résultats / *Results*

4.1 Tenue diélectrique

Echantillon n° *Sample n.*	4 kV pendant 1 minute dans les billes métalliques *4 kV for 1 minute in metallic balls*	
	Résultats / *Results*	Exigences *Requirements*
1	Pas de claquage / *No breakdown*	Pas de claquage *No breakdown*
2	Pas de claquage / *No breakdown*	
3	Pas de claquage / *No breakdown*	
4	Pas de claquage / *No breakdown*	

Echantillon n° *Sample n.*	1 kV pendant 1 minute dans l'eau *1 kV for 1 minute in water*	
	Résultats / *Results*	Exigences *Requirements*
1	Pas de claquage / *No breakdown*	Pas de claquage *No breakdown*
2	Pas de claquage / *No breakdown*	
3	Pas de claquage / *No breakdown*	
4	Pas de claquage / *No breakdown*	

4.2 Essais mécaniques

Echantillon n° *Sample n.*	Vitesse de montée programmée *Planned increase rate* (N/min)	Exigences *Requirements* (N/min)
1	3000	1000 ≤...≤ 5000
2	3000	
3	3000	
4	3000	

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
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Echantillon n° ***Sample n.***	**Effort pendant 1 minute** ***Strength during 1 min*** **(N)**	**Exigences** ***Requirements*** **(N)**
1	2248	20 % CRM *MBL*
2	2248	
3	2248	
4	2248	

Echantillon n° ***Sample n.***	**Effort pendant 1 minute** ***Strength during 1 min*** **(N)**	**Exigences** ***Requirements*** **(N)**
1	9555	85 % CRM *MBL*
2	9555	
3	9555	
4	9555	

5 Conclusion / *Conclusion*

Aucun claquage ou contournement ne s'est produit (déclenchement du générateur de tension).
No breakdown or flashover occurred (tripping of voltage generator).

Aucun glissement ou rupture ne s'est produit.
No slippage or breakage occurred.

FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

sicame

Laboratoire d'essais
Direction Etudes et Recherches

Test report	**: Tensile test**
Test number	**: 07 01 081**
Product brand	**: SICAME**
Product type	**: MJPT 70**

Demander of the test	: SICAME Export
Starting date of the test	: 09/01/2007
Report emission date	: 16 JAN. 2007
According to standard	: NF C 33-021 § 2.3.2 (june 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested prelinsulated junction sleeves type MJPT 70 conform to the requirements of NF C 33-021 § 2.3.2 (june 98) with a 85% maximum load of the cable tensile instead of 60% required by the standard and with cables of Vietnam.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
D 0330 02
CAMOKOB

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1. Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
93 05 48	Crimping machine	50 kN
94 03 10	Traction bench 3 tons	Class 1

1.2 Cables :

Section (mm²)	70
Nature	Aluminium
Standard	/
From	Vietnam
Identification n°	06082

2. Product tested.

Désignation : MJPT 70

Number : 2

Batch number : sample 1 : embossed date : 09/2006 (06M621000)

Sample 2 : embossed date : 01/2004 (customer's one)

Marking : See annex 1

Identification : 1 and 2

Reception date at the laboratory : on the 08/01/2007 for the sample 1

and on the 14/12/2006 for the sample 2

3. Test.

Preinsulated junction sleeves are tested according to NF C 33-021 § 2.3.2 (june 98) standard except that the stage of strength was of 65% of the minimum load during one hour instead of 50% of the minimum load during one minute and with a 85% maximum load of the cable tensile instead of 60% required for the garantee.

3.1 Test procedure.

Connection is carried out using 5 mm wide dies for groove E 140 and 9 mm wide dies for grooves E 173 and E 215. The minimum strength to be applied is given in the standard. The length of the cores used complies with the length indicated in the standard.

The assembly is submitted to a tensile strength applied to the conductor. The strength is increased at a rate between 1000 N/min and 5000 N/min up to 65% of the minimum load required. This strength is applied for 1 hour.

The strength is then increased up to 85% of the maximum load of the cable and released.

3.2 Preparation

A 9 mm wide dies for groove E173 is used.

4. Results.

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	22°C 46 % HR
Rate of the tensile (N/min)	Between 1000 et 5000	3000
Strength value maintained for 1 hour (N)	5415	Sample 1 : ok Sample 2 : ok
Strength value applied without breakdown : 85% of the maximum load of the cable (N)	8330	Sample 1 : ok Sample 2 : ok

5. Requirement

No slippage is observed.

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На основание чл. 2
от ЗЗЛД

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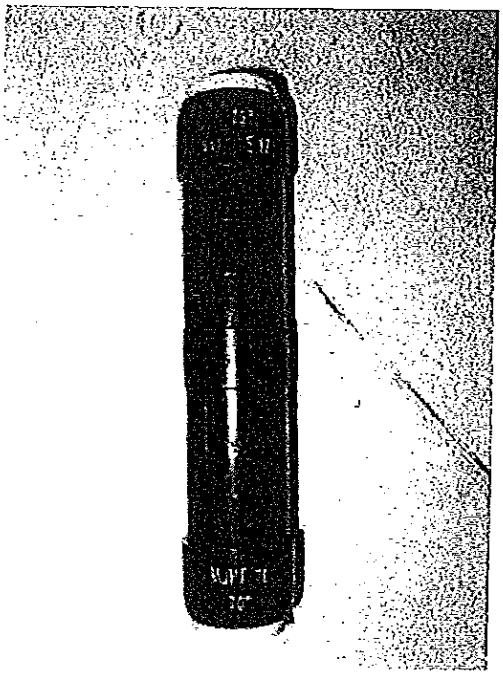

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЈРТ 70

1. **№ на тест 9212350** – Механичен тест;
2. **№ на тест 1209301** – Тест за издражливост върху фазовия проводник;
3. **№ на тест 0701081** – Тест за якост на опън.

На основание чл. 2 от ЗЗЛД

Съставил:

"ВАК - 02" ООД САМОКОВ

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SICAME

Laboratoire d'essais
LABEP

Rapport d'essai : **Essai d'endurance sur conducteur de phase**
Test report : ***Endurance test on phase conductor***

Rapport d'essai n°	: 12 09 303	***Test report n.***	*: 12 09 303*
Constructeur	: SICAME	***Product manufacturer***	*: SICAME*
Référence produit	: MJPT95	***Product reference***	*: MJPT95*
Demandeur de l'essai	: SICAME S.A.	***Test applied by***	*: SICAME S.A.*
Date d'essai	: du 10 octobre au 13 novembre 2012	***Date of the test***	*: 10 October to 13 November 2012*
Date d'émission du rapport	: 15 novembre 2012	***Report issue date***	*: 15 November 2012*

Essais réalisés suivant : NF EN 50483-4 (07/2009), § 8.2.7
Tests carried out in accordance with

Ce rapport comprend : 9 pages
This report contains

Conclusion : Les manchons de jonction préisolés SICAME de type MJPT95 soumis à essai satisfont aux exigences du § 8.2.7 de la norme NF EN 50483-4 (07/2009).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion *: The tested SICAME insulated splicing sleeves MJPT95 comply with the requirements of clause 8.2.7 of NF EN 50483-4 (July 2009) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
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ВЯРНО С ОРИГИНАЛА

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1 Echantillons soumis à essai / *Samples under test*

Type : Manchon de jonction préisolé
Insulated splicing sleeve

Désignation / *Designation* : MJPT95

Fabricant / *Manufacturer* : SICAME

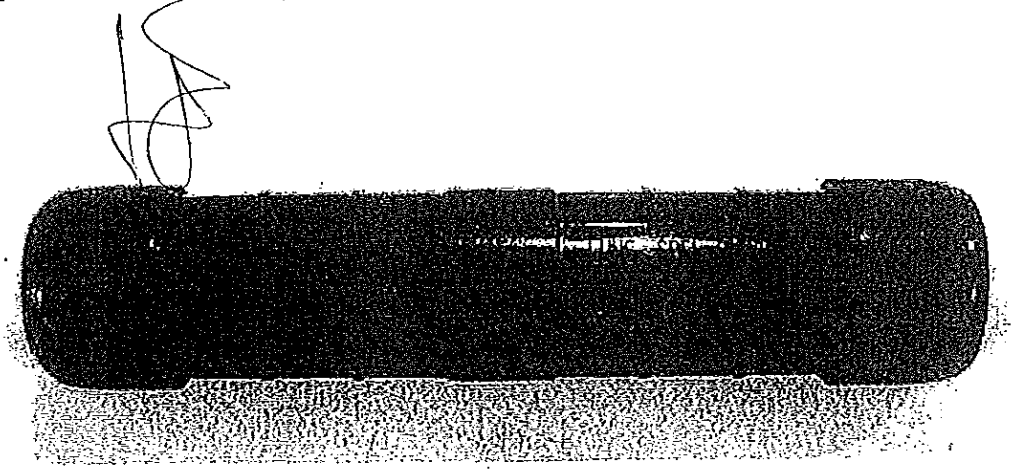
Numéro de lot / *Batch number* : Tête de série / *Head of series*
Echantillons suivant le plan E0700640
Samples in accordance with drawing n. E0700640

Classes du produit selon NF EN 50483-1 (§ 9.3) *Classes of product in accordance with NF EN 50483-1 (§ 9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐	Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 4

Repérage / *Identification* : 1, 2, 3, 4

Date de réception au laboratoire : 25 septembre 2012
Reception date at the laboratory : *25 September 2012*



2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir avec matrices E173 *Compression tool with dies E173*	5 tonnes *5 tons*
02 01 76	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
04 00 30	Thermomètre étanche *Watertight thermometer*	Précision 1°C *Accuracy 1°C*
12 03 03	Conductimètre *Conductimeter*	Précision 30 µS/cm *Accuracy 30µS/cm*
03 02 56	Chronomètre *Stop watch*	Précision 1 s *Accuracy 1s*
91 02 69	Diélectrimètre BOUCHET (10 kV) *Dielectrimeter BOUCHET (10 kV)*	Précision 0,5mA et 200V *Accuracy 0,5mA and 200V*
95 00 87	Armoire électrique n°9 *Electrical rack n°9*	Transformateur 1200A/7V commandé par unité thyristor au primaire et régulateur de température PID *Transformer 1200A/7V thyristor control unit used in the primary circuit and PID temperature controller*
05 00 34	Enregistreur Eurotherm *Eurotherm data recorder*	Mesure et enregistrement de température par thermocouple type T *Measurement and recording of temperatures by T-type thermocouples*
94 03 09	Banc de traction 3 tonnes *Tensile test machine 3 tons*	Classe 1 *Class 1*

2.2 Câbles / *Cables*

N° Lot / *Identification*	11029					
Norme / *Standard*	WT-92/K-396					
Provenance / *From*	Pologne / *Poland*					
Section / *Cross section*	95 mm²					
Matériau de l'âme *Conductor material*	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme *Conductor type*	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☑	Rétreinte *Compacted*	☐	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme *Conductor shape*	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins *Number of wires*	19					
Ø sur âme *Ø on conductor*	13,1 mm					
Matériau de l'isolant *Insulation material*	Polyéthylène réticulé *Cross-linked polyethylene*					
Ø sur isolant *Ø on insulation*	16,1 mm					
Conditionnement *Conditioned on*	1h00 à 110°C *1h00 at 110°C*					
Référence du câble HD626 *HD626 conductor reference*	/					
Charge de rupture minimale (CRM) / *Minimum Breaking Load (MBL)*	11242 N					

3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 8.2.7 de la norme NF EN 50483-4 (07/2009).

L'essai est effectué sur quatre manchons pour chaque section.

La charge, pour le type de système approprié, doit être appliquée aux extrémités du conducteur et ajustée comme demandé durant l'essai.

Des cycles thermiques, d'une durée de 90 min, doivent être appliqués au montage d'essai.

500 cycles doivent être réalisés.

Pendant les 45 premières minutes de chaque cycle, le courant traversant l'ensemble doit créer l'élévation de température.

La température de référence du conducteur doit être maintenue à la température normale de service dans un intervalle de ± 3 K comme indiqué dans l'Annexe C de la EN 50483-1. Cette température est atteinte dans un temps de 5 min à 15 min en début de cycle.

Pendant les 45 dernières minutes, de chaque cycle, le montage en essai doit être refroidi à (25 ± 3) °C. La température doit ensuite être maintenue à cette valeur, jusqu'à la fin du cycle.

A intervalle de 24h, à la fin de la période de chauffage à la température normale de service, les températures atteintes par les deux manchons doivent être enregistrées.

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Insulated splicing sleeves are tested in accordance with NF EN 50483-4 (07/2009) §8.2.7 standard.

The test is carried out on 4 Insulated splicing sleeves for each cross-section.

The load, for the appropriate type of system, shall be applied to the extremities of the core and varied as required throughout the test.

Thermal cycles, with duration of 90 min, shall be applied to the test assembly.

There shall be 500 cycles.

For the first 45 minutes of every cycle, current flowing through the assembly shall create the temperature rise.

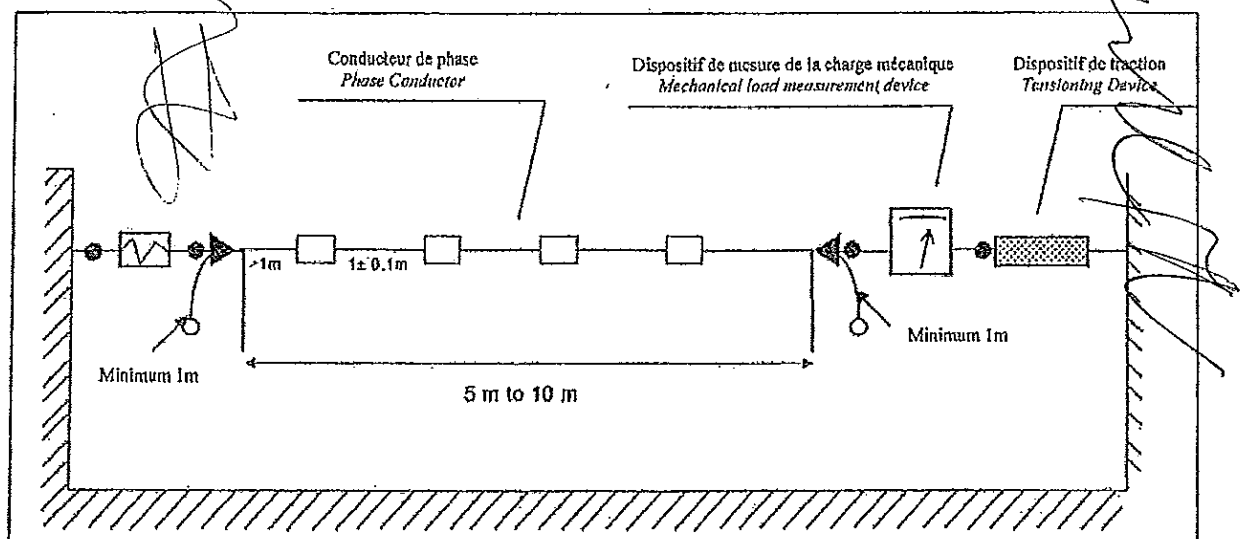
The reference temperature of the conductor shall be maintained at the normal operating temperature within an interval of ± 3 °C a shown in Table B.1 of Annexe B. this temperature shall be reached within 5 min to 15 min at the beginning of the cycle.

For the last 45 min, of each cycle, the test assembly shall be cooled to (25 ± 3) °C. The temperature shall then be maintained, at this value, until the end of the cycle.

At 24 h intervals, at the end of the normal operating temperature heating period, the temperatures reached by the two sleeves shall be recorded.

La figure 1 décrit un exemple typique de dispositif d'essai. La configuration peut différer de ce montage du moment qu'elle respecte les longueurs du conducteur de phase

Figure 1 shows a typical test arrangement. The test configuration can differ from this arrangement as long as it complies with the phase conductor.



Equipement de traction / *Anchoring Equipment*

Jonction mécanique permettant la rotation / *Mechanical Junction allowing rotation*

Tendeur mécanique de réglage / *Mechanical tension adjustment*

Raccordement de la source de courant / *Current source connection*

Manchon en essai / *Test Sleeve*

Figure 1 – Shéma d'installation du montage en essai
Figure 1 – Illustrative set up of the testing assembly

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La variation de la charge mécanique et de la température est décrite sur le diagramme de la Figure 2.

Un effort de traction doit être appliqué jusqu'à une valeur égale à 35 % de la CRM du câble. Cette valeur doit être atteinte approximativement en 1 min.

La charge doit ensuite être maintenue pendant 10 min par un réglage permanent manuel ou automatique. On doit laisser l'ensemble se stabiliser mécaniquement pendant 24 h sans aucun réglage.

Une fois l'ensemble stabilisé les cycles thermiques doivent commencer. A la fin du premier cycle, l'effort de traction doit être réglé à 20 % de la CRM du câble.

Au moins une fois par 24 h, l'effort de traction doit être ajusté à 20 % de la CRM du câble.

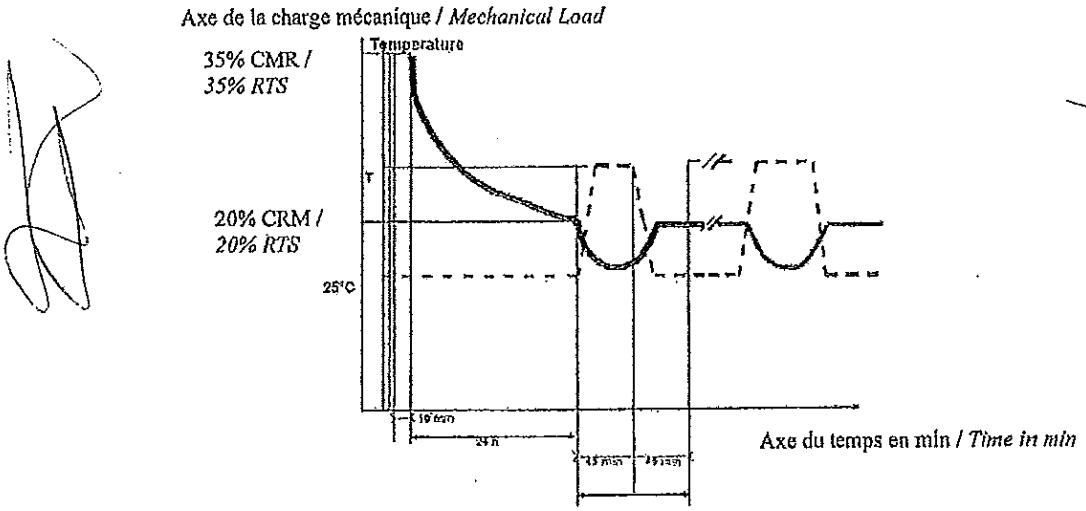
The variation in mechanical load and temperature is shown, diagrammatically, in Figure 2.

A tensile load shall be applied until a value equal to 35 % of the MBL is reached. This value shall be achieved in approximately 1 minute.

The load shall then be maintained for 10 min using a manual or automatic continuous adjustment. The assembly shall be left to self stabilize mechanically for 24 h without any adjustment.

Once the assembly has stabilized the thermal cycles shall be started. At the end of the first cycle, the tensile load shall be set at 20 % of MBL.

At least once every 24 h, the tensile load shall be adjusted to 20 % of the MBL.



Variation de la charge mécanique / *Mechanical Load Variation*
Température du conducteur / *Conductor temperature*
T Température normale de service / *Normal Operating Temperature*

Figure 2 – Diagramme des cycles thermiques et des contraintes mécaniques appliqués sur le conducteur de phase

Figure 2 – Diagram of thermal cycles and mechanical stresses applied on phase conductor

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Tableau 1 – Effort de traction appliqué
Table 1 – Applied tensile load

20 % de la CRM du câble *20 % of MBL* 2248 N	35% de la CRM du câble *35 % of MBL* 3934 N

La température normale de service du câble est de 80° C.
The rated operating temperature of the cable is 80° C.

A la fin de la période de chauffage, la température des manchons doit être inférieure à la température du conducteur de référence.

Les manchons de Classe 1 et de Classe 2 doivent satisfaire aux exigences de l'essai de tenue diélectrique dans l'air, 8.2.3.1.3.2.

Pour les manchons de Classe 1, l'ensemble formé par le raccord et les conducteurs doit être ensuite retiré des billes métalliques, sans contrainte mécanique, et doit satisfaire aux exigences de l'essai de tenue diélectrique dans l'eau, comme indiqué au 8.2.3.1.3.1, mais avec une tension de 1 kV.

Les quatre manchons doivent satisfaire aux exigences de l'essai mécanique du § 8.2.2.

At the end of the heating period, the sleeves' temperatures shall be lower than the temperature of the reference core.

The Class 1 and the Class 2 sleeves shall meet the requirements of the Dielectrical Voltage Test in Air, Clause 8.2.3.1.3.2.

For Class 1 sleeves the assembly formed by the connector and the cores shall then taken out of the metallic balls, without any mechanical stress, and shall meet the requirements of the dielectrical voltage test in water, Clause 8.2.3.1.3.1 but with a voltage of 1 kV.

The four sleeves shall meet the requirements of the mechanical test Clause 8.2.2.

3.1 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences ***Requirements***	**Relevés** ***Results***
Température ambiante et humidité ***Ambient temperature and humidity conditions***	15 °C ≤ T° ≤ 35 °C 25 % ≤ HR ≤ 75 %	20 °C 39 %HR
Température de l'eau ***Water temperature***	-	20,2 °C
Résistivité de l'eau ***Water resistivity***	≤ 200 Ωm	39,9 Ωm
Temps d'immersion ***Immersion time***	≥ 30 min	31 min
Vitesse de montée en tension ***Voltage increase rate***	≈ 1 kV/s	≈ 1 kV/s

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3.2 Configuration des échantillons / *Samples configuration*

Echantillon n° *Sample n.*	Section / *Cross section* (mm²)	
	Câble principal *Main cable*	Câble dérivé *Tap cable*
1	95	95
2		
3		
4		

4 Résultats / *Results*

4.1 Tenue diélectrique

Echantillon n° *Sample n.*	4 kV pendant 1 minute dans les billes métalliques *4 kV for 1 minute in metallic balls*	
	Résultats / *Results*	Exigences *Requirements*
1	Pas de claquage / *No breakdown*	Pas de claquage *No breakdown*
2	Pas de claquage / *No breakdown*	
3	Pas de claquage / *No breakdown*	
4	Pas de claquage / *No breakdown*	

Echantillon n° *Sample n.*	1 kV pendant 1 minute dans l'eau *1 kV for 1 minute in water*	
	Résultats / *Results*	Exigences *Requirements*
1	Pas de claquage / *No breakdown*	Pas de claquage *No breakdown*
2	Pas de claquage / *No breakdown*	
3	Pas de claquage / *No breakdown*	
4	Pas de claquage / *No breakdown*	

4.2 Essais mécaniques

Echantillon n° *Sample n.*	Vitesse de montée programmée *Planned increase rate* (N/min)	Exigences *Requirements* (N/min)
1	3000	1000 ≤...≤ 5000
2	3000	
3	3000	
4	3000	

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Echantillon n° *Sample n.*	Effort pendant 1 minute *Strength during 1 min* (N)	Exigences *Requirements* (N)
1	2248	20 % CRM *MBL*
2	2248	
3	2248	
4	2248	

Echantillon n° *Sample n.*	Effort pendant 1 minute *Strength during 1 min* (N)	Exigences *Requirements* (N)
1	9555	85 % CRM *MBL*
2	9555	
3	9555	
4	9555	

5 Conclusion / *Conclusion*

Aucun claquage ou contournement ne s'est produit (déclenchement du générateur de tension).
No breakdown or flashover occurred (tripping of voltage generator).

Aucun glissement ou rupture ne s'est produit.
No slippage or breakage occurred.

FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
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СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЈРТ 95

1. **№ на тест 1209303** - Тест за издръжливост върху фазовия проводник.

На основание чл. 2 от ЗЗЛД

Съставил:

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SICAME

Laboratoire d'essais
LABEP

Rapport d'essai	**: Essai de vieillissement électrique**
Test report	***: Electrical ageing test***

Rapport d'essai n°	: 1201231	***Test report n.***	*: 1201231*
Constructeur	: SICAME	***Manufacturer***	*: SICAME*
Référence produit	: MJPT150	***Product reference***	*: MJPT150*
Demandeur de l'essai	: SICAME S.A.	***Test applied by***	*: SICAME S.A.*
Date d'essai	: Du 15 juin au 09 septembre 2012	***Date of the test***	*: 15th June to 09th September 2012*
Date d'émission du rapport	: 25 septembre 2012	***Report issue date***	*: 25th September 2012*

Essais réalisés suivant : NF EN 50483-5 (07/2009)
Tests carried out in accordance with

Ce rapport comprend : 11 pages
This report contains

Conclusion : Les manchons de jonction préisolés SICAME de type MJPT150 soumis à essai satisfont aux exigences de la norme NF EN 50483-5 (07/2009)
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion *: The tested SICAME preinsulated splicing sleeves MJPT150 comply with the requirements of NF EN 50483-5 (July 2009) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
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ВЯРНО С ОРИГИНАЛА

1 Echantillons soumis à essai / *Samples under test*

Type : Manchons de jonction préisolés
Preinsulated splicing sleeves

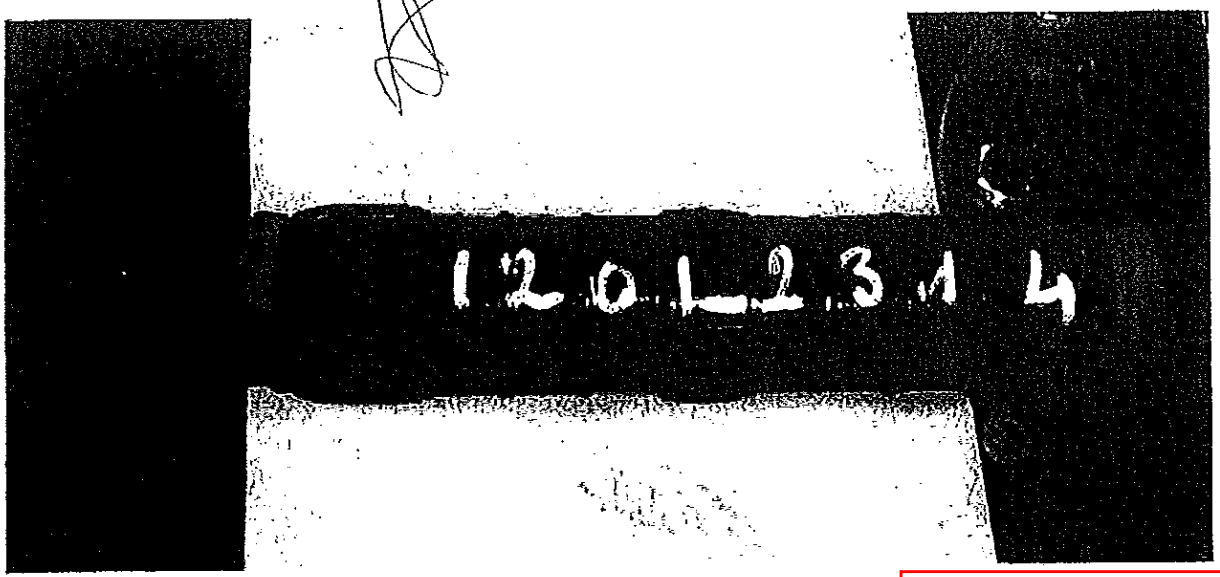
Désignation / *Designation* : MJPT150
Fabricant / *Manufacturer* : SICAME
Numéro de lot / *Batch number* : M327850

Plage de section / *Cross-section range* : 150 mm²

Classe du produit selon NF EN 50483-1 (§9.3) *Class of product in accordance with NF EN 50483-1 (§9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit tests*
☐	Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 6
Repérage / *Identification* : 1, 2, 3, 4, 5, 6

Date de réception au laboratoire : le 12 janvier 2012
Reception date at the laboratory : *on January, 12th 2012*



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2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristics*
100203	Centrale d'acquisition *Measurement acquisition*	Thermocouples type J *Type J thermocouples*
930548	Presse à sertir *Compression tool*	5 tonnes *5 tons*
/	Matrice *Die*	E215 largeur 9 mm *E215 width 9 mm*
970202	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
980196	Pince ampèremétrique *Handheld clamp meter*	2000 A
090460	Banc électrique BC6 *Electrical bench BC6*	-
039221 790059	Banc de court-circuits *Short circuit bench*	-
#12	Thermomètre indicateur *Indicating thermometer*	-

2.2 Câbles utilisés / *Cables used*

N° Lot / *Identification*	09003					
Norme / *Standard*	NF C 33-209					
Provenance / *From*	France					
Section / *Cross section*	150 mm²					
Matériau de l'âme / *Conductor material*	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme / *Conductor type*	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☑	Rétreinte *Compacted*	☐	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme / *Conductor shape*	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nb de brins / *N. of wires*	19					
Ø sur âme / *Ø conductor*	14,5 mm					
Matériau de l'isolant *Insulation material*	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / *Ø insulation*	18 mm					
Référence du câble HD626 / *HD626 conductor reference*	6 K-1					

ВЗЯТО С ОРИГИНАЛА

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3 Méthode d'essai / *Test method*

Les modalités d'essai sont celles de la norme NF EN 50483-5 de juillet 2009.

Test procedures are in accordance with NF EN 50483-5 (July 2009) standard.

3.1 Conditions de montage des échantillons / *Conditions during installation of the samples*

Les conditions ambiantes relevées lors du montage des raccords sont les suivantes :
Ambient conditions when installing the connectors assembly are as follows :

	Exigences *Requirements*	**Relevés** *Results*
Température ambiante et humidité *Ambient temperature and humidity conditions*	20 °C ≤ T° ≤ 26 °C 25 % ≤ HR ≤ 75 %	22,0 °C 42 %HR

	Section/ *Cross section* (mm²)	
Echantillon n° *Sample n.*	Câble principal *Main cable*	Câble dérivé *Tap cable*
1	150	150
2		
3		
4		
5		
6		

3.2 Conditions d'essai / *Test conditions*

Le banc d'essai est situé dans le laboratoire, à l'abri des courants d'air éventuel.
La température climatisée du laboratoire est maintenue entre 20°C et 26°C.
Les parois verticales sont distantes de plus de 0,3 m de la boucle d'essai.
Les plans horizontaux sont éloignés de plus de 0,6 m du plan de la boucle d'essai.
Les égaliseurs sont soudés.

The testing bench is located in the laboratory, with the shelter of the possible draught.
Ambient temperature of the air-conditioned laboratory is maintained in the range 20-26°C.
Vertical walls are distant of more than 0,3 m of the test loop.
Horizontal planes are distant of more than 0,6 m of the plan of the test loop.
Equalizers are produced by welding.

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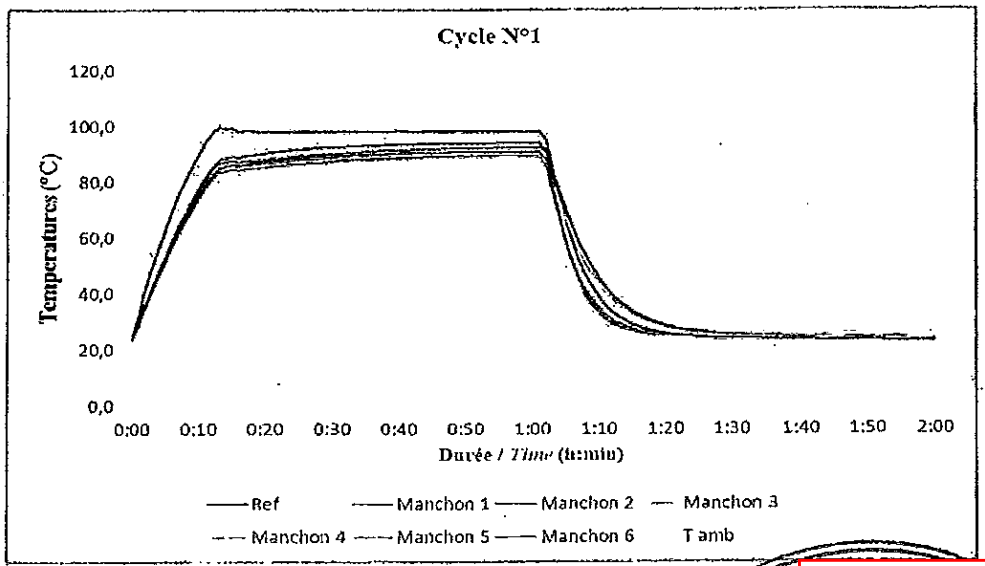
3.3 Configuration de la boucle d'essai / *Test loop configuration*

Boucle d'essai selon NF EN 50483-5 / *Test loop in accordance with NF EN 50483-5*
☐ Boucle d'essai pour raccords de dérivation avec conducteur principal et dérivé ayant des sections et des résistances linéiques égales. *Test branch connectors with main and branch conductors having equal cross-sections and linear resistances.*
☐ Boucle d'essai pour raccords de dérivation avec conducteur principal et dérivé ayant des sections et des résistances linéiques inégales. *Test loop for branch connectors with main branch and branch conductors having unequal cross-sections and linear resistances.*
☑ Boucle d'essai pour raccords de jonction avec conducteurs ayant des sections et des résistances linéiques égales ou inégales. *Test loop for through connectors with conductors having equal or unequal cross-sections and linear resistances.*
☐ Boucle d'essai pour cosses pré-isolées. *Test loop for pre-insulated lugs.*

Paramètres de la boucle d'essai / *Test loop parameters*	
Section du câble principal / *Main cable cross section*	: 150 mm²
Longueur l_a / *Length* l_a	: 250 mm
Longueur l_b / *Length* l_b	: 250 mm
Longueur l_r / *Length* l_r	: 512 mm
Nombre de cycles / *Number of cycles*	: 1000
Consigne de temperature / *Temperature setting*	: 98,0 °C
Courant de chauffe / *Heating current*	: 446 A
Durée de chauffe / *Heating time*	: 60 min
Durée de refroidissement / *Cooling time*	: 40 min
Courant continu de mesure / *D.C measuring current*	: 19 A

3.4 Premier cycle thermique / *First heat cycle*



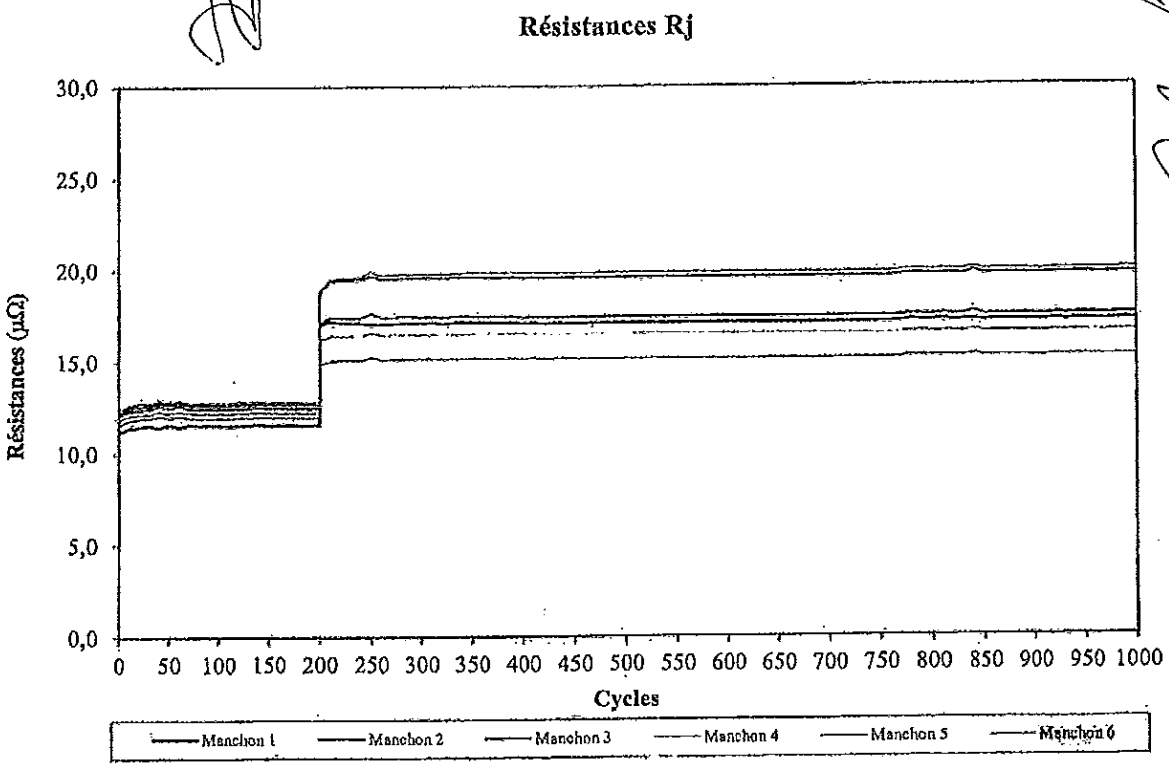
3.5 Court-circuits / *Short circuits*

Raccord *Connector*	N°	Temps *Time* (s)	I_{rms} (A)	$I^2.t$ ($kA^2.s$)	Températures maximales / *Maximum temperatures* (°C)		
					Raccords / *Connectors*		Du câble (calculée) / *of cable (calculated)*
					N°1	**N°2**	
1, 2	1	1,109	16679	308,5	152,8	151,8	252,2
	2	1,120	16592	321,8	162,8	164,5	265,8
	3	1,108	16887	316,1	162,9	162,2	259,9
	4	1,108	16845	314,5	165,0	166,5	258,3
	5	1,110	16367	297,4	158,2	158,8	241,2
	6	1,119	16616	308,9	165,3	165,2	252,6
					N°3	**N°4**	
3, 4	1	1,160	15874	292,1	132,1	135,7	235,8
	2	1,077	16743	302,0	139,1	141,8	244,1
	3	1,110	16613	306,3	144,1	147,1	250,0
	4	1,136	16743	318,4	152,5	154,5	261,5
	5	1,130	16758	319,5	153,6	155,7	258,4
	6	1,145	16517	312,4	160,9	159,9	253,3
					N°5	**N°6**	
5, 6	1	1,140	16901	325,8	142,0	143,0	267,0
	2	1,100	16732	307,1	144,0	136,5	248,1
	3	1,129	16540	309,0	150,0	139,7	250,4
	4	1,156	16586	317,9	156,3	148,5	260,6
	5	1,150	16650	318,9	158,2	150,2	262,7
	6	1,128	16557	309,3	154,6	146,9	253,0

4 Résultats / *Results*

4.1 Tableau des résistances / *Table of resistances*

Résistances R_j / R_j *resistances* (µΩ)						
Cycle	Raccord n° / *Connector n.*					
	1	2	3	4	5	6
0	11,2	12,2	12,2	12,4	11,6	11,9
200 av cc	11,6	12,5	12,7	12,9	12,0	12,3
200 ap cc	17,0	17,1	18,8	18,7	14,9	16,2
250	17,0	17,4	19,4	19,6	15,0	16,3
325	17,1	17,5	19,6	19,8	15,1	16,5
400	17,1	17,4	19,6	19,8	15,2	16,5
475	17,1	17,5	19,6	19,9	15,2	16,5
550	17,1	17,4	19,6	19,9	15,2	16,5
625	17,2	17,5	19,7	19,9	15,2	16,6
700	17,2	17,5	19,7	19,9	15,2	16,6
775	17,2	17,5	19,7	20,0	15,3	16,6
850	17,1	17,5	19,7	19,9	15,2	16,6
925	17,2	17,5	19,7	20,0	15,3	16,6
1000	17,2	17,5	19,7	20,0	15,2	16,6



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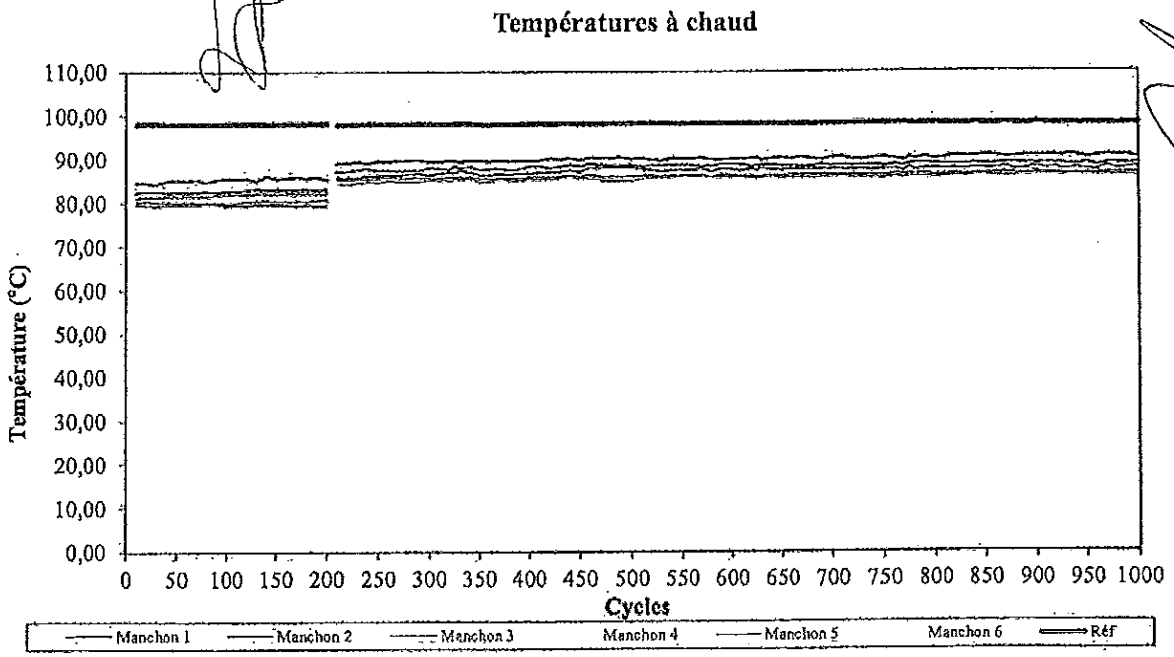
4.2 Tableau des températures / *Table of temperatures* (°C)

Cycle	Températures maximales / *Maximum temperatures* (°C)						
	Raccord n° / *Connector n.*						Câble / *Cable* 150 mm²
	1	2	3	4	5	6	
0	-	-	-	-	-	-	-
200	85,5	83,4	79,5	82,8	80,9	82,2	98,2
200	-	-	-	-	-	-	-
250	89,6	87,5	86,2	85,9	85,8	84,8	98,1
325	89,6	88,5	87,0	86,0	86,1	85,5	98,1
400	89,6	88,4	86,8	86,1	85,9	85,6	98,2
475	90,4	88,7	88,3	86,0	86,0	85,0	98,2
550	90,1	88,6	87,5	86,2	86,4	86,1	98,2
625	90,3	88,4	87,4	86,1	86,1	85,5	98,0
700	90,3	88,4	87,7	86,5	86,3	85,8	98,1
775	90,3	88,8	88,2	86,5	86,5	85,9	98,2
850	90,8	88,7	87,8	86,6	86,5	86,3	98,1
925	90,5	88,9	87,4	86,5	86,4	86,0	98,0
1000	90,2	89,1	88,0	86,8	86,4	85,9	98,2



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5 Résultats statistiques / *Statistical results*

5.1 Calculs statistiques / *Statistical calculations*

		Exigences *Requirements*
$\overline{Rj}$	11,905	-
S_0	0,439	-
δ	0,06	$\leq 0,3$

	Raccord n° / *Connector n.*						Exigences *Requirements*
	1	2	3	4	5	6	
$\overline{R_j}$	17,14	17,47	19,64	19,89	15,19	16,53	-
$s(\overline{R_j})$	17,64						-
β	0,17						$\leq 0,3$

5.2 Evaluation de la stabilité de la résistance / *Assessment of resistance stability*

Raccord n° *Connector n.*	R_j (µΩ)			Stabilité *Stability*	Exigences *Requirements*
	Min.	Moy. / *Ave*	Max		
1	17,0	17,1	17,2	0,96%	≤ 15 %
2	17,4	17,5	17,5	1,07%	
3	19,4	19,6	19,7	1,65%	
4	19,6	19,9	20,0	1,96%	
5	15,0	15,2	15,3	1,95%	
6	16,3	16,5	16,6	1,85%	

5.3 Rapports de résistance / *Resistance factor ratios*

Cycles	λ_j					
	1	2	3	4	5	6
0	-	-	-	-	-	-
250	1,52	1,43	1,59	1,58	1,29	1,37
325	1,53	1,44	1,61	1,60	1,30	1,39
400	1,53	1,43	1,61	1,60	1,31	1,39
475	1,53	1,44	1,61	1,60	1,31	1,39
550	1,53	1,44	1,61	1,60	1,31	1,39
625	1,53	1,44	1,62	1,61	1,31	1,39
700	1,53	1,44	1,62	1,61	1,31	1,39
775	1,53	1,44	1,62	1,61	1,32	1,40
850	1,53	1,44	1,62	1,61	1,31	1,39
925	1,53	1,44	1,62	1,61	1,32	1,39
1000	1,53	1,44	1,62	1,61	1,31	1,39
Exigences *Requirements*	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2

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5.4 Stabilité de la température / *Temperature stability* ($\Delta\theta_j$)

Cycles	$\Delta\theta_j$ (°C)					
	1	2	3	4	5	6
0	-	-	-	-	-	-
250	8,46	10,56	11,86	12,16	12,26	13,26
325	8,48	9,58	11,08	12,08	11,98	12,58
400	8,56	9,76	11,36	12,06	12,26	12,56
475	7,78	9,48	9,88	12,18	12,18	13,18
550	8,14	9,64	10,74	12,04	11,84	12,14
625	7,71	9,61	10,61	11,91	11,91	12,51
700	7,83	9,73	10,43	11,63	11,83	12,33
775	7,93	9,43	10,03	11,73	11,73	12,33
850	7,27	9,37	10,27	11,47	11,57	11,77
925	7,53	9,13	10,63	11,53	11,63	12,03
1000	8,00	9,10	10,20	11,40	11,80	12,30

Raccord n° *Connector n.*	$\Delta\theta_j$ (°C)					Exigences / *Requirements*
	Moy. *Ave.*	$\overline{\Delta\theta_j} - 10$	Min.	Max.	$\overline{\Delta\theta_j} + 10$	$\overline{\Delta\theta_j} - 10 \le \Delta\theta_j \le \overline{\Delta\theta_j} + 10$
1	8,0	-2,0	7,3	8,6	18,0	Conforme / ***Compliant***
2	9,6	-0,4	9,1	10,6	19,6	
3	10,6	0,6	9,9	11,9	20,6	
4	11,8	1,8	11,4	12,2	21,8	
5	11,9	1,9	11,8	12,3	21,9	
6	12,5	2,5	11,8	13,3	22,5	

5.5 Température maximale θ_j de chaque raccord / *Maximum temperature θj of each connector.*

Raccord n° *Connector n.*	θ_j Max (°C)	θ_r (°C)	Exigences *Requirements*
1	90,8	98,2	θ_j Max ≤ θ_r
2	89,1		
3	88,3		
4	86,8		
5	86,5		
6	86,3		

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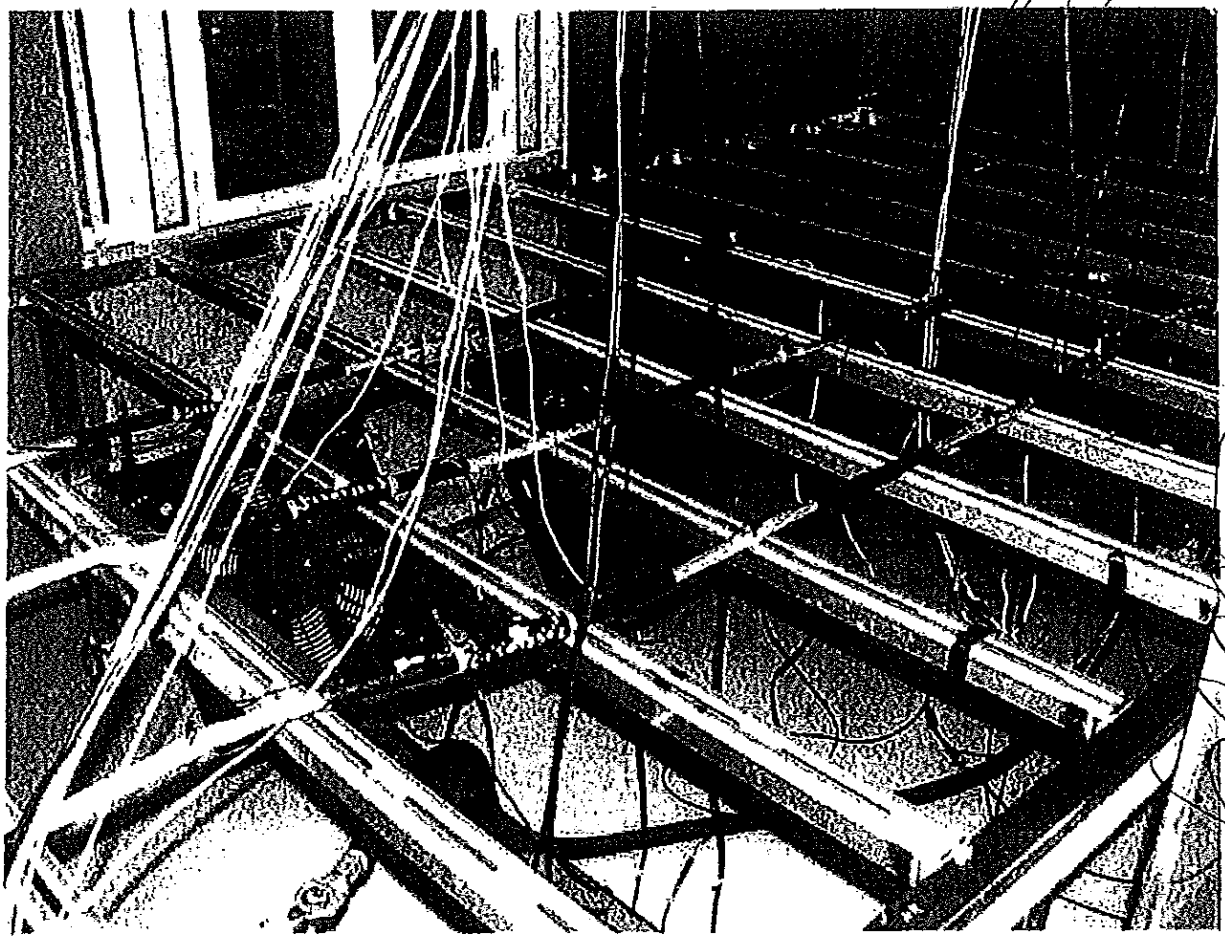
6 Photo de la boucle d'essai / *Photo of the test loop*



FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЈРТ 150

1. **№ на тест: 9212370** - Механичен тест.
2. **№ на тест: 1201231** - Тест за стареене под въздействието на електричество.

"ВАК - 02" ООД

Съставил:

На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД САМОКОВ

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SICAME

Laboratoire d'essais
de la Direction Etudes et Recherches

Rapport d'essai : **Essai de montage à basse température**
Test report : ***Installation test at low temperature***

Rapport d'essai n°	: 12 04 125	*Test report n.*	*: 12 04 125*
Constructeur	: SICAME	*Product brand*	*: SICAME*
Référence produit	: MJPT50-25	*Product type*	*: MJPT50-25*
Demandeur de l'essai	: SICAME S.A.	*Test applied by*	*: SICAME S.A.*
Date d'essai	: Du 17 au 18 avril 2012	*Date of the test*	*: 17 to 18 April 2012*
Date d'émission du rapport	: 15 mai 2012	*Report emission date*	*: 15 May 2012*

Essais réalisés suivant : NF EN 50483-4 (07/2009), § 8.2.4
Tests carried out in accordance with

Ce rapport comprend : **9 pages**
This report contains

Conclusion : Les manchons de jonction préisolés SICAME de type MJPT 50-25 soumis à essai satisfont aux exigences du § 8.2.4 de la norme NF EN 50483-4 (07/2009).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion *: The tested SICAME insulated splicing sleeves MJPT 50-25 comply with the requirements of clause 8.2.4 of NF EN 50483-4 (07/2009) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
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B.P. N° 1 - 19231 POMPADOUR - CEDEX - FRANCE - Tél (33) 05 55 73 89 00 - Fax (33) 05 55 73 83 12 - Email : info@sicame.fr

"ВАК - 02" ООД
САМОКОВ

ВЯРНО С ОРИГИНАЛА

1 Echantillons soumis à essai / *Samples under test*

Type : Manchon de jonction préisolé
Insulated splicing sleeve

Désignation / *Designation* : MJPT 50-25

Matière de la jupe / *over molding material* : KEPITAL

Fabricant / *Manufacturer* : SICAME

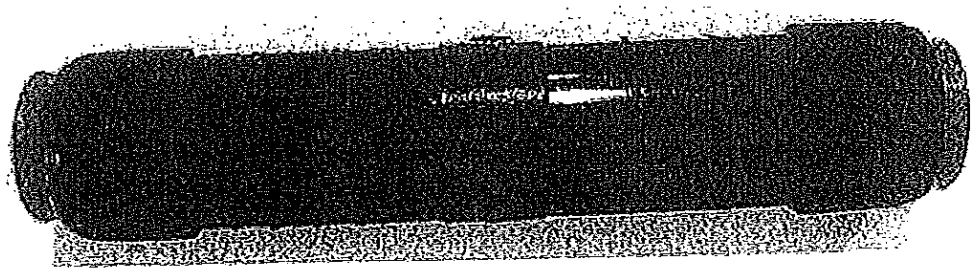
Numéro de lot / *Batch number* : Tête de série / *Head of series*
Echantillons suivant le plan E0700610
Samples in accordance with drawing n. E0700610

Classes du produit selon NF EN 50483-1 (§ 9.3) *Classes of product in accordance with NF EN 50483-1 (§ 9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐	Classe B *Class B*	; raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 2

Repérage / *Identification* : 1, 2

Date de réception au laboratoire : 3 avril 2012
Reception date at the laboratory : *03 April 2012*



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2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir *Compression tool*	5 tonnes *5 tons*
/	Matrices *Dies*	E173 largeur 9 mm *E173 width 9 mm*
99 01 48	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
10 03 21	Chambre froide *Low temperature chamber*	Précision 1°C *Accuracy 1°C*
99 00 41	Conductimètre *Conductimeter*	Précision 30 µS/cm *Accuracy 30µS/cm*
04 00 30	Thermomètre étanche *Watertight thermometer*	Précision 1°C *Accuracy 1°C*
03 02 56	Chronomètre *Stop watch*	Précision 1 s *Accuracy 1s*
94 03 09	Banc de traction 3 tonnes *Tensile test machine 3 tons*	Classe 1 *Class 1*
91 02 69	Diélectrimètre BOUCHET (10 kV) *Dielectrimeter BOUCHET (10 kV)*	Précision 0,5mA et 200V *Accuracy 0,5mA and 200V*

2.2 Câbles / *Cables*

N° Lot / ***Identification***	07021					
Norme / ***Standard***	NF C 33-209					
Provenance / ***From***	France / *France*					
Section / ***Cross section***	50 mm²					
Matériau de l'âme / ***Conductor material***	☐	Cuivre / *Copper*	☑	Aluminium	☐	Alliage d'aluminium / *Aluminium alloy*
Type d'âme / ***Conductor type***	☐	Massive / *Solid*	☑	Câblée / *Stranded*		
	☐	Rétreinte / *Compacted*	☑	Non rétreinte / *Non compacted*	☐	Souple / *Flexible*
Forme d'âme / ***Conductor shape***	☑	Ronde / *Circular*	☐	Sectorale / *Sector-shaped*		
Nombre de brins / ***Number of wires***	7					
Ø sur âme / ***Ø on conductor***	9,00 mm					
Matériau de l'isolant / ***Insulation material***	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / ***Ø on insulation***	11,45 mm					
Conditionnement / ***Conditioned on***	1h00 à 120°C *1h00 at 120°C*					
Référence du câble HD626 / ***HD626 conductor reference***	4 E-1					
Charge de rupture minimale / ***Minimum breaking load***	3 000 N					

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N° Lot / *Identification*	08006					
Norme / *Standard*	NF C 33-209					
Provenance / *From*	France / *France*					
Section / *Cross section*	25 mm²					
Matériau de l'âme / *Conductor material*	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme / *Conductor type*	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☑	Rétreinte *Compacted*	☐	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme / *Conductor shape*	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins / *Number of wires*	7					
Ø sur âme / *Ø on conductor*	6,05 mm					
Matériau de l'isolant *Insulation material*	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / *Ø on insulation*	9,00 mm					
Conditionnement *Conditioned on*	1h00 à 120°C *1h00 at 120°C*					
Référence du câble HD626 *HD626 conductor reference*	6 E-1					
Charge de rupture minimale *Minimum breaking load*	4 200 N					

3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 8.2.4 de la norme NF EN 50483-4 (07/2009).

L'essai est effectué sur deux manchons pour chaque section.

Les raccords, le conducteur et les outillages sont au préalable pré-conditionnés jusqu'à la température d'essai (-10 ± 3) °C, ensuite ils sont assemblés à cette température dans la chambre froide.

Au moins 3h à température ambiante après la sortie de la chambre froide, les manchons sont soumis à :

- <u>l'essai de tenue diélectrique dans l'eau, conformément au § 8.2.3</u> :

L'ensemble, raccord et conducteurs, est placé au fond d'un bac d'eau. Pendant le déplacement de l'ensemble, il peut être maintenu pour s'assurer qu'il n'y ait pas de courbure du conducteur ou de mouvement inutile des éléments. Le raccord est placé horizontalement. La profondeur de l'eau est mesurée à partir de la partie supérieure du raccord. Les conducteurs émergent suffisamment de l'eau pour éviter un claquage. Le courant de fuite maximum est égal à (10 ± 0,5) mA. La résistivité de l'eau est ≤ 200 Ωm. L'eau est à température ambiante. On effectue la montée progressive en tension à une vitesse d'environ 1 kV/s. Après une durée d'immersion de 30 min, une tension alternative de 6 kV est appliquée à l'échantillon pendant 60 s.

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- l'essai mécanique, conformément au § 8.2.2. :

L'ensemble est soumis à un effort de traction appliqué sur l'âme conformément à la figure 8 de la norme. Les efforts de traction sont appliqués sur les âmes, la montée en charge est conforme à la NF EN 50483-1, § 9.1.4. (vitesse entre 1000 N/min et 5000 N/min)
Un effort de traction est appliqué sur l'âme jusqu'à atteindre les valeurs exprimées en % de la CRM du Tableau 1 :

Tableau 1 – Efforts initiaux exigés pour le marquage

Système de torsade	*Sections*	*Efforts*	*Essai*
Système autoporté	4 mm² à 16 mm² Cuivre	10 % de la CRM pendant 60 s	☐
	16 mm² à 25 mm² Aluminium	20 % de la CRM pendant 60 s	☑
	35 mm² à 150 mm² Aluminium	**Pleine traction :** 20 % de la CRM pendant 60 s	☐
		Traction allégée : 5 % de la CRM pendant 60 s	☐
Système à neutre porteur	**Phases :** 16 mm² à 150 mm² Aluminium	30 % de la CRM pendant 60 s	☐
	Neutre : 25 mm² à 95 mm² alliage d'aluminium	60 % de la CRM pendant 60 s	☐

Un marquage est réalisé sur le câble à l'endroit où il sort du raccord.

Les efforts sont ensuite augmentés jusqu'aux valeurs exprimées en % de la CRM du Tableau 2 :

Tableau 2 – Efforts d'essai

Système de torsade	*Sections*	*Efforts*	*Essai*
Système autoporté	4 mm² à 16 mm² Cuivre	20 % de la CRM pendant 60 s	☐
	16 mm² à 25 mm² Aluminium	1 200 N ou 40 % de la CRM, la plus grande des deux valeurs pendant 60 s	☑
	35 mm² à 150 mm² Aluminium	**Pleine traction :** 85 % de la CRM pendant 60 s	☐
		Traction allégée : 10% de la CRM pendant 60 s	☐
Système à neutre porteur	**Phases :** 16 mm² à 150 mm² Aluminium	60 % de la CRM pendant 60 s	☐
	Neutre : 25 mm² à 95 mm² alliage d'aluminium	95 % de la CRM pendant 60 s	☐

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Connectors are tested in accordance with NF EN 50483-4 (07/2009) §8.2.4 standard.
Two samples are tested of each equal cross section.
The connectors, conductor and tools are further pre-conditioned until they reach the test temperature of (-10 ± 3) °C before they are assembled. Assembly is made in the cold temperature chamber, at (-10 ± 3)°C.
At least 3 h after having been removed from the cold chamber, the sleeves are subjected to :

- *dielectrical voltage test in water, according to clause 8.2.3:*

The assembly, of connector and cores, is placed at the bottom of a water tank. During the movement of the assembly it may be supported to ensure no bending of the core or unnecessary movement of the component parts. The connector is placed horizontally. The depth of water is measured from the upper part of the connector. The cores are sufficiently above the water level to prevent flashover. The maximum leakage current is equal to (10 ± 0,5) mA. The resistivity of the water is ≤ 200 Ωm. The water is at ambient temperature. The a.c. voltage is applied to a rate of approximately 1 kV/s. After 30 min under water, the voltage test is applied to the sample with 6 kV a.c. for 60 s.

- *mechanical testing, according to clause 8.2.2:*

The assembly is subjected to a tensile load applied to the conductor in accordance with Figure 8 of the standard.
Tensile test loads are applied to conductors, the rate of increase is in accordance with § 9.1.4 of NF EN 50483-1. (speed between 1000 N/min and 5000 N/min)

A tensile test load is applied to the conductor until it reaches the values of Table 1:

Table 1 – Initial loads required for marking

Bundle System	Cross sections	Loads	Test
Self supporting system	4 mm² to 16 mm² Copper	10 % of MBL for 60 s	☐
	16 mm² to 25 mm² Aluminium	20 % of MBL for 60 s	☒
	35 mm² to 150 mm² Aluminium	Full tension : 20 % of MBL for 60 s	☐
		Partial tension : 5 % of MBL for 60 s	☐
Neutral messenger system	Phases : 16 mm² to 150 mm² Aluminium	30 % of MBL for 60 s	☐
	Neutral : 25 mm² to 95 mm² Aluminium alloy	60 % of MBL for 60 s	☐

The cable is marked at the point at wich it leaves the connector.

The load then is increased up to the values of Table 2:

Table 2 – Test loads

Bundle System	*Cross sections*	*Loads*	*Test*
Self supporting system	*4 mm² to 16 mm² Copper*	*20 % of MBL for 60 s*	☐
	16 mm² to 25 mm² Aluminium	*1200 N or 40 % of MBL whichever is the greater for 60 s*	☑
	35 mm² to 150 mm² Aluminium	*Full tension :* *85 % of MBL for 60 s*	☐
		Partial tension : *10 % of MBL for 60 s*	☐
Neutral messenger system	*Phases :* *16 mm² to 150 mm² Aluminium*	*60 % of MBL for 60 s*	☐
	Neutral : *25 mm² to 95 mm² Aluminium alloy*	*95 % of MBL for 60 s*	☐

3.1 Exigences supplémentaires du demandeur de l'essai
Additional requirements of the applicant for the test

Néant
None

3.2 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences *Requirements*	**Relevés** *Results*
Température ambiante et humidité *Ambient temperature and humidity conditions*	15 °C ≤ T° ≤ 35 °C 25 % ≤ HR ≤ 75 %	22 °C 30 %HR
Temps de conditionnement *Conditioning time*	-	1 h 23 min
Température de la chambre froide *Low temperature chamber*	(-10 ± 3)°C	-11,0 °C
Temps à température ambiante après la sortie de la chambre froide *Ambient temperature time after out of cold chamber*	> 3 h	3 h 21 min
Température de l'eau *Water temperature*	Température ambiante *Ambient temperature*	21,5 °C
Résistivité de l'eau *Water resistivity*	≤ 200 Ωm	34,01 Ωm
Temps d'immersion (minutes) *Immersion time (minutes)*	30	30
Vitesse de montée en tension *Voltage increase rate*	≈ 1 kV/s	≈ 1 kV/s

На основание чл. 2
от ЗЗЛД

3.3 Configuration des échantillons / *Samples configuration*

Echantillon n° *Sample n.*	Section / *Cross section* (mm²)		Système de torsade *Bundle system*
1	50	25	Système autoporté *Self supporting system*
2			

4 Résultats / *Results*

Echantillon n° *Sample n.*	6 kV pendant 1 min *6 kV for 1 min*	
	Exigences *Requirements*	Résultats *Results*
1	Pas de claquage *No breakdown*	Pas de claquage *No breakdown*
2		Pas de claquage *No breakdown*

Echantillon n° *Sample n.*	Vitesse de montée programmée *Planned increase rate* (N/min)	
	Exigences *Requirements*	Résultats *Results*
1	$1000 \leq \ldots \leq 5000$	3000
2		3000

Echantillon n° *Sample n.*	Effort pour marquage pendant 1 minute *Strength for marking during 1 min* (N)		Effort pendant 1 minute *Strength during 1 min* (N)	
	Exigences *Requirements*	Résultats *Results*	Exigences *Requirements*	Résultats *Results*
1	20 % CRM *MBL* ⇔ 600	600	40 % CRM *MBL* ⇔ 1200	1200
2		600		1200

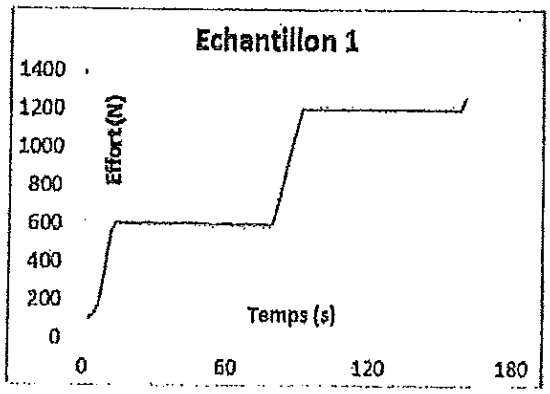
5 Conclusion / *Conclusion*

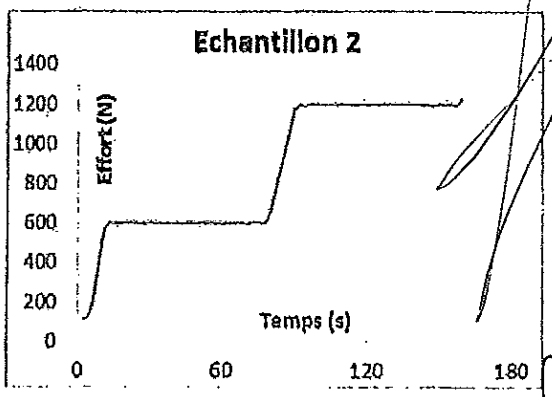
Aucun claquage ou contournement ne s'est produit (déclenchement du générateur de tension).
No breakdown or flashover occurred (tripping of voltage generator).

Aucun glissement ou rupture ne s'est produit.
No slippage or breakage occurred.

На основание чл. 2
от ЗЗЛД

6 Courbes / *Curves*





FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП MJPT 50-25

1. **№ на тест: 9212300** - Механичен тест;
2. **№ на тест: 1204125** - Тест за инсталиране при ниска температура.

Съставил:

На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД САМОКОВ

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SICAME

Laboratoire d'essais
de la Direction Etudes et Recherches

Rapport d'essai : **Essai de montage à basse température**
Test report : ***Installation test at low temperature***

Rapport d'essai n°	: 12 04 122	*Test report n.*	*: 12 04 122*
Constructeur	: SICAME	*Product brand*	*: SICAME*
Référence produit	: MJPT 50-35	*Product type*	*: MJPT 50-35*
Demandeur de l'essai	: SICAME S.A.	*Test applied by*	*: SICAME S.A.*
Date d'essai	: Du 17 au 18 avril 2012	*Date of the test*	*: 17 to 18 April 2012*
Date d'émission du rapport	: 15 mai 2012	*Report emission date*	*: 15 May 2012*

Essais réalisés suivant : NF EN 50483-4 (07/2009), § 8.2.4
Tests carried out in accordance with

Ce rapport comprend : 9 pages
This report contains

Conclusion : Les manchons de jonction préisolés SICAME de type MJPT 50-35 soumis à essai satisfont aux exigences du § 8.2.4 de la norme NF EN 50483-4 (07/2009).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion *: The tested SICAME insulated splicing sleeves MJPT 50-35 comply with the requirements of clause 8.2.4 of NF EN 50483-4 (07/2009) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
от ЗЗЛД

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ВЯРНО С ОРИГИНАЛА

1 Echantillons soumis à essai / *Samples under test*

Type : Manchon de jonction préisolé
Insulated splicing sleeve

Désignation / *Designation* : MJPT 50-35

Matière de la jupe / *over molding material* : KEPITAL

Fabricant / *Manufacturer* : SICAME

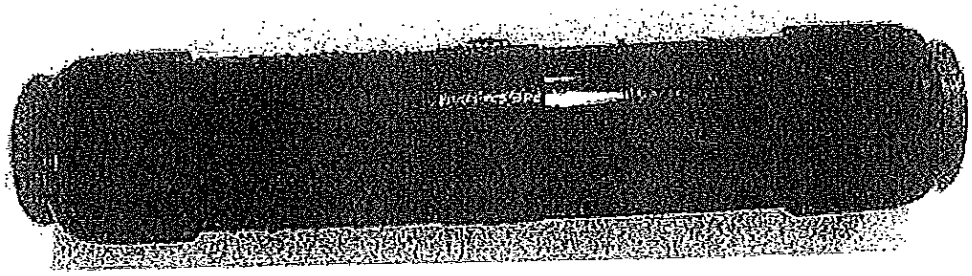
Numéro de lot / *Batch number* : Tête de série / *Head of series*
Echantillons suivant le plan E0700610
Samples in accordance with drawing n. E0700610

Classes du produit selon NF EN 50483-1 (§ 9.3) *Classes of product in accordance with NF EN 50483-1 (§ 9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐	Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 2

Repérage / *Identification* : 1, 2

Date de réception au laboratoire : 3 avril 2012
Reception date at the laboratory : *03 April 2012*



ВЗРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir *Compression tool*	5 tonnes *5 tons*
/	Matrices *Dies*	E173 largeur 9 mm *E173 width 9 mm*
99 01 48	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
10 03 21	Chambre froide *Low temperature chamber*	Précision 1°C *Accuracy 1°C*
99 00 41	Conductimètre *Conductimeter*	Précision 30 µS/cm *Accuracy 30µS/cm*
04 00 30	Thermomètre étanche *Watertight thermometer*	Précision 1°C *Accuracy 1°C*
03 02 56	Chronomètre *Stop watch*	Précision 1 s *Accuracy 1s*
94 03 09	Banc de traction 3 tonnes *Tensile test machine 3 tons*	Classe 1 *Class 1*
91 02 69	Diélectrimètre BOUCHET (10 kV) *Dielectrimeter BOUCHET (10 kV)*	Précision 0,5mA et 200V *Accuracy 0,5mA and 200V*

2.2 Câbles / *Cables*

N° Lot / ***Identification***	07021					
Norme / ***Standard***	NF C 33-209					
Provenance / ***From***	France / *France*					
Section / ***Cross section***	50 mm²					
Matériau de l'âme / ***Conductor material***	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme / ***Conductor type***	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☐	Rétreinte *Compacted*	☑	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme / ***Conductor shape***	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins / ***Number of wires***	7					
Ø sur âme / ***Ø on conductor***	9,00 mm					
Matériau de l'isolant ***Insulation material***	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / ***Ø on insulation***	11,45 mm					
Conditionnement ***Conditioned on***	1h00 à 120°C *1h00 at 120°C*					
Référence du câble HD626 ***HD626 conductor reference***	4 B-1					
Charge de rupture minimale ***Minimum breaking load***	3 000 N					

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

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N° Lot / *Identification*	08006					
Norme / *Standard*	NF C 33-209					
Provenance / *From*	France / *France*					
Section / *Cross section*	35 mm²					
Matériau de l'âme / *Conductor material*	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme / *Conductor type*	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☑	Rétreinte *Compacted*	☐	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme / *Conductor shape*	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins / *Number of wires*	7					
Ø sur âme / *Ø on conductor*	7,05 mm					
Matériau de l'isolant *Insulation material*	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / *Ø on insulation*	10,45 mm					
Conditionnement *Conditioned on*	1h00 à 120°C *1h00 at 120°C*					
Référence du câble HD626 *HD626 conductor reference*	6 E-1					
Charge de rupture minimale *Minimum breaking load*	4 200 N					

3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 8.2.4 de la norme NF EN 50483-4 (07/2009).

L'essai est effectué sur deux manchons pour chaque section.

Les raccords, le conducteur et les outillages sont au préalable pré-conditionnés jusqu'à la température d'essai (-10 ± 3) °C, ensuite ils sont assemblés à cette température dans la chambre froide.

Au moins 3h à température ambiante après la sortie de la chambre froide, les manchons sont soumis à :

- l'essai de tenue diélectrique dans l'eau, conformément au § 8.2.3 :

L'ensemble, raccord et conducteurs, est placé au fond d'un bac d'eau. Pendant le déplacement de l'ensemble, il peut être maintenu pour s'assurer qu'il n'y ait pas de courbure du conducteur ou de mouvement inutile des éléments. Le raccord est placé horizontalement. La profondeur de l'eau est mesurée à partir de la partie supérieure du raccord. Les conducteurs émergent suffisamment de l'eau pour éviter un claquage. Le courant de fuite maximum est égal à (10 ± 0,5) mA. La résistivité de l'eau est ≤ 200 Ωm. L'eau est à température ambiante. On effectue la montée progressive en tension à une vitesse d'environ 1 kV/s. Après une durée d'immersion de 30 min, une tension alternative de 6 kV est appliquée à l'échantillon pendant 60 s.

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- l'essai mécanique, conformément au § 8.2.2. :

L'ensemble est soumis à un effort de traction appliqué sur l'âme conformément à la figure 8 de la norme. Les efforts de traction sont appliqués sur les âmes, la montée en charge est conforme à la NF EN 50483-1, § 9.1.4. (vitesse entre 1000 N/min et 5000 N/min)
Un effort de traction est appliqué sur l'âme jusqu'à atteindre les valeurs exprimées en % de la CRM du Tableau 1 :

Tableau 1 – Efforts initiaux exigés pour le marquage

Système de torsade	*Sections*	*Efforts*	*Essai*
Système autoporté	4 mm² à 16 mm² Cuivre	10 % de la CRM pendant 60 s	☐
	16 mm² à 25 mm² Aluminium	20 % de la CRM pendant 60 s	☑
	35 mm² à 150 mm² Aluminium	**Pleine traction :** 20 % de la CRM pendant 60 s	☐
		Traction allégée : 5 % de la CRM pendant 60 s	☐
Système à neutre porteur	**Phases :** 16 mm² à 150 mm² Aluminium	30 % de la CRM pendant 60 s	☐
	Neutre : 25 mm² à 95 mm² alliage d'aluminium	60 % de la CRM pendant 60 s	☐

Un marquage est réalisé sur le câble à l'endroit où il sort du raccord.

Les efforts sont ensuite augmentés jusqu'aux valeurs exprimées en % de la CRM du Tableau 2 :

Tableau 2 – Efforts d'essai

Système de torsade	*Sections*	*Efforts*	*Essai*
Système autoporté	4 mm² à 16 mm² Cuivre	20 % de la CRM pendant 60 s	☐
	16 mm² à 25 mm² Aluminium	1 200 N ou 40 % de la CRM, la plus grande des deux valeurs pendant 60 s	☑
	35 mm² à 150 mm² Aluminium	**Pleine traction :** 85 % de la CRM pendant 60 s	☐
		Traction allégée : 10% de la CRM pendant 60 s	☐
Système à neutre porteur	**Phases :** 16 mm² à 150 mm² Aluminium	60 % de la CRM pendant 60 s	☐
	Neutre : 25 mm² à 95 mm² alliage d'aluminium	95 % de la CRM pendant 60 s	☐

На основание чл. 2
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Connectors are tested in accordance with NF EN 50483-4 (07/2009) §8.2.4 standard.
Two samples are tested of each equal cross section.
The connectors, conductor and tools are further pre-conditioned until they reach the test temperature of (-10 ± 3) °C before they are assembled. Assembly is made in the cold temperature chamber, at (-10 ± 3)°C.
At least 3 h after having been removed from the cold chamber, the sleeves are subjected to :

- *dielectrical voltage test in water, according to clause 8.2.3:*

The assembly, of connector and cores, is placed at the bottom of a water tank. During the movement of the assembly it may be supported to ensure no bending of the core or unnecessary movement of the component parts. The connector is placed horizontally. The depth of water is measured from the upper part of the connector. The cores are sufficiently above the water level to prevent flashover. The maximum leakage current is equal to (10 ± 0,5) mA. The resistivity of the water is ≤ 200 Ωm. The water is at ambient temperature. The a.c. voltage is applied to a rate of approximately 1 kV/s. After 30 min under water, the voltage test is applied to the sample with 6 kV a.c. for 60 s.

- *mechanical testing, according to clause 8.2.2:*

The assembly is subjected to a tensile load applied to the conductor in accordance with Figure 8 of the standard.
Tensile test loads are applied to conductors, the rate of increase is in accordance with § 9.1.4 of NF EN 50483-1. (speed between 1000 N/min and 5000 N/min)

A tensile test load is applied to the conductor until it reaches the values of Table 1:

Table 1 – Initial loads required for marking

Bundle System	*Cross sections*	*Loads*	*Test*
Self supporting system	*4 mm² to 16 mm² Copper*	*10 % of MBL for 60 s*	☐
	16 mm² to 25 mm² Aluminium	*20 % of MBL for 60 s*	☑
	35 mm² to 150 mm² Aluminium	***Full tension :*** *20 % of MBL for 60 s*	☐
		Partial tension : *5 % of MBL for 60 s*	☐
Neutral messenger system	***Phases :*** *16 mm² to 150 mm² Aluminium*	*30 % of MBL for 60 s*	☐
	Neutral : *25 mm² to 95 mm² Aluminium alloy*	*60 % of MBL for 60 s*	☐

The cable is marked at the point at wich it leaves the connector.

На основание чл. 2
от ЗЗЛД

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The load then is increased up to the values of Table 2:

Table 2 – Test loads

Bundle System	*Cross sections*	*Loads*	*Test*
Self supporting system	*4 mm² to 16 mm² Copper*	*20 % of MBL for 60 s*	☑
	16 mm² to 25 mm² Aluminium	*1200 N or 40 % of MBL whichever is the greater for 60 s*	☑
	35 mm² to 150 mm² Aluminium	***Full tension :*** *85 % of MBL for 60 s*	☐
		Partial tension : *10 % of MBL for 60 s*	☐
Neutral messenger system	***Phases :*** *16 mm² to 150 mm² Aluminium*	*60 % of MBL for 60 s*	☐
	Neutral : *25 mm² to 95 mm² Aluminium alloy*	*95 % of MBL for 60 s*	☐

3.1 Exigences supplémentaires du demandeur de l'essai
Additional requirements of the applicant for the test

Néant
None

3.2 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences *Requirements*	**Relevés** *Results*
Température ambiante et humidité *Ambient temperature and humidity conditions*	15 °C ≤ T° ≤ 35 °C 25 % ≤ HR ≤ 75 %	22 °C 30 %HR
Temps de conditionnement *Conditioning time*	-	1 h 23 min
Température de la chambre froide *Low temperature chamber*	(-10 ± 3)°C	-11,0 °C
Temps à température ambiante après la sortie de la chambre froide *Ambient temperature time after out of cold chamber*	> 3 h	3 h 21 min
Température de l'eau *Water temperature*	Température ambiante *Ambient temperature*	21,5 °C
Résistivité de l'eau *Water resistivity*	≤ 200 Ωm	34,01 Ωm
Temps d'immersion (minutes) *Immersion time (minutes)*	30	30
Vitesse de montée en tension *Voltage increase rate*	≈ 1 kV/s	≈ 1 kV/s

На основание чл. 2
от ЗЗЛД

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3.3 Configuration des échantillons / *Samples configuration*

Echantillon n° *Sample n.*	Section / *Cross section* (mm²)		Système de torsade *Bundle system*
1	50	35	Système autoporté *Self supporting system*
2			

4 Résultats / *Results*

Echantillon n° *Sample n.*	6 kV pendant 1 min *6 kV for 1 min*	
	Exigences *Requirements*	Résultats *Results*
1	Pas de claquage *No breakdown*	Pas de claquage *No breakdown*
2		Pas de claquage *No breakdown*

Echantillon n° *Sample n.*	Vitesse de montée programmée *Planned increase rate* (N/min)	
	Exigences *Requirements*	Résultats *Results*
1	1000 ≤ ... ≤ 5000	3000
2		3000

Echantillon n° *Sample n.*	Effort pour marquage pendant 1 minute *Strength for marking during 1 min* (N)		Effort pendant 1 minute *Strength during 1 min* (N)	
	Exigences *Requirements*	Résultats *Results*	Exigences *Requirements*	Résultats *Results*
1	20 % CRM *MBL* ⇔ 600	600	40 % CRM *MBL* ⇔ 1200	1200
2		600		1200

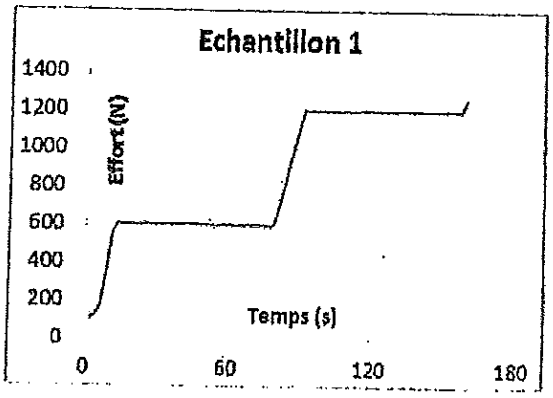
5 Conclusion / *Conclusion*

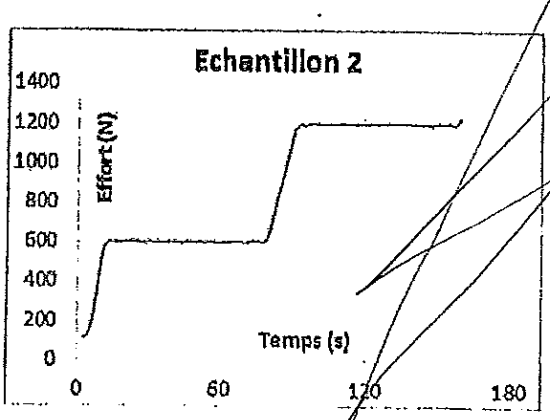
Aucun claquage ou contournement ne s'est produit (déclenchement du générateur de tension).
No breakdown or flashover occurred (tripping of voltage generator).

Aucun glissement ou rupture ne s'est produit.
No slippage or breakage occurred.

На основание чл. 2
от ЗЗЛД

6 Courbes / *Curves*





FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

На основание чл. 2
от ЗЗЛД

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЈРТ 50-35

1. **№ на тест: 9212310** – Механичен тест;
2. **№ на тест: 1204122** - Тест за инсталиране при ниска температура.

На основание чл. 2 от ЗЗЛД

Съставил:

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СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЈРТ 70-35

1. **№ на тест: 9212330** – Механичен тест;

Съставил:

На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД САМОКОВ

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SICAME

Laboratoire d'essais
LABEP

Rapport d'essai : Essai d'endurance sur conducteur de phase
Test report : *Endurance test on phase conductor*

Rapport d'essai n°	: 12 09 302	*Test report n.*	: *12 09 302*
Constructeur	: SICAME	*Product manufacturer*	: *SICAME*
Référence produit	: MJPT70-50	*Product reference*	: *MJPT70-50*
Demandeur de l'essai	: SICAME S.A.	*Test applied by*	: *SICAME S.A.*
Date d'essai	: du 10 octobre au 13 novembre 2012	*Date of the test*	: *10 October to 13 November 2012*
Date d'émission du rapport	: 15 novembre 2012	*Report issue date*	: *15 November 2012*

Essais réalisés suivant : NF EN 50483-4 (07/2009), § 8.2.7
Tests carried out in accordance with

Ce rapport comprend : 9 pages
This report contains

Conclusion : Les manchons de jonction préisolés SICAME de type MJPT70-50 soumis à essai satisfont aux exigences du § 8.2.7 de la norme NF EN 50483-4 (07/2009).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion : *The tested SICAME insulated splicing sleeves MJPT70-50 comply with the requirements of clause 8.2.7 of NF EN 50483-4 (July 2009) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
от ЗЗЛД

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"ВАК - 02" ООД
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ВЯРНО С ОРИГИНАЛА

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1 Echantillons soumis à essai / *Samples under test*

Type : Manchon de jonction préisolé
Insulated splicing sleeve

Désignation / *Designation* : MJPT70-50

Fabricant / *Manufacturer* : SICAME

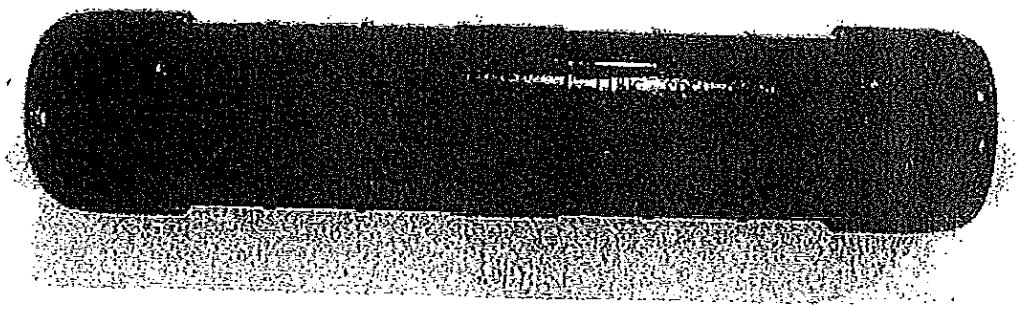
Numéro de lot / *Batch number* : Tête de série / *Head of series*
Echantillons suivant le plan E0700640
Samples in accordance with drawing n. E0700640

Classes du produit selon NF EN 50483-1 (§ 9.3) *Classes of product in accordance with NF EN 50483-1 (§ 9.3)*	
☑ Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐ Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑ Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐ Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 4

Repérage / *Identification* : 1, 2, 3, 4

Date de réception au laboratoire : 25 septembre 2012
Reception date at the laboratory : *25 September 2012*



ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir *Compression tool*	5 tonnes *5 tons*
/	Matrices *Dies*	E173 largeur 9 mm *E173 width 9 mm*
99 01 48	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
10 03 21	Chambre froide *Low temperature chamber*	Précision 1°C *Accuracy 1°C*
99 00 41	Conductimètre *Conductimeter*	Précision 30 µS/cm *Accuracy 30µS/cm*
04 00 30	Thermomètre étanche *Watertight thermometer*	Précision 1°C *Accuracy 1°C*
03 02 56	Chronomètre *Stop watch*	Précision 1 s *Accuracy 1s*
94 03 09	Banc de traction 3 tonnes *Tensile test machine 3 tons*	Classe 1 *Class 1*
91 02 69	Diélectrimètre BOUCHET (10 kV) *Dielectrimeter BOUCHET (10 kV)*	Précision 0,5mA et 200V *Accuracy 0,5mA and 200V*

2.2 Câbles / *Cables*

N° Lot / ***Identification***	07021					
Norme / ***Standard***	NF C 33-209					
Provenance / ***From***	France / *France*					
Section / ***Cross section***	50 mm²					
Matériau de l'âme / ***Conductor material***	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme / ***Conductor type***	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☐	Rétreinte *Compacted*	☑	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme / ***Conductor shape***	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins / ***Number of wires***	7					
Ø sur âme / ***Ø on conductor***	9,00 mm					
Matériau de l'isolant ***Insulation material***	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / ***Ø on insulation***	11,45 mm.					
Conditionnement ***Conditioned on***	1h00 à 120°C *1h00 at 120°C*					
Référence du câble HD626 ***HD626 conductor reference***	4 E-1					
Charge de rupture minimale ***Minimum breaking load***	3 000 N					

На основание чл. 2
от ЗЗЛД

ВЕРНО С ОРИГИНАЛА

N° Lot / ***Identification***	11029					
Norme / ***Standard***	WT-92/K-396					
Provenance / ***From***	Pologne / *Poland*					
Section / ***Cross section***	70 mm²					
Matériau de l'âme ***Conductor material***	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme ***Conductor type***	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☑	Rétreinte *Compacted*	☐	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme ***Conductor shape***	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins ***Number of wires***	19					
Ø sur âme ***Ø on conductor***	10,0 mm					
Matériau de l'isolant ***Insulation material***	Polyéthylène réticulé *Cross-linked polyethylene*					
Ø sur isolant ***Ø on insulation***	13,1 mm					
Conditionnement ***Conditioned on***	1h00 à 110°C *1h00 at 110°C*					
Référence du câble HD626 ***HD626 conductor reference***	/					
Charge de rupture minimale (CRM) / ***Minimum Breaking Load (MBL)***	11242 N					

3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 8.2.7 de la norme NF EN 50483-4 (07/2009).

L'essai est effectué sur quatre manchons pour chaque section.

La charge, pour le type de système approprié, doit être appliquée aux extrémités du conducteur et ajustée comme demandé durant l'essai.

Des cycles thermiques, d'une durée de 90 min, doivent être appliqués au montage d'essai.

500 cycles doivent être réalisés.

Pendant les 45 premières minutes de chaque cycle, le courant traversant l'ensemble doit créer l'élévation de température.

La température de référence du conducteur doit être maintenue à la température normale de service dans un intervalle de ± 3 K comme indiqué dans l'Annexe C de la EN 50483-1. Cette température est atteinte dans un temps de 5 min à 15 min en début de cycle.

Pendant les 45 dernières minutes, de chaque cycle, le montage en essai doit être refroidi à (25 ± 3) °C. La température doit ensuite être maintenue à cette valeur, jusqu'à la fin du cycle.

A intervalle de 24h, à la fin de la période de chauffage à la température normale de service, les températures atteintes par les deux manchons doivent être enregistrées.

На основание чл. 2
от ЗЗЛД

Insulated splicing sleeves are tested in accordance with NF EN 50483-4 (07/2009) §8.2.7 standard.

The test is carried out on 4 Insulated splicing sleeves for each cross-section.

The load, for the appropriate type of system, shall be applied to the extremities of the core and varied as required throughout the test.

Thermal cycles, with duration of 90 min, shall be applied to the test assembly.

There shall be 500 cycles.

For the first 45 minutes of every cycle, current flowing through the assembly shall create the temperature rise.

The reference temperature of the conductor shall be maintained at the normal operating temperature within an interval of ± 3 °C a shown in Table B.1 of Annexe B, this temperature shall be reached within 5 min to 15 min at the beginning of the cycle.

For the last 45 min, of each cycle, the test assembly shall be cooled to (25 ± 3) °C. The temperature shall then be maintained, at this value, until the end of the cycle.

At 24 h intervals, at the end of the normal operating temperature heating period, the temperatures reached by the two sleeves shall be recorded.

La figure 1 décrit un exemple typique de dispositif d'essai. La configuration peut différer de ce montage du moment qu'elle respecte les longueurs du conducteur de phase

Figure 1 shows a typical test arrangement. The test configuration can differ from this arrangement as long as it complies with the phase conductor.

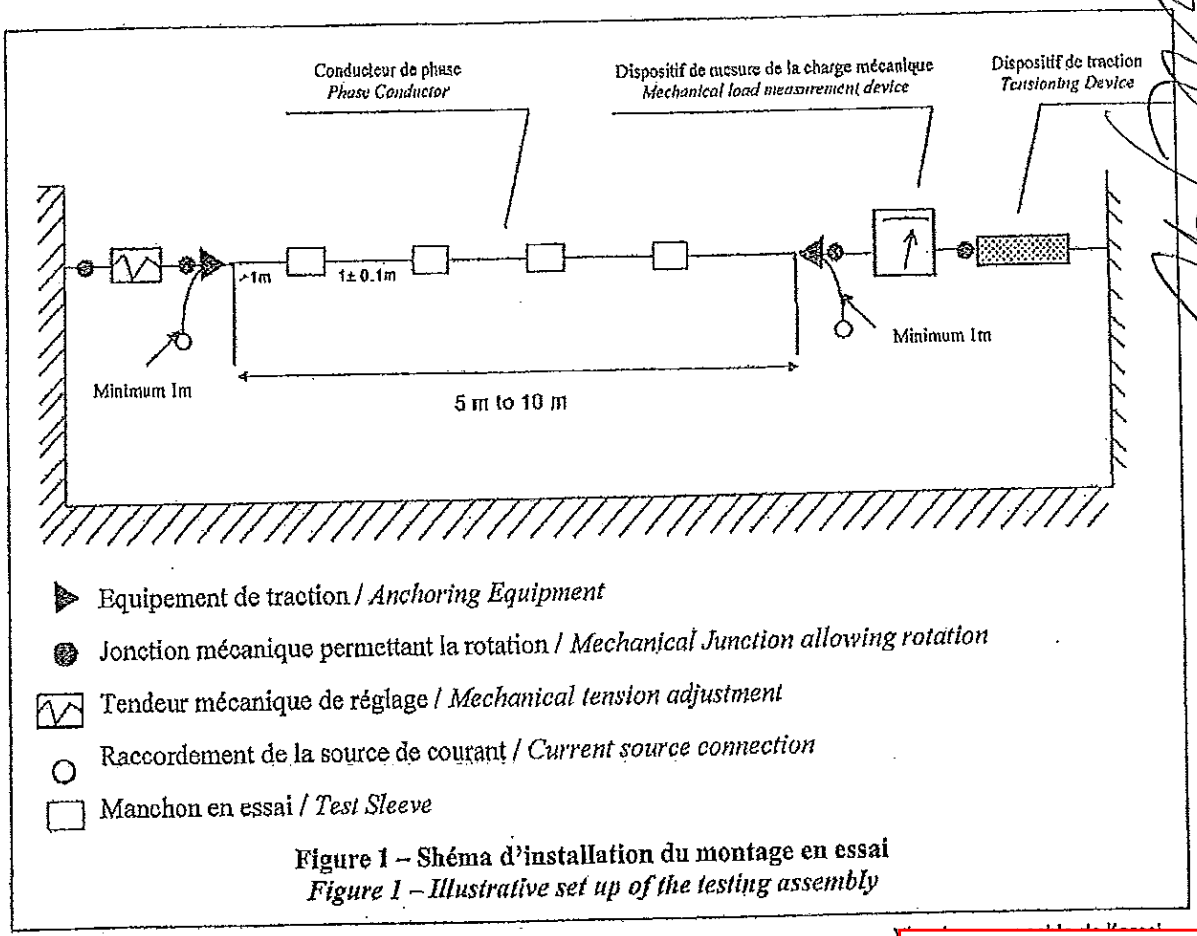


Figure 1 – Shéma d'installation du montage en essai
Figure 1 – Illustrative set up of the testing assembly

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

La variation de la charge mécanique et de la température est décrite sur le diagramme de la Figure 2.

Un effort de traction doit être appliqué jusqu'à une valeur égale à 35 % de la CRM du câble. Cette valeur doit être atteinte approximativement en 1 min.

La charge doit ensuite être maintenue pendant 10 min par un réglage permanent manuel ou automatique. On doit laisser l'ensemble se stabiliser mécaniquement pendant 24 h sans aucun réglage.

Une fois l'ensemble stabilisé les cycles thermiques doivent commencer. A la fin du premier cycle, l'effort de traction doit être réglé à 20 % de la CRM du câble.

Au moins une fois par 24 h, l'effort de traction doit être ajusté à 20 % de la CRM du câble.

The variation in mechanical load and temperature is shown, diagrammatically, in Figure 2.

A tensile load shall be applied until a value equal to 35 % of the MBL is reached. This value shall be achieved in approximately 1 minute.

The load shall then be maintained for 10 min using a manual or automatic continuous adjustment. The assembly shall be left to self stabilize mechanically for 24 h without any adjustment.

Once the assembly has stabilized the thermal cycles shall be started. At the end of the first cycle, the tensile load shall be set at 20 % of MBL.

At least once every 24 h, the tensile load shall be adjusted to 20 % of the MBL.

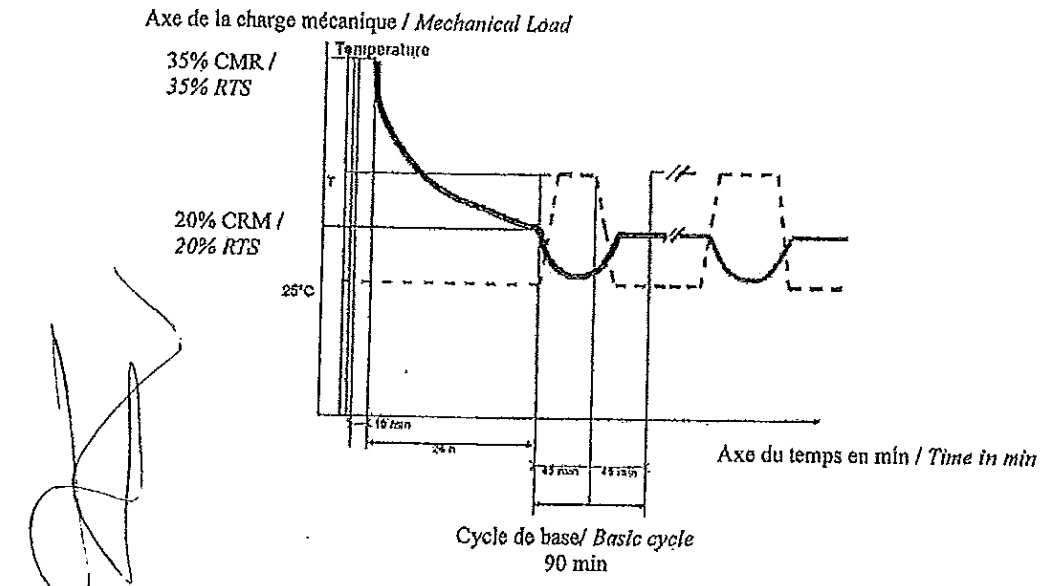


Figure 2 – Diagramme des cycles thermiques et des contraintes mécaniques appliqués sur le conducteur de phase

Figure 2 – Diagram of thermal cycles and mechanical stresses applied on phase conductor

На основание чл. 2
от ЗЗЛД

Tableau 1 – Effort de traction appliqué
Table 1 – Applied tensile load

20 % de la CRM du câble *20 % of MBL* 2248 N	35% de la CRM du câble *35 % of MBL* 3934 N

La température normale de service du câble est de 80° C.
The rated operating temperature of the cable is 80° C.

A la fin de la période de chauffage, la température des manchons doit être inférieure à la température du conducteur de référence.

Les manchons de Classe 1 et de Classe 2 doivent satisfaire aux exigences de l'essai de tenue diélectrique dans l'air, 8.2.3.1.3.2.

Pour les manchons de Classe 1, l'ensemble formé par le raccord et les conducteurs doit être ensuite retiré des billes métalliques, sans contrainte mécanique, et doit satisfaire aux exigences de l'essai de tenue diélectrique dans l'eau, comme indiqué au 8.2.3.1.3.1, mais avec une tension de 1 kV.

Les quatre manchons doivent satisfaire aux exigences de l'essai mécanique du § 8.2.2.

At the end of the heating period, the sleeves' temperatures shall be lower than the temperature of the reference core.

The Class 1 and the Class 2 sleeves shall meet the requirements of the Dielectrical Voltage Test in Air, Clause 8.2.3.1.3.2.

For Class 1 sleeves the assembly formed by the connector and the cores shall then taken out of the metallic balls, without any mechanical stress, and shall meet the requirements of the dielectrical voltage test in water, Clause 8.2.3.1.3.1 but with a voltage of 1 kV.

The four sleeves shall meet the requirements of the mechanical test Clause 8.2.2.

3.1 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences ***Requirements***	**Relevés** ***Results***
Température ambiante et humidité ***Ambient temperature and humidity conditions***	15 °C ≤ T° ≤ 35 °C 25 % ≤ HR ≤ 75 %	20 °C 39 %HR
Température de l'eau ***Water temperature***	-	20,2 °C
Résistivité de l'eau ***Water resistivity***	≤ 200 Ωm	39,9 Ωm
Temps d'immersion ***Immersion time***	≥ 30 min	31 min
Vitesse de montée en tension ***Voltage increase rate***	≈ 1 kV/s	≈ 1 kV/s

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

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3.2 Configuration des échantillons / *Samples configuration*

Echantillon n° *Sample n.*	Section / *Cross section* (mm²)	
	Câble principal *Main cable*	Câble dérivé *Tap cable*
1	70	50
2		
3		
4		

4 Résultats / *Results*

4.1 Tenue diélectrique

Echantillon n° *Sample n.*	4 kV pendant 1 minute dans les billes métalliques *4 kV for 1 minute in metallic balls*	
	Résultats / *Results*	Exigences *Requirements*
1	Pas de claquage / *No breakdown*	Pas de claquage *No breakdown*
2	Pas de claquage / *No breakdown*	
3	Pas de claquage / *No breakdown*	
4	Pas de claquage / *No breakdown*	

Echantillon n° *Sample n.*	1 kV pendant 1 minute dans l'eau *1 kV for 1 minute in water*	
	Résultats / *Results*	Exigences *Requirements*
1	Pas de claquage / *No breakdown*	Pas de claquage *No breakdown*
2	Pas de claquage / *No breakdown*	
3	Pas de claquage / *No breakdown*	
4	Pas de claquage / *No breakdown*	

4.2 Essais mécaniques

Echantillon n° *Sample n.*	Vitesse de montée programmée *Planned increase rate* (N/min)	Exigences *Requirements* (N/min)
1	3000	1000 ≤...≤ 5000
2	3000	
3	3000	
4	.3000	

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

Echantillon n° *Sample n.*	Effort pendant 1 minute *Strength during 1 min* (N)	Exigences *Requirements* (N)
1	2248	20 % CRM *MBL*
2	2248	
3	2248	
4	2248	

Echantillon n° *Sample n.*	Effort pendant 1 minute *Strength during 1 min* (N)	Exigences *Requirements* (N)
1	9555	85 % CRM *MBL*
2	9555	
3	9555	
4	9555	

5 Conclusion / *Conclusion*

Aucun claquage ou contournement ne s'est produit (déclenchement du générateur de tension).
No breakdown or flashover occurred (tripping of voltage generator).

Aucun glissement ou rupture ne s'est produit.
No slippage or breakage occurred.

FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЈРТ 70-50

1. **№ на тест: 9212340** – Механичен тест;
2. **№ на тест: 1209302** - Тест за издръжливост върху фазовия проводник.

На основание чл. 2 от ЗЗЛД

Съставил:

"ВАК - 02" ООД
САМОКОВ

SICAME

Laboratoire d'essais
LABEP

Rapport d'essai : **Essai d'endurance sur conducteur de phase**
Test report : ***Endurance test on phase conductor***

Rapport d'essai n°	: 12 09 307	*Test report n.*	*: 12 09 307*
Constructeur	: SICAME	*Product manufacturer*	*: SICAME*
Référence produit	: MJPT95-70	*Product reference*	*: MJPT95-70*
Demandeur de l'essai	: SICAME S.A.	*Test applied by*	*: SICAME S.A.*
Date d'essai	: du 10 octobre au 13 novembre 2012	*Date of the test*	*: 10 October to 13 November 2012*
Date d'émission du rapport	: 15 novembre 2012	*Report issue date*	*: 15 November 2012*

Essais réalisés suivant : NF EN 50483-4 (07/2009), § 8.2.7
Tests carried out in accordance with

Ce rapport comprend : 9 pages
This report contains

Conclusion : Les manchons de jonction préisolés SICAME de type MJPT95-70 soumis à essai satisfont aux exigences du § 8.2.7 de la norme NF EN 50483-4 (07/2009).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion *: The tested SICAME insulated splicing sleeves MJPT95-70 comply with the requirements of clause 8.2.7 of NF EN 50483-4 (July 2009) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
от ЗЗЛД

B.P. N° 1 - 19231 POMPADOUR - CEDEX - FRANCE - Tél (33) 05 55 73 89 00 - Fax (33) 05 55 73 63 12 - Email : info@sicame.fr

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

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1 Echantillons soumis à essai / *Samples under test*

Type : Manchon de jonction préisolé
Insulated splicing sleeve

Désignation / *Designation* : MJPT95-70

Fabricant / *Manufacturer* : SICAME

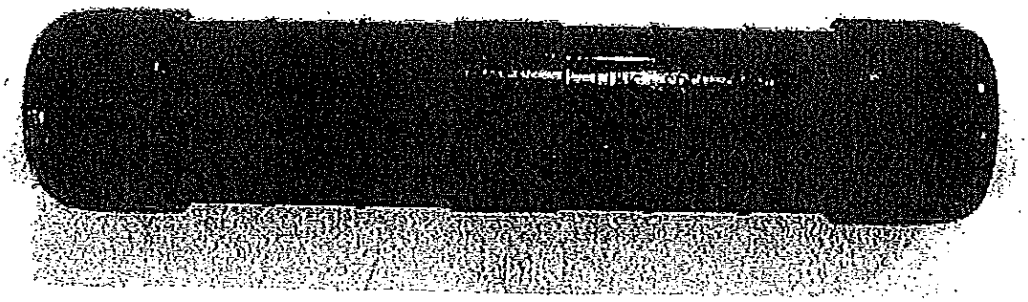
Numéro de lot / *Batch number* : Tête de série / *Head of series*
Echantillons suivant le plan E0700640
Samples in accordance with drawing n. E0700640

Classes du produit selon NF EN 50483-1 (§ 9.3) *Classes of product in accordance with NF EN 50483-1 (§ 9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐	Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 4

Repérage / *Identification* : 1, 2, 3, 4

Date de réception au laboratoire : 25 septembre 2012
Reception date at the laboratory : *25 September 2012*



ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

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2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir *Compression tool*	5 tonnes *5 tons*
/	Matrices *Dies*	E173 largeur 9 mm *E173 width 9 mm*
99 01 48	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
10 03 21	Chambre froide *Low temperature chamber*	Précision 1°C *Accuracy 1°C*
99 00 41	Conductimètre *Conductimeter*	Précision 30 µS/cm *Accuracy 30µS/cm*
04 00 30	Thermomètre étanche *Watertight thermometer*	Précision 1°C *Accuracy 1°C*
03 02 56	Chronomètre *Stop watch*	Précision 1 s *Accuracy 1s*
94 03 09	Banc de traction 3 tonnes *Tensile test machine 3 tons*	Classe 1 *Class 1*
91 02 69	Diélectrimètre BOUCHET (10 kV) *Dielectrimeter BOUCHET (10 kV)*	Précision 0,5mA et 200V *Accuracy 0,5mA and 200V*

2.2 Câbles / *Cables*

N° Lot / *Identification*	07021					
Norme / *Standard*	NF C 33-209					
Provenance / *From*	France / *France*					
Section / *Cross section*	95 mm²					
Matériau de l'âme / *Conductor material*	☐ Cuivre *Copper*	☑ Aluminium		☐ Alliage d'aluminium *Aluminium alloy*		
Type d'âme / *Conductor type*	☐ Massive *Solid*	☑ Câblée *Stranded*				
	☐ Rétreinte *Compacted*	☑ Non rétreinte *Non compacted*		☐ Souple *Flexible*		
Forme d'âme / *Conductor shape*	☑ Ronde *Circular*	☐ Sectorale *Sector-shaped*				
Nombre de brins / *Number of wires*	7					
Ø sur âme / *Ø on conductor*	13,1 mm					
Matériau de l'isolant / *Insulation material*	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / *Ø on insulation*	16,1 mm					
Conditionnement / *Conditioned on*	1h00 à 120°C *1h00 at 120°C*					
Référence du câble HD626 / *HD626 conductor reference*	4 E-1					
Charge de rupture minimale / *Minimum breaking load*	3 000 N					

Visa du responsable de l'essai

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

2.2 Câbles / *Cables*

N° Lot / *Identification*	11029					
Norme / *Standard*	WT-92/K-396					
Provenance / *From*	Pologne / *Poland*					
Section / *Cross section*	70 mm²					
Matériau de l'âme *Conductor material*	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme *Conductor type*	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☑	Rétreinte *Compacted*	☐	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme *Conductor shape*	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins *Number of wires*	19					
Ø sur âme *Ø on conductor*	10,0 mm					
Matériau de l'isolant *Insulation material*	Polyéthylène réticulé *Cross-linked polyethylene*					
Ø sur isolant *Ø on insulation*	13,1 mm					
Conditionnement *Conditioned on*	1h00 à 110°C *1h00 at 110°C*					
Référence du câble HD626 *HD626 conductor reference*	/					
Charge de rupture minimale (CRM) / *Minimum Breaking Load (MBL)*	11242 N					

3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 8.2.7 de la norme NF EN 50483-4 (07/2009).

L'essai est effectué sur quatre manchons pour chaque section.

La charge, pour le type de système approprié, doit être appliquée aux extrémités du conducteur et ajustée comme demandé durant l'essai.

Des cycles thermiques, d'une durée de 90 min, doivent être appliqués au montage d'essai.

500 cycles doivent être réalisés.

Pendant les 45 premières minutes de chaque cycle, le courant traversant l'ensemble doit créer l'élévation de température.

La température de référence du conducteur doit être maintenue à la température normale de service dans un intervalle de ± 3 K comme indiqué dans l'Annexe C de la EN 50483-1. Cette température est atteinte dans un temps de 5 min à 15 min en début de cycle.

Pendant les 45 dernières minutes, de chaque cycle, le montage en essai doit être refroidi à (25 ± 3) °C. La température doit ensuite être maintenue à cette valeur, jusqu'à la fin du cycle.

A intervalle de 24h, à la fin de la période de chauffage à la température normale de service, les températures atteintes par les deux manchons doivent être enregistrées.

На основание чл. 2
от ЗЗЛД

Insulated splicing sleeves are tested in accordance with NF EN 50483-4 (07/2009) §8.2.7 standard.

The test is carried out on 4 Insulated splicing sleeves for each cross-section.

The load, for the appropriate type of system, shall be applied to the extremities of the core and varied as required throughout the test.

Thermal cycles, with duration of 90 min, shall be applied to the test assembly.

There shall be 500 cycles.

For the first 45 minutes of every cycle, current flowing through the assembly shall create the temperature rise.

The reference temperature of the conductor shall be maintained at the normal operating temperature within an interval of ± 3 °C a shown in Table B.1 of Annexe B. this temperature shall be reached within 5 min to 15 min at the beginning of the cycle.

For the last 45 min, of each cycle, the test assembly shall be cooled to (25 ± 3) °C. The temperature shall then be maintained, at this value, until the end of the cycle.

At 24 h intervals, at the end of the normal operating temperature heating period, the temperatures reached by the two sleeves shall be recorded.

La figure 1 décrit un exemple typique de dispositif d'essai. La configuration peut différer de ce montage du moment qu'elle respecte les longueurs du conducteur de phase

Figure 1 shows a typical test arrangement. The test configuration can differ from this arrangement as long as it complies with the phase conductor.

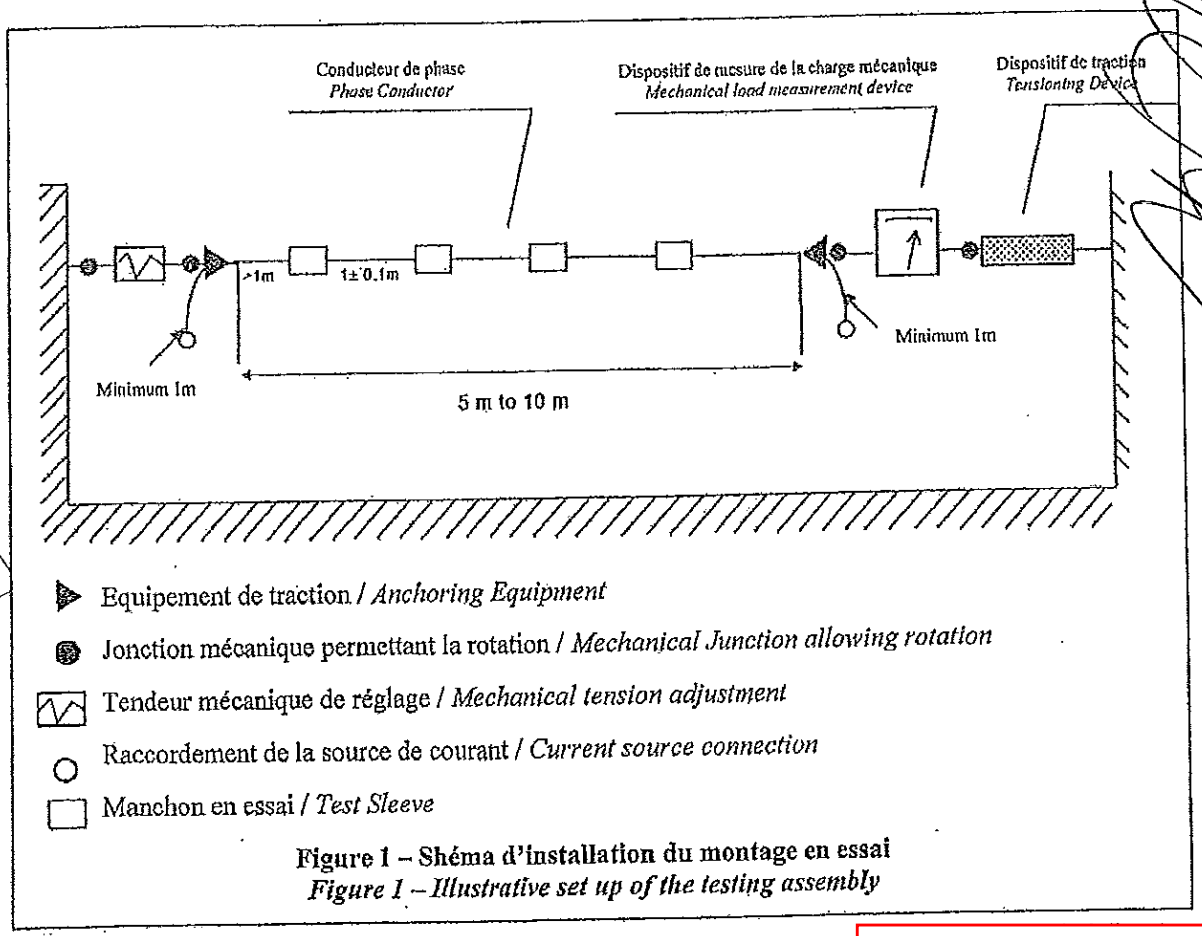

Figure 1 – Shéma d'installation du montage en essai
Figure 1 – Illustrative set up of the testing assembly

На основание чл. 2
от ЗЗЛД

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La variation de la charge mécanique et de la température est décrite sur le diagramme de la Figure 2.

Un effort de traction doit être appliqué jusqu'à une valeur égale à 35 % de la CRM du câble. Cette valeur doit être atteinte approximativement en 1 min.

La charge doit ensuite être maintenue pendant 10 min par un réglage permanent manuel ou automatique. On doit laisser l'ensemble se stabiliser mécaniquement pendant 24 h sans aucun réglage.

Une fois l'ensemble stabilisé les cycles thermiques doivent commencer. A la fin du premier cycle, l'effort de traction doit être réglé à 20 % de la CRM du câble.

Au moins une fois par 24 h, l'effort de traction doit être ajusté à 20 % de la CRM du câble.

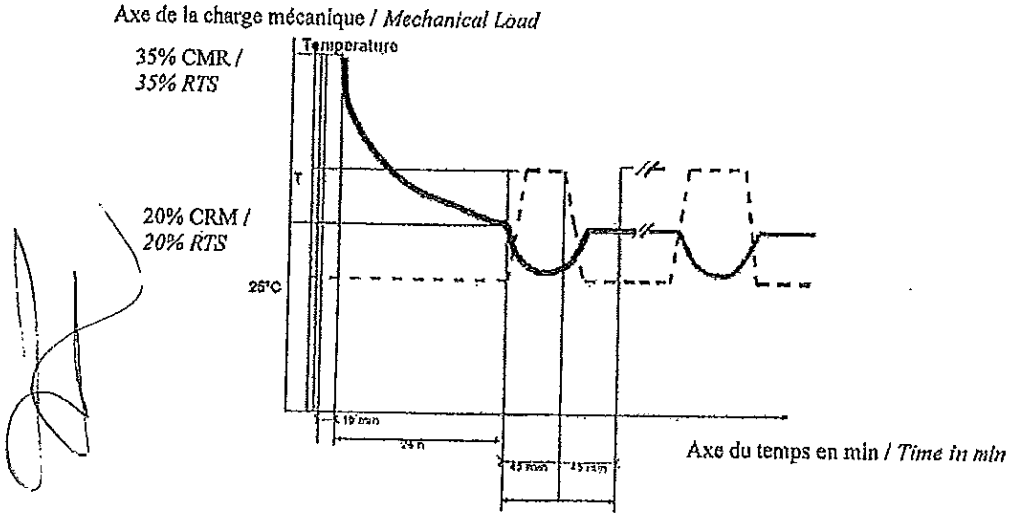
The variation in mechanical load and temperature is shown, diagrammatically, in Figure 2.

A tensile load shall be applied until a value equal to 35 % of the MBL is reached. This value shall be achieved in approximately 1 minute.

The load shall then be maintained for 10 min using a manual or automatic continuous adjustment. The assembly shall be left to self stabilize mechanically for 24 h without any adjustment.

Once the assembly has stabilized the thermal cycles shall be started. At the end of the first cycle, the tensile load shall be set at 20 % of MBL.

At least once every 24 h, the tensile load shall be adjusted to 20 % of the MBL.



Cycle de base/ *Basic cycle*
90 min

Variation de la charge mécanique / *Mechanical Load Variation*
Température du conducteur / *Conductor temperature*
T Température normale de service / *Normal Operating Temperature*

Figure 2 – Diagramme des cycles thermiques et des contraintes mécaniques appliqués sur le conducteur de phase

Figure 2 – Diagram of thermal cycles and mechanical stresses applied on phase conductor

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Tableau 1 – Effort de traction appliqué
Table 1 – Applied tensile load

20 % de la CRM du câble *20 % of MBL* 2248 N	35% de la CRM du câble *35 % of MBL* 3934 N

La température normale de service du câble est de 80° C.
The rated operating temperature of the cable is 80° C.

A la fin de la période de chauffage, la température des manchons doit être inférieure à la température du conducteur de référence.

Les manchons de Classe 1 et de Classe 2 doivent satisfaire aux exigences de l'essai de tenue diélectrique dans l'air, 8.2.3.1.3.2.

Pour les manchons de Classe 1, l'ensemble formé par le raccord et les conducteurs doit être ensuite retiré des billes métalliques, sans contrainte mécanique, et doit satisfaire aux exigences de l'essai de tenue diélectrique dans l'eau, comme indiqué au 8.2.3.1.3.1, mais avec une tension de 1 kV.

Les quatre manchons doivent satisfaire aux exigences de l'essai mécanique du § 8.2.2.

At the end of the heating period, the sleeves' temperatures shall be lower than the temperature of the reference core.

The Class 1 and the Class 2 sleeves shall meet the requirements of the Dielectrical Voltage Test in Air, Clause 8.2.3.1.3.2.

For Class 1 sleeves the assembly formed by the connector and the cores shall then taken out of the metallic balls, without any mechanical stress, and shall meet the requirements of the dielectrical voltage test in water, Clause 8.2.3.1.3.1 but with a voltage of 1 kV.

The four sleeves shall meet the requirements of the mechanical test Clause 8.2.2.

3.1 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences *Requirements*	Relevés *Results*
Température ambiante et humidité *Ambient temperature and humidity conditions*	15 °C ≤ T° ≤ 35 °C 25 % ≤ HR ≤ 75 %	20 °C 39 %HR
Température de l'eau *Water temperature*	-	20,2 °C
Résistivité de l'eau *Water resistivity*	≤ 200 Ωm	39,9 Ωm
Temps d'immersion *Immersion time*	≥ 30 min	31 min
Vitesse de montée en tension *Voltage increase rate*	≈ 1 kV/s	≈ 1 kV/s

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3.2 Configuration des échantillons / *Samples configuration*

Echantillon n° *Sample n.*	Section / *Cross section* (mm²)	
	Câble principal *Main cable*	Câble dérivé *Tap cable*
1	95	70
2		
3		
4		

4 Résultats / *Results*

4.1 Tenue diélectrique

Echantillon n° *Sample n.*	4 kV pendant 1 minute dans les billes métalliques *4 kV for 1 minute in metallic balls*	
	Résultats / *Results*	Exigences *Requirements*
1	Pas de claquage / *No breakdown*	Pas de claquage *No breakdown*
2	Pas de claquage / *No breakdown*	
3	Pas de claquage / *No breakdown*	
4	Pas de claquage / *No breakdown*	

Echantillon n° *Sample n.*	1 kV pendant 1 minute dans l'eau *1 kV for 1 minute in water*	
	Résultats / *Results*	Exigences *Requirements*
1	Pas de claquage / *No breakdown*	Pas de claquage *No breakdown*
2	Pas de claquage / *No breakdown*	
3	Pas de claquage / *No breakdown*	
4	Pas de claquage / *No breakdown*	

4.2 Essais mécaniques

Echantillon n° *Sample n.*	Vitesse de montée programmée *Planned increase rate* (N/min)	Exigences *Requirements* (N/min)
1	3000	1000 ≤...≤ 5000
2	3000	
3	3000	
4	3000	

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Echantillon n° *Sample n.*	Effort pendant 1 minute *Strength during 1 min* (N)	Exigences *Requirements* (N)
1	2248	20 % CRM *MBL*
2	2248	
3	2248	
4	2248	

Echantillon n° *Sample n.*	Effort pendant 1 minute *Strength during 1 min* (N)	Exigences *Requirements* (N)
1	9555	85 % CRM *MBL*
2	9555	
3	9555	
4	9555	

5 Conclusion / *Conclusion*

Aucun claquage ou contournement ne s'est produit (déclenchement du générateur de tension).
No breakdown or flashover occurred (tripping of voltage generator).

Aucun glissement ou rupture ne s'est produit.
No slippage or breakage occurred.

FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
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СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП МЈРТ 95-70

1. **№ на тест: 1209307** - Тест за издръжливост върху фазовия проводник.

На основание чл. 2 от ЗЗЛД

Съставил:

"ВАК - 02" ООД САМОКОВ

SICAME

Laboratoire d'essais
de la Direction Etudes et Recherches

Rapport d'essai : **Essai de vieillissement climatique**
Test report : ***Climatic ageing test***

Rapport d'essai n°	: 11 10 440	***Test report n.***	*: 11 10 440*
Constructeur	: SICAME	***Product brand***	*: SICAME*
Référence produit	: MJPT 150-70	***Product type***	*: MJPT 150-70*
Demandeur de l'essai	: SICAME S.A.	***Test applied by***	*: SICAME S.A.*
Date d'essai	: 08 juin au 02 aout 2012	***Date of the test***	*: 8 June to 2 August 2012*
Date d'émission du rapport	: 03 aout 2012	***Report emission date***	*: 3 August 2012*

Essais réalisés suivant : NF EN 50483-4 (07/2009), § 8.2.5.2
Tests carried out in accordance with

Ce rapport comprend : **7 pages**
This report contains

Conclusion : Les manchons de jonction SICAME de type MJPT 150-70 soumis à essai satisfont aux exigences du § 8.2.5.2 de la norme NF EN 50483-4 (07/2009).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion *: The tested SICAME insulated splicing sleeves MJPT 150-70 comply with the requirements of clause 8.2.5.2 of NF EN 50483-4 (July 2009) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
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ВЯРНО С ОРИГИНАЛА

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1 Echantillons soumis à essai / *Samples under test*

Type : Manchon de jonction
Insulation piercing connector

Désignation / *Designation* : MJPT 150-70

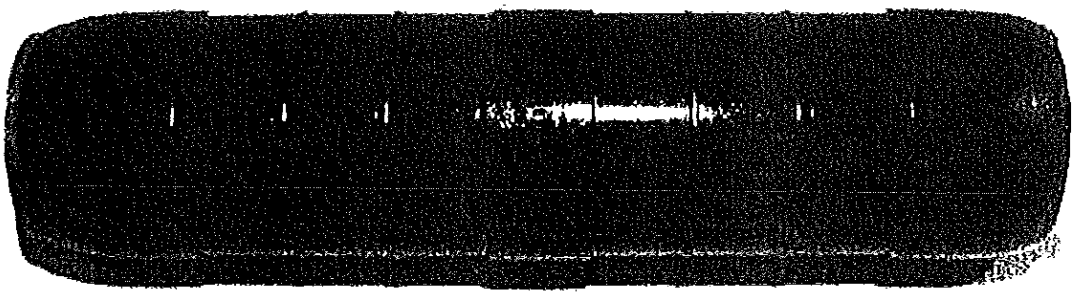
Fabricant / *Manufacturer* : SICAME

Numéro de lot / *Batch number* : Tête de série / *Head of series*
Echantillons suivant le plan E0700650
Samples in accordance with drawing n. E0700650

Classes du produit selon NF EN 50483-1 (§ 9.3) *Classes of product in accordance with NF EN 50483-1 (§ 9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to electrical ageing cycles and short-circuits*
☐	Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected only to electrical ageing cycles*
☑	Classe 1 *Class 1*	; raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 2
Repérage / *Identification* : 1, 2

Date de réception au laboratoire : 04 mai 2012
Reception date at the laboratory : *May, 4th 2012*



ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir avec matrices E215 *Compression tool with dies E215*	5 tonnes *5 tons*
99 01 48	Thermomètre indicateur *Indicated thermometer*	Précision 2°C *Accuracy 2°C*
91 02 69	Diélectrimètre BOUCHET (10 kV) *Dielectrimeter BOUCHET (10 kV)*	Précision 0,5mA et 200V *Accuracy 0,5mA and 200V*
03 02 56	Chronomètre *Stop watch*	Précision 1 s *Accuracy 1s*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
04 00 30	Thermomètre étanche *Watertight thermometer*	Précision 1°C *Accuracy 1°C*
99 00 41	Conductimètre *Conductimeter*	Précision 30 µS/cm *Accuracy 30µS/cm*
12 03 03	Conductimètre *Conductimeter*	Précision 30 µS/cm *Accuracy 30µS/cm*
09 04 54	Wheather-ometer (ATLAS 2)	Conforme à la norme XP C 20-540 *Compliant with XP C 20-540 standard*

2.2 Câbles / *Cables*

N° Lot / *Identification*	9955					
Norme / *Standard*	NF C 33-209					
Provenance / *From*	France / *France*					
Section / *Cross section*	70 mm²					
Matériau de l'âme / *Conductor material*	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme / *Conductor type*	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☑	Rétreinte *Compacted*	☐	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme / *Conductor shape*	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins / *Number of wires*	12					
Ø sur âme / *Ø on conductor*	9,95 mm					
Matériau de l'isolant *Insulation material*	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / *Ø on insulation*	13,75 mm					
Conditionnement *Conditioned on*	1h00 à 120°C *1h00 at 120°C*					
Référence du câble HD626 *HD626 conductor reference*	6 E-1					

N° Lot / *Identification*	09003					
Norme / *Standard*	NF C 33-209					
Provenance / *From*	France / *France*					
Section / *Cross section*	150 mm²					
Matériau de l'âme / *Conductor material*	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme / *Conductor type*	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☑	Rétreinte *Compacted*	☐	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme / *Conductor shape*	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins / *Number of wires*	19					
Ø sur âme / *Ø on conductor*	14,45 mm					
Matériau de l'isolant *Insulation material*	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / *Ø on insulation*	17,95 mm					
Conditionnement *Conditioned on*	1h00 à 120°C *1h00 at 120°C*					
Référence du câble HD626 *HD626 conductor reference*	6 E-1					

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3 Méthode / *Method*

Les essais sur les raccords sont effectués selon les prescriptions du paragraphe 8.2.5.2 de la norme NF EN 50483-4 (07/2009). Les raccords de classe 1 sont testés dans l'eau.
Les connecteurs sont montés sur des conducteurs principaux des sections minimale et maximale et sur des conducteurs dérivés de la section minimale.

Les manchons de jonctions sont montés conformément aux instructions du constructeur.

L'ensemble formé par le manchon de jonction, maintenu d'une façon rigide et appropriée, est placé au fond d'un bac rempli d'eau sur 30 cm de hauteur mesurée au niveau de la partie supérieure du manchon de jonction, les extrémités des conducteurs émergeant suffisamment du bain pour éviter un contournement extérieur. La résistivité de l'eau ne dépasse pas 200 Ωm (NF EN 50483-1 de 07/2009, § 9.1.6) l'eau est à température ambiante.
Le générateur de tension utilisé est réglé pour déclencher sous un courant de fuite de (10,0 ± 0,5) mA (NF EN 50483-1 de 07/2009, § 9.1.5).

Après une durée d'immersion de 30 min, l'ensemble est soumis à un essai diélectrique sous une tension de 6 kV à fréquence industrielle (fréquence : 50 Hz) pendant 1 min. On effectue la montée progressive en tension à une vitesse d'environ 1 kV/s (NF EN 50483-1 § 9.1.7 de 07/2009).

Connectors are tested in accordance with NF EN 50483-4 § 8.2.5.2 (07/2009) standard. Class 1 connectors are tested in water.

They are mounted on the smallest and largest cross-sections on the main core and to the smallest cross-section on the tap core.

They are installed in accordance with the manufacturer's instructions.

The assembly of connector and cores, maintained in a rigid and appropriate way, is placed at the bottom of a water tank. The water height is 30 cm measured from the upper part of the connector, and the cores are long enough out of the water to prevent flashover. The resistivity of the water is less than 200 Ωm (NF EN 50483-1 07/2009, § 9.1.6) and the water is at ambient temperature.

The voltage generator is tripping for a leakage current of (10.0 ± 0.5) mA (NF EN 50483-1 07/2009, § 9.1.5).

After 30 min under water, the voltage test is applied to the sample with a 6 kV a.c. voltage (frequency: 50 Hz) for 1 minute. The a.c. voltage is applied to a rate of approximately 1 kV/s (NF EN 50483-1 07/2009, § 9.1.7).

Les échantillons sont ensuite soumis à l'essai climatique suivant :
The samples are then submitted to the climatic ageing test following:

Méthodes d'essai selon NF EN 50483-6 (§ 8.5) *Test methods in accordance with NF EN 50483-6 (§ 8.5)*		
☑	Méthode 1 *Method 1*	§ 8.5.1
☐	Méthode 2 *Method 2*	§ 8.5.2

Les échantillons sont installés de façon telle que l'axe du conducteur principal soit dans un plan horizontal et la lampe dans un plan vertical. Ces deux plans se coupent au milieu de la lampe et au milieu des échantillons. Le conducteur principal est orthogonal au plan ainsi défini.

The samples are installed so that the axis of the main core is in a horizontal plane and the lamp in a vertical plane. These two planes are intersect in the middle of the lamp and in the middle of the samples. The main core is orthogonal in the described vertical plane.

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"БАК - 02" ООД
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На основание чл. 2
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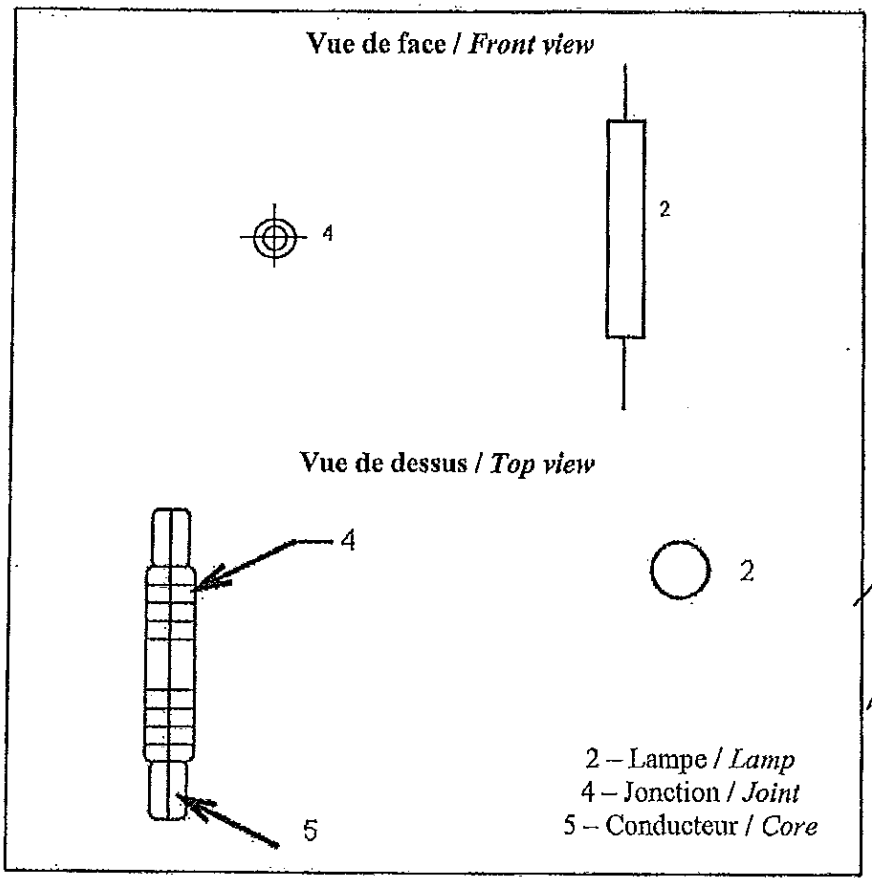

Après les cycles de vieillissement climatique et après une période d'au moins 24h sans dépasser 72 h à l'atmosphère du laboratoire, les échantillons doivent satisfaire aux exigences des essais suivants.

- Les manchons de jonction Classe 1 et Classe 2 doivent satisfaire aux exigences de l'essai de tenue diélectrique dans l'air, comme indiqué au 8.2.3.1.3.2.
- Pour les manchons de classe 1, l'ensemble formé par le raccord et les conducteurs est ensuite retiré des billes métalliques, sans contrainte mécanique, et doit satisfaire aux exigences de l'essai de tenue diélectrique dans l'eau, comme indiqué au 8.2.3.1.3.1, mais avec une tension de 1 kV.
- Une inspection visuelle est réalisée afin de déterminer qu'il n'y a pas eu de dégradation des parties organiques pouvant nuire au bon fonctionnement de l'échantillon.

Le marquage permettant l'identification des échantillons doit être lisible quand il est examiné avec une vue normale ou corrigée, sans grossissement.

After the climatic ageing cycles and after a period of at least 24 h but not exceeding 72 h at the laboratory atmosphere, the samples shall meet the requirements of the following tests.

- The piercing connector Class 1 and Class 2 shall meet the requirements of the dielectrical voltage test in air, as given in 8.2.3.1.3.2.

- For piercing connector Class 1 the assembly formed by the connector and the cores shall be then taken out of the metallic balls, without any mechanical stress, and shall meet the requirements of the dielectrical voltage test in water as given in 8.2.3.1.3.1, but with a voltage of 1 kV.

- Visual inspection shall be carried out to determine that there has been no degradation of the organic parts which could affect the normal function of the sample.

The sample's identification marking shall be legible when examined with normal or corrected vision, without magnification.

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4 Résultats / *Results*

4.1 Configuration des échantillons / *Samples configuration*

	Section/ *Cross section* (mm²)	
Connecteur n° *Connector n.*	Câble principal *Main cable*	Câble dérivé *Tap cable*
1	150	70
2		

4.2 Tenue diélectrique avant essai climatique / *Dielectrical test before climatic ageing test*

Les conditions ambiantes relevées lors du montage des manchons sont les suivantes :
Ambient conditions during the installation of the sleeves are as follows:

	Exigences *Requirements*	Relevés *Results*
Température ambiante et humidité *Ambient temperature and humidity conditions*	15 °C ≤ T° ≤ 30 °C 25 % ≤ HR ≤ 75 %	22 °C 41 %HR
Température de l'eau *Water temperature*	Température ambiante *Ambient temperature*	23,7 °C
Résistivité de l'eau *Water resistivity*	≤ 200 Ωm	34,8 Ωm
Temps d'immersion *Immersion time*	30 min	30 min
Vitesse de montée en tension *Voltage increase rate*	≈ 1 kV/s	≈ 1 kV/s

Echantillon n° *Sample n.*	Avant essai climatique / *Before climatic ageing test* : 6 kV pendant 1 min dans l'eau *6 kV for 1 min in water*	
	Exigences *Requirements*	Résultats *Results*
1	Pas de claquage *No breakdown*	Pas de claquage *No breakdown*
2		Pas de claquage *No breakdown*

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД САМОКОВ

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4.3 Tenue diélectrique après essai climatique / *Dielectrical test after climatic ageing test*

Les conditions ambiantes relevées sont les suivantes :
Ambient conditions are as follows:

	Exigences *Requirements*	Relevés *Results*
Température ambiante et humidité *Ambient temperature and humidity conditions*	15 °C ≤ T° ≤ 30 °C 25 % ≤ HR ≤ 75 %	22 °C 47 %HR
Température de l'eau *Water temperature*	Température ambiante *Ambient temperature*	21,2 °C
Résistivité de l'eau *Water resistivity*	≤ 200 Ωm	23,6 Ωm
Temps d'immersion *Immersion time*	30 min	30 min
Vitesse de montée en tension *Voltage increase rate*	≈ 1 kV/s	≈ 1 kV/s

Echantillon n° *Sample n.*	**Après essai climatique / *After climatic ageing test* :**			
	6 kV pendant 1 min dans les billes métalliques *6 kV for 1 min in metallic balls*		**1 kV pendant 1 min dans l'eau** *1 kV for 1 min in water*	
	Exigences *Requirements*	Résultats *Results*	Exigences *Requirements*	Résultats *Results*
1	Pas de claquage *No breakdown*	Pas de claquage *No breakdown*	Pas de claquage *No breakdown*	Pas de claquage *No breakdown*
2		Pas de claquage *No breakdown*		Pas de claquage *No breakdown*

5 Conclusion / *Conclusion*

Aucun claquage ou contournement ne s'est produit.
Le marquage permettant l'identification des échantillons est lisible quand il est examiné avec une vue normale ou corrigée, sans grossissement.

No breakdown or flashover occurred.
The marking allowing the samples identification is legible when examined with normal or corrected vision, without magnification.

FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
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На основание чл. 2
от ЗЗЛД

SICAME

Laboratoire d'essais
LABEP

Rapport d'essai : **Essai d'endurance sur conducteur de phase**
Test report : ***Endurance test on phase conductor***

Rapport d'essai n°	: 12 09 370	*Test report n.*	: 12 09 370
Constructeur	: SICAME	*Product manufacturer*	: SICAME
Référence produit	: MJPT150-70	*Product reference*	: MJPT150-70
Demandeur de l'essai	: SICAME S.A.	*Test applied by*	: SICAME S.A.
Date d'essai	: du 10 octobre au 13 novembre 2012	*Date of the test*	: 10 October to 13 November 2012
Date d'émission du rapport	: 15 novembre 2012	*Report issue date*	: 15 November 2012

Essais réalisés suivant : NF EN 50483-4 (07/2009), § 8.2.7
Tests carried out in accordance with

Ce rapport comprend : 9 pages
This report contains

Conclusion : Les manchons de jonction préisolés SICAME de type MJPT150-70 soumis à essai satisfont aux exigences du § 8.2.7 de la norme NF EN 50483-4 (07/2009).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion : *The tested SICAME insulated splicing sleeves MJPT150-70 comply with the requirements of clause 8.2.7 of NF EN 50483-4 (July 2009) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
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ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД САМОКОВ

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1 Echantillons soumis à essai / *Samples under test*

Type : Manchon de jonction préisolé
Insulated splicing sleeve

Désignation / *Designation* : MJPT150-70

Fabricant / *Manufacturer* ; SICAME

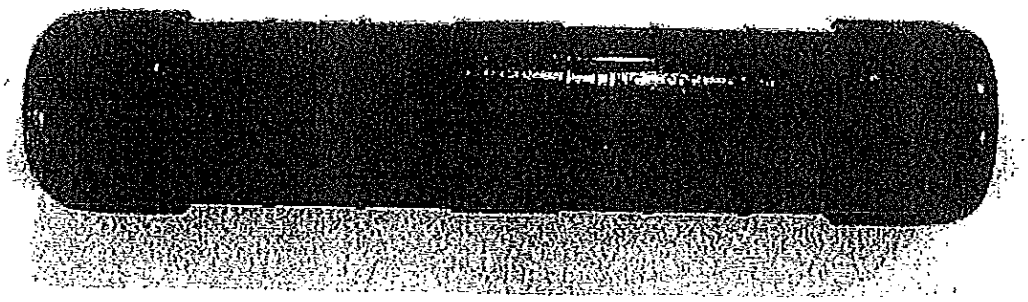
Numéro de lot / *Batch number* : Tête de série / *Head of series*
Echantillons suivant le plan E0700640
Samples in accordance with drawing n. E0700640

Classes du produit selon NF EN 50483-1 (§ 9.3) *Classes of product in accordance with NF EN 50483-1 (§ 9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐	Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 4

Repérage / *Identification* : 1, 2, 3, 4

Date de réception au laboratoire : 25 septembre 2012
Reception date at the laboratory : *25 September 2012*



ВЯРНО С ОРИГИНАЛА

На основание чл. 2
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2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir *Compression tool*	5 tonnes *5 tons*
/	Matrices *Dies*	E173 largeur 9 mm *E173 width 9 mm*
99 01 48	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
10 03 21	Chambre froide *Low temperature chamber*	Précision 1°C *Accuracy 1°C*
99 00 41	Conductimètre *Conductimeter*	Précision 30 µS/cm *Accuracy 30µS/cm*
04 00 30	Thermomètre étanche *Watertight thermometer*	Précision 1°C *Accuracy 1°C*
03 02 56	Chronomètre *Stop watch*	Précision 1 s *Accuracy 1s*
94 03 09	Banc de traction 3 tonnes *Tensile test machine 3 tons*	Classe 1 *Class 1*
91 02 69	Diélectrimètre BOUCHET (10 kV) *Dielectrimeter BOUCHET (10 kV)*	Précision 0,5mA et 200V *Accuracy 0,5mA and 200V*

2.2 Câbles / *Cables*

N° Lot / *Identification*	07021					
Norme / *Standard*	NF C 33-209					
Provenance / *From*	France / *France*					
Section / *Cross section*	70 mm²					
Matériau de l'âme / *Conductor material*	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme / *Conductor type*	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☐	Rétreinte *Compacted*	☑	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme / *Conductor shape*	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins / *Number of wires*	7					
Ø sur âme / *Ø on conductor*	13,1 mm					
Matériau de l'isolant / *Insulation material*	Polyéthylène réticulé type TIX-5 / *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / *Ø on insulation*	16,1 mm					
Conditionnement / *Conditioned on*	1h00 à 120°C / *1h00 at 120°C*					
Référence du câble HD626 / *HD626 conductor reference*	4 B-1					
Charge de rupture minimale / *Minimum breaking load*	3 000 N					

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2.2 Câbles / *Cables*

N° Lot / *Identification*	11029					
Norme / *Standard*	WT-92/K-396					
Provenance / *From*	Pologne / *Poland*					
Section / *Cross section*	150 mm²					
Matériau de l'âme *Conductor material*	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme *Conductor type*	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☑	Rétreinte *Compacted*	☐	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme *Conductor shape*	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins *Number of wires*	19					
Ø sur âme *Ø on conductor*	16,1 mm					
Matériau de l'isolant *Insulation material*	Polyéthylène réticulé *Cross-linked polyethylene*					
Ø sur isolant *Ø on insulation*	19,1 mm					
Conditionnement *Conditioned on*	1h00 à 110°C *1h00 at 110°C*					
Référence du câble HD626 *HD626 conductor reference*	/					
Charge de rupture minimale (CRM) / *Minimum Breaking Load (MBL)*	11242 N					

3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 8.2.7 de la norme NF EN 50483-4 (07/2009).

L'essai est effectué sur quatre manchons pour chaque section.

La charge, pour le type de système approprié, doit être appliquée aux extrémités du conducteur et ajustée comme demandé durant l'essai.

Des cycles thermiques, d'une durée de 90 min, doivent être appliqués au montage d'essai.

500 cycles doivent être réalisés.

Pendant les 45 premières minutes de chaque cycle, le courant traversant l'ensemble doit créer l'élévation de température.

La température de référence du conducteur doit être maintenue à la température normale de service dans un intervalle de ± 3 K comme indiqué dans l'Annexe C de la EN 50483-1. Cette température est atteinte dans un temps de 5 min à 15 min en début de cycle.

Pendant les 45 dernières minutes, de chaque cycle, le montage en essai doit être refroidi à (25 ± 3) °C. La température doit ensuite être maintenue à cette valeur, jusqu'à la fin du cycle.

A intervalle de 24h, à la fin de la période de chauffage à la température normale de service, les températures atteintes par les deux manchons doivent être enregistrées.

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Insulated splicing sleeves are tested in accordance with NF EN 50483-4 (07/2009) §8.2.7 standard.

The test is carried out on 4 Insulated splicing sleeves for each cross-section.

The load, for the appropriate type of system, shall be applied to the extremities of the core and varied as required throughout the test.

Thermal cycles, with duration of 90 min, shall be applied to the test assembly.

There shall be 500 cycles.

For the first 45 minutes of every cycle, current flowing through the assembly shall create the temperature rise.

The reference temperature of the conductor shall be maintained at the normal operating temperature within an interval of ± 3 °C a shown in Table B.1 of Annexe B. this temperature shall be reached within 5 min to 15 min at the beginning of the cycle.

For the last 45 min, of each cycle, the test assembly shall be cooled to (25 ± 3) °C. The temperature shall then be maintained, at this value, until the end of the cycle.

At 24 h intervals, at the end of the normal operating temperature heating period, the temperatures reached by the two sleeves shall be recorded.

La figure 1 décrit un exemple typique de dispositif d'essai. La configuration peut différer de ce montage du moment qu'elle respecte les longueurs du conducteur de phase

Figure 1 shows a typical test arrangement. The test configuration can differ from this arrangement as long as it complies with the phase conductor.

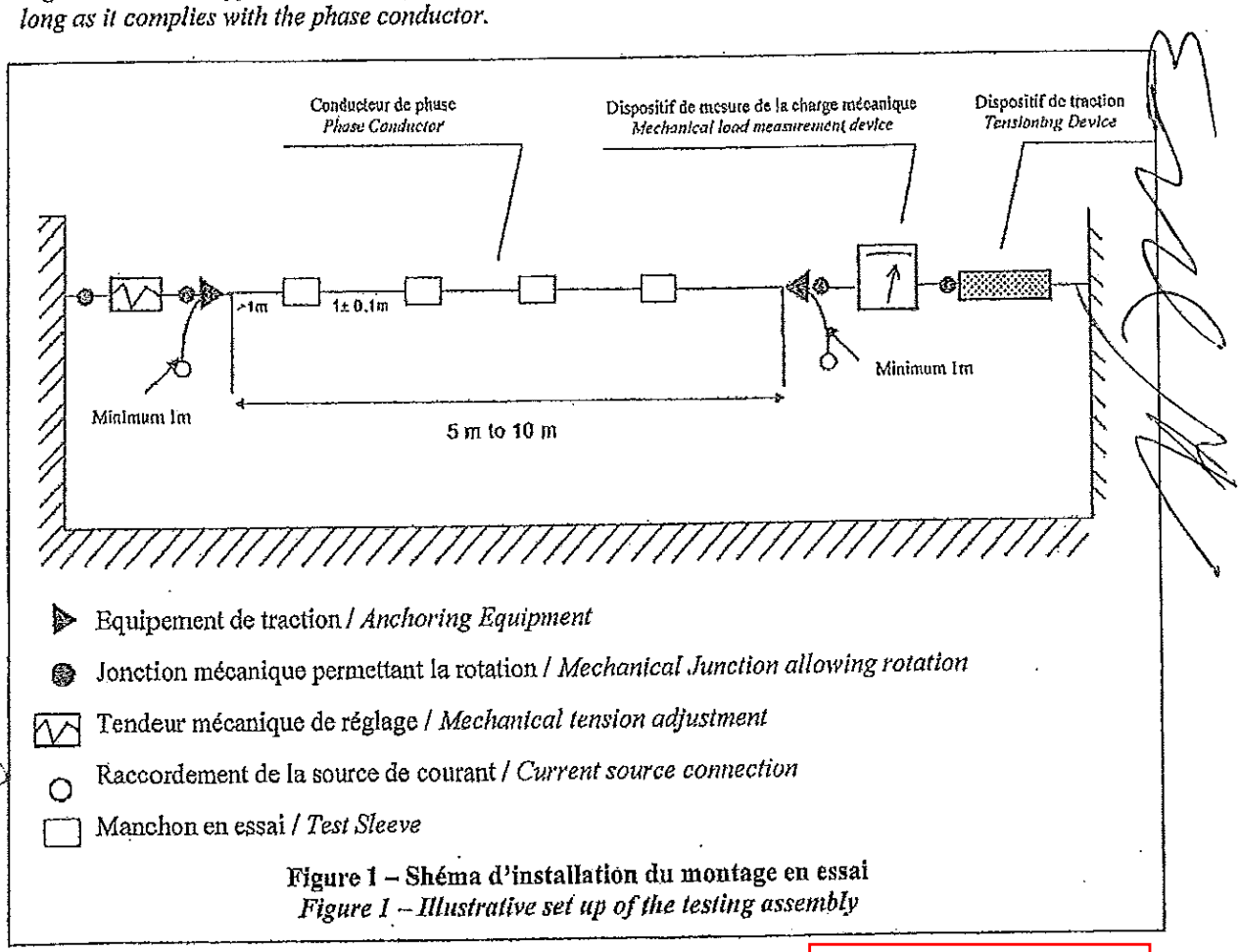

Figure 1 – Shéma d'installation du montage en essai
Figure 1 – Illustrative set up of the testing assembly

ВЯРНО С ОРИГИНАЛА

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La variation de la charge mécanique et de la température est décrite sur le diagramme de la Figure 2.

Un effort de traction doit être appliqué jusqu'à une valeur égale à 35 % de la CRM du câble. Cette valeur doit être atteinte approximativement en 1 min.

La charge doit ensuite être maintenue pendant 10 min par un réglage permanent manuel ou automatique. On doit laisser l'ensemble se stabiliser mécaniquement pendant 24 h sans aucun réglage.

Une fois l'ensemble stabilisé les cycles thermiques doivent commencer. A la fin du premier cycle, l'effort de traction doit être réglé à 20 % de la CRM du câble.

Au moins une fois par 24 h, l'effort de traction doit être ajusté à 20 % de la CRM du câble.

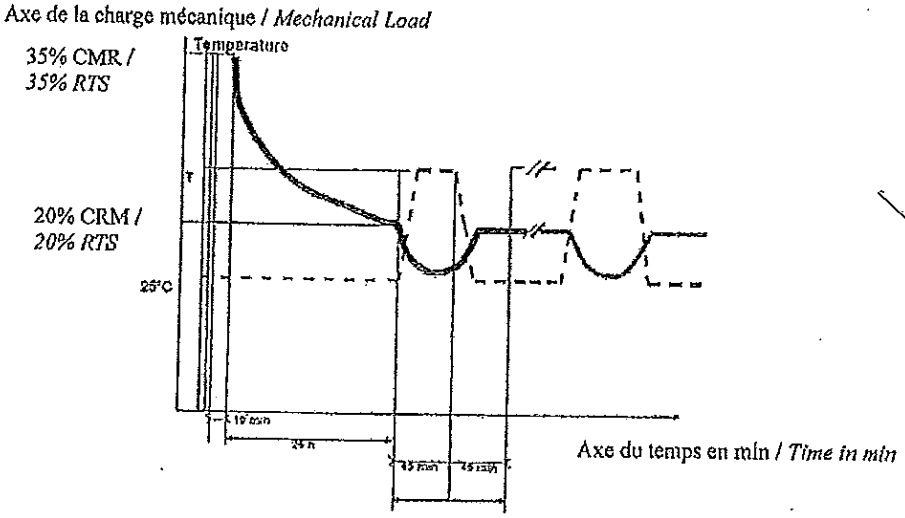
The variation in mechanical load and temperature is shown, diagrammatically, in Figure 2.

A tensile load shall be applied until a value equal to 35 % of the MBL is reached. This value shall be achieved in approximately 1 minute.

The load shall then be maintained for 10 min using a manual or automatic continuous adjustment. The assembly shall be left to self stabilize mechanically for 24 h without any adjustment.

Once the assembly has stabilized the thermal cycles shall be started. At the end of the first cycle, the tensile load shall be set at 20 % of MBL.

At least once every 24 h, the tensile load shall be adjusted to 20 % of the MBL.



Variation de la charge mécanique / *Mechanical Load Variation*
Température du conducteur / *Conductor temperature*
T Température normale de service / *Normal Operating Temperature*

Figure 2 – Diagramme des cycles thermiques et des contraintes mécaniques appliqués sur le conducteur de phase

Figure 2 – Diagram of thermal cycles and mechanical stresses applied on phase conductor

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Tableau 1 – Effort de traction appliqué
Table 1 – Applied tensile load

20 % de la CRM du câble *20 % of MBL* 2248 N	35% de la CRM du câble *35 % of MBL* 3934 N

La température normale de service du câble est de 80° C.
The rated operating temperature of the cable is 80° C.

A la fin de la période de chauffage, la température des manchons doit être inférieure à la température du conducteur de référence.

Les manchons de Classe 1 et de Classe 2 doivent satisfaire aux exigences de l'essai de tenue diélectrique dans l'air, 8.2.3.1.3.2.

Pour les manchons de Classe 1, l'ensemble formé par le raccord et les conducteurs doit être ensuite retiré des billes métalliques, sans contrainte mécanique, et doit satisfaire aux exigences de l'essai de tenue diélectrique dans l'eau, comme indiqué au 8.2.3.1.3.1, mais avec une tension de 1 kV.

Les quatre manchons doivent satisfaire aux exigences de l'essai mécanique du § 8.2.2.

At the end of the heating period, the sleeves' temperatures shall be lower than the temperature of the reference core.

The Class 1 and the Class 2 sleeves shall meet the requirements of the Dielectrical Voltage Test in Air, Clause 8.2.3.1.3.2.

For Class 1 sleeves the assembly formed by the connector and the cores shall then taken out of the metallic balls, without any mechanical stress, and shall meet the requirements of the dielectrical voltage test in water, Clause 8.2.3.1.3.1 but with a voltage of 1 kV.

The four sleeves shall meet the requirements of the mechanical test Clause 8.2.2.

3.1 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences ***Requirements***	**Relevés** ***Results***
Température ambiante et humidité ***Ambient temperature and humidity conditions***	15 °C ≤ T° ≤ 35 °C 25 % ≤ HR ≤ 75 %	20 °C 39 %HR
Température de l'eau ***Water temperature***	-	20,2 °C
Résistivité de l'eau ***Water resistivity***	≤ 200 Ωm	39,9 Ωm
Temps d'immersion ***Immersion time***	≥ 30 min	31 min
Vitesse de montée en tension ***Voltage increase rate***	≈ 1 kV/s	≈ 1 kV/s

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3.2 Configuration des échantillons / *Samples configuration*

Echantillon n° *Sample n.*	Section / *Cross section* (mm²)	
	Câble principal *Main cable*	Câble dérivé *Tap cable*
1	150	70
2		
3		
4		

4 Résultats / *Results*

4.1 Tenue diélectrique

Echantillon n° *Sample n.*	4 kV pendant 1 minute dans les billes métalliques *4 kV for 1 minute in metallic balls*	
	Résultats / *Results*	Exigences *Requirements*
1	Pas de claquage / *No breakdown*	Pas de claquage *No breakdown*
2	Pas de claquage / *No breakdown*	
3	Pas de claquage / *No breakdown*	
4	Pas de claquage / *No breakdown*	

Echantillon n° *Sample n.*	1 kV pendant 1 minute dans l'eau *1 kV for 1 minute in water*	
	Résultats / *Results*	Exigences *Requirements*
1	Pas de claquage / *No breakdown*	Pas de claquage *No breakdown*
2	Pas de claquage / *No breakdown*	
3	Pas de claquage / *No breakdown*	
4	Pas de claquage / *No breakdown*	

4.2 Essais mécaniques

Echantillon n° *Sample n.*	Vitesse de montée programmée *Planned increase rate* (N/min)	Exigences *Requirements* (N/min)
1	3000	1000 ≤...≤ 5000
2	3000	
3	3000	
4	3000	

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Echantillon n° *Sample n.*	Effort pendant 1 minute *Strength during 1 min* (N)	Exigences *Requirements* (N)
1	2248	20 % CRM *MBL*
2	2248	
3	2248	
4	2248	

Echantillon n° *Sample n.*	Effort pendant 1 minute *Strength during 1 min* (N)	Exigences *Requirements* (N)
1	9555	85 % CRM *MBL*
2	9555	
3	9555	
4	9555	

5 Conclusion / *Conclusion*

Aucun claquage ou contournement ne s'est produit (déclenchement du générateur de tension).
No breakdown or flashover occurred (tripping of voltage generator).

Aucun glissement ou rupture ne s'est produit.
No slippage or breakage occurred.

FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

ВЯРНО С ОРИГИНАЛА

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СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП MJPT 150-70

1. **№ на тест: 9212380** - Механичен тест;
2. **№ на тест: 1110440** - Тест за стареене под въздействие на климатичните условия;
3. **№ на тест: 1209370** - Тест за издръжливост върху фазовия проводник.

На основание чл. 2 от ЗЗЛД

Съставил:

"ВАК - 02" ООД САМОКОВ

SICAME

Laboratoire d'essais
LABEP

Rapport d'essai : **Essai d'endurance sur conducteur de phase**
Test report : ***Endurance test on phase conductor***

Rapport d'essai n°	: 12 09 309	*Test report n.*	: *12 09 309*
Constructeur	: SICAME	*Product manufacturer*	: *SICAME*
Référence produit	: MJPT150-95	*Product reference*	: *MJPT150-95*
Demandeur de l'essai	: SICAME S.A.	*Test applied by*	: *SICAME S.A.*
Date d'essai	: du 10 octobre au 13 novembre 2012	*Date of the test*	: *10 October to 13 November 2012*
Date d'émission du rapport	: 15 novembre 2012	*Report issue date*	: *15 November 2012*

Essais réalisés suivant : NF EN 50483-4 (07/2009), § 8.2.7
Tests carried out in accordance with

Ce rapport comprend : 9 pages
This report contains

Conclusion : Les manchons de jonction préisolés SICAME de type MJPT150-95 soumis à essai satisfont aux exigences du § 8.2.7 de la norme NF EN 50483-4 (07/2009).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion : *The tested SICAME insulated splicing sleeves MJPT150-95 comply with the requirements of clause 8.2.7 of NF EN 50483-4 (July 2009) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
от ЗЗЛД

B.P. N° 1 - 19231 POMPADOUR - CEDEX - FRANCE - Tél (33) 05 55 73 89 00 - Fax (33) 05 55 73 63 12 - Email : info@sicame.fr

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

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1 Echantillons soumis à essai / *Samples under test*

Type : Manchon de jonction préisolé
Insulated splicing sleeve

Désignation / *Designation* : MJPT150-95

Fabricant / *Manufacturer* : SICAME

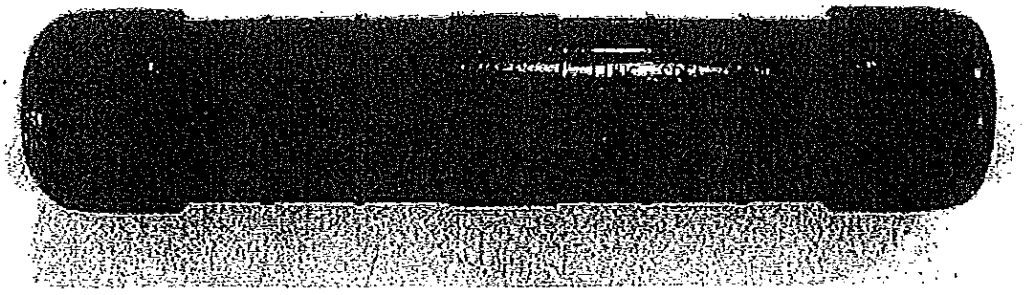
Numéro de lot / *Batch number* : Tête de série / *Head of series*
Echantillons suivant le plan E0700640
Samples in accordance with drawing n. E0700640

Classes du produit selon NF EN 50483-1 (§ 9.3) *Classes of product in accordance with NF EN 50483-1 (§ 9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐	Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 4

Repérage / *Identification* : 1, 2, 3, 4

Date de réception au laboratoire : 25 septembre 2012
Reception date at the laboratory : *25 September 2012*



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САМОКОВ

2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir *Compression tool*	5 tonnes *5 tons*
/	Matrices *Dies*	E173 largeur 9 mm *E173 width 9 mm*
99 01 48	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
10 03 21	Chambre froide *Low temperature chamber*	Précision 1°C *Accuracy 1°C*
99 00 41	Conductimètre *Conductimeter*	Précision 30 µS/cm *Accuracy 30µS/cm*
04 00 30	Thermomètre étanche *Watertight thermometer*	Précision 1°C *Accuracy 1°C*
03 02 56	Chronomètre *Stop watch*	Précision 1 s *Accuracy 1s*
94 03 09	Banc de traction 3 tonnes *Tensile test machine 3 tons*	Classe 1 *Class 1*
91 02 69	Diélectrimètre BOUCHET (10 kV) *Dielectrimeter BOUCHET (10 kV)*	Précision 0,5mA et 200V *Accuracy 0,5mA and 200V*

2.2 Câbles / *Cables*

N° Lot / *Identification*	07021					
Norme / *Standard*	NF C 33-209					
Provenance / *From*	France / *France*					
Section / *Cross section*	95 mm²					
Matériau de l'âme / *Conductor material*	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme / *Conductor type*	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☐	Rétreinte *Compacted*	☑	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme / *Conductor shape*	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins / *Number of wires*	7					
Ø sur âme / *Ø on conductor*	13,1 mm					
Matériau de l'isolant / *Insulation material*	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*					
Ø sur isolant / *Ø on insulation*	16,1 mm.					
Conditionnement / *Conditioned on*	1h00 à 120°C *1h00 at 120°C*					
Référence du câble HD626 / *HD626 conductor reference*	4 B-1					
Charge de rupture minimale / *Minimum breaking load*	3 000 N					

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ВЕРНО С ОРИГИНАЛА

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2.2 Câbles / *Cables*

N° Lot / ***Identification***	11029					
Norme / ***Standard***	WT-92/K-396					
Provenance / ***From***	Pologne / *Poland*					
Section / ***Cross section***	150 mm²					
Matériau de l'âme ***Conductor material***	☐	Cuivre *Copper*	☑	Aluminium	☐	Alliage d'aluminium *Aluminium alloy*
Type d'âme ***Conductor type***	☐	Massive *Solid*	☑	Câblée *Stranded*		
	☑	Rétreinte *Compacted*	☐	Non rétreinte *Non compacted*	☐	Souple *Flexible*
Forme d'âme ***Conductor shape***	☑	Ronde *Circular*	☐	Sectorale *Sector-shaped*		
Nombre de brins ***Number of wires***	19					
Ø sur âme ***Ø on conductor***	16,1 mm					
Matériau de l'isolant ***Insulation material***	Polyéthylène réticulé *Cross-linked polyethylene*					
Ø sur isolant ***Ø on insulation***	19,1 mm					
Conditionnement ***Conditioned on***	1h00 à 110°C *1h00 at 110°C*					
Référence du câble HD626 ***HD626 conductor reference***	/					
Charge de rupture minimale (CRM) / ***Minimum Breaking Load (MBL)***	11242 N					

3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 8.2.7 de la norme NF EN 50483-4 (07/2009).

L'essai est effectué sur quatre manchons pour chaque section.

La charge, pour le type de système approprié, doit être appliquée aux extrémités du conducteur et ajustée comme demandé durant l'essai.

Des cycles thermiques, d'une durée de 90 min, doivent être appliqués au montage d'essai.

500 cycles doivent être réalisés.

Pendant les 45 premières minutes de chaque cycle, le courant traversant l'ensemble doit créer l'élévation de température.

La température de référence du conducteur doit être maintenue à la température normale de service dans un intervalle de ± 3 K comme indiqué dans l'Annexe C de la EN 50483-1. Cette température est atteinte dans un temps de 5 min à 15 min en début de cycle.

Pendant les 45 dernières minutes, de chaque cycle, le montage en essai doit être refroidi à (25 ± 3) °C. La température doit ensuite être maintenue à cette valeur, jusqu'à la fin du cycle.

A intervalle de 24h, à la fin de la période de chauffage à la température normale de service, les températures atteintes par les deux manchons doivent être enregistrées.

Insulated splicing sleeves are tested in accordance with NF EN 50483-4 (07/2009) §8.2.7 standard.

The test is carried out on 4 Insulated splicing sleeves for each cross-section.

The load, for the appropriate type of system, shall be applied to the extremities of the core and varied as required throughout the test.

Thermal cycles, with duration of 90 min, shall be applied to the test assembly.

There shall be 500 cycles.

For the first 45 minutes of every cycle, current flowing through the assembly shall create the temperature rise.

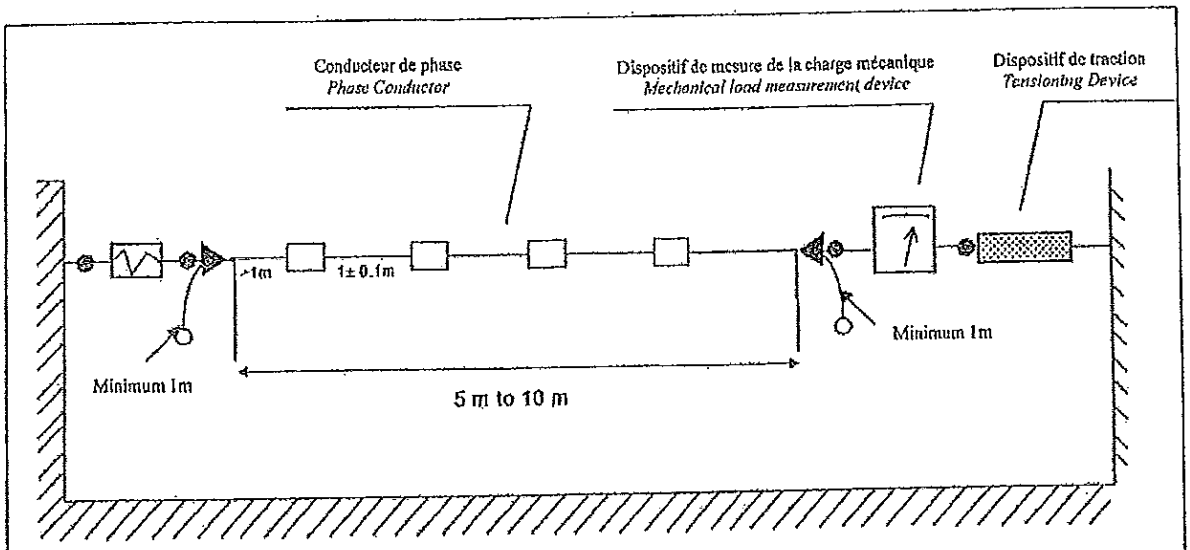
The reference temperature of the conductor shall be maintained at the normal operating temperature within an interval of ± 3 °C a shown in Table B.1 of Annexe B. this temperature shall be reached within 5 min to 15 min at the beginning of the cycle.

For the last 45 min, of each cycle, the test assembly shall be cooled to (25 ± 3) °C. The temperature shall then be maintained, at this value, until the end of the cycle.

At 24 h intervals, at the end of the normal operating temperature heating period, the temperatures reached by the two sleeves shall be recorded.

La figure 1 décrit un exemple typique de dispositif d'essai. La configuration peut différer de ce montage du moment qu'elle rescpecte les longueurs du conducteur de phase

Figure 1 shows a typical test arrangement. The test configuration can differ from this arrangement as long as it complies with the phase conductor.



Equipement de traction / *Anchoring Equipment*

Jonction mécanique permettant la rotation / *Mechanical Junction allowing rotation*

Tendeur mécanique de réglage / *Mechanical tension adjustment*

Raccordement de la source de courant / *Current source connection*

Manchon en essai / *Test Sleeve*

Figure 1 – Shéma d'installation du montage en essai
Figure 1 – Illustrative set up of the testing assembly

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

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La variation de la charge mécanique et de la température est décrite sur le diagramme de la Figure 2.

Un effort de traction doit être appliqué jusqu'à une valeur égale à 35 % de la CRM du câble. Cette valeur doit être atteinte approximativement en 1 min.

La charge doit ensuite être maintenue pendant 10 min par un réglage permanent manuel ou automatique. On doit laisser l'ensemble se stabiliser mécaniquement pendant 24 h sans aucun réglage.

Une fois l'ensemble stabilisé les cycles thermiques doivent commencer. A la fin du premier cycle, l'effort de traction doit être réglé à 20 % de la CRM du câble.

Au moins une fois par 24 h, l'effort de traction doit être ajusté à 20 % de la CRM du câble.

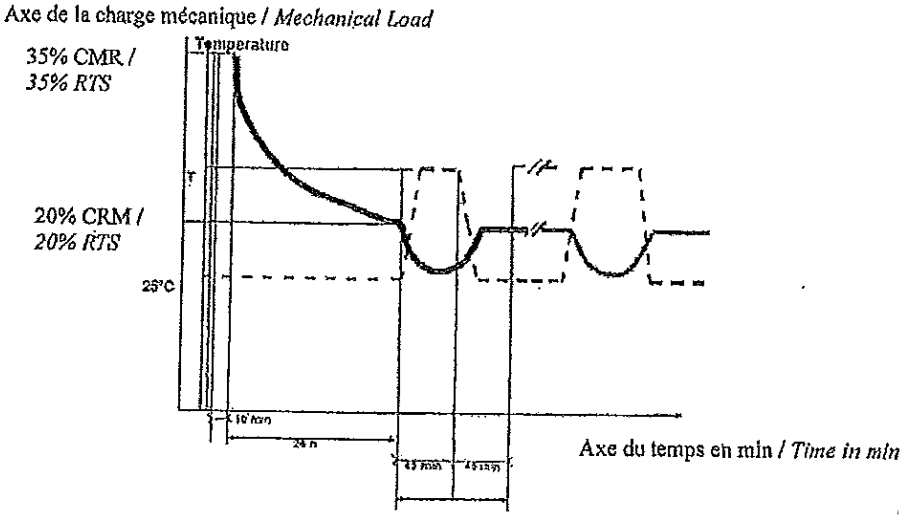
The variation in mechanical load and temperature is shown, diagrammatically, in Figure 2.

A tensile load shall be applied until a value equal to 35 % of the MBL is reached. This value shall be achieved in approximately 1 minute.

The load shall then be maintained for 10 min using a manual or automatic continuous adjustment. The assembly shall be left to self stabilize mechanically for 24 h without any adjustment.

Once the assembly has stabilized the thermal cycles shall be started. At the end of the first cycle, the tensile load shall be set at 20 % of MBL.

At least once every 24 h, the tensile load shall be adjusted to 20 % of the MBL.



Variation de la charge mécanique / *Mechanical Load Variation*

Température du conducteur / *Conductor temperature*

T Température normale de service / *Normal Operating Temperature*

Figure 2 – Diagramme des cycles thermiques et des contraintes mécaniques appliqués sur le conducteur de phase

Figure 2 – Diagram of thermal cycles and mechanical stresses applied on phase conductor

На основание чл. 2
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Tableau 1 – Effort de traction appliqué
Table 1 – Applied tensile load

20 % de la CRM du câble *20 % of MBL* 2248 N	35% de la CRM du câble *35 % of MBL* 3934 N

La température normale de service du câble est de 80° C.
The rated operating temperature of the cable is 80° C.

A la fin de la période de chauffage, la température des manchons doit être inférieure à la température du conducteur de référence.

Les manchons de Classe 1 et de Classe 2 doivent satisfaire aux exigences de l'essai de tenue diélectrique dans l'air, 8.2.3.1.3.2.

Pour les manchons de Classe 1, l'ensemble formé par le raccord et les conducteurs doit être ensuite retiré des billes métalliques, sans contrainte mécanique, et doit satisfaire aux exigences de l'essai de tenue diélectrique dans l'eau, comme indiqué au 8.2.3.1.3.1, mais avec une tension de 1 kV.

Les quatre manchons doivent satisfaire aux exigences de l'essai mécanique du § 8.2.2.

At the end of the heating period, the sleeves' temperatures shall be lower than the temperature of the reference core.

The Class 1 and the Class 2 sleeves shall meet the requirements of the Dielectrical Voltage Test in Air, Clause 8.2.3.1.3.2.

For Class 1 sleeves the assembly formed by the connector and the cores shall then taken out of the metallic balls, without any mechanical stress, and shall meet the requirements of the dielectrical voltage test in water, Clause 8.2.3.1.3.1 but with a voltage of 1 kV.

The four sleeves shall meet the requirements of the mechanical test Clause 8.2.2.

3.1 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences ***Requirements***	**Relevés** ***Results***
Température ambiante et humidité ***Ambient temperature and humidity conditions***	15 °C ≤ T° ≤ 35 °C 25 % ≤ HR ≤ 75 %	20 °C 39 %HR
Température de l'eau ***Water temperature***	-	20,2 °C
Résistivité de l'eau ***Water resistivity***	≤ 200 Ωm	39,9 Ωm
Temps d'immersion ***Immersion time***	≥ 30 min	31 min
Vitesse de montée en tension ***Voltage increase rate***	≈ 1 kV/s	≈ 1 kV/s

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3.2 Configuration des échantillons / *Samples configuration*

Echantillon n° *Sample n.*	Section / *Cross section* (mm²)	
	Câble principal *Main cable*	Câble dérivé *Tap cable*
1	150	95
2		
3		
4		

4 Résultats / *Results*

4.1 Tenue diélectrique

Echantillon n° *Sample n.*	4 kV pendant 1 minute dans les billes métalliques *4 kV for 1 minute in metallic balls*	
	Résultats / *Results*	Exigences *Requirements*
1	Pas de claquage / *No breakdown*	Pas de claquage *No breakdown*
2	Pas de claquage / *No breakdown*	
3	Pas de claquage / *No breakdown*	
4	Pas de claquage / *No breakdown*	

Echantillon n° *Sample n.*	1 kV pendant 1 minute dans l'eau *1 kV for 1 minute in water*	
	Résultats / *Results*	Exigences *Requirements*
1	Pas de claquage / *No breakdown*	Pas de claquage *No breakdown*
2	Pas de claquage / *No breakdown*	
3	Pas de claquage / *No breakdown*	
4	Pas de claquage / *No breakdown*	

4.2 Essais mécaniques

Echantillon n° *Sample n.*	Vitesse de montée programmée *Planned increase rate* (N/min)	Exigences *Requirements* (N/min)
1	3000	1000 ≤...≤ 5000
2	3000	
3	3000	
4	3000	

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Echantillon n° *Sample n.*	Effort pendant 1 minute *Strength during 1 min* (N)	Exigences *Requirements* (N)
1	2248	20 % CRM *MBL*
2	2248	
3	2248	
4	2248	

Echantillon n° *Sample n.*	Effort pendant 1 minute *Strength during 1 min* (N)	Exigences *Requirements* (N)
1	9555	85 % CRM *MBL*
2	9555	
3	9555	
4	9555	

5 Conclusion / *Conclusion*

Aucun claquage ou contournement ne s'est produit (déclenchement du générateur de tension).
No breakdown or flashover occurred (tripping of voltage generator).

Aucun glissement ou rupture ne s'est produit.
No slippage or breakage occurred.

FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

На основание чл. 2
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СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ СЪЕДИНИТЕЛ ТИП MJPT 150-95

1. **№ на тест: 1209309** - Тест за издръжливост върху фазовия проводник.

Съставил:

На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД
СМОКОВ

MICHAUD
MATERIEL ELECTRIQUE

BP 11 - Z.I. LE BLANCHON - 01160 PONT D'AIN - (FRANCE)

LABORATOIRE D'ESSAIS
TEST LABORATORY

RAPPORT D'ESSAIS
TEST REPORT

ESSAIS DE QUALIFICATION DES MANCHONS DE JONCTION MJPT (K101, K103, K106, K110, K121, K123, K115, K116,K117,K170 ET K175)
N°130-06-02-03

QUALIFICATION TESTS OF MJPT SLEEVES (K101, K103, K106, K110, K121, K123, K115, K116,K117,K170 AND K175)
N° 130-06-02-03

16/06/2006

DEMANDEUR : Bureau d'Etudes MICHAUD SA
REQUESTED BY : MICHAUD SA's Research Department

PRESENTATION : Ce document regroupe les essais de qualification des manchons de jonction MJPT (K101, K103, K106, K110, K121, K123, K115, K116,K117,K170 et K175). Les matériels testés sont de fabrication MICHAUD SA.
Les modalités d'essais retenues sont celles de la norme NF C 33-021 de Juin 1998.

INTRODUCTION : This document gathers the qualification tests of MJPT sleeves (K101, K103, K106, K110, K121, K123, K115, K116,K117, K170 and K175). Tested products are of MICHAUD's manufacture.
The test procedures are the ones of the standard NF C 33-021 dated June 1998.

На основание чл. 2
от ЗЗЛД

DIFFUSION : Le 16/06/2006 - 1 exemplaire original UR (LE)
Le 18/02/2011 - 1 exemplaire original **VAK-02** (Bulgarie)
- 1 exemplaire original COM (Classement Client)

ISSUANCE : On the 16/06/2006 - 1 original to UR (LE)
On the 18/02/2011 - 1 original to VAK-02 (Bulgaria)
- 1 original to COM (Customer filing)

Ce document comporte 39 pages (y compris la présente page 1).
This document includes 39 pages (including this page 1).

CONTENTS

(*) The numbers of paragraph are given in the standard NF C 33-021 dated June 1998.

I) INTRODUCTION

1.1 Subject

This document gathers the qualification tests of MJPT sleeves (K101, K103, K106, K110, K121, K123, K115, K116, K170 and K175). Tested products are of MICHAUD's manufacture.

Test procedures are the ones of the standard NF C 33-021 dated June 1998.

For each test, there is a test sheet gathering procedures and results.

1.2 Tested products

Tested products are preinsulated sleeves for aerial conductors according to the technical file «MJPT». These products are coming from an industrial series and have been delivered to Test Laboratory on 09/01/2006.

DESIGNATION	REFERENCE	N° OF BATCH
PREINSULATED SLEEVE (173) MJPT 16	K 101	05 50 51
PREINSULATED SLEEVE (173) MJPT 25	K 103	05 47 49
PREINSULATED SLEEVE (173) MJPT 35	K 106	05 35 13
PREINSULATED SLEEVE (173) MJPT 50	K 110	05 47 50
PREINSULATED SLEEVE (173) MJPT 70	K 121	05 50 20
PREINSULATED SLEEVE (173) MJPT 95	K 123	05 50 07
PREINSULATED SLEEVE (173) MJPT 54	K 115	05 50 65
PREINSULATED SLEEVE (173) MJPT 70	K 116	05 50 66
PREINSULATED SLEEVE (215) MJPT 95	K 170	05 47 46
PREINSULATED SLEEVE (215) MJPT 150	K 175	05 50 01

1.3 Order of test

Tests are performed on 8 sleeves MJPT 16, MJPT 25, MJPT 35, MJPT 50, MJPT 70, MJPT 95 (215), MJPT 54N and on 20 sleeves MJPT 95 (173), MJPT 150 and MJPT 70N.

NUMBER OF SAMPLES		TESTS
MJPT 16, MJPT 25, MJPT 35, MJPT 50, MJPT 70, MJPT 95 (215) AND MJPT 54N	MJPT 95 (173), MJPT 150 AND MJPT 70N	
/	1 and 2	2.3.1 Mechanical tests – Crimping aptitude test
1 and 2	3 and 4	2.3.2 Mechanical tests – Tensile test
3 up to 6	5 up to 8	2.4 Dielectric and watertightness tests 2.6 Climatic ageing test
7 and 8	9 and 10	2.5 Low temperature assembly test 2.4 Dielectric and watertightness tests 2.3.2 Mechanical tests – Tensile test
/	11 up to 16	2.8 Electric ageing test
/	17 up to 20	2.9 Endurance test under mechanical and thermal stresses 2.3.2 Mechanical tests – Tensile test

II) STANDARD DOCUMENTS REFERRED TO IN THIS REPORT

- French standards

C 20-540 : June 2002,
«Environmental test - Test methods - Climatic ageing test of equipment and synthetic materials for outdoor use».

NF C 33-004 : June 1998,
«Insulated cables and their accessories for power systems - Connecting equipment for overhead distributions and services of rated voltage 0,6/1kV with at least one insulated core - Electrical ageing test».

NF C 33-021 : June 1998,
«Insulated cables and their accessories for power systems - Preinsulated compression type connecting equipment for overhead distributions and services of rated voltage 0,6/1kV with bundle assembled cores».

NF C 33-209 : July 1996,
«Insulated or shielded cables for power systems - Bundle assembled cores for overhead systems of rated voltage 0,6/1kV».

III) GENERAL CONDITIONS

- Temperature

Tests are carried out at the room temperature of the test laboratory between 20°C and 26°C.

- Cores used

STANDARD	NAME OF MANUFACTURER	NOMINAL CROSS-SECTIONAL AREA (in mm²)	NUMBER OF STRANDS AND COMPOSITION OF CORE	Ø OVER INSULANT (in mm)	Ø OVER CORE (in mm)
NF C 33-209	NEXANS	150	19 strands aluminium	17,5	13,9
		95	19 strands aluminium	15,0	11,2
		70	12 strands aluminium	13,6	10,1
		70N	7 strands aluminium alloy	13,3	10,2
		54,6N	7 strands aluminium alloy	12,5	9,4
		50	7 stands aluminium	11,2	8,3
		35	7 stands aluminium	10,6	7,1
		25	7 stands aluminium	9,0	6,0
		16	7 stands aluminium	7,4	4,8

Before tests, cores are conditioned, according to § 2.2.2 of the standard NF C 33-021 as follows : they are put in an enclosure during 1 h at 120°C, then the door of enclosure is opened so that conductors come back to room temperature.

IV) TESTS

On the following pages, sheets of each performed test can be found.

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

TEST DESCRIPTION : 2.3.1 Mechanical tests – Crimping aptitude test	Page 1/1

DATE : 22/02/2006
PLACE : MICHAUD test laboratory
OPERATOR : AC. BERNARD

N° OF SAMPLES : 1 and 2 for sleeves MJPT 95 (173), MJPT 150 and MJPT 70N

TEST EQUIPMENTS

- Measure equipment for traction / compression

PROCEDURES

Procedures and acceptance criteria are the ones of § 2.3.1 of standard NF C 33-021 dated June 1998.

Samples are fitted on aluminium cores stripped over the length indicated on the sleeve.

Then, they are crimped with the measure equipment for traction / compression, according to the installation instructions. Crimping is performed with 9mm width dies type E173 for sleeves MJPT 95 and MJPT 70N and type E215 for sleeves MJPT 150.

The crimping strength applied is 5 000 daN.

At the end of the test, the two half-dies must be in contact : a 0,05 mm thick wedge does not go in.

TEST RESULTS

TYPE OF SLEEVES	N° OF SAMPLE	PREVIOUS TEST	SECTION OF CONDUCTOR (in mm²)	COMMENTS AFTER CRIMPING	FOLLOWING TEST
MJPT 95 (173)	1	/	95mm² Al	Satisfactory : The 0,05 mm thick wedge does not go in	/
	2			Satisfactory : The 0,05 mm thick wedge does not go in	
MJPT 150	1	/	150mm² Al	Satisfactory : The 0,05 mm thick wedge does not go in	/
	2			Satisfactory : The 0,05 mm thick wedge does not go in	
MJPT 70N	1	/	70mm² Al alloy	Satisfactory : The 0,05 mm thick wedge does not go in	/
	2			Satisfactory : The 0,05 mm thick wedge does not go in	

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД САМОКОВ

TEST DESCRIPTION : 2.3.2 Mechanical tests – Tensile test — Page 1/3

DATE : 10/01/2006, 11/01/2006, 13/01/2006, 03/04/2006, 09/05/2006, 13/06/2006 — OPERATOR : AC. BERNARD

PLACE : MICHAUD test laboratory

N° OF SAMPLES : 3, 4, 9, 10 and 17 up to 20 for sleeves MJPT 95 (173), MJPT 150 and MJPT 70N
1, 2, 7 and 8 for the other type of sleeves

TEST EQUIPMENTS

- Measure equipment for traction / compression
- Mechanical tensile strength and endurance bench

PROCEDURES

Procedures and acceptance criteria are the ones of § 2.3.2 of standard NF C 33-021 dated June 1998.

Samples are fitted on 30cm length cores stripped over the length indicated on the sleeve. They are crimped with a pneumatic jack and adapted dies.

So as to assure a good crimping of the preinsulated sleeves, we check that a 0,05 mm thick wedge does not go in.

Then, the assembly sleeve - cores is installed between the clamping jaws of the tensile strength machine. Then, an increasing tensile strength is applied on the conductor core which progress is comprised between 1 000N/min and 5 000N/min up to the following F1 values and for the following duration :

- 600N for 1 minute for 16mm² Al conductor,
- 900N for 1 minute for 25mm² Al conductor,
- 1 300N for 1 minute for 35mm² Al conductor,
- 1 800N for 1 minute for 50mm² Al conductor,
- 2 500N for 1 minute for 70mm² Al conductor,
- 3 375N for 1 minute for 95mm² Al conductor,
- 5 300N for 1 minute for 150mm² Al conductor,
- 10 300N for 1 minute for 54,6mm² Al alloy conductor,
- 12 700N for 1 minute for 70mm² Al alloy conductor.

Then, the strength is raised until the following F2 values, then it is released :

- 1 200N for 16mm² Al conductor,
- 1 800N for 25mm² Al conductor,
- 2 500N for 35mm² Al conductor,
- 3 500N for 50mm² Al conductor,
- 5 000N for 70mm² Al conductor,
- 6 750N for 95mm² Al conductor,
- 10 500N for 150mm² Al conductor,
- 15 800N for 54,6mm² Al alloy conductor,
- 19 500N for 70mm² Al alloy conductor.

No slip shall be noticed.

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД САМОКОВ

TEST DESCRIPTION : 2.3.2 Mechanical tests – Tensile test

TEST RESULTS

TYPE OF SLEEVES	N° OF SAMPLE	PREVIOUS TEST	SECTION OF CONDUCTOR (in mm²)	F1 STRENGTH APPLIED DURING THE STEP	F2 STRENGTH APPLIED (in N)	COMMENTS	FOLLOWING TEST
MJPT 16	1	/	16mm² Al	600	1 200	Satisfactory	/
	2		16mm² Al	600	1 200	Satisfactory	
	7	2.4	16mm² Al	600	1 200	Satisfactory	
	8		16mm² Al	600	1 200	Satisfactory	
MJPT 25	1	/	25mm² Al	900	1 800	Satisfactory	/
	2		25mm² Al	900	1 800	Satisfactory	
	7	2.4	25mm² Al	900	1 800	Satisfactory	
	8		25mm² Al	900	1 800	Satisfactory	
MJPT 35	1	/	35mm² Al	1 300	2 500	Satisfactory	/
	2		35mm² Al	1 300	2 500	Satisfactory	
	7	2.4	35mm² Al	1 300	2 500	Satisfactory	
	8		35mm² Al	1 300	2 500	Satisfactory	
MJPT 50	1	/	50mm² Al	1 800	3 500	Satisfactory	/
	2		50mm² Al	1 800	3 500	Satisfactory	
	7	2.4	50mm² Al	1 800	3 500	Satisfactory	
	8		50mm² Al	1 800	3 500	Satisfactory	
MJPT 70	1	/	70mm² Al	2 500	5 000	Satisfactory	/
	2		70mm² Al	2 500	5 000	Satisfactory	
	7	2.4	70mm² Al	2 500	5 000	Satisfactory	
	8		70mm² Al	2 500	5 000	Satisfactory	
MJPT 95 (215)	1	/	95mm² Al	3 375	6 750	Satisfactory	/
	2		95mm² Al	3 375	6 750	Satisfactory	
	7	2.4	95mm² Al	3 375	6 750	Satisfactory	
	8		95mm² Al	3 375	6 750	Satisfactory	
MJPT 54N	1	/	54,6N Al alloy	10 300	15 800	Satisfactory	/
	2		54,6N Al alloy	10 300	15 800	Satisfactory	
	7	2.4	54,6N Al alloy	10 300	15 800	Satisfactory	
	8		54,6N Al alloy	10 300	15 800	Satisfactory	

TEST DESCRIPTION : 2.3.2 Mechanical tests – Tensile test

TEST RESULTS

TYPE OF SLEEVES	N° OF SAMPLE	PREVIOUS TEST	SECTION OF CONDUCTOR (in mm²)	F1 STRENGTH APPLIED DURING THE STEP	F2 STRENGTH APPLIED (in N)	COMMENTS	FOLLOWING TEST
MJPT 95 (173)	3	/	95mm² Al	3 375	6 750	Satisfactory	
	4		95mm² Al	3 375	6 750	Satisfactory	
	9	2.4	95mm² Al	3 375	6 750	Satisfactory	
	10		95mm² Al	3 375	6 750	Satisfactory	
	17	2.9	95mm² Al	3 375	6 750	Satisfactory	/
	18		95mm² Al	3 375	6 750	Satisfactory	
	19		95mm² Al	3 375	6 750	Satisfactory	
	20		95mm² Al	3 375	6 750	Satisfactory	
MJPT 150	3	/	150mm² Al	5 300	10 500	Satisfactory	/
	4		150mm² Al	5 300	10 500	Satisfactory	
	9	2.4	150mm² Al	5 300	10 500	Satisfactory	
	10		150mm² Al	5 300	10 500	Satisfactory	
	17	2.9	150mm² Al	5 300	10 500	Satisfactory	
	18		150mm² Al	5 300	10 500	Satisfactory	
	19		150mm² Al	5 300	10 500	Satisfactory	
	20		150mm² Al	5 300	10 500	Satisfactory	
MJPT 70N	3	/	70mm² Al alloy	12 700	19 500	Satisfactory	/
	4		70mm² Al alloy	12 700	19 500	Satisfactory	
	9	2.4	70mm² Al alloy	12 700	19 500	Satisfactory	
	10		70mm² Al alloy	12 700	19 500	Satisfactory	
	17	2.9	70mm² Al alloy	12 700	19 500	Satisfactory	
	18		70mm² Al alloy	12 700	19 500	Satisfactory	
	19		70mm² Al alloy	12 700	19 500	Satisfactory	
	20		70mm² Al alloy	12 700	19 500	Satisfactory	

ВЯРНО С ОРИГИНАЛА

ВАК - 02 ООД
САМОКОВ

TEST DESCRIPTION : 2.4 Dielectric and watertightness tests — Page 1/3

DATE : FROM 10/01/2006 TO 12/01/2006
PLACE : MICHAUD test laboratory

OPERATORS : AC. BERNARD
JP. RAPY

N° OF SAMPLES : 5 up to 10 for sleeves MJPT 95 (173), MJPT 150 and MJPT 70N
3 up to 8 for the other type of sleeves.

TEST EQUIPMENTS

- Measure equipment for traction / compression
- Dielectric test equipment A 1105

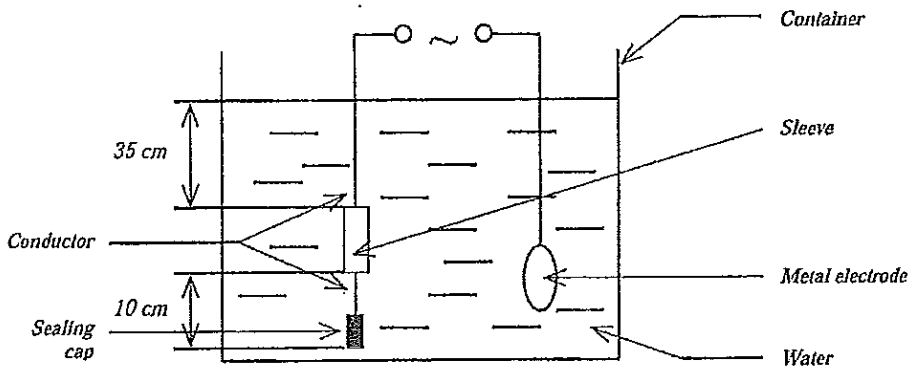
PROCEDURES

Procedures and acceptance criteria are the ones of § 2.4 of standard NF C 33-021 dated June 1998.

Samples are fitted on cores stripped over the length indicated on the sleeve. They are crimped with a pneumatic jack and adapted dies.

So as to assure a good crimping of the preinsulated sleeves, we check that a 0,05 mm thick wedge does not go in.

After having put a sealing cap on one of the stripped extremities of the conductor, assemblies sleeve - cores are installed vertically in water, as shown below :



Voltage generator used is regulated to release under a 10 mA leakage current.
After 30 min under water, a dielectric test is performed on the assembly under a 6 kV voltage at an industrial frequency for 1 min. The increase of voltage is performed at 1 kV/s speed.
No breakage (release of voltage source) shall occur.

TEST RESULTS

TYPE OF SLEEVES	N° OF SAMPLE	PREVIOUS TEST	SECTION OF CONDUCTOR (in mm²)	COMMENTS AFTER 1 min UNDER 6kV	FOLLOWING TEST
MJPT 16	3	/	16mm² Al	Satisfactory	2.6
	4		16mm² Al	Satisfactory	
	5		16mm² Al	Satisfactory	
	6		16mm² Al	Satisfactory	

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

4999

TEST DESCRIPTION : 2.4 Dielectric and watertightness tests — Page 2/3

TYPE OF SLEEVES	N° OF SAMPLE	PREVIOUS TEST	SECTION OF CONDUCTOR (in mm²)	COMMENTS AFTER 1 min UNDER 6kV	FOLLOWING TEST
MJPT 16	7	2.5	16mm² Al	Satisfactory	2.3.2
	8		16mm² Al	Satisfactory	
MJPT 25	3	/	25mm² Al	Satisfactory	2.6
	4		25mm² Al	Satisfactory	
	5		25mm² Al	Satisfactory	
	6		25mm² Al	Satisfactory	
	7	2.5	25mm² Al	Satisfactory	2.3.2
	8		25mm² Al	Satisfactory	
MJPT 35	3	/	35mm² Al	Satisfactory	2.6
	4		35mm² Al	Satisfactory	
	5		35mm² Al	Satisfactory	
	6		35mm² Al	Satisfactory	
	7	2.5	35mm² Al	Satisfactory	2.3.2
	8		35mm² Al	Satisfactory	
MJPT 50	3	/	50mm² Al	Satisfactory	2.6
	4		50mm² Al	Satisfactory	
	5		50mm² Al	Satisfactory	
	6		50mm² Al	Satisfactory	
	7	2.5	50mm² Al	Satisfactory	2.3.2
	8		50mm² Al	Satisfactory	
MJPT 70	3	/	70mm² Al	Satisfactory	2.6
	4		70mm² Al	Satisfactory	
	5		70mm² Al	Satisfactory	
	6		70mm² Al	Satisfactory	
	7	2.5	70mm² Al	Satisfactory	2.3.2
	8		70mm² Al	Satisfactory	
MJPT 95 (215)	3	/	95mm² Al	Satisfactory	2.6
	4		95mm² Al	Satisfactory	
	5		95mm² Al	Satisfactory	
	6		95mm² Al	Satisfactory	
	7	2.5	95mm² Al	Satisfactory	2.3.2
	8		95mm² Al	Satisfactory	

TEST DESCRIPTION : 2.4 Dielectric and watertightness tests

TYPE OF SLEEVES	N° OF SAMPLE	PREVIOUS TEST	SECTION OF CONDUCTOR (in mm²)	COMMENTS AFTER 1 min UNDER 6kV	FOLLOWING TEST
MJPT 54N	3	/	54,6N Al alloy	Satisfactory	2.6
	4		54,6N Al alloy	Satisfactory	
	5		54,6N Al alloy	Satisfactory	
	6		54,6N Al alloy	Satisfactory	
	7	2.5	54,6N² Al alloy	Satisfactory	2.3.2
	8		54,6N² Al alloy	Satisfactory	
MJPT 95 (173)	5	/	95mm² Al	Satisfactory	2.6
	6		95mm² Al	Satisfactory	
	7		95mm² Al	Satisfactory	
	8		95mm² Al	Satisfactory	
	9	2.5	95mm² Al	Satisfactory	2.3.2
	10		95mm² Al	Satisfactory	
MJPT 150	5	/	150mm² Al	Satisfactory	2.6
	6		150mm² Al	Satisfactory	
	7		150mm² Al	Satisfactory	
	8		150mm² Al	Satisfactory	
	9	2.5	150mm² Al	Satisfactory	2.3.2
	10		150mm² Al	Satisfactory	
MJPT 70N	5	/	70N Al alloy	Satisfactory	2.6
	6		70N Al alloy	Satisfactory	
	7		70N Al alloy	Satisfactory	
	8		70N Al alloy	Satisfactory	
	9	2.5	70N Al alloy	Satisfactory	2.3.2
	10		70N Al alloy	Satisfactory	

TEST DESCRIPTION : 2.5 Low temperature assembly test — Page 1/2

DATE : 12/01/2006
PLACE : MICHAUD test laboratory — OPERATOR : AC. BERNARD

N° OF SAMPLES : 9 and 10 for sleeves MJPT 95 (173), MJPT 150 and MJPT 70N
3 and 8 for the other types of sleeves

TEST EQUIPMENTS

- Enclosure with regulated temperature - 25°C + 45°C
- Measure equipment for traction / compression

PROCEDURES

Procedures and acceptance criteria are the ones of § 2.5 of standard NF C 33-021 dated June 1998.

Each sleeve as well as cores which are ready to be fitted, are installed in the enclosure with regulated temperature - 25°C + 45°C, at a temperature of - 11°C.

After one hour, the assembly being kept in the enclosure, the sleeve is crimped with a pneumatic jack and adapted dies.

So as to assure a good crimping of the preinsulated sleeves, we check that a 0,05 mm thick wedge does not go in.

3 h after its exit of the enclosure with regulated temperature - 25°C + 45°C, the sleeve being fitted is subjected to the dielectric and watertightness tests, then to the tensile test (respectively § 2.4 and 2.3.2 of this test report).

TEST RESULTS

TYPE OF SLEEVES	N° OF SAMPLE	PREVIOUS TEST	SECTION OF CONDUCTOR (in mm²)	COMMENTS DURING THE ASSEMBLY AT -11°C	FOLLOWING TEST
MJPT 16	7	/	16mm² Al	Satisfactory	2.4
	8		16mm² Al	Satisfactory	
MJPT 25	7	/	25mm² Al	Satisfactory	2.4
	8		25mm² Al	Satisfactory	
MJPT 35	7	/	35mm² Al	Satisfactory	2.4
	8		35mm² Al	Satisfactory	
MJPT 50	7	/	50mm² Al	Satisfactory	2.4
	8		50mm² Al	Satisfactory	
MJPT 70	7	/	70mm² Al	Satisfactory	2.4
	8		70mm² Al	Satisfactory	
MJPT 95 (215)	7	/	95mm² Al	Satisfactory	2.4
	8		95mm² Al	Satisfactory	
MJPT 54N	7	/	54,6N Al alloy	Satisfactory	2.4
	8		54,6N Al alloy	Satisfactory	

TEST DESCRIPTION : 2.5 Low temperature assembly test

TYPE OF SLEEVES	N° OF SAMPLE	PREVIOUS TEST	SECTION OF CONDUCTOR (in mm²)	COMMENTS DURING THE ASSEMBLY AT -11°C	FOLLOWING TEST
MJPT 95 (173)	9	/	95mm² Al	Satisfactory	2.4
	10		95mm² Al	Satisfactory	
MJPT 150	9	/	150mm² Al	Satisfactory	2.4
	10		150mm² Al	Satisfactory	
MJPT 70N	9	/	70N Al alloy	Satisfactory	2.4
	10		70N Al alloy	Satisfactory	

TEST DESCRIPTION : 2.6 Climatic ageing test

Page 1/5

DATE : FROM 13/01/2006 TO 28/02/2006
PLACE : MICHAUD laboratory test

OPERATORS : A. BERNARD
JP. RAPY

N° OF SAMPLES : 5 up to 8 for sleeves MJPT 95 (173), MJPT 150 and MJPT 70N
3 up to 6 for the other types of sleeves

TEST EQUIPMENTS

- Climatic ageing enclosure XR 35

PROCEDURES

Procedure and acceptance criteria are the ones of § 2.6 of standard NF C 33-021 dated June 1998.

CLIMATIC TEST

Procedures of this test are the ones of standard C 20-540 dated June 2002.

Samples support 6 weekly cycles, the enclosure temperature being 70 (± 2) °C for the conditionings A and C.

ACCEPTANCE CRITERIA

At the end of the climatic ageing cycles, the samples shall comply with the following tests, after being placed in the test laboratory atmosphere for at least 24 h without exceeding 72 h :

◊ Dielectric test :
* The assembly, placed horizontally, is covered with lead balls, over 1 to 2cm. After 1min, a dielectric test is performed on the assembly at a 6kV voltage at an industrial frequency during 1min. Increase of voltage is performed at a 1kV/s speed.
No breakage shall occur.
* A dielectric test is performed on the assembly under a 1kV voltage, according to § 2.4 of this test report.
No breakage shall occur.

◊ Visual control :
* At the end of the tests, marking of the pieces shall be legible when examined with normal or correction vision without magnification.

TEST RESULTS

TYPE OF SLEEVES	SAMPLE N°	PREVIOUS TEST	COMMENTS AFTER 6 WEEKS CLIMATIC AGEING TEST	DIELECTRIC TEST		LEGIBILITY IDENTIFICATION MARKING	FOLLOWING TEST
				6KV TEST IN LEAD	1KV TEST IN WATER		
MJPT 16	3	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/
	4		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	

ВЯРНО С ОРИГИНАЛА

"БАК - 02" ООД
САМОКОВ

TEST DESCRIPTION : 2.6 Climatic ageing test

TYPE OF SLEEVES	SAMPLE N°	PREVIOUS TEST	COMMENTS AFTER 6 WEEKS CLIMATIC AGEING TEST	DIELECTRIC TEST		LEGIBILITY IDENTIFICATION MARKING	FOLLOWING TEST
				6KV TEST IN LEAD	1KV TEST IN WATER		
MJPT 16	5	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/
	6		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
MJPT 25	3	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/
	4		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	5		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	6		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
MJPT 35	3	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/
	4		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	5		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	6		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
MJPT 150	3	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/

TEST DESCRIPTION : 2.6 Climatic ageing test

TYPE OF SLEEVES	SAMPLE N°	PREVIOUS TEST	COMMENTS AFTER 6 WEEKS CLIMATIC AGEING TEST	DIELECTRIC TEST		LEGIBILITY IDENTIFICATION MARKING	FOLLOWING TEST
				6KV TEST IN LEAD	1KV TEST IN WATER		
MJPT 150	4	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/
	5		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	6		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
MJPT 70	3	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/
	4		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	5		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	6		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
MJPT 95 (215)	3	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/
	4		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	5		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	6		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	

TEST DESCRIPTION : 2.6 Climatic ageing test

TYPE OF SLEEVES	SAMPLE N°	PREVIOUS TEST	COMMENTS AFTER 6 WEEKS CLIMATIC AGEING TEST	DIELECTRIC TEST		LEGIBILITY IDENTIFICATION MARKING	FOLLOWING TEST
				6KV TEST IN LEAD	1KV TEST IN WATER		
MJPT 54N	3	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/
	4		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	5		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	6		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
MJPT 95 (173)	5	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/
	6		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	7		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	8		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
MJPT 150	5	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/
	6		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	7		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	

TEST DESCRIPTION : 2.6 Climatic ageing test

TYPE OF SLEEVES	SAMPLE N°	PREVIOUS TEST	COMMENTS AFTER 6 WEEKS CLIMATIC AGEING TEST	DIELECTRIC TEST		LEGIBILITY IDENTIFICATION MARKING	FOLLOWING TEST
				6KV TEST IN LEAD	1KV TEST IN WATER		
MJPT 150	8	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/
MJPT 70N	5	2.4	No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	/
	6		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	7		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	
	8		No visible damage (the body has slightly whitened and the cap has slightly faded on the side exposed to UV	No breakage	No breakage	Satisfactory	

TEST DESCRIPTION : 2.8 Electric ageing test — Page 1/17

DATE : FROM 02/02/2006 TO 03/03/2006
PLACE : MICHAUD test laboratory
OPERATORS : AC. BERNARD, JP. RAPY

N° OF SAMPLES : 11 up to 16 for sleeves MJPT 95 (173), MJPT 150 and MJPT 70N

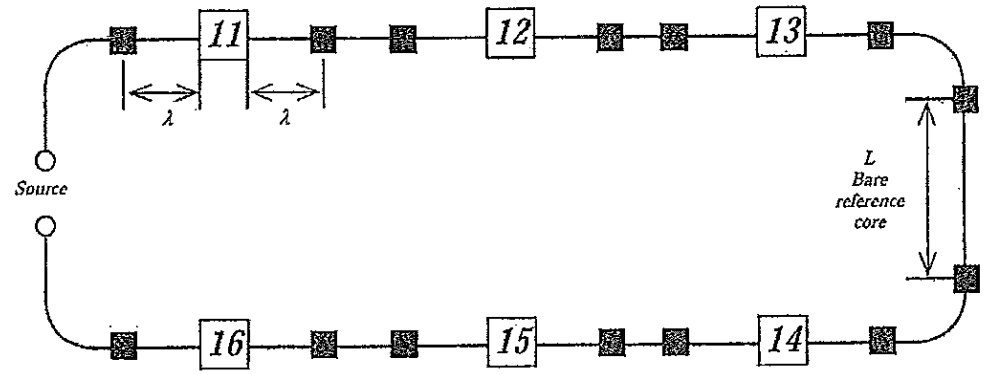
TEST EQUIPMENTS

- Measure equipment for traction / compression
- N° 1, 2 and 4 electric ageing benches
- Measure stations NI1, NI2 and SA 70 NI

PROCEDURES

Procedures and acceptance criteria are the ones of § 2.8 of standard NF C 33-021 dated June 1998 which refers to standard NF C 33-004 dated June 1998.

The test loop carried out according to standard NF C 33-004 is the loop "A" in "U" form :



LEGEND

- Sleeve
- Voltage measure point
- Core : 95mm² Al for the sleeve MJPT 95 (173)
  150mm² Al for the sleeve MJPT 150
  70mm² Al alloy for the sleeve MJPT 70N

1. Preparation of the loop

- Parameters of the loop are calculated :

TYPE OF SLEEVES	λ	L
MJPT 95 (173)	200mm	400mm
MJPT 150	250mm	500mm
MJPT 70N	200mm	400mm

- Voltage measure points are performed by means of equalizers (welding method : «TIG», metal filler : 1 050A aluminium). They are placed as shown on the previous schema.

- Conductors that come out of the sleeves, as well as the reference conductor, are equipped with terminal lugs.
- The reference core is stripped.

2. Assembly of the loop

- Samples are fitted on cores stripped over the length indicated on the sleeve. They are crimped with a pneumatic jack and adapted dies.
- So as to assure a good crimping of the preinsulated sleeves, we check that a 0,05 mm thick wedge does not go in.
- Conductors equipped with terminal lugs are linked between each other, to the electric ageing bench by means of bolts.
- Voltage measure points are installed.
- Temperature measure points are installed as follows :

	TYPE OF THERMOCOUPLE	PLACE OF FIXING	TYPE OF HOLD
Sleeve	- type «k», «sheathed» in a tube of inconel. - diameter 1 mm.	- at the middle of the sleeve, in a 1,2mm diameter hole.	- covered with «thermoconductor» grease - holding with a mastic type «polyurethane»
Reference core	- type «k», - diameter 0,5 mm.	- at the «middle» of the reference conductor core.	- holding through a splice (copper wire diameter 0,4mm) - covered with «thermoconductor» grease
Room temperature	- type «k», «sheathed» in a tube of inconel, - diameter 1 mm.	- at the middle of the loop in the horizontal level containing the sleeves.	/

3. Process of a cycle

		TYPE OF SLEEVES		
		MJPT 95 (173)	MJPT 150	MJPT 70N
Heating at 120°C of the reference core	Duration	5 min	5 min	4 min
	Intensity	~ 500A	~ 700A	~ 415A
Step at 120°C of the reference core	Duration	50 min	55 min	50 min
	Intensity	~ 355A	~ 490A	~ 275A
Temperature measure every 10 cycle				
Cooling	Duration	30min	35min	35min
Resistance measure every 10 cycle				
Total duration of a cycle	Duration	85min	95min	89min

4. Performing of the test - Measures

- *Resistance measure is performed under a direct current of 25A for sleeve MJPT 70N, 30A for sleeve MJPT 95 (173) and 40A for sleeve MJPT 150, every 10 cycle.*
- *Rj resistance values of each sleeve are calculated according to § 5.3.3.4 of standard NF C 33-004 dated June 1998.*
- *The test is performed as follows :*
  - *50 cycles of electrical ageing,*
  - *application of 4 overloads during 1 s with an intensity of 6 650A for sleeve MJPT 70N, 9 500A for sleeve MJPT 95 and 15 000A for sleeve MJPT 150,*
  - *150 cycles of electrical ageing.*

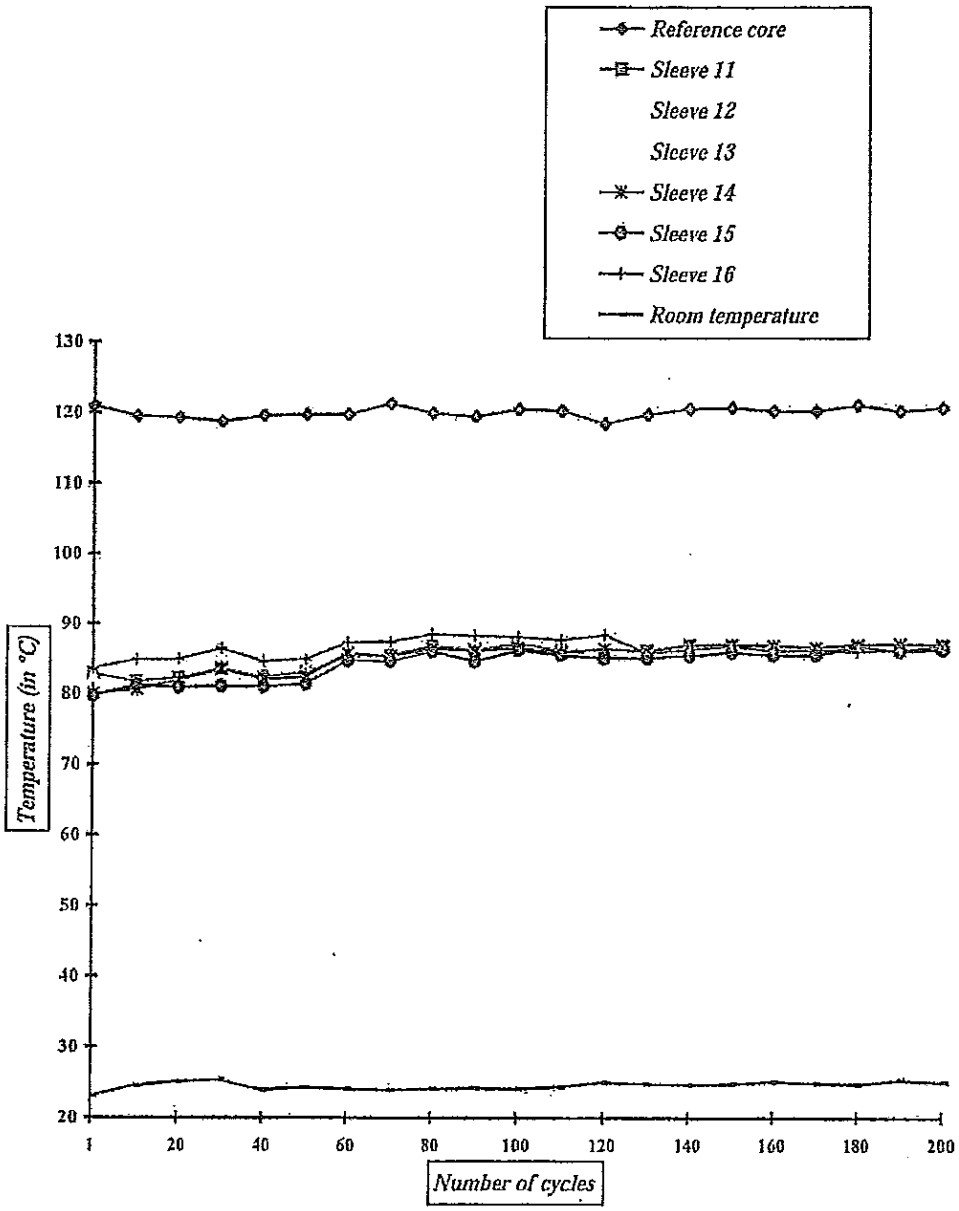
TEST RESULTS

Sleeve MJPT 95 (173)

TEMPERATURE RECORD (in °C)

Cycles	Reference core	Sleeves						Room temperature
		11	12	13	14	15	16	
1	120,9	82,8	82,4	84,1	80,0	79,7	83,6	23,1
10	119,5	81,7	81,0	85,3	80,6	81,2	84,8	24,5
20	119,3	82,2	81,3	84,2	81,9	80,9	84,9	25,1
30	118,7	83,6	81,9	85,0	83,5	81,1	86,4	25,3
40	119,6	82,4	81,1	84,0	82,0	81,0	84,6	23,9
50	119,7	83,0	81,6	84,0	82,4	81,4	84,9	24,3
60	119,8	85,2	84,1	86,7	85,8	84,7	87,3	24,1
70	121,3	85,5	84,3	87,3	85,3	84,6	87,4	23,9
80	120,0	86,8	85,7	88,5	86,4	86,0	88,5	24,1
90	119,5	86,3	85,5	87,4	86,1	84,6	88,3	24,2
100	120,5	87,1	86,2	88,3	86,5	86,2	88,1	24,1
110	120,3	86,2	85,3	87,0	85,9	85,5	87,7	24,4
120	118,5	85,3	85,7	87,7	86,4	85,1	88,4	25,0
130	119,8	86,2	85,7	85,4	86,1	85,1	85,9	24,8
140	120,6	86,9	86,3	85,8	87,0	85,4	86,3	24,7
150	120,8	86,8	85,8	86,0	87,0	85,9	86,9	24,8
160	120,3	86,5	85,9	85,5	86,9	85,5	86,0	25,1
170	120,3	86,0	85,4	85,4	86,6	85,5	86,2	24,9
180	121,1	86,7	86,6	85,6	87,0	86,7	86,0	24,7
190	120,3	86,2	86,4	85,3	87,1	86,0	86,3	25,3
200	120,7	86,8	86,2	85,9	87,0	86,3	86,6	25,0

TEST DESCRIPTION : 2.8 Electric ageing test

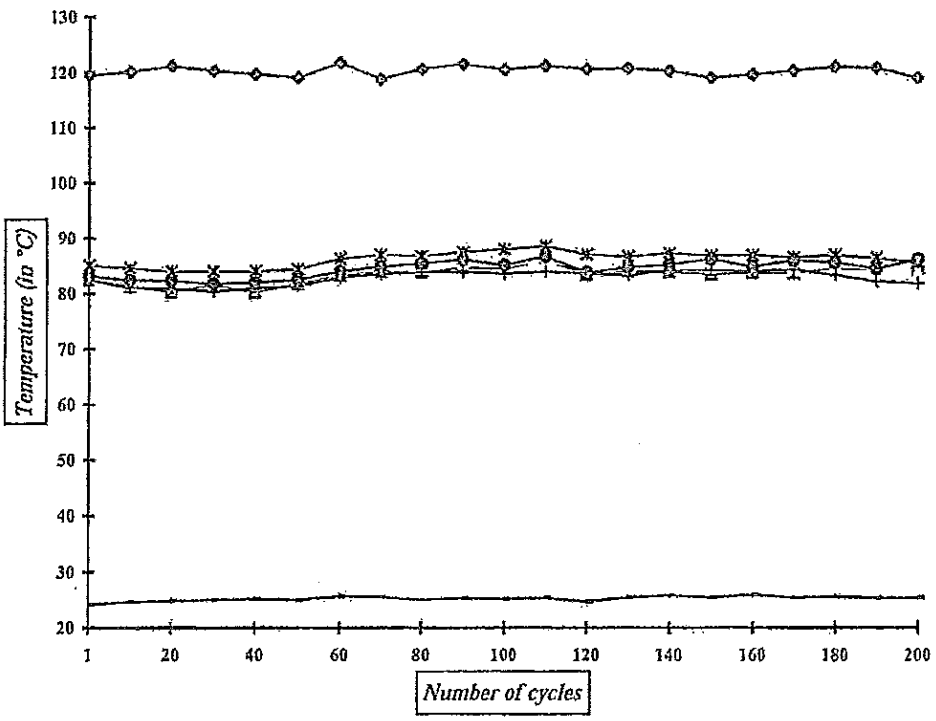


Sleeve MJPT 150

TEMPERATURE RECORD (in °C)

Cycles	Reference core	Sleeves						Room temperature
		11	12	13	14	15	16	
1	119,5	82,5	83,3	84,4	85,1	83,1	82,4	24,1
10	120,1	81,2	81,8	84,8	84,6	82,4	81,0	24,6
20	121,2	80,3	82,0	83,6	84,0	82,3	80,9	24,8
30	120,3	81,6	81,9	83,5	84,0	81,7	80,4	25,0
40	119,7	80,2	82,3	83,5	84,1	82,0	81,0	25,2
50	119,1	81,8	82,3	84,0	84,4	82,5	81,3	25,0
60	121,8	83,3	85,1	84,6	86,3	84,0	82,9	25,7
70	118,8	84,0	84,6	86,3	87,0	84,9	83,5	25,6
80	120,6	83,8	84,8	86,1	86,8	85,4	83,9	25,0
90	121,5	84,7	85,7	86,4	87,5	86,1	83,9	25,3
100	120,5	84,5	85,1	85,7	88,0	85,1	83,6	25,2
110	121,2	86,1	85,9	86,8	88,6	86,7	84,0	25,4
120	120,6	83,4	84,6	84,5	87,1	83,8	83,6	24,7
130	120,8	84,0	84,5	85,0	86,7	84,8	83,3	25,5
140	120,3	83,9	85,8	85,8	87,3	85,3	84,3	25,8
150	119,1	83,5	84,9	85,1	86,9	86,2	84,2	25,5
160	119,6	83,8	85,7	85,1	86,9	84,9	84,1	25,9
170	120,3	83,7	84,8	84,1	86,5	86,0	84,3	25,4
180	121,0	84,4	85,0	86,2	86,9	85,6	83,3	25,6
190	120,8	84,5	84,5	87,4	86,4	84,5	82,2	25,3
200	119,0	83,8	83,7	85,6	85,5	86,1	81,8	25,4

TEST DESCRIPTION : 2.8 Electric ageing test

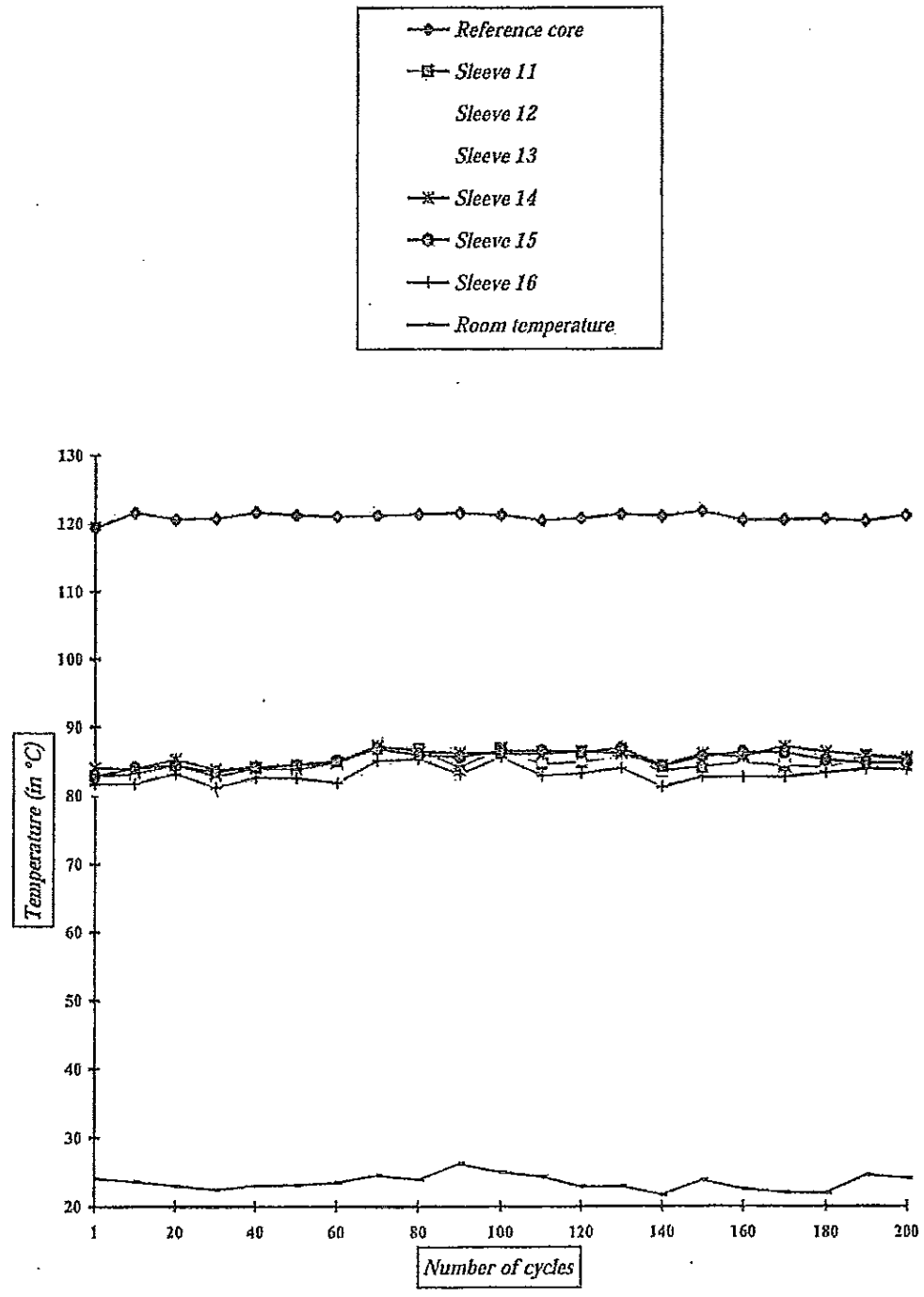


Sleeve MJPT 70N

TEMPERATURE RECORD (in °C)

Cycles	Reference core	Sleeves						Room temperature
		11	12	13	14	15	16	
1	119,3	82,8	80,9	80,6	84,0	82,7	81,6	24,1
10	121,6	83,1	82,6	80,3	83,8	84,0	81,7	23,6
20	120,6	84,4	84,0	81,2	85,2	84,3	83,1	23,0
30	120,7	82,8	82,1	79,5	83,7	83,4	81,1	22,4
40	121,6	83,9	83,4	80,4	84,1	84,1	82,6	23,0
50	121,2	83,8	82,9	80,9	84,4	84,4	82,5	23,1
60	121,0	84,7	84,5	81,6	84,8	85,0	81,8	23,5
70	121,1	86,9	86,0	83,5	87,2	86,8	85,0	24,5
80	121,3	86,7	85,8	82,7	86,3	85,9	85,3	23,9
90	121,5	84,0	85,5	82,5	86,1	85,5	83,0	26,2
100	121,2	86,8	85,9	83,1	86,1	86,4	85,5	25,0
110	120,4	84,5	85,1	82,3	86,0	86,5	82,8	24,3
120	120,7	84,8	85,3	82,7	86,3	86,2	83,1	22,9
130	121,3	85,7	85,5	82,6	86,1	86,8	83,9	22,9
140	121,0	83,5	83,7	80,8	84,2	84,2	81,2	21,7
150	121,7	84,1	85,7	82,3	86,0	85,6	82,6	23,8
160	120,4	84,7	84,8	82,1	85,5	86,2	82,6	22,5
170	120,4	84,2	85,1	82,1	87,0	86,1	82,6	22,0
180	120,5	83,9	84,4	82,1	86,2	85,0	83,1	21,9
190	120,2	85,6	85,1	82,6	85,7	84,6	83,7	24,5
200	121,0	85,0	84,3	81,5	85,3	84,6	83,6	24,1

TEST DESCRIPTION : 2.8 Electric ageing test

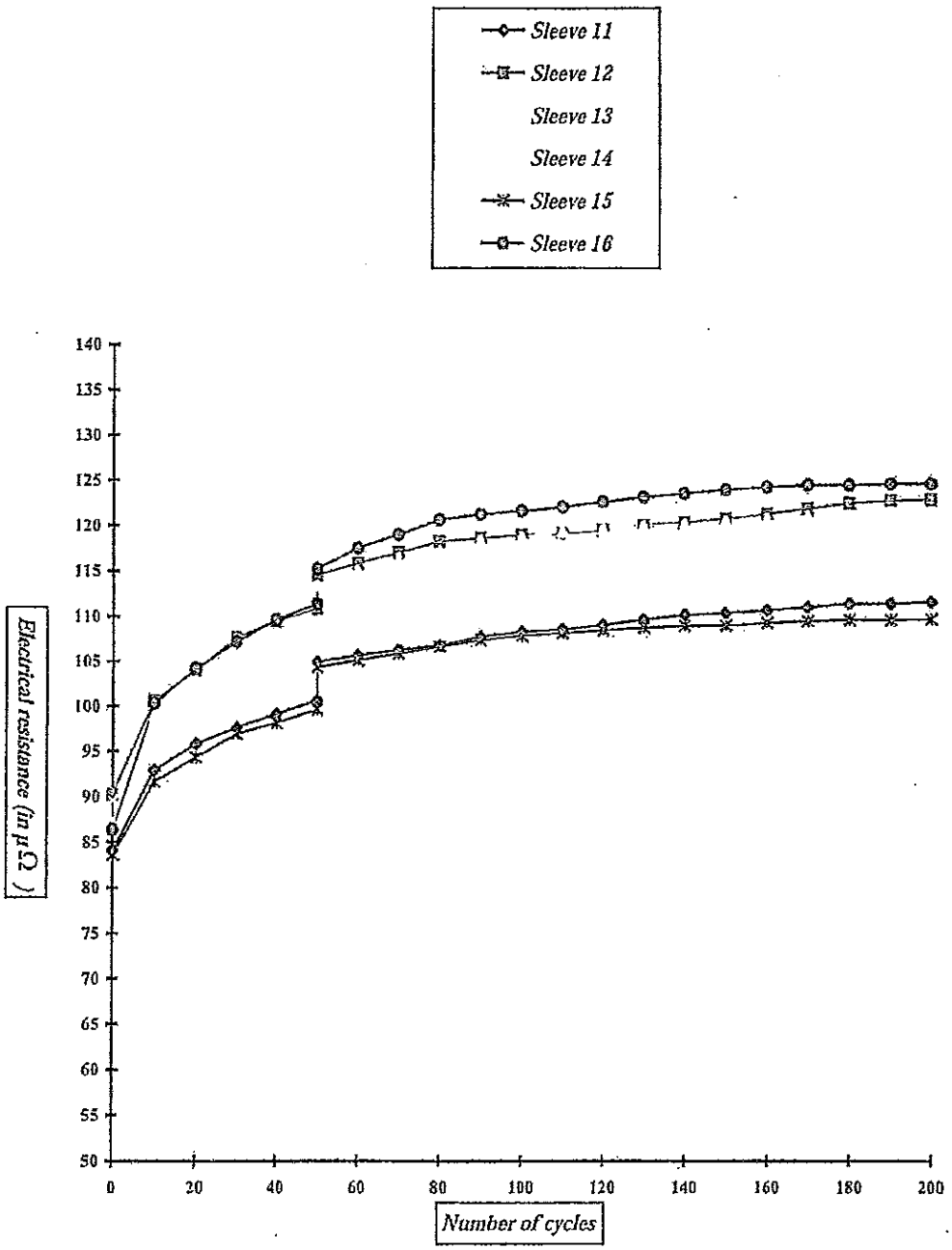


Sleeve MJPT 95 (173)

Rj RESISTANCE RECORD (in μΩ)

Cycles	Sleeves					
	11	12	13	14	15	16
0	84,1	90,3	87,2	89,5	83,6	86,4
10	92,9	100,6	99,0	97,4	91,6	100,3
20	95,8	104,0	102,7	100,3	94,3	104,2
30	97,6	107,6	104,8	102,6	96,9	107,1
40	99,1	109,4	106,7	104,2	98,1	109,6
50 before overloads	100,6	110,8	108,9	105,9	99,6	111,3
50 after overloads	104,9	114,5	113,3	111,5	104,3	115,2
60	105,6	115,8	115,0	113,0	105,1	117,5
70	106,2	117,0	116,4	114,6	105,8	119,0
80	106,7	118,2	117,1	115,8	106,6	120,6
90	107,7	118,6	118,3	116,5	107,3	121,2
100	108,2	118,9	118,7	117,4	107,8	121,6
110	108,5	119,1	119,3	118,0	108,1	122,0
120	109,0	119,5	119,6	118,5	108,4	122,6
130	109,6	120,0	119,9	118,9	108,7	123,1
140	110,1	120,3	120,1	119,3	108,9	123,5
150	110,3	120,7	120,4	119,6	108,9	123,9
160	110,6	121,2	120,7	119,8	109,2	124,2
170	110,9	121,8	120,9	120,2	109,4	124,4
180	111,3	122,4	121,1	120,5	109,5	124,4
190	111,3	122,7	121,3	120,6	109,5	124,5
200	111,5	122,8	121,4	120,8	109,6	124,5

TEST DESCRIPTION : 2.8 Electric ageing test



Sleeve MJPT 150

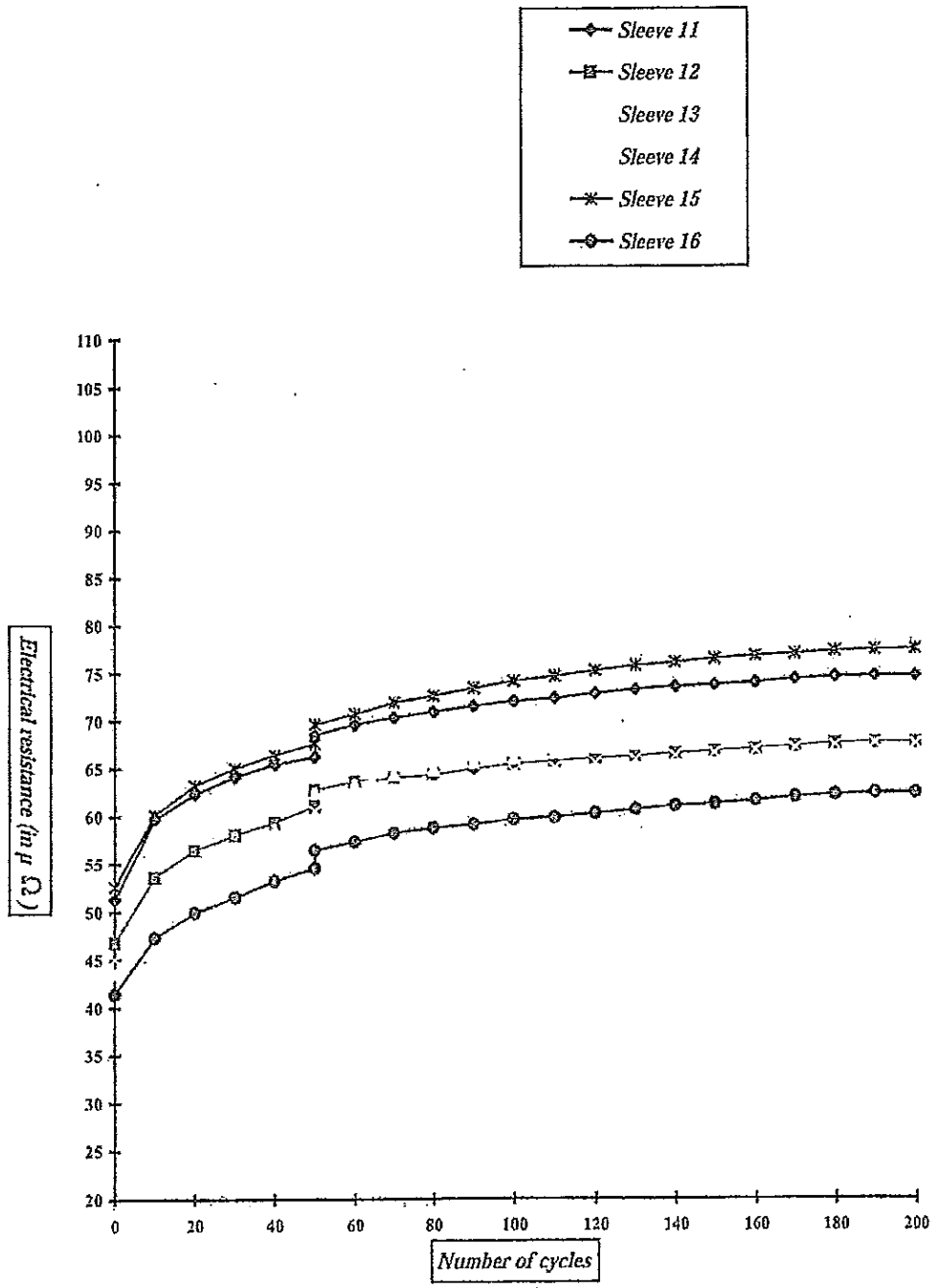
Rj RESISTANCE RECORD (in μΩ)

Cycles	Sleeves					
	11	12	13	14	15	16
0	51,3	46,8	43,6	45,1	52,6	41,4
10	59,7	53,6	50,7	51,0	60,1	47,3
20	62,3	56,4	54,1	53,4	63,2	49,9
30	64,1	58,0	56,4	55,6	65,0	51,5
40	65,4	59,3	58,6	57,0	66,4	53,2
50 before overloads	66,2	61,0	59,8	58,3	67,6	54,5
50 after overloads	68,5	62,7	62,4	60,5	69,6	56,4
60	69,6	63,6	63,3	61,4	70,7	57,3
70	70,3	64,0	64,4	62,3	71,9	58,2
80	70,9	64,3	64,9	63,2	72,6	58,7
90	71,5	64.9	65,6	63,9	73,4	59,1
100	72,0	65,4	66,0	64,6	74,1	59,6
110	72,3	65,7	66,6	65,0	74,6	59,8
120	72,8	66,0	67,1	65,5	75,2	60,2
130	73,2	66,2	67,5	65,8	75,7	60,6
140	73,5	66,5	67,9	66,2	76,0	61,0
150	73,7	66,7	68,4	66,5	76,4	61,2
160	73,9	66,9	68,6	66,8	76,7	61,5
170	74,3	67,2	68,9	67,0	76,9	61,9
180	74,5	67,5	69,2	67,3	77,2	62,1
190	74,6	67,6	69,3	67,5	77,3	62,3
200	74,6	67,6	69,6	67,4	77,4	62,3

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

TEST DESCRIPTION : 2.8 Electric ageing test



TEST DESCRIPTION : 2.8 Electric ageing test

Sleeve MJPT 70N

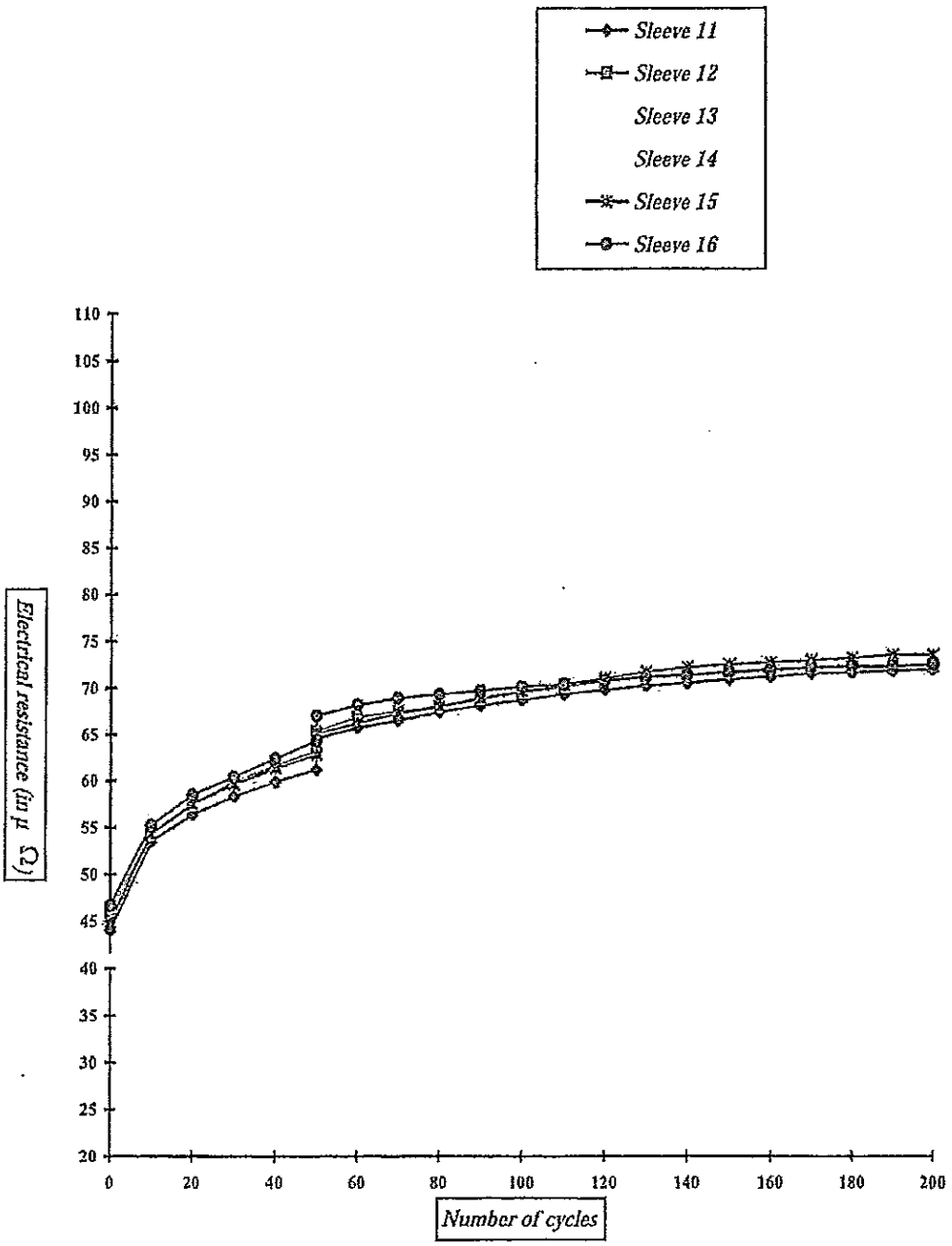
Rj RESISTANCE RECORD (in μΩ)

Cycles	Sleeves					
	11	12	13	14	15	16
0	44,0	46,1	40,9	41,4	44,9	46,7
10	53,5	54,2	45,8	47,4	54,3	55,2
20	56,4	57,4	48,1	50,1	57,5	58,5
30	58,3	59,9	50,6	51,8	59,6	60,4
40	59,9	61,6	52,3	53,2	61,3	62,4
50 before overloads	61,2	63,2	53,9	54,8	62,8	64,3
50 after overloads	64,6	65,3	56,4	58,0	65,1	67,0
60	65,7	66,9	57,2	58,9	66,2	68,2
70	66,5	67,5	58,4	60,1	67,3	68,9
80	67,4	68,0	58,9	60.5	68,0	69,3
90	68,1	68,8	59,6	61,3	68,9	69,7
100	68,7	69,5	60,5	61,9	69,6	70,1
110	69,3	70,1	61,1	62,4	70,3	70,4
120	69,8	70,7	61,7	62,7	71,0	70,8
130	70,2	71,1	62,2	62,9	71,7	71,2
140	70,5	71,4	62,6	63,2	72,2	71,3
150	70,9	71,6	62,9	63,6	72,5	71,7
160	71,2	71,9	63,3	63,8	72,7	71,9
170	71,5	72,1	63,5	64,0	72,9	72,2
180	71.6	72,2	63,6	64,2	73,2	72,3
190	71,8	72,1	63.7	64,5	73,5	72,3
200	71,9	72,3	63,7	64,6	73,5	72,5

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД САМОКОВ

TEST DESCRIPTION : 2.8 Electric ageing test



TEST DESCRIPTION : 2.8 Electric ageing test — Page 16/17

The results are the ones of § 5.4 of standard NF C 33-004 which defines the following acceptance criteria :

◊ *Relative initial scatter of resistances : : $\delta \leq 0,30$*

◊ *Stability of resistances R_j (on the 11th last measures) :* $\frac{\Delta R_j}{R_j} \leq 12\%$

◊ *Stability of temperatures θj (on the 11th last measures) :*

$d_j - 10 \leq d_j \leq d_j + 10$ with : $* d_j = \theta_R - \theta_j$

$* \theta_R$: temperature of the warmest reference core

$\theta_j \leq$ Max θ_R

Equivalent to check : Min $d_j \geq 0$

1) Temperature

TYPE OF SLEEVES	SAMPLE N°	TEMPERATURE STABILITY (IN K)			
		$\overline{d_j} - 10$	Min d_j	Max d_j	$\overline{d_j} + 10$
MJPT 95 (173)	11	23,9	33,2	34,4	43,9
	12	24,3	32,8	35,0	44,3
	13	24,1	30,8	35,5	44,1
	14	23,6	32,1	34,4	43,6
	15	24,5	33,4	35,2	44,5
	16	23,5	30,1	35,1	43,5
MJPT 150	11	26,1	35,1	37,2	46,1
	12	25,3	33,9	36,3	45,3
	13	24,7	33,4	36,2	44,7
	14	23,3	32,2	34,4	43,3
	15	24,9	32,9	36,8	44,9
	16	26,8	34,9	38,6	46,8
MJPT 70N	11	26,0	34,4	37,6	46,0
	12	25,8	35,1	37,3	45,8
	13	28,6	37,6	40,2	48,6
	14	24,9	33,4	36,8	44,9
	15	25,1	33,9	36,8	45,1
	16	27,6	35,7	39,8	47,6

TEST DESCRIPTION : 2.8 Electric ageing test

2) Resistance

TYPE OF SLEEVES	SAMPLE N°	INITIAL SCATTER δ	RESISTANCE STABILITY (in %) $\frac{\Delta R_j}{R_j}$
MJPT 95 (173)	11	0,052	3,0
	12		3,2
	13		2,2
	14		2,8
	15		1,7
	16		2,3
MJPT 150	11	0,155	3,5
	12		3,3
	13		5,3
	14		4,4
	15		4,3
	16		4,4
MJPT 70N	11	0,090	4,5
	12		3,9
	13		5,1
	14		4,3
	15		5,4
	16		3,4

TEST DESCRIPTION : 2.9 **Endurance test under mechanical and thermal stresses** Page 1/4

DATE : FROM 27/02/2006 TO 13/06/2006
PLACE : MICHAUD test laboratory

OPERATORS : AC. BERNARD
JP. RAPY

N° OF SAMPLES : 17 up to 20 for sleeves MJPT 95 (173), MJPT 150 and MJPT 70N

TEST EQUIPMENTS

- Measure equipment for traction / compression
- Mechanical tensile strength and endurance bench
- Measure station SA 32

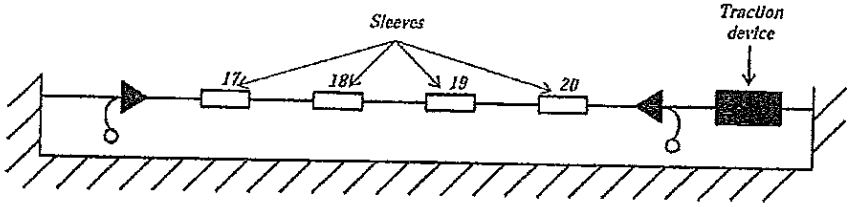
PROCEDURES

Procedures and acceptance criteria are the ones of § 2.9 of standard NF C 33-021 dated June 1998.

A) Sleeves MJPT 95 (173) et MJPT 150

1. Assembly

The four sleeves are fitted on a core according to the principle scheme hereafter :



The free length between each sleeve and between the end sleeves and the anchoring equipment is of 1m.

Thermocouples are installed in the middle of both sleeves placed at both extremities of the assembly, as well as in the middle of a 1 m long stripped reference core placed outside anchoring equipment.

2. Installation period

A tensile strength of 4 050N for sleeve MJPT 95 (173) and 6 300N for sleeve MJPT 150 is applied in 1min on the core. This strength is regulated during 10min, temperature of the conductors core being regulated at the room temperature.

Then, while regulating the cores conductor at the room temperature, we leave the assembly stabilizing during 24 h.

3. Cycles application

After the previous stabilization period, 500 cycles of 90 min are applied on the assembly as follows :

- Heating :
  - for 45 min : Temperature of the conductors core maintained at (90 ± 3) °C.
  - for 45 min : Natural cooling of the conductors core down to (25 ± 3) °C and stabilization at this temperature.
- Mechanical strength :

  It is adjusted at 2 230N for sleeve MJPT 95 (173) and 3 500N for sleeve MJPT 150 at the end of the first cycle then once per 24 h at the end of a cycle.

Temperature of the sleeves is measured every 25 cycles at the end of the heating period at 90°C.

TEST DESCRIPTION : 2.9 Endurance test under mechanical and thermal stresses — Page 2/4

4. Acceptance criteria

a) Temperature of the sleeves n° 17 and 20, at the end of the heating periods, must be under the temperature of the reference core.

b) Sleeves n° 18 and 19 must be tested accordingly :

- *Dielectric strength test in the balls*

  The assembly, placed horizontally, is covered with lead balls over 1 up to 2cm. After at least 1 min, a dielectric test is performed on the assembly at a 6kV voltage at an industrial frequency for 1min, at a 1kV/s speed
  No breakage shall occur.

- *Dielectric strength test in water*

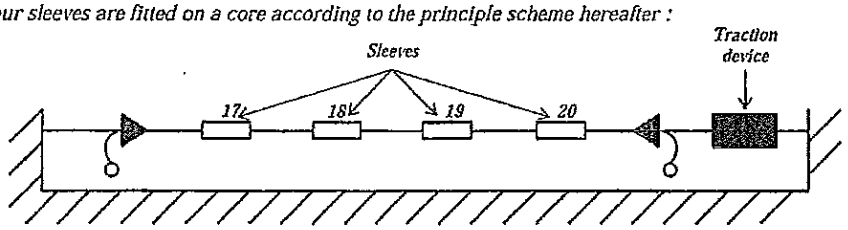
  A dielectric strength is then performed on the assembly under a 1kV voltage according to § 2.4 of this report.
  No breakage shall occur.

c) The four sleeves must be tested according to the mechanical test (§ 2.3.2 of this report).

B) Sleeve MJPT 70N

1. Assembly

The four sleeves are fitted on a core according to the principle scheme hereafter :



The free length between each sleeve and between the end sleeves and the anchoring equipment is of 1m.

Thermocouples are installed in the middle of both sleeves placed at both extremities of the assembly, as well as in the middle of a 1 m long stripped reference core placed outside anchoring equipment.

2. Cycles application

500 cycles of 90 min are applied on the assembly as follows :

- *Heating :*
  - *for 45 min : Temperature of the conductors core maintained at (90 ± 3)°C,*
  - *for 45 min : Natural cooling of the conductors core down to (25 ± 3)°C and stabilization at this temperature.*
- *Mechanical strength :*
  - *for 75 min : a F1 tensile strength of 4 500N is applied on the assembly,*
  - *for 15 min : the tensile strength is adjusted at F2 equal to 10 000N.*

F2 strength application shall be progressive and performed in 5 up to 60 s.

Temperature of the sleeves is measured every 25 cycles at the end of the heating period at 90°C.

TEST DESCRIPTION : 2.9 Endurance test under mechanical and thermal stresses — Page 3/4

3. Acceptance criteria

a) Temperature of the sleeves n° 17 and 20, at the end of the heating periods, must be under the temperature of the reference core.

b) Sleeves n° 18 and 19 must be tested accordingly :

- Dielectric strength test in the balls

  The assembly, placed horizontally, is covered with lead balls over 1 up to 2cm. After at least 1 min, a dielecuric test is performed on the assembly at a 6kV voltage at an industrial frequency for 1min, at a 1kV/s speed.
  No breakage shall occur.

- Dielectric strength test in water

  A dielectric strength is then performed on the assembly under a 1kV voltage according to § 2.4 of this report.
  No breakage shall occur.

c) The four sleeves must be tested according to the mechanical test (§ 2.3.2 of this report).

TEST RESULTS

a) Temperature of sleeves n° 17 et 20

CYCLES	TYPE OF SLEEVES								
	MJPT 95 (173)			MJPT 150			MJPT 70N		
	REFERENCE CORE	17	20	REFERENCE CORE	17	20	REFERENCE CORE	17	20
1	90,6	66,1	68,4	89,7	68,8	67,3	88,6	64,3	62,9
25	88,7	65,9	68,9	90,4	68,2	68,4	89,4	64,8	62,6
50	89,5	64,7	67,6	90.6	67,6	68,4	91,2	63,6	63,1
75	90,3	66,2	68,0	91,3	67,9	68,1	90,3	64,1	62,5
100	91,5	65,1	68,2	89,8	68,4	67,6	91,5	64,7	62,2
125	89.9	66,4	68,8	89,6	67,5	67,8	89,6	64,2	62,8
150	90,4	66,8	67,9	90,5	68,3	68,0	90,2	63,9	63,4
175	90,8	65,9	68,1	88,9	68,0	67,6	88,7	63,5	62,5
200	91,6	66,3	68,5	91,2	68,5	67,5	89,8	64,4	62,7
225	89,5	65,4	68,3	90,2	68,6	68,2	90,0	63,8	63,3
250	90,2	66,2	67,7	89,1	67,3	68,3	91,3	64,1	62,6
275	91,4	66,0	68,4	90,4	68,9	67,4	89,9	63,7	63,5
300	90,7	66,6	68,2	89,6	68,1	68,7	90,6	63,6	62,7
325	90,3	65,3	67,3	88,8	67,5	69,3	91,5	64,3	63,1
350	90,5	65,7	68,0	90,7	68,6	67,8	89,6	64,2	63,6
375	89,9	65,8	68,6	91,2	68,3	68,4	90,4	63,9	62,8

TEST DESCRIPTION : 2.9 Endurance test under mechanical and thermal stresses

CYCLES	TYPE OF SLEEVES								
	MJPT 95 (173)			MJPT 150			MJPT 70N		
	REFERENCE CORE	17	20	REFERENCE CORE	17	20	REFERENCE CORE	17	20
400	90,4	66,3	68,8	91,1	68,6	67,1	88,5	64,4	63,0
425	91,5	65,9	68,6	89,8	68,3	67,6	89,6	64,6	62,9
450	89,7	66,0	67,4	90,4	67,5	68,3	90,1	64,3	63,3
475	90,3	66,4	68,5	90,7	68,1	68,1	91,2	64,2	62,8
500	90,6	65,8	68,3	89,2	68,7	67,9	90,5	63,9	62,6

Temperature of each sleeve is always under the reference core temperature.

b) Dielectric test of sleeves n° 18 and 19

TYPE OF SLEEVES	SAMPLE N°	COMMENTS AFTER 1min UNDER 6kV IN THE BALLS	COMMENTS AFTER 1min À 1kV IN WATER	FOLLOWING TEST
MJPT 95 (173)	18	Satisfactory	Satisfactory	2.3.2
	19	Satisfactory	Satisfactory	
MJPT 150	18	Satisfactory	Satisfactory	2.3.2
	19	Satisfactory	Satisfactory	
MJPT 70N	18	Satisfactory	Satisfactory	2.3.2
	19	Satisfactory	Satisfactory	

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ ЗА МАНШОН МЛРТ - К 117, К 116, К 115

1. **№ на тест: 130-06-02-03**

Съставил: "ВАК - 02" ООД САМОКОВ

"ВАК - 02" ООД САМОКОВ

sicame

Test report	: water tightness Test
Test number	: 10 02 301
Product brand	: SICAME
Product type	: CPTA 16

Demander of the test	: SICAME DER
Starting date of the test	: 04/02/2010
Report emission date	: 12 FEV. 2010
According to standard	: NFC 33 021 § 2.4.3 and § 2.4.4 (june 98)
This report contains	: 3 pages and 1 annex

Conclusion : The tested SICAME LV pre-insulated terminal lugs type CPTA 16 conform to the requirements of NFC 33 021 § 2.4.3 and § 2.4.4 (june 98) standard.

This is an English translation. The original French test report is the only reference version

На основание чл. 2
от ЗЗЛД

"ВАК 02" ООД
САМОКОВ

1 Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Indicator thermometer	Accuracy 2°C
93 05 48	Crimping machine	Strength 50 kN
93 02 04	Water tank	/
97 02 02	Calibrated ruler	Accuracy 0.5mm
	Dies E173	Width 9 mm

1.2 Cables

Section (mm²)	16
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08006
Conditioned on	03/02/2010 (1 h at 120°C)

2 Product tested

Designation : CPTA 16

Quantity : 2

Batch number : 09M93760

Stamping : See annex 1

Identification : 1 and 2

Reception date at the laboratory on the : 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

532

3 Test procedure

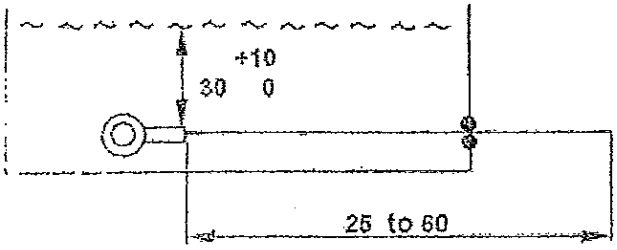
Connectors are tested according to NFC 33 021 § 2.4.3 and § 2.4.4 (June 98) standard.

3.1 Procedure

The assembly made by the lug and the conductor is placed at the bottom of a tank filled with water. The height of water is (30 ± 10) cm measured above the lug.

The core crosses out of the tank through an appropriate seal which avoids any excessive stress on the core insulation according to figure below

The assembly is left in the water for 24 h.



dimensions in cm

3.2 Preparation

A E173 groove with 9 mm wide dies is used.

4 Requirements

No trace of water shall be observed at the end of the core.

5 Results

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 and 35°C Between 25 and 75% HR	21°C 26 % HR
Duration of immersion	24 h 00	24 h 00
Immersion depth	30 $^{+10}_{0}$ cm	33 cm

6 Conclusion

No trace of water observed at the end of the core after the 24h.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

833

Test report number 10 02 300
Annex 1

SICAME LABORATORY

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

Test report	: Tensile test
Test number	: 10 02 191
Product brand	: SICAME
Product type	: CPTA 16

Demander of the test	: SICAME DER
Starting date of the test	: 09/02/2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.2 (june 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 16 conform to the requirements of NF C 33-021 § 2.3.2 (june 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

1. Equipment used during test.

1.1 Equipment used

N° C.T.	Designation	Characteristic
99 01 48	Thermometer indicated	Accuracy 2°C
93 05 48	Crimping machine	50 kN
94 03 10	Traction bench 3 tons	Class 1
	Dies E173	Width 9 mm

1.2 Cables :

Section (mm²)	16
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08006
Conditioned on	03/02/2010 (1 h at 120°C)

2. Product tested.

Désignation	: CPTA 16
Number	: 2
Batch number	: 09M93760
Stamping	: See annex 1
Identification	: 1 and 2
Reception date at the laboratory	: on the 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

3. Test.

Pre-insulated terminal lugs are tested according to NF C 33-021 § 2.3.2 (june 98) standard.

3.1 Test procedure.

Connection is carried out using 5 mm wide dies for groove E 140 and 9 mm wide dies for grooves E 173 and E 215. The minimum strength to be applied is given in the standard. The length of the cores used complies with the length indicated in the standard.

The assembly is submitted to a tensile strength applied to the conductor. The strength is increased at a rate between 1000 N/min and 5000 N/min up to:

- for phases: 50% of the minimum load indicated in standard. This strength is applied for 1 min.
- for neutral messenger: 65% of the minimum load indicated in standard. This strength is applied for 1 hour.

The strength is then increased up to the minimum load indicated in standard, and released.

3.2 Preparation

A 9 mm wide dies for groove E173 is used.

4. Results.

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	22°C 28 % HR
Rate of the tensile (N/min)	Between 1000 et 5000	2500
Strength value maintained for 1 min (N)	1300	Sample 1 : ok Sample 2 : ok
Strength value applied without breakdown (N)	2500	Sample 1 : ok Sample 2 : ok

5. Requirement

No slippage is observed.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

Test report number 10 02 190
Annex 1

SICAME LABORATORY

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

Test report	: Crimping ability test
Test number	: 10 02 081
Product brand	: SICAME
Product type	: CPTA 16

Demander of the test	: SICAME DER
Starting date of the test	: 10/02/2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.1 (june 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 16 conform to the requirements of NF C 33-021 § 2.3.1 (june 98) standard

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

539

1. Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Thermometer indicated	Accuracy 2°C
93 05 48	Crimping machine	50 kN
02 01 35	50 µm thick gauge	Accuracy ± 1,5 µm
/	Dies I:175	Width 9 mm

1.2 Cables :

Section (mm²)	16
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08006
Conditioned on	03/02/2010 (1 h at 120°C)

2. Product tested.

Désignation : CPTA 16

Number : 2

Batch number : 09M93760

Stamping : See annex 1

Identification : 1 and 2

Reception date at the laboratory : on the 03/02/2010

На основание чл. 2
от ЗЗЛД

3. Test.

Pre-insulated terminal lugs are tested according to NF C 33-021 § 3.3.1 (june 98) standard.

3.1 Test procedure.

Crimping of the joint sleeve or terminal lug on the relevant cores) shall be carried out using dies in compliance with table 3.1 of annex B of the standard. The minimum compression strength given in table 3.2 of annex B of the standard shall be applied.

3.3 Preparation

A 9 mm wide die for groove F 173 is used.

4. Requirements

The two half-dies shall be in contact, which means that a 0,05 mm thick gauge cannot be inserted between the half-dies.

5. Results

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	21°C 25 % HR
A 0,05 mm thick gauge is inserted between the half-dies	No	Sample 1 : no Sample 2 : no

6. Conclusion

The two half-dies are in contact, which means that a 0,05 mm thick gauge cannot be inserted between the half-dies.

На основание чл. 2
от ЗЗЛД

ВЕРНО С ОРИГИНАЛА

САМОКОВ

541

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ НАКРАЙНИК ТИП СРТА 16

1. **№ на тест:** 1002301 - Тест за водонепромокаемост;
2. **№ на тест:** 1002191 – Тест за якост на опън;
3. **№ на тест:** 1002081 - Изпитване на способността за пресоване;

Съставил: На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД САМОКОВ

543

Test report	: Crimping ability test
Test number	: 10 02 082
Product brand	: SICAME
Product type	: CPTA 25

Demander of the test	: SICAME DFR
Starting date of the test	: 10/02/2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.1 (June 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 25 conform to the requirements of NF C 33-021 § 2.3.1 (June 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

1. Equipment used during test.

1.1 Equipment used

N° C.T.	Designation	Characteristic
99 01 48	Thermometer indicated	Accuracy 2°C
93 05 48	Crimping machine	50 kN
02 01 35	50 µm thick gauge	Accuracy ± 1.5 µm
	Dies 6173	Width 9 mm

1.2 Cables :

Section (mm²)	35
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08006
Conditioned on	03/02/2010 (1 h at 120°C)

2. Product tested.

Désignation : CPTA 25

Number : 2

Batch number : 09M93760

Stamping : See annex 1

Identification : 1 and 2

Reception date in the laboratory : on the 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

545

3. Test.

Pre-insulated terminal lugs are tested according to NF C 33-021 § 2.3.1 (June 98) standard.

3.1 Test procedure.

Crimping of the joint sleeve or terminal lug on the relevant core(s) shall be carried out using dies in compliance with table B.1 of annex B of the standard. The minimum compression strength given in table B.2 of annex B of the standard shall be applied.

3.3 Preparation

A 9 mm² section for groove D173 is used.

4. Requirements

The two half-dies shall be in contact, which means that a 0,05 mm thick gauge cannot be inserted between the half-dies.

5. Results

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	21°C 25 % HR
A 0,05 mm thick gauge is inserted between the half-dies	No	Sample 1 : no Sample 2 : no

6. Conclusion

The two half-dies are in contact, which means that a 0,05 mm thick gauge cannot be inserted between the half-dies.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

Test report	: Tensile test
Test number	: 10 02 192
Product brand	: SICAME
Product type	: CPTA 25

Demander of the test	: SICAME DER
Starting date of the test	: 09 02 2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.2 (June 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 25 conform to the requirements of NF C 33-021 § 2.3.2 (June 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

547

1. Equipment used during test.

1.1 Equipment used

N° LT.	Designation	Characteristic
99 01 48	Thermometer indicated	Accuracy 2°C
93 05 48	Crimping machine	50 kN
94 03 10	Traction bench 3 tons	Class 1
	Dies E173	Width 9 mm

1.2 Cables :

Section (mm²)	25
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08006
Conditioned on	03/02/2010 (1 h at 120°C)

2. Product tested.

Désignation	: CPTA 25
Number	: 2
Batch number	: 09M193760
Stamping	: See annex 1
Identification	: 1 and 2
Reception date at the laboratory	: on the 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

3. Test.

Pre-insulated terminal lugs are tested according to NF C 33-021 § 2.3.2 (june 98) standard.

3.1 Test procedure.

Connection is carried out using 5 mm wide dies for groove E 140 and 9 mm wide dies for grooves E 173 and E 215. The minimum strength to be applied is given in the standard. The length of the cores used complies with the length indicated in the standard.

The assembly is submitted to a tensile strength applied to the conductor. The strength is increased at a rate between 1000 N/min and 5000 N/min up to:

- for phases: 50% of the minimum load indicated in standard. This strength is applied for 1 min.
- for neutral messenger: 65% of the minimum load indicated in standard. This strength is applied for 1 hour.

The strength is then increased up to the minimum load indicated in standard, and released.

3.2 Preparation

A 9 mm wide dies for groove E173 is used.

4. Results.

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	22°C 28 % HR
Rate of the tensile (N/min)	Between 1000 et 5000	2500
Strength value maintained for 1 min (N)	1300	Sample 1 : ok Sample 2 : ok
Strength value applied without breakdown (N)	2500	Sample 1 : ok Sample 2 : ok

5. Requirement

No slippage is observed.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

549

Test report	: Water tightness Test
Test number	: 10 02 302
Product brand	: SICAME
Product type	: CPTA 25

Demander of the test	: SICAME DER
Starting date of the test	: 04-02-2010
Report emission date	: 12 FEV. 2010
According to standard	: NFC 33 021 § 2.4.3 and § 2.4.4 (June 98)
This report contains	: 3 pages and 1 annex

Conclusion : The tested SICAME SA pre-insulated terminal lugs type CPTA 25 conform to the requirements of NFC 33 021 § 2.4.3 and § 2.4.4 (June 98) standard.

This is an English translation. The original French test report is the only reference version

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

1 Equipment used during test.

1.1 Equipment used

N° U.I.	Designation	Characteristic
99 01 48	Dial thermometer	Accuracy 2°C
93 05 48	Traction machine	Strength 50 kN
93 02 06	Water tank	/
97 02 32	Calibrated ruler	Accuracy 0,5mm
	[illegible]	Width 9 mm

1.2 Cables

Section (mm²)	25
Nature	Aluminium
Standard	NF C 33-209
From	[illegible]
Identification n°	08006
Conditioning	[illegible]
	[illegible]

2 Product tested

Designation	: CPJA 25
Quantity	: 2
Batch number	: 09M93760
Stamping	: See annex 1
Identification	: 1 and 2
Received in the laboratory on the	: 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

3 Test procedure

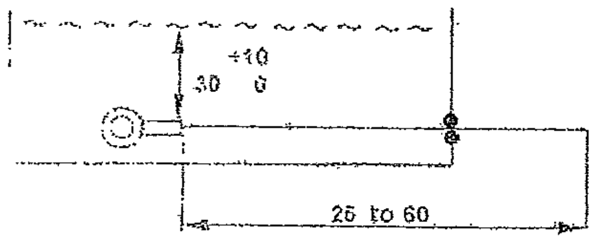
Conductor [illegible] tested according to NFC 33 021 § 2.4.3 and § 2.4.4 (june 98) standard.

3.1 Procedure

The [illegible] by the lug and the conductor is placed at the bottom of a tank filled with water. The height [illegible] (30 ± 10) cm measured above the lug.

The core [illegible] of the tank through an appropriate seal which avoids any excessive stress on the [illegible] according to figure below.

The [illegible] is left in the water for 24 h.



dimensions in cm

3.2 Preparation

A [illegible] used.

4 Requirements

No trace of water shall be observed at the end of the core.

5 Results

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 and 35°C	21°C
	Between 25 and 75% HR	26 % HR
Duration of immersion	[illegible]	24 h 00
Immersion depth	30 [illegible] cm	33 cm

6 Conclusion

No [illegible] end of the core after the 24h.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ НАКРАЙНИК ТИП СРТА 25

1. **№ на тест: 1002082** - Изпитване на способността за пресоване;
2. **№ на тест: 1002192** - Тест за якост на опън;
3. **№ на тест: 1002302** - Тест за водонепропускливост;

Съставил: На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД
САМОКОВ

sicame

Laboratoire d'essais
Direction Etudes et Recherches

Test report	**: Tensile test**
Test number	**: 10 02 190**
Product brand	**: SICAME**
Product type	**: CPTA 35**

Demander of the test	: SICAME DER
Starting date of the test	: 09/02/2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.2 (june 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 35 conform to the requirements of NF C 33-021 § 2.3.2 (june 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

ВАК - 02° ООД
САМОКОВ

1. Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Thermometer indicated	Accuracy 2°C
93 05 48	Crimping machine	50 kN
94 03 10	Traction bench 3 tons	Class I
/	Dies E173	Width 9 mm

1.2 Cables :

Section (mm²)	35
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08006
Conditioned on	03/02/2010 (1 h at 120°C)

2. Product tested.

Désignation : CPTA 35

Number : 2

Batch number : 09M93760

Stamping : See annex 1

Identification : 1 and 2

Reception date at the laboratory : on the 03/02/2010

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

САМОКОВ

3. Test.

Pre-insulated terminal lugs are tested according to NF C 33-021 § 2.3.2 (june 98) standard.

3.1 Test procedure.

Connection is carried out using 5 mm wide dies for groove E 140 and 9 mm wide dies for grooves E 173 and E 215. The minimum strength to be applied is given in the standard. The length of the cores used complies with the length indicated in the standard.

The assembly is submitted to a tensile strength applied to the conductor. The strength is increased at a rate between 1000 N/min and 5000 N/min up to:

- for phases: 50% of the minimum load indicated in standard. This strength is applied for 1 min,
- for neutral messenger: 65% of the minimum load indicated in standard. This strength is applied for 1 hour.

The strength is then increased up to the minimum load indicated in standard, and released.

3.2 Preparation

A 9 mm wide dies for groove E173 is used.

4. Results.

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	22°C 28 % HR
Rate of the tensile (N/min)	Between 1000 et 5000	2500
Strength value maintained for 1 min (N)	1300	Sample 1 : ok Sample 2 : ok
Strength value applied without breakdown (N)	2500	Sample 1 : ok Sample 2 : ok

5. Requirement

No slippage is observed.

Test report number 10 02 190
Annex 1

SICAME LABORATORY

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

SICAME

Laboratoire d'essais
Direction Etudes et Recherches

Test report	**: water tightness Test**
Test number	**: 10 02 300**
Product brand	**: SICAME**
Product type	**: CPTA 35**

Demander of the test : SICAME DER

Starting date of the test : 04/02/2010

Report emission date : 12 FEV. 2010

According to standard : NFC 33 021 § 2.4.3 and § 2.4.4 (june 98)

This report contains : 3 pages and 1 annex

Conclusion : The tested SICAME LV pre-insulated terminal lugs type CPTA 35 conform to the requirements of NFC 33 021 § 2.4.3 and § 2.4.4 (june 98) standard.

This is an English translation. The original French test report is the only reference version

На основание чл. 2
от ЗЗЛД

"ВАК - 02" ООД
САМОКОВ

1 Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Indicator thermometer	Accuracy 2°C
93 05 48	Crimping machine	Strength 50 kN
93 02 04	Water tank	/
97 02 02	Calibrated ruler	Accuracy 0,5mm
/	Dies E173	Width 9 mm

1.2 Cables

Section (mm²)	35
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08006
Conditioned on	03/02/2010 (1 h at 120°C)

2 Product tested

Designation : CPTA 35

Quantity : 2

Batch number : 09M93760

Stamping : See annex 1

Identification : 1 and 2

Reception date at the laboratory on the : 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

3 Test procedure

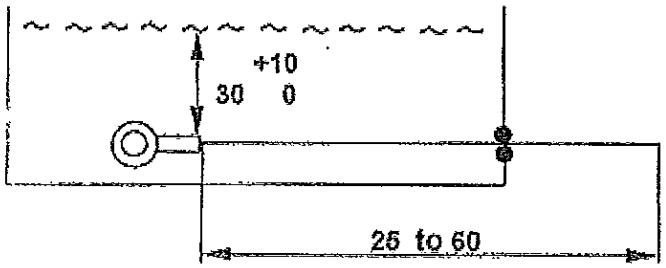
Connectors are tested according to NFC 33 021 § 2.4.3 and § 2.4.4 (june 98) standard.

3.1 Procedure

The assembly made by the lug and the conductor is placed at the bottom of a tank filled with water. The height of water is (30 ± 10) cm measured above the lug.

The core crosses out of the tank through an appropriate seal which avoids any excessive stress on the core insulation according to figure below

The assembly is left in the water for 24 h.



dimensions in cm

3.2 Preparation

A E173 groove with 9 mm wide dies is used.

4 Requirements

No trace of water shall be observed at the end of the core.

5 Results

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 and 35°C Between 25 and 75% HR	21°C 26 % HR
Duration of immersion	24 h 00	24 h 00
Immersion depth	$30\ ^{+10}_{0}$ cm	33 cm

6 Conclusion

No trace of water is observed at the end of the core after the 24h.

На основание чл. 2
от ЗЗЛД

ВЗРНО С ОРИГИНАЛА

sicame

Laboratoire d'essais
Direction Etudes et Recherches

Test report	**: Crimping ability test**
Test number	**: 10 02 080**
Product brand	**: SICAME**
Product type	**: CPTA 35**

Demander of the test	: SICAME DER
Starting date of the test	: 10/02/2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.1 (june 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 35 conform to the requirements of NF C 33-021 § 2.3.1 (june 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

1. Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Thermometer indicated	Accuracy 2°C
93 05 48	Crimping machine	50 kN
02 01 35	50 µm thick gauge	Accuracy ± 1,5 µm
/	Dies E173	Width 9 mm

1.2 Cables :

Section (mm²)	35
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08006
Conditioned on	03/02/2010 (1 h at 120°C)

2. Product tested.

Désignation : CPTA 35

Number : 2

Batch number : 09M93760

Stamping : See annex 1

Identification : 1 and 2

Reception date at the laboratory : on the 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

3. Test.

Pre-insulated terminal lugs are tested according to NF C 33-021 § 2.3.1 (june 98) standard.

3.1 Test procedure.

Crimping of the joint sleeve or terminal lug on the relevant core(s) shall be carried out using dies in compliance with table B.1 of annex B of the standard. The minimum compression strength given in table B.2 of annex B of the standard shall be applied.

3.3 Preparation

A 9 mm wide dies for groove E173 is used.

4. Requirements

The two half-dies shall be in contact, which means that a 0,05 mm thick gauge cannot be inserted between the half-dies.

5. Results.

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	21°C 25 % HR
A 0,05 mm thick gauge is inserted between the half-dies	No	Sample 1 : no Sample 2 : no

6. Conclusion

The two half-dies are in contact, which means that a 0,05 mm thick gauge cannot be inserted between the half-dies.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

Test report number 10 02 080
Annex 1

SICAME LABORATORY

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ НАКРАЙНИК ТИП СРТА 35

1. **№ на тест: 1002190** – Тест за якост на опън;
2. **№ на тест: 1002300** - Тест за водонепропускливост;
3. **№ на тест: 1002080** - Изпитване на способността за пресоване.

Съставил:

На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД
САМОКОВ

66

SICAME

Test report	**: Tensile test**
Test number	**: 10 02 200**
Product brand	**: SICAME**
Product type	**: CPTA 50**

Demander of the test	: SICAME DER
Starting date of the test	: 09/02/2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.2 (june 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 50 conform to the requirements of NF C 33-021 § 2.3.2 (june 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

ВАК - 02 - 007
САМОКОВ

567

1. Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Thermometer indicated	Accuracy 2°C
93 05 48	Crimping machine	50 kN
94 03 10	Traction bench 3 tons	Class 1
/	Dies E173	Width 9 mm

1.2 Cables :

Section (mm²)	50
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08007
Conditioned on	03/02/2010 (1 h at 120°C)

2. Product tested.

Désignation : CPTA 50

Number : 2

Batch number : 09M01252

Stamping : See annex 1

Identification : 1 and 2

Reception date at the laboratory : on the 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

3. Test.

Pre-insulated terminal lugs are tested according to NF C 33-021 § 2.3.2 (june 98) standard.

3.1 Test procedure.

Connection is carried out using 5 mm wide dies for groove E 140 and 9 mm wide dies for grooves E 173 and E 215. The minimum strength to be applied is given in the standard. The length of the cores used complies with the length indicated in the standard.

The assembly is submitted to a tensile strength applied to the conductor. The strength is increased at a rate between 1000 N/min and 5000 N/min up to:

- for phases: 50% of the minimum load indicated in standard. This strength is applied for 1 min,
- for neutral messenger: 65% of the minimum load indicated in standard. This strength is applied for 1 hour.

The strength is then increased up to the minimum load indicated in standard, and released.

3.2 Preparation

A 9 mm wide dies for groove E173 is used.

4. Results.

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	22°C 28 % HR
Rate of the tensile (N/min)	Between 1000 et 5000	2500
Strength value maintained for 1 min (N)	1300	Sample 1 : ok Sample 2 : ok
Strength value applied without breakdown (N)	2500	Sample 1 : ok Sample 2 : ok

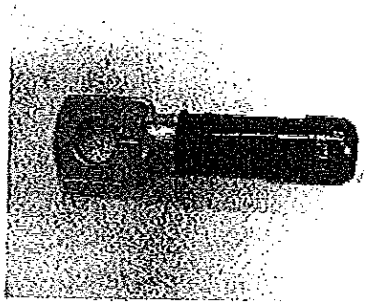
5. Requirement

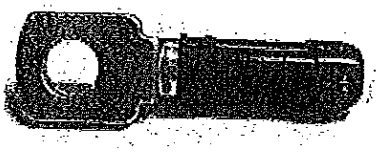
No slippage is observed.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ





ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

sicame

Laboratoire d'essais
Direction Etudes et Recherches

Test report	**: water tightness Test**
Test number	**: 10 02 310**
Product brand	**: SICAME**
Product type	**: CPTA 50**

Demander of the test : SICAME DER

Starting date of the test : 04/02/2010

Report emission date : 12 FEV. 2010

According to standard : NFC 33 021 § 2.4.3 and § 2.4.4 (june 98)

This report contains : 3 pages and 1 annex

Conclusion : The tested SICAME LV pre-insulated terminal lugs type CPTA 50 conform to the requirements of NFC 33 021 § 2.4.3 and § 2.4.4 (june 98) standard.

This is an English translation. The original French test report is the only reference version

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

1 Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Indicator thermometer	Accuracy 2°C
93 05 48	Crimping machine	Strength 50 kN
93 02 04	Water tank	/
97 02 02	Calibrated ruler	Accuracy 0,5mm
/	Dies E173	Width 9 mm

1.2 Cables

Section (mm²)	50
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08007
Conditioned on	03/02/2010 (1 h at 120°C)

2 Product tested

Designation : CPTA 50

Quantity : 2

Batch number : 09M01252

Stamping : See annex 1

Identification : 1 and 2

Reception date at the laboratory on the : 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

3 Test procedure

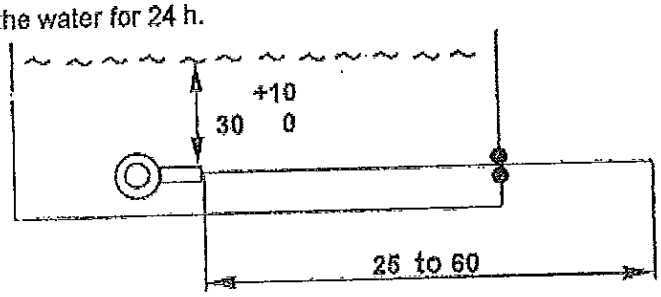
Connectors are tested according to NFC 33 021 § 2.4.3 and § 2.4.4 (june 98) standard.

3.1 Procedure

The assembly made by the lug and the conductor is placed at the bottom of a tank filled with water. The height of water is (30 ± 10) cm measured above the lug.

The core crosses out of the tank through an appropriate seal which avoids any excessive stress on the core insulation according to figure below

The assembly is left in the water for 24 h.



dimensions in cm

3.2 Preparation

A E173 groove with 9 mm wide dies is used.

4 Requirements

No trace of water shall be observed at the end of the core.

5 Results

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 and 35°C Between 25 and 75% HR	21°C 26 % HR
Duration of immersion	24 h 00	24 h 00
Immersion depth	30^{+10}_{0} cm	33 cm

6 Conclusion

No trace of water is observed at the end of the core after the 24h.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

CAMORO

J73

Test report number 10 02 310
Annex 1

SICAME LABORATORY

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САНОКОВ

SICAME

Laboratoire Central
Direction Etudes et Recherches

Test report	**: Crimping ability test**
Test number	**: 10 02 090**
Product brand	**: SICAME**
Product type	**: CPTA 50**

Demander of the test	: SICAME DER
Starting date of the test	: 10/02/2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.1 (june 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 50 conform to the requirements of NF C 33-021 § 2.3.1 (june 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВАК-02-ОВТ
САМОКОВ

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1. Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Thermometer indicated	Accuracy 2°C
93 05 48	Crimping machine	50 kN
02 01 35	50 µm thick gauge	Accuracy ± 1,5 µm
/	Dies E173	Width 9 mm

1.2 Cables :

Section (mm²)	50
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08007
Conditioned on	03/02/2010 (1 h at 120°C)

2. Product tested.

Désignation : CPTA 50

Number : 2

Batch number : 09M01252

Stamping : See annex 1

Identification : 1 and 2

Reception date at the laboratory : on the 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

3. Test.

Pre-insulated terminal lugs are tested according to NF C 33-021 § 2.3.1 (June 98) standard.

3.1 Test procedure.

Crimping of the joint sleeve or terminal lug on the relevant core(s) shall be carried out using dies in compliance with table B.1 of annex B of the standard. The minimum compression strength given in table B.2 of annex B of the standard shall be applied.

3.3 Preparation

A 9 mm wide dies for groove E173 is used.

4. Requirements

The two half-dies shall be in contact, which means that a 0,05 mm thick gauge cannot be inserted between the half-dies.

5. Results.

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	21°C 25 % HR
A 0,05 mm thick gauge is inserted between the half-dies	No	Sample 1 : no Sample 2 : no

6. Conclusion

The two half-dies are in contact, which means that a 0,05 mm thick gauge cannot be inserted between the half-dies.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

САМОКОВ

Test report number 10 02 090
Annex 1

SICAME LABORATORY

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ НАКРАЙНИК ТИП СРТА 50

1. **№ на тест: 1002200** - Тест за якост на опън;
2. **№ на тест: 1002310** - Тест за водонепропускливост;
3. **№ на тест: 1002090** - Изпитване на способността за пресоване.

Съставил:

На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД
САМОКОВ

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SICAME

Laboratoire d'essais
LABEP

Rapport d'essai : **Essai de corrosion au brouillard salin**
Test report : ***Salt mist test***

Rapport d'essai n°	: 14 05 390	***Test report n.***	: *14 05 390*
Constructeur	: SICAME	***Manufacturer***	: *SICAME*
Référence produit	: CPTA 54	***Product reference***	: *CPTA 54*
Demandeur de l'essai	: SICAME S.A.	***Test applied by***	: *SICAME S.A.*
Date d'essai	: 28 mai au 05 juin 2014	***Date of the test***	: *28 May to 5 June 2014*
Date d'émission du rapport	: 05 juin 2014	***Report issue date***	: *5 June 2014*

Essais réalisés suivant : NF C 33-021 (09/2013), § 6.7.1
Tests carried out in accordance with

Ce rapport comprend : 5 pages
This report contains

Conclusion : Les cosses préisolées SICAME de type CPTA 54 soumis à essai satisfont aux exigences du § 6.7.1 de la norme NF C 33-021 (09/2013).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion : *The tested SICAME preinsulated lugs CPTA 54 comply with the requirements of clause 6.7.1 of NF C 33-021 (09/2013) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
от ЗЗЛД

B.P. N° 1 - 19231 POMPADOUR - CEDEX - FRANCE - Tel.(33)05 55 73 89 00 - Fax (33) 05 55 73 63 12 - Email : info@sicame.fr

1. Echantillons soumis à essai / *Samples under test*

Type : Cosses préisolées
Preinsulated lugs

Désignation / *Designation* : CPTA 54

Fabricant / *Manufacturer* : SICAME

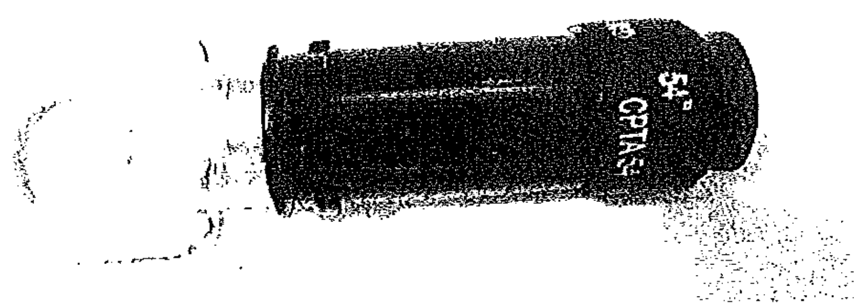
Numéro de lot / *Batch number* : 12M435210
Echantillons suivant le plan E1100310
Samples in accordance with drawing n. E1100310

Plage de sections *Cross-section range*
54,6 mm²

Classes du produit selon NF EN 50483-1 (§9.3) *Classes of product in accordance with NF EN 50483-1 (§9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐	Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 2
Repérage / *Identification* : 1, 2

Date de réception au laboratoire : 26 mai 2014
Reception date at the laboratory : *26 May 2014*



ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД САМОКОВ

2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir *Compression tool*	5 tonnes *5 tons*
/	Matrices *Dies*	E173 largeur 9 mm *E173 width 9 mm*
02 01 76	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
11 03 16	Hygromètre indicateur *Indicating hygrometer*	Précision ± 5% *Accuracy ± 5%*
10 03 33	pH-mètre *pH-meter*	Précision ± 0,1 pH *Accuracy ± 0,1 pH*
98 03 39	Densimètre *Densimeter*	Précision ± 0,1 % *Accuracy ± 0,1 %*
04 00 30	Thermomètre étanche *Watertight thermometer*	Précision 1°C *Accuracy 1°C*
10 01 98	Enceinte de brouillard salin *Salt spray enclosure*	Conforme à la NF EN 60068-2-11 (08/1999) *Compliant with NF EN 60068-2-11 (08/1999)*

3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 6.7.1 de la norme NF C 33-021 (09/2013).

Lugs are tested in accordance with NF C 33-021 (09/2013) § 6.7.1 standard.

3.1 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences *Requirements*	Relevés *Results*	
		Min	*Max*
Température ambiante et humidité ***Ambient temperature and humidity conditions***	15 °C ≤ T° ≤ 35 °C 25 % ≤ HR ≤ 75 %	21 °C 46 %HR	22 °C 55 %HR

3.2 Configuration des échantillons / *Samples configuration*

Échantillon n° *Sample n.*	Section / *Cross section* (mm²)
1	54,6
2	

4 Exigences / *Requirements*

	Exigences / *Requirements*	**Résultats / *Results***
Concentration de NaCl *NaCl concentration* (%)	5 ± 1	Min : 4,8 Max : 5,0
Valeur du pH *pH value*	6,5 ≤ pH ≤ 7,2	Min : 6,76 Max : 7,07
Nombre de cycle en brouillard salin *Number of cycles in salt spray*	1 × 168 h	1 × 168 h
Volume récolté *Collected volume* (mL/cycle)	168 ≤ v ≤ 336	185

5 Résultats / *Results*

	Exigences *Requirements*	**Relevés / *Results***	
		Echantillon / *Sample*	
		1	**2**
Détérioration des raccords *Deterioration of the connectors*	Aucune *No deterioration*	Aucune *No deterioration*	Aucune *No deterioration*
Marquage *Identification marking*	Lisible *Legible*	Lisible *Legible*	Lisible *Legible*

6 Conclusion / *Conclusion*

Le marquage permettant l'identification des échantillons est lisible quand il est examiné avec une vue normale ou corrigée, sans grossissement.
Aucune détérioration des cosses pouvant nuire à leur bon fonctionnement ne s'est produit.

The sample's identification marking is legible when examined with normal or corrected vision, without magnification.
No deterioration of the lugss occurred which would impair their normal function.

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

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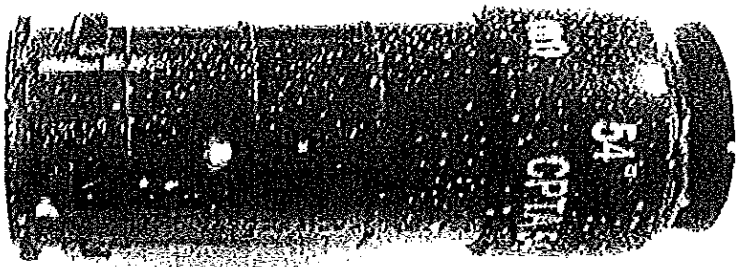
7 Photographies / *Pictures*

Echantillon 1 après essai / *Sample 1 after test*

Echantillon 2 après essai / *Sample 2 after test*



FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" 2004
САМОКОВ

SICAME

Laboratoire d'essais
LABEP

Rapport d'essai : **Essai d'étanchéité**
Test report : ***Water tightness test***

Rapport d'essai n°	: 14 05 290	***Test report n.***	*: 14 05 290*
Constructeur	: SICAME	***Manufacturer***	*: SICAME*
Référence produit	: CPTA 54	***Product reference***	*: CPTA 54*
Demandeur de l'essai	: SICAME S.A.	***Test applied by***	*: SICAME S.A.*
Date d'essai	: 03 au 04 juin 2014	***Date of the test***	*: 3 to 4 June 2014*
Date d'émission du rapport	: 05 juin 2014	***Report issue date***	*: 5 June 2014*

Essais réalisés suivant : NF C 33-021 (09/2013), § 6.4.2
Tests carried out in accordance with

Ce rapport comprend : 4 pages
This report contains

Conclusion : Les cosses préisolées SICAME de type CPTA 54 soumis à essai satisfont aux exigences du § 6.4.2 de la norme NF C 33-021 (09/2013).
Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion *: The tested SICAME preinsulated lugs CPTA 54 comply with the requirements of clause 6.4.2 of NF C 33-021 (09/2013) standard.*
To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

Visa	Visa	Visa
Responsable de l'essai	Responsable Qualité Environnement	Directeur Études et Recherches
Supervisor of the test	*Quality Manager*	*Director Research & Development*
C. ESPINASSE	L. DUPAQUET	X. SOUCHE

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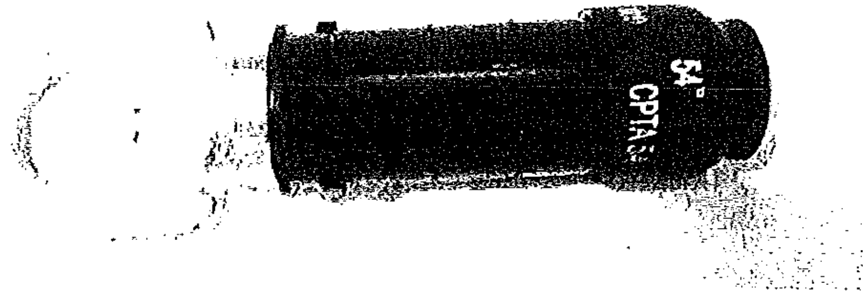
1 Echantillons soumis à essai / *Samples under test*

Type	: Cosses préisolées *Preinsulated lugs*
Désignation / *Designation*	: CPTA 54
Fabricant / *Manufacturer*	: SICAME
Numéro de lot / *Batch number*	: 12M435210 Echantillons suivant le plan E1100310 *Samples in accordance with drawing n. E1100310*

Plage de sections ***Cross-section range***
54,6 mm²

Classes du produit selon NF EN 50483-1 (§9.3) ***Classes of product in accordance with NF EN 50483-1 (§9.3)***		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐	Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples*	: 2
Repérage / *Identification*	: 1, 2
Date de réception au laboratoire *Reception date at the laboratory*	: 26 mai 2014 *: 26 May 2014*



ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir *Compression tool*	5 tonnes *5 tons*
/	Matrices *Dies*	E173 largeur 9 mm *E173 width 9 mm*
02 01 76	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
11 03 16	Hygromètre indicateur *Indicating hygrometer*	Précision ± 5% *Accuracy ± 5%*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
10 00 73	Bac d'étanchéité *Water tank*	/ /

2.2 Câbles / *Cables*

N° Lot / ***Identification***	13001				
Norme / ***Standard***	NF C 33-209				
Provenance / ***From***	France				
Section / ***Cross section***	54,6 mm²				
Matériau de l'âme / ***Conductor material***	☐ Cuivre *Copper*	☐ Aluminium	☑ Alliage d'aluminium *Aluminium alloy*		
Type d'âme / ***Conductor type***	☐ Massive *Solid*	☑ Câblée *Stranded*			
	☐ Rétreinte *Compacted*	☑ Non rétreinte *Non compacted*	☐ Souple *Flexible*		
Forme d'âme / ***Conductor shape***	☑ Ronde *Circular*	☐ Sectorale *Sector-shaped*			
Nombre de brins / ***Number of wires***	7				
Ø sur âme / ***Ø on conductor***	9,6 mm				
Matériau de l'isolant ***Insulation material***	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*				
Ø sur isolant / ***Ø on insulation***	12,6 mm				
Conditionnement ***Conditioned on***	1h00 à 120°C *1h00 at 120°C*				
Charge de rupture minimale (CRM) ***Minimum Breaking Load (MBL)***	16 600 N				
Référence du câble HD626 / ***HD626 conductor reference***	6 E-1				

"ВАК - 02" ООД
САМОКОВ

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3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 6.4.2 de la norme NF C 33-021 (09/2013).
Lugs are tested in accordance with NF C 33-021 (09/2013) § 6.4.2 standard.

3.1 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences *Requirements*	**Relevés** *Results*
Température ambiante et humidité *Ambient temperature and humidity conditions*	15 °C ≤ T° ≤ 30 °C 25 % ≤ HR ≤ 75 %	21 °C 47 %HR
Hauteur d'eau au dessus du connecteur (cm) *Height of water above the connectors (cm)*	30 à 40 *30 to 40*	33

3.2 Configuration des échantillons / *Samples configuration*

Echantillon n° *Sample n.*	**Section** / *Cross section* (mm²)
1	54,6
2	

4 Résultats / Results

Echantillon n° *Sample n.*	**Exigences** *Requirements*	**Résultats** *Results*
1	Pas de trace d'eau après 24 h d'immersion *No trace of water after 24 h immersion*	Pas de trace d'eau *No trace of water*
2		Pas de trace d'eau *No trace of water*

5 Conclusion / *Conclusion*

Aucune trace d'eau au-dessous de l'extrémité des conducteurs n'est constatée.
No trace of water is observed at the end of the core.

FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ФОД
САМОКОВ

SICAME

Laboratoire d'essais

LABEP

Rapport d'essai : Essai de traction

Test report : Tensile test

Rapport d'essai n°	: 14 05 280	*Test report n.*	*: 14 05 280*
Constructeur	: SICAME	*Manufacturer*	*: SICAME*
Référence produit	: CPTA 54	*Product reference*	*: CPTA 54*
Demandeur de l'essai	: SICAME S.A.	*Test applied by*	*: SICAME S.A.*
Date d'essai	: 28 mai 2014	*Date of the test*	*: 28 May 2014*
Date d'émission du rapport	: 28 mai 2014	*Report issue date*	*: 28 May 2014*

Essais réalisés suivant : NF C 33-021 (09/2013), § 6.3.2

Tests carried out in accordance with

Ce rapport comprend : 5 pages

This report contains

Conclusion : Les cosses préisolées SICAME de type CPTA 54 soumis à essai satisfont aux exigences du § 6.3.2 de la norme NF C 33-021 (09/2013).

Pour déclarer la conformité, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

Conclusion *: The tested SICAME preinsulated lugs CPTA 54 comply with the requirements of clause 6.3.2 of NF C 33-021 (09/2013) standard.*

To give a ruling on the conformity, the uncertainty associated to the result is not implicitly involved

На основание чл. 2
от ЗЗЛД

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ВЯРНО С ОРИГИНАЛА

ВАК 02 ООД САМОКОВ

1 Echantillons soumis à essai / *Samples under test*

Type : Cosses préisolées
Preinsulated lugs

Désignation / *Designation* : CPTA 54

Fabricant / *Manufacturer* : SICAME

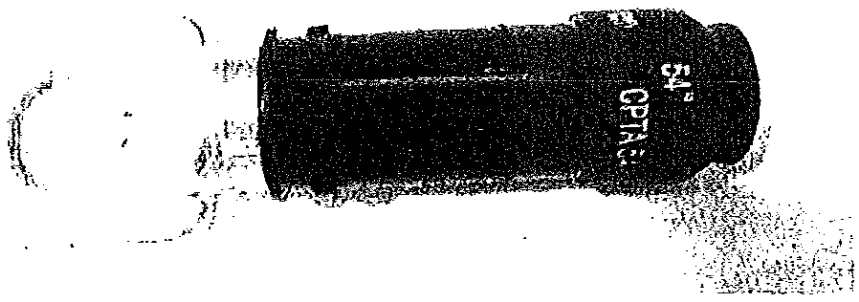
Numéro de lot / *Batch number* : 12M435210
Echantillons suivant le plan E1100310
Samples in accordance with drawing n. E1100310

Plage de sections *Cross-section range*
54,6 mm²

Classes du produit selon NF EN 50483-1 (§9.3) *Classes of product in accordance with NF EN 50483-1 (§9.3)*		
☑	Classe A *Class A*	: raccords soumis aux cycles de vieillissement électrique et aux essais de court-circuit *: connectors subjected to heat cycles and short-circuit current tests*
☐	Classe B *Class B*	: raccords soumis seulement aux cycles de vieillissement électrique *: connectors subjected to heat cycles only*
☑	Classe 1 *Class 1*	: raccords soumis à l'essai de tenue diélectrique dans l'eau *: connectors subjected to dielectric test in water*
☐	Classe 2 *Class 2*	: raccords soumis à l'essai de tenue diélectrique dans l'air *: connectors subjected to dielectric test in air*

Nombre d'échantillons / *Number of samples* : 2
Repérage / *Identification* : 1, 2

Date de réception au laboratoire : 26 mai 2014
Reception date at the laboratory : *26 May 2014*



ВЯРНО С ОРИГИНАЛА

"БАК - 02" ООД
САМОКОВ

2 Caractéristiques du matériel / *Equipment used during test*

2.1 Appareillage utilisé / *Equipment used*

N° U.T.	Désignation / *Designation*	Caractéristiques / *Characteristic*
93 05 48	Presse à sertir *Compression tool*	5 tonnes *5 tons*
/	Matrices *Dies*	E173 largeur 9 mm *E173 width 9 mm*
02 01 76	Thermomètre indicateur *Indicating thermometer*	Précision ± 2°C *Accuracy ± 2°C*
11 03 16	Hygromètre indicateur *Indicating hygrometer*	Précision ± 5% *Accuracy ± 5%*
97 02 02	Réglet étalon *Calibrated ruler*	Précision 0,5 mm *Accuracy 0,5 mm*
94 03 10	Banc de traction 3 tonnes *Tensile test machine 3 tons*	Classe 1 *Class 1*

2.2 Câbles / *Cables*

N° Lot / ***Identification***	13001
Norme / ***Standard***	NF C 33-209
Provenance / ***From***	France
Section / ***Cross section***	54,6 mm²
Matériau de l'âme / ***Conductor material***	☐ Cuivre *Copper* ☐ Aluminium ☑ Alliage d'aluminium *Aluminium alloy*
Type d'âme / ***Conductor type***	☐ Massive *Solid* ☑ Câblée *Stranded* ☐ Rétreinte *Compacted* ☑ Non rétreinte *Non compacted* ☐ Souple *Flexible*
Forme d'âme / ***Conductor shape***	☑ Ronde *Circular* ☐ Sectorale *Sector-shaped*
Nombre de brins / ***Number of wires***	7
Ø sur âme / ***Ø on conductor***	9,6 mm
Matériau de l'isolant ***Insulation material***	Polyéthylène réticulé type TIX-5 *Cross-linked polyethylene, TIX-5 type*
Ø sur isolant / ***Ø on insulation***	12,6 mm
Conditionnement ***Conditioned on***	1h00 à 120°C *1h00 at 120°C*
Charge de rupture minimale (CRM) ***Minimum Breaking Load (MBL)***	16 600 N
Référence du câble HD626 / ***HD626 conductor reference***	6 E-1

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

3 Méthode / *Method*

Les essais sont effectués selon les prescriptions du paragraphe 6.3.2 de la norme NF C 33-021 (09/2013).

Lugs are tested in accordance with NF C 33-021 (09/2013) § 6.3.2 standard.

3.1 Conditions ambiantes / *Ambient conditions*

Les conditions ambiantes relevées lors de l'essai sont les suivantes :
Ambient conditions when performing the test are as follows:

	Exigences *Requirements*	**Relevés** *Results*
Température ambiante et humidité *Ambient temperature and humidity conditions*	15 °C ≤ T° ≤ 35 °C 25 % ≤ HR ≤ 75 %	21 °C 46 %HR

3.2 Configuration des échantillons / *Samples configuration*

Echantillon n° *Sample n.*	**Section** / *Cross section* **(mm²)**
1	54,6
2	

4 Résultats / *Results*

Echantillon n° *Sample n.*	**Vitesse de montée programmée** *Planned increase rate* **(N/min)**	
	Exigences *Requirements*	Résultats *Results*
1	1000 ≤ … ≤ 5000	3000
2		3000

Echantillon n° *Sample n.*	**Effort pour marquage pendant 1 minute** *Strength for marking during 1 min* **(N)**		**Effort maximum** *Maximum strength* **(N)**	
	Exigences *Requirements*	Résultats *Results*	Exigences *Requirements*	Résultats *Results*
1	1500	1500	2500 ± 5% ⇔ 2375 ≤ … ≤ 2625	2521
2		1500		2523

ВЯРНО С ОРИГИНАЛА

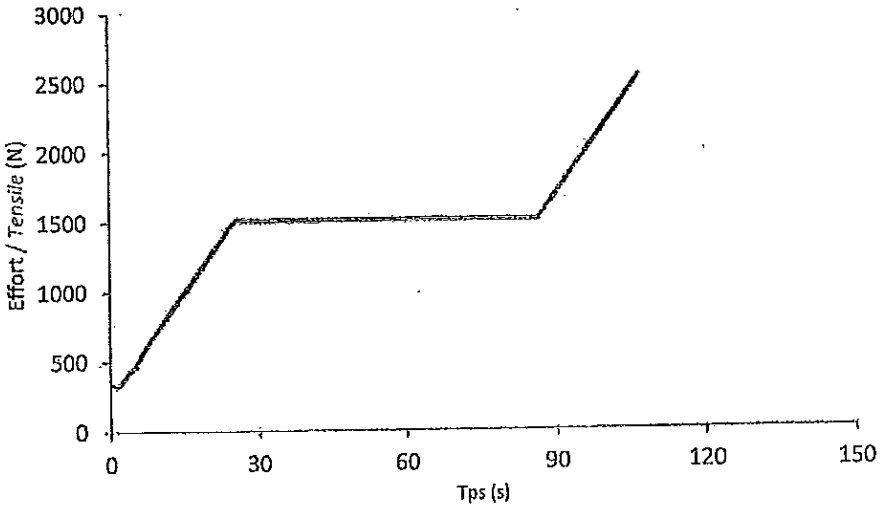
"ВАК - 02" ООД
САМОКОВ

5 Conclusion / *Conclusion*

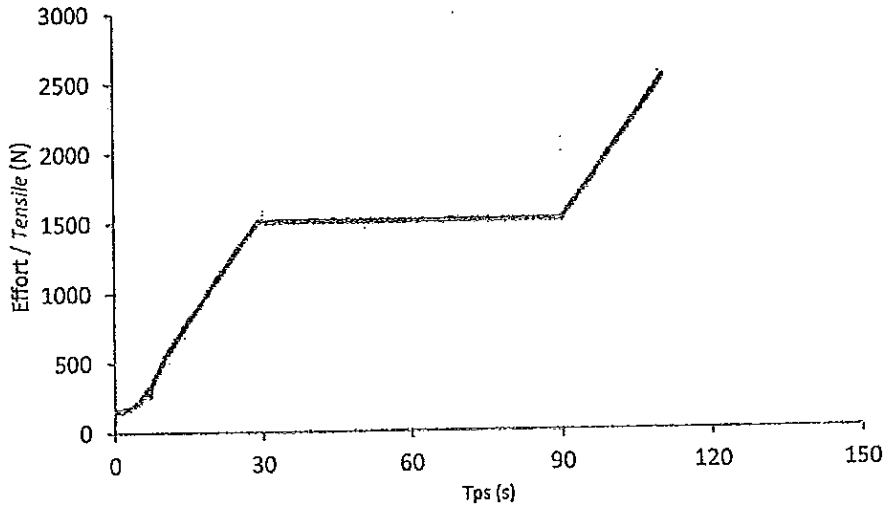
Aucun glissement ou rupture ne s'est produit.
No slippage or breakage occurred.

6 Courbes / *Curves*

Echantillon 1 / *Sample 1*



Echantillon 2 / *Sample 2*



FIN DU RAPPORT D'ESSAI / *END OF TEST REPORT*

"БАК - 02" ООД
САМОКОВ

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ НАКРАЙНИК ТИП СРТА 54

1. **№ на тест: 1405390** – Корозионен тест в солна мъгла;
2. **№ на тест: 1405290** – Тест за водонепропускливост;
3. **№ на тест: 1405280** – Тест за якост на опън;

Съставил: На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД

Test report	: Crimping ability test
Test number	: 10 02 091
Product brand	: SICAME
Product type	: CPTA 70

Demander of the test	: SICAME DLR
Starting date of the test	: 10/02/2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.1 (June 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 70 conform to the requirements of NF C 33-021 § 2.3.1 (June 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

1. Equipment used during test.

1.1 Equipment used

N° I.T.	Designation	Characteristic
99 01 48	Thermometer indicated	Accuracy 2°C
93 05 48	Crimping machine	50 kN
02 01 35	50 µm thick gauge	Accuracy ± 1.5 µm
	Dies n°173	Width 9 mm

1.2 Cables :

Section (mm²)	70
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	080107
Conditioned on	03/02/2010
	(1 h at 20°C)

2. Product tested.

Désignation	: CPI A 70
Number	: 2
Batch number	: 09A101252
Stamping	: See annex 1
Identification	: 1 and 2
Reception date at the laboratory	: on the 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

3. Test.

Pre-insulated terminal lugs are tested according to NF C 33-021 § 2.3.1 (June 98) standard.

3.1 Test procedure.

Crimping of the joint sleeve or terminal lug on the relevant core(s) shall be carried out using dies in compliance with table B.1 of annex B of the standard. The minimum compression strength given in table B.2 of annex B of the standard shall be applied.

3.3 Preparation

A 9 ram wide dies for groove U 175 is used.

4. Requirements

The two half-dies shall be in contact, which means that a 0.05 mm thick gauge cannot be inserted between the half-dies

5. Results

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 35 % et 75 % HR	21°C 35 % HR
A 0,05 mm. thick gauge is inserted between the half-dies	No	Sample 1 : no Sample 2 : no

6. Conclusion

The two half-dies are in contact, which means that a 0.05 mm thick gauge cannot be inserted between the half-dies.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

BAR - 02 OOD
SAMOKOV

Test report	: Tensile test
Test number	: 10 02 301
Product brand	: SICAME
Product type	: CPTA 70

Demander of the test	: SICAME DIR
Starting date of the test	: 09 02 2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.2 (June 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 70 conform to the requirements of NF C 33-021 § 2.3.2 (June 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВЕРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

1. Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Thermometer indicated	Accuracy 2°C
93 05 48	Crimping machine	50 kN
94 03 10	Traction bench 5 tons	Class 1
/	Dies E173	Width 9 mm

1.2 Cables :

Section (mm²)	70
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08007
Conditioned on	03/02/2010 (1 h at 120°C)

2. Product tested.

Désignation	: CPTA 70
Number	: 2
Batch number	: 09M01252
Stamping	: See annex 1
Identification	: 1 and 2
Reception date at the laboratory	: on the 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
ДАМОРОВ

3. Test.

Pre-insulated terminal lugs are tested according to NF C 33-021 § 2.3.2 (June 98) standard.

3.1 Test procedure.

Connection is carried out using 5 mm wide dies for groove E 140 and 9 mm wide dies for grooves E 173 and E 215. The minimum strength to be applied is given in the standard. The length of the cores used complies with the length indicated in the standard.

The assembly is submitted to a tensile strength applied to the conductor. The strength is increased at a rate between 1000 N/min and 5000 N/min up to:

- for phases: 50% of the minimum load indicated in standard. This strength is applied for 1 min.
- for neutral messenger: 65% of the minimum load indicated in standard. This strength is applied for 1 hour.

The strength is then increased up to the minimum load indicated in standard, and released.

3.2 Preparation

A 9 mm wide dies for groove E173 is used.

4. Results.

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	22°C 28 % HR
Rate of the tensile (N/min)	Between 1000 et 5000	2500
Strength value maintained for 1 min (N)	1300	Sample 1 : ok Sample 2 : ok
Strength value applied without breakdown (N)	2500	Sample 1 : ok Sample 2 : ok

5. Requirement

No slippage is observed.

На основание чл. 2
от ЗЗЛД

ВЕРНО С ОРИГИНАЛА

САМОКОВ

Test report	: water tightness Test
Test number	: 10 02 311
Product brand	: SICAME
Product type	: CPTA70

Demander of the test	: SICAME DLR
Starting date of the test	: 04/02/2010
Report emission date	: 12 FEV. 2010
According to standard	: NFC 33 021 § 2.4.3 and § 2.4.4 (June 98)
This report contains	: 3 pages and 1 annex

Conclusion : The tested SICAME LV pre-insulated terminal lugs type CPTA70 conform to the requirements of NFC 33 021 § 2.4.3 and § 2.4.4 (June 98) standard.

This is a English translation. The original French test report is the only reference version

601

1 Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Indicator thermometer	Accuracy 2°C
93 05 48	Crimping machine	Strength 50 kN
93 02 04	Water tank	/
97 02 02	Calibrated ruler	Accuracy 0,5mm
/	Dies E173	Width 9 mm

1.2 Cables

Section (mm²)	70
Nature	Aluminium
Standard	NF C 33-209
From	France
Identification n°	08007
Conditioned on	05/02/2010 (1 h at 120°C)

2 Product tested

Designation	: CPTA 70
Quantity	: 2
Batch number	: 09M01252
Stamping	: See annex 1
Identification	: 1 and 2
Reception date at the laboratory on the	: 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

602

3 Test procedure

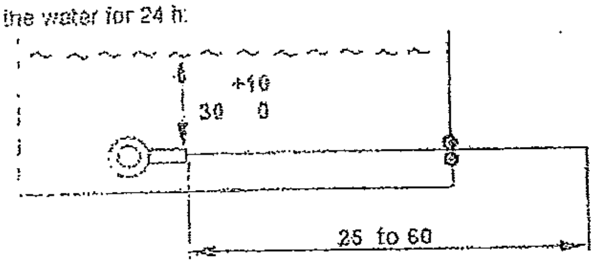
Connectors are tested according to NF C 33 021 § 2.4.3 and § 2.4.4 (june 98) standard.

3.1 Procedure

The assembly made by the lug and the conductor is placed at the bottom of a tank filled with water. The height of water is (30 ± 10) cm measured above the lug.

The core passes out of the tank through an appropriate seal which avoids any excessive stress on the core [illegible] according to figure below

The assembly is left in the water for 24 h.



dimensions in cm

3.2 Preparation

A [illegible] with [illegible] is used.

4 Requirements

No [illegible] shall be observed at the end of the core

5 Results

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 and 35°C	21°C
	Between 25 and 75% HR	26 % HR
Duration of [illegible]	24 h 00	24 h 00
Immersion depth	30 [illegible] cm	33 cm

6 Conclusion

No [illegible] at the end of the core after the 24h.

На основание чл. 2
от ЗЗЛД

"ВАК - 02" ООД
САМОКОВ

ВЯРНО С ОРИГИНАЛА

603

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ НАКРАЙНИК ТИП СРТА 70

1. **№ на тест: 1002091** - Изпитване на способността за пресоване;
2. **№ на тест: 1002201** – Тест за якост на опън;
3. **№ на тест: 1002311** - Тест за водонепропускливост;

Съставил: На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД
САМОКОВ

SICAME
Laboratoire d'essais
Direction Etudes et Recherches

Test report	**: Tensile test**
Test number	**: 10 02 210**
Product brand	**: SICAME**
Product type	**: CPTA 95**

Demander of the test	: SICAME DER
Starting date of the test	: 09/02/2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.2 (June 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 95 conform to the requirements of NF C 33-021 § 2.3.2 (June 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

B.P. N° 1 - 19231 POMPADOUR - Tél. (33) 05 55 73 63 12 - Fax (33) 05 55 73 63 12 - E-mail: info@sicame.fr

"ВАК - 02" ООД
САМОКОВ

ВЯРНО С ОРИГИНАЛА

605

1. Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Thermometer indicated	Accuracy 2°C
93 05 48	Crimping machine	50 kN
94 03 10	Traction bench 3 tons	Class 1
/	Dies E173	Width 9 mm

1.2 Cables :

Section (mm²)	95
Nature	Aluminium
Standard	UNE 21-030-92 (12/1992)
From	Spain
Identification n°	05024
Conditioned on	27/06/2006 (1 h at 120°C)

2. Product tested.

Désignation : CPTA 95

Number : 2

Batch number : 09M932780

Stamping : See annex 1

Identification : 1 and 2

Reception date at the laboratory : on the 03/02/2010

3. Test.

Pre-insulated terminal lugs are tested according to NF C 33-021 § 2.3.2 (june 98) standard.

3.1 Test procedure.

Connection is carried out using 5 mm wide dies for groove E 140 and 9 mm wide dies for grooves E 173 and E 215. The minimum strength to be applied is given in the standard. The length of the cores used complies with the length indicated in the standard.

The assembly is submitted to a tensile strength applied to the conductor. The strength is increased at a rate between 1000 N/min and 5000 N/min up to:

- for phases: 50% of the minimum load indicated in standard. This strength is applied for 1 min,
- for neutral messenger: 65% of the minimum load indicated in standard. This strength is applied for 1 hour.

The strength is then increased up to the minimum load indicated in standard, and released.

3.2 Preparation

A 9 mm wide dies for groove E173 is used.

4. Results.

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	22°C 28 % HR
Rate of the tensile (N/min)	Between 1000 et 5000	2500
Strength value maintained for 1 min (N)	1300	Sample 1 : ok Sample 2 : ok
Strength value applied without breakdown (N)	2500	Sample 1 : ok Sample 2 : ok

5. Requirement

No slippage is observed.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

607

Test report number 10 02 210
Annex 1

SICAME LABORATORY

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
ДАМОКОВ

608

Laboratoire d'essais
Direction Etudes et Recherches

Test report : water tightness Test
Test number : 10 02 320
Product brand : SICAME
Product type : CPTA 95

Demander of the test : SICAME DER

Starting date of the test : 08/02/2010

Report emission date : 12 FEV. 2010

According to standard : NFC 33 021 § 2.4.3 and 2.4.4 (june 98)

This report contains : 3 pages and 1 annex

Conclusion : The tested SICAME LV pre-insulated terminal lugs type CPTA 95 conform to the requirements of NFC 33 021 § 2.4.3 and 2.4.4 (june 98) standard.

This is an English translation. The original French test report is the only reference version

На основание чл. 2
от ЗЗЛД

1 Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Indicator thermometer	Accuracy 2°C
93 05 48	Crimping machine	Strength 50 kN
93 02 04	Water tank	/
97 02 02	Calibrated ruler	Accuracy 0,5mm
/	Dies E173	Width 9 mm

1.2 Cables

Section (mm²)	95
Nature	Aluminium
From	Spain
Standard	UNE 21-030-92 (12/1992)
Identification n°	05024
Conditioned on	27/06/2006 (1h at 120°C)

2 Product tested

Designation	: CPTA 95
Quantity	: 2
Batch number	: 09M93278
Marking	: See annex 1
Identification	: 1 and 2
Reception date at the laboratory on the	: 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

610

3 Test procedure

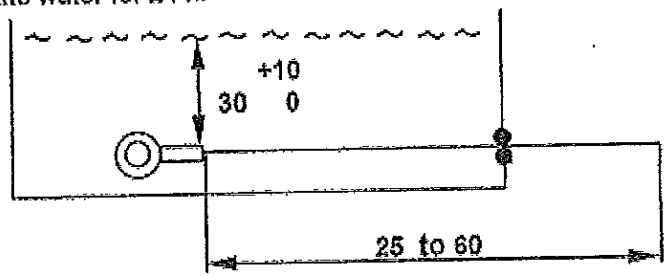
Connectors are tested according to NFC 33 021 § 2.4.3 and 2.4.4 (june 98) standard.

3.1 Procedure

The assembly made by the lug and the conductor is placed at the bottom of a tank filled with water. The height of water is (30 ± 10) cm measured above the lug.

The core crosses out of the tank through an appropriate seal which avoids any excessive stress on the core insulation according to figure below

The assembly is left in the water for 24 h.



dimensions in cm

3.2 Preparation

A E173 groove with 9 mm wide dies is used.

4 Requirements

No trace of water shall be observed at the end of the core.

5 Results

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 and 35°C Between 25 and 75% HR	22°C 32 % HR
Duration of immersion	24 h 00	24 h 00
Immersion depth	$30\ ^{+10}_{0}$ cm	35 cm

6 Conclusion

No trace of water is observed at the end of the core after the 24h.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

Test report number 10 02 320
Annex 1

SICAME LABORATORY

Test report	**: Crimping ability test**
Test number	**: 10 02 100**
Product brand	**: SICAME**
Product type	**: CPTA 95**

Demander of the test	: SICAME DER
Starting date of the test	: 10/02/2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.1 (June 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 95 conform to the requirements of NF C 33-021 § 2.3.1 (June 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

"ВАК - 02" ООД
САМОКОВ

1. Equipment used during test.

1.1 Equipment used

N° U.T.	Designation	Characteristic
99 01 48	Thermometer indicated	Accuracy 2°C
93 05 48	Crimping machine	50 kN
02 01 35	50 µm thick gauge	Accuracy ± 1,5 µm
/	Dies E173	Width 9 mm

1.2 Cables :

Section (mm²)	95
Nature	Aluminium
Standard	UNE 21-030-92 (12/1992)
From	Spain
Identification n°	05024
Conditioned on	27/06/2006 (1 h at 120°C)

2. Product tested.

Désignation : CPTA 95

Number : 2

Batch number : 09M93278

Stamping : See annex 1

Identification : 1 and 2

Reception date at the laboratory : on the 03/02/2010

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

3. Test.

Pre-insulated terminal lug are tested according to NF C 33-021 § 2.3.1 (june 98) standard.

3.1 Test procedure.

Crimping of the joint sleeve or terminal lug on the relevant core(s) shall be carried out using dies in compliance with table B.1 of annex B of the standard. The minimum compression strength given in table B.2 of annex B of the standard shall be applied.

3.3 Preparation

A 9 mm wide dies for groove E173 is used.

4. Requirements

The two half-dies shall be in contact, which means that a 0,05 mm thick gauge cannot be inserted between the half-dies.

5. Results.

	Standard requirements	Results
Ambient temperature and humidity conditions	Between 15 et 35°C Between 25 % et 75 % HR	21°C 25 % HR
A 0,05 mm thick gauge is inserted between the half-dies	No	Sample 1 : no Sample 2 : no

6. Conclusion

The two half-dies are in contact, which means that a 0,05 mm thick gauge cannot be inserted between the half-dies.

На основание чл. 2
от ЗЗЛД

ВЕРНО С ОРИГИНАЛА

Test report number 10 02 100
Annex 1

SICAME LABORATORY

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ

616

СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗОЛИРАН ПРЕСОВ НАКРАЙНИК ТИП СРТА 95

1. **№ на тест: 1002210** – Тест за якост на опън;
2. **№ на тест: 1002320** – Тест за водонепропускливост;
3. **№ на тест: 1002100** – Изпитване на способността за пресоване.

Съставил: На основание чл. 2 от ЗЗЛД

"ВАК - 02" ООД САМОКОВ

617

Test report	: Crimping ability test
Test number	: 10 02 102
Product brand	: SICAME
Product type	: CPTA 150

Demander of the test	: SICAME DER
Starting date of the test	: 10 02 2010
Report emission date	: 12 FEV. 2010
According to standard	: NF C 33-021 § 2.3.1 (june 98)
This report contains	: 3 pages and 1 annex
Conclusion	: The tested SICAME pre-insulated terminal lugs type CPTA 150 conform to the requirements of NF C 33-021 § 2.3.1 (june 98) standard.

This is an English translation. The original French test report is the only reference version.

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

"ВАК - 02" ООД
САМОКОВ