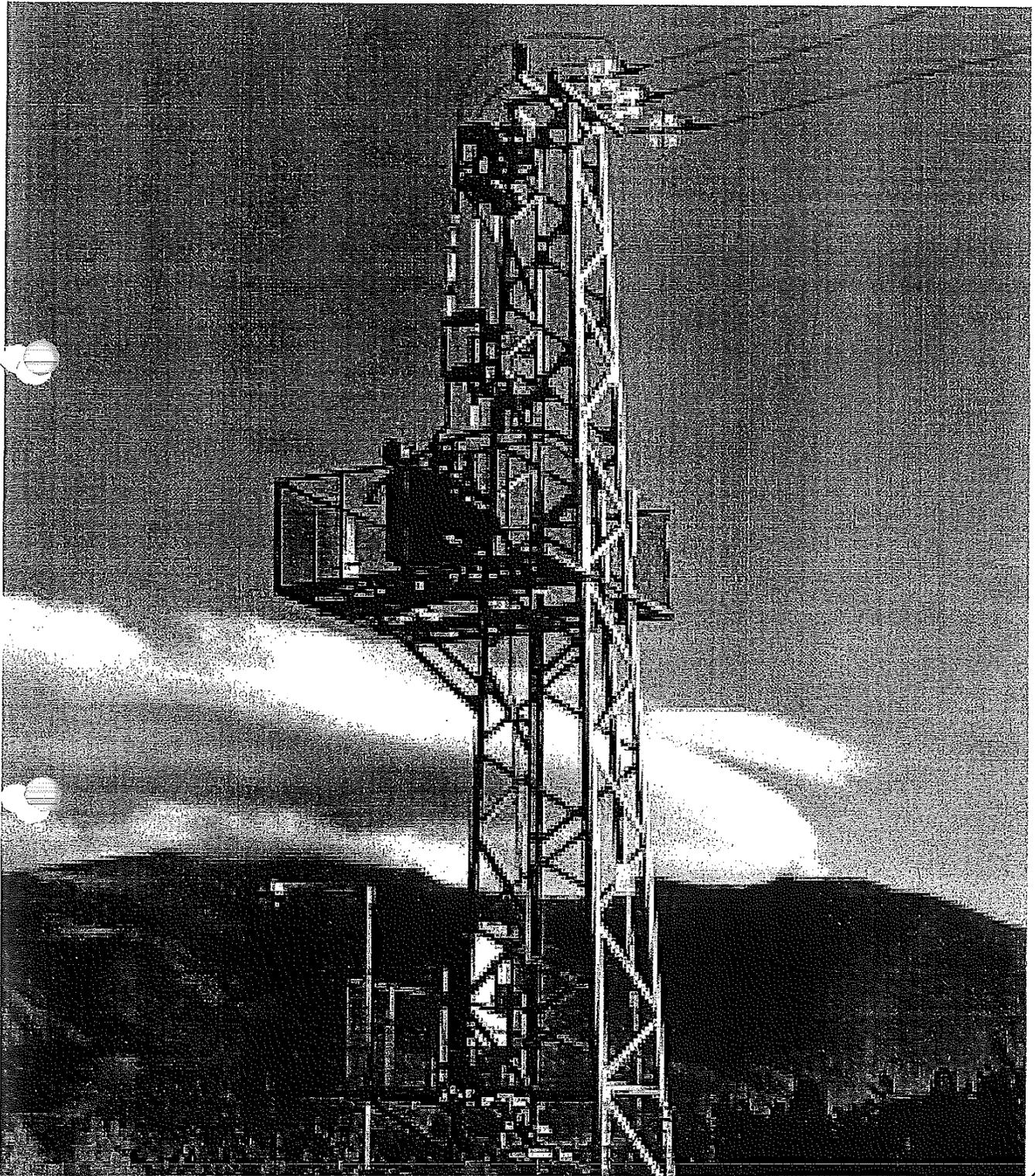


КАТАЛОЗИ



Vertical text or markings along the right edge of the page, possibly a scanning artifact or a page number.



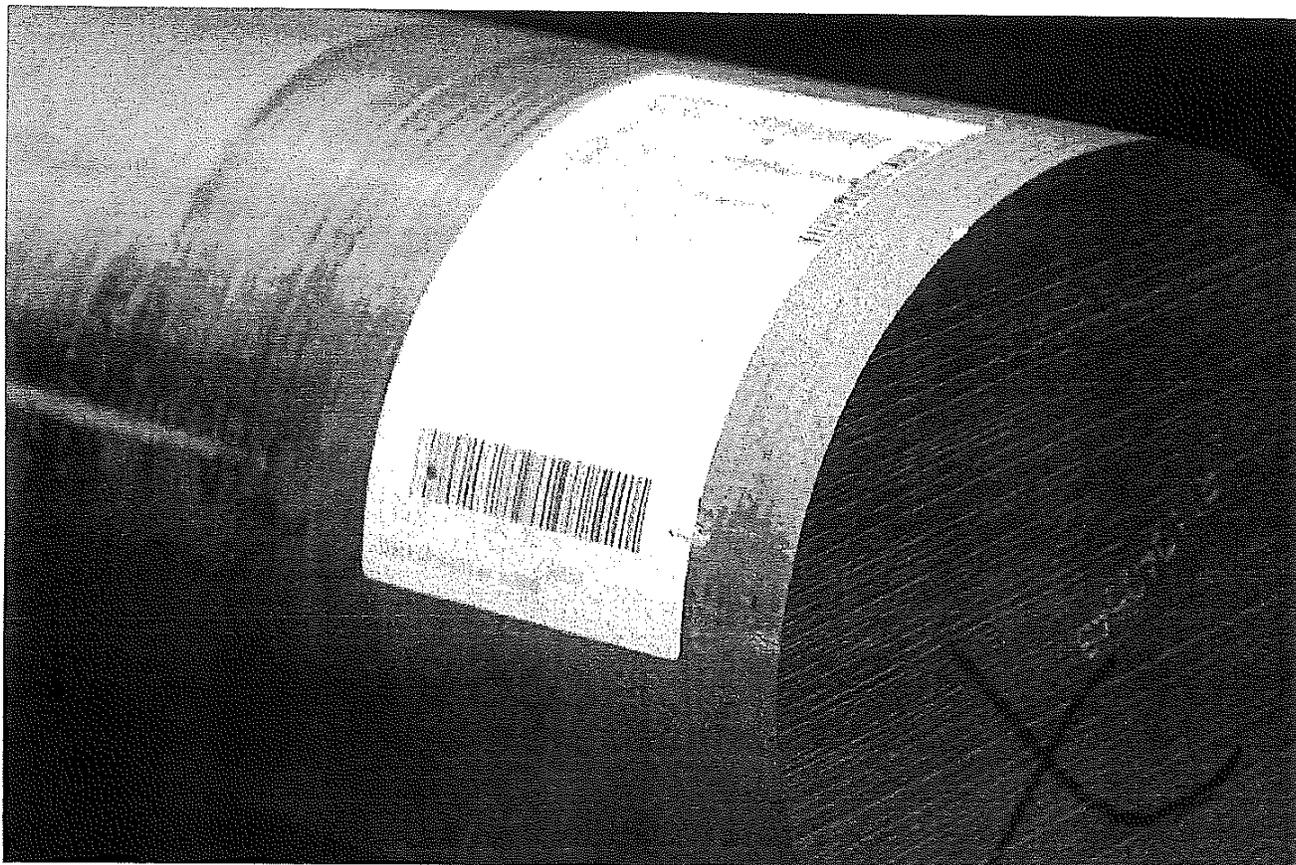
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ИНДУСТРИАЛНИ АЛУМИНИЕВИ ПРОФИЛИ

ETEM

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Алуминият като материал

ТЕГЛО

Алуминият е много лек метал с тегло от $2,7 \text{ kg/dm}^3$, около една трета от това на стоманата. Употребата на алуминий в автомобилите например намалява теглото и разхода на енергия и увеличава товарния капацитет.

СИЛА

Алуминият притежава добра устойчивост на натиск, а якостта на опън е в диапазон от 70 до 700 MPa в зависимост от сплавите и метода на производство. Чрез използването на екструдирани профили с подходящи сплави и с правилен напречен разрез може да се постигне якост, сравнима с тази на стоманените структури.

МОДУЛ НА ЕЛАСТИЧНОСТ

Модулът на еластичност (Young's Modulus) на алуминия е три пъти по-малък от този на стоманата ($E=70 \text{ GPa}$), което значи, че инерционният момент на алуминиевите профили трябва да е три пъти по-голям, за да се постигне същата устойчивост като на стоманените профили.

ФОРМОВАНЕ

Алуминият е подходящ за формоване - процес, използван при екструзията. Алуминият може да е лят, изтеглен или валцован.

МАШИННА ОБРАБОТКА

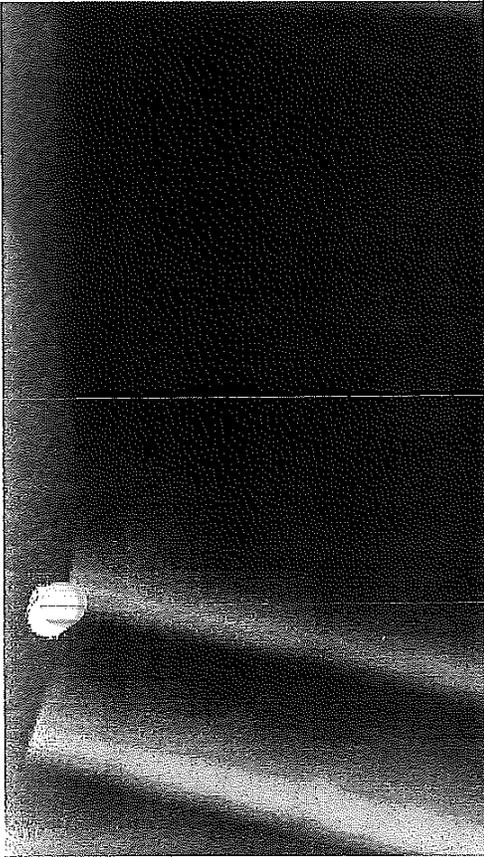
Алуминият е много лесен за машинно обработване като за тази цел могат да се използват обикновени инструменти (триони, дрелки и др.). Той може да се формова в нагрятото и студено състояние.

СВЪРЗВАНЕ

Алуминиевите части могат да се свързват чрез процесите на заваряване, спояване, адхезивно залепване и занитване.

УСТОЙЧИВОСТ НА КОРОЗИЯ

Алуминият естествено образува защитно оксидно покритие и е силно устойчив на корозия. Този слой може да се подсили допълнително чрез повърхностно третиране като например анодизация или електростатично прахово покритие.



Алуминият притежава уникална комбинация от свойства, които го правят изключително атрактивен материал с универсално приложение.

ПРОВОДИМОСТ

Алуминият е отличен проводник на топлина и електричество и във връзка с теглото си е почти два пъти по-добър проводник от медта. Заради това си свойство алуминият е най-често използваният материал в основните електропроводни линии.

ЛИНЕЙНО РАЗШИРЕНИЕ

Алуминият има относително висок коефициент на линейно разширение в сравнение с други метали. Това трябва да се взема под внимание по време на етапа на проектиране, за да се избегнат възможните различия.

НЕТОКСИЧНОСТ

Алуминият е нетоксичен и следователно много подходящ за подготовка и съхранение на храна.

ОТРАЖЕНИЕ НА СВЕТЛИНА

Алуминият притежава добри светлоотразителни свойства.

Производство

ЕКСТРУЗИЯ

С две производствени бази в Атина, Гърция и София, България с общ годишен капацитет над 40000 тона, ЕТЕМ гарантира постоянна и непрекъсната доставка до всички свои клиенти.

Нашите заводи са оборудвани с 5 модерни преси с усилие на пресоване, вариращо от 1500 до 3000 тона, произвеждайки широк диапазон от стандартни алуминиеви профили с повече от 900 различни напречни сечения в следните групи: L-профили, шини, кръгли, правоъгълни и квадратни тръби, T-профили, U-профили. Модерното оборудване ни позволява да произвеждаме високотехнологични прецизни профили, по чертеж на клиента.

Всички профили се произвеждат в съответствие с Европейския стандарт EN 573-3 от следните сплави:

- EN AW – 6060 (Al Mg Si)
- EN AW – 6063 (Al Mg 0.7 Si)
- EN AW – 6005 (Al Si Mg)
- EN AW – 6082 (Al Si 1 Mg Mn)

РАБОТНИ СТАНДАРТИ В ЕТЕМ

EN 573

Алуминий и алуминиеви сплави.
Химичен състав и форма на деформирани продукти;

EN 755

Алуминий и алуминиеви сплави.
Пресувани пръти, тръби и профили;

EN 12020

Алуминий и алуминиеви сплави.
Пресувани прецизни профили от сплави EN AW-6060 и EN AW-6063;

DIN 17611

Анодизирани продукти от алуминий и алуминиеви сплави;

EN 22768

Допуски с общо предназначение.
Толеранси за линейни и ъглови размери и геометрични толеранси за характеристики без индикации на индивидуален толеранс (приложено към производството).

Алуминиеви сплави

ОБЩИ ФИЗИЧНИ СВОЙСТВА НА АЛУМИНИЕВИТЕ СПЛАВИ

Серия 6000 има добри свойства за екструзия и може да се подлага на последваща топлинна обработка /стареене/. Това третиране осигурява на сплавта средна до висока якост, добра устойчивост на корозия, дори и при използване близо до морето, а също така позволява прилагането на процеси като заваряване. Голяма част от екструдираните елементи за носещи товари структури притежават тези свойства. Те се използват както на сушата, така и в морето.

EN AW-6060 ISO AlMgSi

Приложения

Архитектурни системи- прозорци, врати, преградни стени. Интериорни мебели, осветление, стълби, решетки, мрежи. Охлаждащи и нагревателни устройства, електронни модули, електромоторни корпуси. Гъвкави системи за монтаж, специални машинни части. Подови конструкции на камиони и ремаркета, пневматично оборудване, железопътни приложения. Напояване, отоплителни и охладителни тръби, офис обзавеждане.

Общи характеристики

Много добра устойчивост на корозия. Добри заваръчни свойства. Подходящо за студено формование категория T4. Топлинно третирана сплав със средна якост с леко по-ниско съпротивление от това на 6005. Средно до силно износване на материала. Общо използвана сплав за комплексни напречни профили. Стандартизирано качество на анодизиране

EN AW-6063 ISO AlMg0.7Si

Приложения

Архитектурни системи- прозорци, врати, преградни стени. Обзавеждане, стълби, решетки и др. Устройства за охлаждане и нагряване, електронни модули и електромоторни корпуси. Гъвкави монтажни системи, специални машинни части. Подови повърхности на камиони и ремаркета, пневматично оборудване, железопътни приложения. Напояване, отоплителни и охладителни тръби, офис обзавеждане. Нагревателни повърхности и системи.

Общи характеристики

Много добра устойчивост на корозия. Добра заваряемост. Добро формование в студено състояние, категория T4. Средна якост на топлинно третирана сплав с якост, малко по-ниска от тази на 6005. Средно износване на материала. Общо използвана сплав за комплексни напречни профили. Стандартни декоративни елементи.

EN AW-6005¹ ISO AlSiMg

Приложения

Железопътен транспорт и системи от пръти с комплексни напречни сечения (интегрирани структури). Строителни обекти, пилони, платформи, тръби. Приложения в електрическата индустрия и в прецизната механика. Екструдирани форми за различни цели, когато необходимата якост трябва да е по-висока от тази на 6060 и 6063. Мачти за яхти, мебели.

Общи характеристики

Много добра устойчивост на корозия. Добра заваряемост. Средна до силна топлинно третирана сплав с якост, леко превишаваща тази на 6060 и 6063. Висока якост на материала. По-добри екструзионни свойства от 6082 и 6061 за комплексни напречни сечения.

EN AW-6082¹ ISO AlSi1MgMn

Приложения

Тежки структури във вагони, рамки на тежкотоварни камиони, корабостроене, мостове, военни мостове, кола, котли. Машини: Платформи, фланци за инструменти, хидравлични системи, нули и колони, моторни лодки. Ядрени технологии. Мачти и греди за корабостроенето (особено за речни кораби). Тръби за скелета, рамки за тенти и зали, проводници, пробници. Механизми за занитване.

Общи характеристики

Много добра корозоустойчивост. Много добра заваряемост. Лесна машинна обработка. Добро формование в студено състояние в категория T4 след стабилизиращо топлинно третиране. Сплав с якост по-висока от тази на 6061. Средно износване на материала. Не е подходяща за сложни напречни профили.

¹Не всички профили от каталога могат да бъдат произведени от тази сплав. Моля, свържете се с ETEM за повече информация в случай на конкретно запитване.

Свойства на сплавите

Описание	Механични свойства					
	Закаляване	Rm (MPa)	Rp0.2 (MPa)	A50 mm %	HBW**	Охлаждане с вода*** Дебелина на стената
EN 573-3						
EN AW-6060 (AlMgSi)	T4	120	60	14	50	> 10 mm
EN AW-6060 (AlMgSi)	T5	160	120	6	60	> 10 mm
EN AW-6060 (AlMgSi)	T6	190	150	6	70	> 10 mm
EN AW-6060 (AlMgSi)	T64	180	120	10	60	> 10 mm
EN AW-6060 (AlMgSi)	T66	215	160	6	75	> 10 mm
EN AW-6063 (AlMg0.7Si)	T4	130	65	12	50	> 6 mm
EN AW-6063 (AlMg0.7Si)	T5	175	130	6	65	> 6 mm
EN AW-6063 (AlMg0.7Si)	T6	215	170	10	75	> 6 mm
EN AW-6063 (AlMg0.7Si)	T66	245	200	8	80	> 6 mm
EN AW-6005 (AlSiMg)	T4	180	90	13	50	> 5 mm
EN AW-6005 (AlSiMg)	T6	270	225	6	85-90	> 5 mm
EN AW-6082 (AlSi1MgMn)	T4	205	110	12	70	> 3 mm
EN AW-6082 (AlSi1MgMn)	T5	270	230	6	90	> 3 mm
EN AW-6082 (AlSi1MgMn)	T6	310	260	8	95	> 3 mm

* В таблицата са дадени минималните стойности.

** Стойностите на HBW са ориентировъчни.

*** Водното охлаждане ще намали качеството на повърхността.

Повърхностно третиране

Заводът в България разполага с уникална вертикална линия за електростатично прахово боядисване. Инсталацията има дневен капацитет от 40 тона и позволява боядисването на профили с дължина до 7000 mm. Линията е сертифицирана по QUALICOAT и отговаря на всички европейски изисквания за качество и чиста продукция и гарантира висококачествено и дълготрайно защитно покритие на профилите. В допълнение към пълния диапазон на RAL цветовете ние предлагаме боядисване в цвят имитация на дърво. Новата технология, наричана EZY, предлага имитации на: липа, тъмна акация, светла и тъмна череша, светъл и тъмен орех, смокиня, бреза, златен дъб, махагон и др.

Метод	Тип	Описание	Изисквания
Електрохимичен /елоксация/	Елоксация	Използва се за защита от корозия, електроизолация, подобряване на повърхностното износване, добър декоративен вид и подготовка на повърхността за ланово покритие	$L_{max} = 6500 \text{ mm}$
Органична повърхностна обработка	Прахово покритие	Повърхностно третиране позволява: *широк набор от цветове; *защита на алуминиевата повърхност; *повишаване износостойчивостта и понижаване коефициента на триене; *полагане на защитни фолиа върху боядисаните повърхности.	$L_{min} = 3000 \text{ mm}$ $L_{max} = 7000 \text{ mm}$
	Декорация	Процес на повърхностна обработка, при която се постига повърхност тип дървесна имитация	Изисквания: *тегло на профила = max 2500 g/m; *дължина: $L_1 = 4800 \text{ mm}$ $L_2 = 5400 \text{ mm}$ $L_3 = 6000 \text{ mm}$

Качество и сертификати

Нашата амбиция е да доставяме правилните продукти навреме и на точното място, за постигане на максимално удовлетворение на клиентите.

С въвеждането на системата за управление на качеството ние сме заложили следните стратегически цели, постигането на които е от решаващо значение за организацията:

- Да се отговори на изискванията на нашите клиенти
- Да се съхрани и разшири пазарният дял на нашата компания
- Да се работи с компетентен и лоялен персонал
- Да се намалят несъответствията и загубите поради лошо качество
- Да се поддържат взаимно полезни връзки с нашите партньори и доставчици
- Да се развият и използват системите за управление на качеството като инструмент за постигане на нашите цели

Практичният израз на реализирането на настоящата политика е успешното прилагане на системата за управление на качеството съгласно ISO/TS 16949:2009 и постоянното подобрене на резултатите.

ISO / TS 16949:2009

Система за управление на качеството – международен отраслов стандарт, разработен за автомобилната промишленост на основата на стандартите ISO 9000

ISO 9001:2008

Система за управление на качеството

ISO 14001:2004

Система за управление на околната среда

BS OHSAS 18001:2007

Система за управление на здравето и безопасността на работното място

EN 15088:2005

Контрол на фабричното производство

QUALICOAT

Знак за качество за бои, лакове и прахови покрития върху алуминий за архитектурни приложения

LRQA
България България

СЕРТИФИКАТ ЗА ОДОБРЕНИЕ

Настоящият сертификат се издава за да удостовери, че Системата за управление на качеството и безопасността на труда на:

"ЕТЕМ БЪЛГАРИЯ" АД
бул. "Илинци" 119А, София 1220
България.

е одобрена от LRQA Register Quality Assurance, Security, Health & Safety в съответствие със специфичните стандарти за управление на качеството:

BS OHSAS 18001:2007

Системата за управление на качеството и безопасността на труда е проектирана и разработвана на архитектурни системи и вентилаторски фасадни системи. Производствена и търговска алуминиева профилна система с полуфабрикати от мод. Мозайк и алуминий.

Системата за управление на качеството е проектирана и разработвана на архитектурни системи и вентилаторски фасадни системи. Производствена и търговска алуминиева профилна система с полуфабрикати от мод. Мозайк и алуминий.

Издател: 05.08.2019
Издава сертификат: 05.08.2019
Валиден до: 05.08.2021

на основание чл. 36а, ал. 3 от ЗОП

LRQA
България България

СЕРТИФИКАТ ЗА ОДОБРЕНИЕ

Настоящият сертификат се издава за да удостовери, че Системата за управление на качеството на:

"ЕТЕМ БЪЛГАРИЯ" АД
бул. "Илинци" 119А, София 1220
България.

е одобрена от LRQA Register Quality Assurance в съответствие със специфичните стандарти за управление на качеството:

BS EN ISO 9001:2008 EN ISO 9001:2008 ISO 9001:2008

Системата за управление на качеството е проектирана и разработвана на архитектурни системи и вентилаторски фасадни системи. Производствена и търговска алуминиева профилна система с полуфабрикати от мод. Мозайк и алуминий.

Издател: 05.08.2019
Издава сертификат: 05.08.2019
Валиден до: 05.08.2021

на основание чл. 36а, ал. 3 от ЗОП

Authorization
to use the quality sign

LRQA
България България

"ЕТЕМ БЪЛГАРИЯ" АД
бул. "Илинци" 119А
София 1220

License number: 4101

Издател: 05.08.2019
Издава сертификат: 05.08.2019
Валиден до: 05.08.2021

на основание чл. 36а, ал. 3 от ЗОП

LRQA
България България

СЕРТИФИКАТ ЗА ОДОБРЕНИЕ

Настоящият сертификат се издава за да удостовери, че Системата за управление на качеството на:

"ЕТЕМ БЪЛГАРИЯ" АД
бул. "Илинци" 119А, София 1220
България.

е одобрена от LRQA Register Quality Assurance в съответствие със специфичните стандарти за управление на качеството:

ISO 14001:2004 EN ISO 14001:2004 BS EN ISO 14001:2004

Системата за управление на околната среда е проектирана и разработвана на архитектурни системи и вентилаторски фасадни системи. Производствена и търговска алуминиева профилна система с полуфабрикати от мод. Мозайк и алуминий.

Издател: 05.08.2019
Издава сертификат: 05.08.2019
Валиден до: 05.08.2021

на основание чл. 36а, ал. 3 от ЗОП

ОРГАН ЗА ТЕХНИЧЕСКО СЪОТВЕТСТВИЕ
СЕ

СЕРТИФИКАТ
ПРОИЗВОДСТВЕН КОНТРОЛ

ISO 9001-2008

ДЪЖНОСТИ ОТ АЛУМИНИЕВИ И АЛУМИНИЕВИ СПЛАВИ

"ЕТЕМ БЪЛГАРИЯ" АД
бул. "Илинци" 119А
София 1220

"ЕТЕМ БЪЛГАРИЯ" АД
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LRQA
България България

СЕРТИФИКАТ ЗА ОДОБРЕНИЕ

Настоящият сертификат се издава за да удостовери, че Системата за управление на качеството на:

"ЕТЕМ БЪЛГАРИЯ" АД
бул. "Илинци" 119А, София 1220
България.

е одобрена от LRQA Register Quality Assurance, Security, Health & Safety в съответствие със специфичните стандарти за управление на качеството:

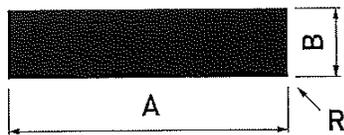
ISO 9001:2008 (без проектиране)

Системата за управление на качеството е проектирана и разработвана на архитектурни системи и вентилаторски фасадни системи. Производствена и търговска алуминиева профилна система с полуфабрикати от мод. Мозайк и алуминий.

Издател: 05.08.2019
Издава сертификат: 05.08.2019
Валиден до: 05.08.2021

на основание чл. 36а, ал. 3 от ЗОП

FB Шини



Продукт #	A	B	R	Тегло [g/m]
9165	8	8		173
9169	10	5		135
9003	10	10		270
9145	12	5		162
9174	12	6		194
9017	12	12		389
9019	15	2		81
11094	15	3		121
9021	15	4		162
9022	15	5		202
9023	15	6		243
9320	15	8		324
17037	15	10		405
17144	15	15		607
31181	16	3		129
9118	16	8		345
30135	17	2.5		115
9101	20	4		216
9034	20	8		432
9033	20	10		540
17038	20	12		648
9153	20	15		810
9004	20	20		1080
30625	22	5		297
31174	25	2.5		169
9037	25	3		202
9038	25	4		270
9039	25	5		337
17039	25	6		405
17040	25	8		540
9041	25	12		810
17041	25	15		1012
17042	25	20		1350

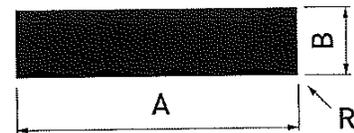
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FB Шини

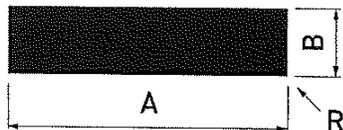
Продукт #	A	B	R	Тегло [g/m]
9201	25	25		1687
OB028001	28	7		529
30136	30	1.5		121
9132	30	3		243
9044	30	4		324
9317	30	4	2	315
9045	30	5		405
9046	30	6		486
9047	30	8		648
9314	30	8	2	639
9048	30	10		810
9049	30	12		972
9154	30	15		1215
9322	30	20		1620
17043	30	25		2025
9294	30	30		2430
9161	31.7	2.4		205
9339	31.75	4.76		408
9051	35	2		189
9052	35	3		283
17044	35	5		472
OB035005	35	6		567
17045	35	8		756
30688	35	10		945
17046	35	15		1417
OB035009	35	25		2362
SB035001	35	35		3307
9340	38.1	4.76		489
9059	40	2		216
9061	40	3		324
9318	40	3.7	1.85	392
9062	40	4		432
9110	40	5		540
9105	40	6		648
9063	40	8		864
9064	40	10		1080
9065	40	12		1296
9324	40	15		1620
9181	40	20		2160
12384	40	25		2700



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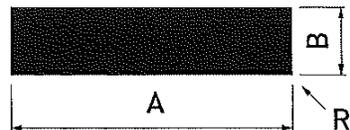
FB ШИНИ

Продукт #	A	B	R	Тегло [g/m]
9302	40	30		3240
9295	40	40		4320
17047	45	3		364
17048	45	5		607
OB045006	45	6		729
17049	45	8		972
OB045004	45	10		1215
OB045005	45	15		1822
OB048001	48	8		1037
9122	50	3		405
9071	50	4		540
9124	50	5		675
9113	50	6		810
9072	50	8		1080
9073	50	10		1350
9143	50	12		1620
9325	50	15		2025
9298	50	20		2700
17050	50	25		3375
17051	50	30		4050
17052	50	40		5400
17145	50	50		6750
OB055002	55	6		891
9162	60	3		486
17053	60	4		648
9082	60	5		810
9296	60	6		972
9079	60	8		1296
9080	60	10		1620
9327	60	12		1944
9328	60	15		2430
9148	60	20		3240
17055	60	30		4860
17056	60	40		6480
SB060001	60	60		9720
OB065002	65	6		1053
17057	70	3		567
17058	70	5		945



FB Шини

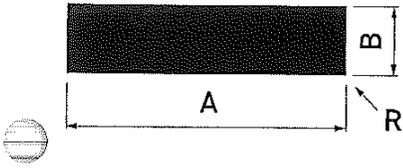
Продукт #	A	B	R	Тегло [g/m]
17059	70	6		1134
12388	70	8		1512
9084	70	10		1890
17060	70	15		2835
10796	70	20		3780
17061	70	25		4725
OB070016	70	50		9450
5B070002	70	70		13230
9185	80	3		648
17062	80	4		864
9088	80	5		1080
9329	80	6		1296
9198	80	8		1728
9186	80	10		2160
17063	80	12		2592
9089	80	15		3240
17064	80	20		4320
17065	80	25		5400
17066	80	30		6480
OB080022	80	40		8637
OB080021	80	50		10800
17067	90	10		2430
17068	90	15		3645
31107	91	3		737
OB100018	100	1.5		405
17069	100	3		810
9277	100	4		1080
9128	100	5		1350
9142	100	6		1620
9191	100	8		2160
9092	100	10		2700
17070	100	12		3240
17071	100	15		4050
17072	100	20		5400
17073	100	25		6750
9278	100	30		8100
OB100021	100	50		13500
OB104001	104	46	1	12914
30155	106	2.9		850
OB120011	120	4		1296
17074	120	5		1620



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FB ШИНИ



Продукт #	A	B	R	Тегло [g/m]
OB120010	120	6		1944
11100	120	8		2592
9095	120	10		3240
17075	120	12		3888
17076	120	15		4860
17078	125	15		5062
OB130002	130	6	1	2103
OB130001	130	10		3510
10797	140	10		3780
17079	150	5		2025
12389	150	8		3240
9166	150	10		4050
9303	150	15		6075
OB160002	160	10		4320

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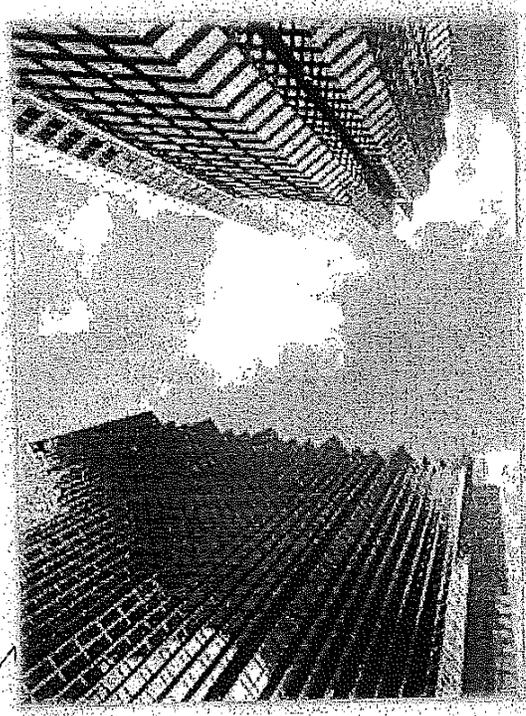
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ЛАКПРОМ

ЗАРЯДАТА
МАРКА

ЕПОКСИДНИ ИНДУСТРИАЛНИ ПОКРИТИЯ



Разнообразни по предназначение,
Видове цветове, техника на нанасяне
Универсални по приложимост
Многофункционални по
комбинативност

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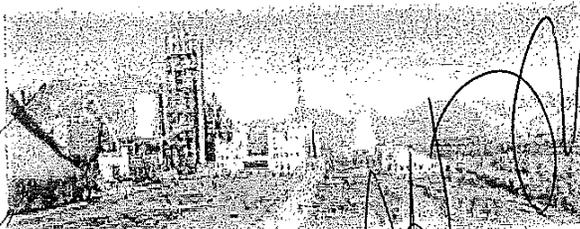
ВЯРНО С ОРНИКАЦИЯ
Дата 19.03.11 Подпис

ИНДУСТРИАЛНИ ПОКРИТИЯ ЗА МЕТАЛ

- ЕПОКСИ КИТ, двукомпонентен
- ЕПОКСИДЕН ГРУНД ЕП – 074, двукомпонентен
- ГРУНД ЦИНКОВО- ЕПОКСИДЕН ЕП – 076, двукомпонентен
- ЦИНКОВ ГРУНД, едноккомпонентен
- ЕПОКСИ МИОКС ГРУНД - двукомпонентен
- ЛАК ЕПОКСИДЕН ЕП – 078, двукомпонентен
- ЕМАЙЛАКОВЕ ЕПОКСИДНИ ЕП – 71, двукомпонентни
- ЕМАЙЛАКОВЕ ЕПОКСИДНИ ЕП – 72, двукомпонентни
- ЕПОКСИДНА БОЯ С ВИСОКО СЪДЪРЖАНИЕ НА ТВЪРДИ ВЕЩЕСТВА, двукомпонентна
- ЕПОКСИДНО ПОКРИТИЕ ЕП – 500, БЕЗ РАСТВОРИТЕЛИ, двукомпонентно
- ЕПОКСИ – МИОКС ПОКРИТИЕ, двукомпонентно
- ЕМАЙЛАКОВЕ ЕПОКСИДНИ ЕП – 71, двукомпонентни

Предназначени са за защита на стоманени повърхности, съоръжения и конструкции, експлоатирани в условия на атмосферна корозия и агресивни среди, с основна характеристика:

- Отлично сцепление с основата – адхезия
- Устойчивост на атмосферни влияния и UV лъчи.
- Влаго- и водоустойчивост
- Химическа устойчивост – въздействие на разтвори на киселини, алкали, соли, масла, петролни продукти (разтворители, дизелово гориво), мазнини.
- Механична здравина, твърдост, еластичност
- Дълготрайна и ефективна корозионна защита
- Устойчивост на промишлени замърсявания
- Лесно нанасяне, висока покривност, нисък разход
- Устойчивост на износване
- Гарантиран дълъг експлоатационен срок



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Дата 14.08.11. Борни

ГРУНД ЦИНКОВО - ЕПОКСИДЕН ЕП-076 gБукомпонентен

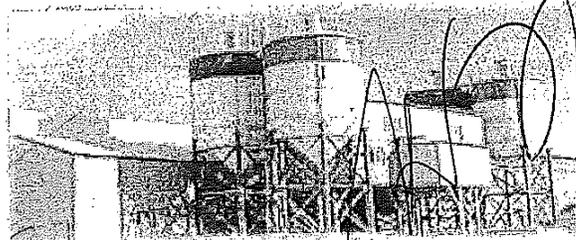
Изпитан от:

Акредитирана лаборатория „Строителна химия“ към
ИЦС-НИСИ-ЕООД - протокол № 493-4-116/26.09.2003 г.;
ДКИЦ „Метални конструкции“, Сектор „Корозия,
антикорозионни покрития и антикорозионна защита“ -
Кремиковци, София - протокол №2-45-023/13.06.2003 г.
Българска академия на науките - Институт по
металознание „Акад. А. Балевски“ протокол №С - 1052-
1/08.03.2010 г.

- Основно покритие, осигуряващо антикорозионна защита на стоманени елементи, конструкции и съоръжения в период на лагеруване, дострояване, монтаж или транспортиране.
- Покритие осигуряващо ефективна корозионна защита на машини, оборудване, виадукти, стълбове, цистерни, резервоари за петролни продукти и други.
- Оптималната концентрация на цинков прах в покритието обезпечава съчетание на добри физико – механични и защитни свойства на грундовото покритие.
- Върху грундираните повърхности могат да се нанасят алкидни, епоксидни, винилови, хлоркаучукови, полиуретанови, полиестерни, нитроцелулозни и други защитни покрития.



Втвърдител ЛАМИД 25/40 в тегловно съотношение:
100 тегл. части ГРУНД ЕП-076 : 5,6 тегл. части ЛАМИД
25/40 (обемно съотношение 11:2).
Съхнене: 2 часа при 20°C
Разход: 130 g/m² - за дебелина на сухия филм 25
микрометра; 210 g/m² - за дебелина на сухия филм 40
микрометра



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Дата 12.05.11 Подпис

ЦИНКОВ ГРУНД - еднокомпонентен

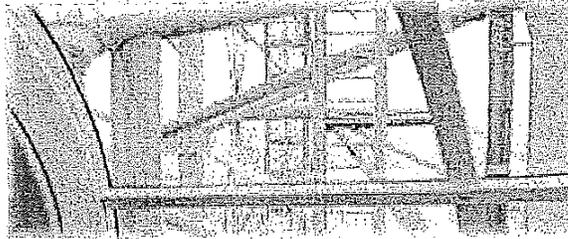
• Предназначен е за студено поцинковане на черни метали; за антикорозионна защита на строителни конструкции, транспортни съоръжения, машини и други.

• Подходящ е за битови и индустриални нужди; за репаратура на горещо и студено поцинкована ламарина.

• Осигурява дълготрайна антикорозионна защита и добро сцепление на основата със следващите покрития.

Съхнене: 30 минути при 20° С

Разход: 170 g/m² - за дебелина на сухия филм 30 микрона
220 g/m² - за дебелина на сухия филм 40 микрона



ЕПОКСИ - МИОКС ГРУНД, двухкомпонентен

• Двухкомпонентен Епоксиден грунд със съдържание на слюдест железен оксид (МИОКС).

Предназначен е за основа преди нанасяне на

• ЕПОКСИ - МИОКС ПОКРИТИЯ или други епоксидни, акрилатни, винилови, полиуретанови и други завършващи лаково-бояджийски материали.

• Обезпечава ефективна антикорозионна защита на стоманени елементи, конструкции и съоръжения, резервоари за петролни продукти, виадукти, метални стълбове, пристанищни съоръжения и други.

Ствърдител ААМИД в тегловно съотношение: 100 т. ч.

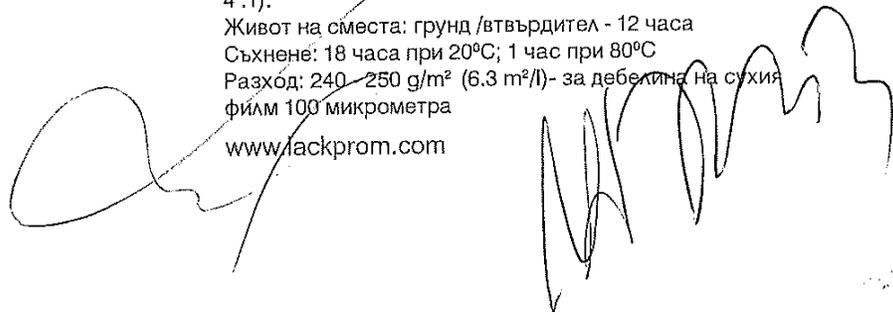
ГРУНД : 5,6 тегл. части ААМИД (обемно съотношение 4 :1).

Живот на сместа: грунд /ствърдител - 12 часа

Съхнене: 18 часа при 20°С; 1 час при 80°С

Разход: 240 - 250 g/m² (6.3 m²/l)- за дебелина на сухия филм 100 микрометра

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Член 19.03.11

ЕПОКСИ КИТ, gВукомпонентен

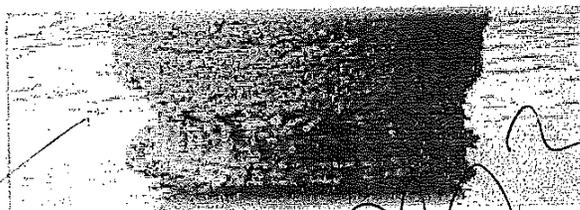
- Запълва и изравнява метални повърхности изложени на леко абразивно и корозионно действие, преди грундиране и боядисване. Не се свива в процеса на втвърдяване.
 - Подходящ за употреба върху хоризонтални и вертикални повърхности.
 - Употребява се в комбинация с Втвърдител за епоксидна смола 5 – 6 % Живот на сместа: ЕПОКСИ КИТ : ВТВЪРДИТЕЛ 90 минути
- Време за втвърдяване: 15 часа при 20°С.
Разход: 0,7 т²/кг или 1300 – 1400 g/m² за слой с дебелина 1mm²



ЕПОКСИДЕН ГРУНД ЕП-074 gВукомпонентен

Техническата спецификация е съгласувана от МЗ.
Грундът е изпитан от акредитирана лаборатория
„Строителна химия“ към ИЦС-НИСИ-ЕООД - протокол
№236-4-52/30.05.2003 г.

- Предназначен е за основа в системи за антикорозионна защита на черни метали, метални конструкции и съоръжения, експлоатирани в условията на активна атмосферна корозия и агресивни среди, включително атмосферни условия на влажен тропически климат в приморски промишлени райони.
 - За външна и вътрешна употреба в помещения с висока влажност и изпарения на киселини, алкални разтвори и други.
- Втвърдител ЛАМИД 25/40 в тегловно съотношение 100 т. ч. ЕП-074 : 17 т.ч.
ЛАМИД 25/40 (обемно 7 : 2)
Съхнене: при 20°С - 24 часа; 70°С - 50 минути;
Разход: 11-12 т²/л или 130-140 g/m² за дебелина на сухия филм 40 микрона



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ПОКРИТИЕ МЕЖДУНАЧНО EP - 11 *g*ВУКОМПОНЕНТНО

- Защишава металните конструкции и съоръжения от черни метали под покритията от епоксидни бои и емайлакове.
- Част е от Епоксидна антикорозионна защитна система.
- Спомага за подобряване на адхезията, като поема топлинните деформации на метала, предизвикани от температурните промени.
- Повишава антикорозионната и химикалоустойчивост на системата.

Втвърдител ААМИД в тегловно съотношение: 100 т. ч. EP - 11 : 12 т.ч. и ААМИД (обемно съотношение 11 : 2).
Съхнене: 18 часа при 20°C; 50 минути при 70°C
Разход: 120 - 140 g/m² (9 - 10 m²/l) - за дебелина на сухия филм 40 микрометра

ЕПОКСИДЕН КОМПАУНД *g*ВУКОМПОНЕНТЕН

- Конструкционен и изолационен материал с висока електрическа якост 35 MV/m (БДС 2324 - 83) за приложение в електротехническата промишленост.
- Предназначен за заливане.

Втвърдител: Епоксиден втвърдител Н - 1 в тегловно съотношение: 100 т. ч. КОМПАУНД : 15 т.ч. Н-1 (обемно съотношение 7 : 2).
Живот на сместа: 90 минути при 20°C
Втвърдяване: 24 часа при 20°C



ЛАК ЕПОКСИДЕН EP - 78 *g*ВУКОМПОНЕНТЕН

- Предназначен е за защита на стоманени и алуминиеви повърхности експлоатирани в условия на влажност, въздействие на алкални разтвори, спиртно бензилови смеси и повишена температура (50 - 60)°C.

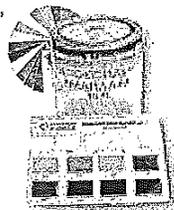
Втвърдител ААМИД в тегловно съотношение: 100 т. ч. EP - 78 : 21 т.ч. и ААМИД (обемно съотношение 9 : 2).
Живот на сместа: 24 часа при 20°C
Съхнене: 10 часа при 20°C; 1 час при 120°C
Разход: 80 - 100 g/m² (9 - 10 m²/l)
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18.09.11

ЕПОКСИДЕН ЕМАЙЛАК ЕП - 71 gВукомпонентен

- Декоративно – защитно финашно покритие, предназначено за експлоатация в условия на активна атмосферна корозия, агресивни среди, включително атмосферни условия на влажен тропически климат в промишлени и приморски райони.
- Допринася за увеличаване защитното действие на Епоксидната антикорозионна защитна система.



Втвърдител ДТА -900 в тегловно съотношение: 100 т. ч. ЕП – 71 : 20 т.ч. и ДТА – 900 (обемно съотношение 7: 2).
Живот на сместа: 8 часа при 20° С
Съхнене: 18 часа при 20°С; 60 минути при 80°С

ЕПОКСИДЕН ЕМАЙЛАК ЕП - 72 gВукомпонентен

- Декоративно – защитно финашно покритие с изключителна атмосфероустойчивост на покритието, устойчивост морска вода и минерални масла.
- Епоксидният емайлак ЕП – 72 обезпечава покритие с дебелина на сухия филм 100 – 150 микрона при еднослойно нанасяне.

Втвърдител ЛАМИД в тегловно съотношение 100 т. ч. ЕП – 72 : 19 т.ч. и ЛАМИД (обемно съотношение 7: 2).
Живот на сместа: 4 часа при 20°С
Съхнене: 28 часа при 20°С; 60 минути при 80°С
Разход: 190 g/m² (7 т²/л) за дебелина на сухия филм 100 микрометра



ЕПОКСИДНА БОЯ С ВИСОКО СЪДЪРЖАНИЕ НА ТЪРДИ ВЕЩЕСТВА gВукомпонентна

- Предназначена е за директно нанасяне върху стоманени повърхности, работещи в условия на корозия и агресивни среди.
- Може да се нанася върху здрави повърхности, непозволяващи струйно почистване, а с възможност за механична обработка за получаване на груба повърхност.
- С еднослойно нанасяне се обезпечава сухо покритие до 150 микрометра.

Втвърдител: Епоксиден втвърдител Н-3 в тегловно съотношение 100 т. ч. Боя : 19 т.ч. и Н - 3(обемно съотношение 5 : 1).
Живот на сместа: 2 часа при 20° С
Съхнене: 24 часа при 20°С
Разход: 290 - 310 g/m² (5 - 6 т²/л) за дебелина на сухия филм 150 микрометра
www.lackprom.com



Дата 19.03.11

ЕПОКСИДНО ПОКРИТИЕ ЕП-500 БЕЗ РАСТВОРИТЕЛИ двухкомпонентно

Разрешено за контакт с всички мастни и водни храни и алкохолни напитки, съгласно Наредба №2/2008 г. за материалите и предметите от пластмаса, предназначени за контакт с храни.

• Епоксидното покритие ЕП - 500 е предназначено за експлоатация в помещения и за защита на съоръжения в месо- и млеко-преработващи предприятия, спирто- и винопроизводство; заведения за обществено хранене - обслужващи блокове; складови помещения за съхранение на всички видове опаковани и пакетирани хранителни продукти с неядлива обвивка. Втвърдител Епоксиден втвърдител Н - 2 в тегловно съотношение: 100 т. ч. ЕП - 500 : 32 т. ч. Н-2 (обемно съотношение 15 : 8).

Втвърдяване: 24 часа при 20°C

Разход: 300 g/m² или 5 - 6 m²/l - за дебелина на сух филм 200 микрометра



ЕПОКСИ - МИОКС ПОКРИТИЕ двухкомпонентно

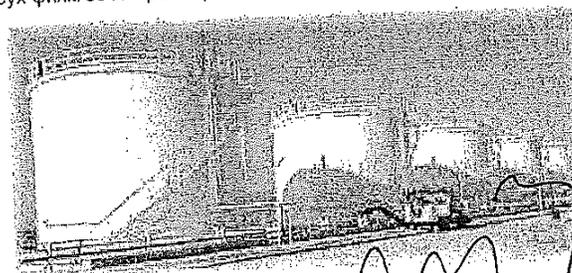
• Предназначено е за повърхностно (финашно) боядисване в ЕПОКСИ - МИОКС СИСТЕМА. Съдържа слюдест железен оксид (MIOX), който допринася за получаването на плътен, устойчив на UV облъчване, атмосферни замърсявания в промишлени райони и въздействие на водни разтвори на химикали (киселини, алкали, соли), масло, мазнини и разтворители.

• Подходящо за пристанищни съоръжения, виадукти, цистерни резервоари за петролни продукти, метални стълбове.

Втвърдител: ААМИД 25/40 в тегловно съотношение: 100 т. ч. ЕП - MIOX : 25 т. ч. ААМИД 25/40 (обемно съотношение 8 : 3).

Съхнене: 8 часа при 20°C

Разход: 160 - 180 g/m² или 8 - 9 m²/l - за дебелина на сух филм 60 микрометра; 210 - 230 g/m² или 6 - 7 m²/l - за дебелина на сух филм 80 микрометра



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Дата 13.09.11. Подпис

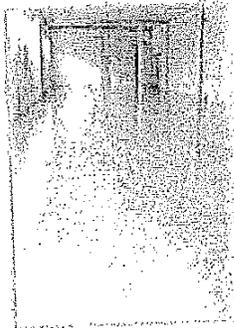
ИНДУСТРИАЛНИ ПОКРИТИЯ ЗА БЕТОН

- ЕПОКСИ КИТ, двукомпонентен
- ЕПОКСИДЕН ГРУНД ЕР - 0710, двукомпонентен
- ЕПОКСИДЕН ГРУНД, водоразредим, двукомпонентен
- ЕПОКСИДЕН ЛАК ЕР - 78, двукомпонентен
- ЕПОКСИДЕН ЕМАЙЛАК ЕР - 71, двукомпонентен
- ЕПОКСИДЕН ЕМАЙЛАК ЕР - 72, двукомпонентен
- ЕПОКСИДНА БОЯ С ВИСОКО СЪДЪРЖАНИЕ НА ТЪВРДИ ВЕЩЕСТВА, двукомпонентна
- ЕПОКСИДНО ПОКРИТИЕ ЕР - 500 БЕЗ РАЗТВОРИТЕЛ, двукомпонентно

Предназначени са за защита на бетонови повърхности работещи в условия на ерозия, корозия и агресивни среди.

Характеризират се с:

- Отлично сцепление с основата, механична здравина, твърдост и еластичност
- Атмосфероустойчивост
- Износоустойчивост
- Химикалоустойчивост
- Водо- и влагоустойчивост
- Устойчивост на промишлени замърсявания
- Лесно нанасяне, висока покривност, нисък разход
- Плътна, гладка повърхност, лесно за почистване и поддръжка
- Дълготрайна и ефективна корозионна защита
- Гарантиран дълъг експлоатационен срок



ЕПОКСИ КИТ, двукомпонентен

- Предназначен е за поправка на бетонови повърхности, повредени от тежки химични, механични или атмосферни условия на работа.

• Изравнява и защитава бетонната повърхност. Не се свива в процеса на втвърдяване.

- Подходящ за употреба върху хоризонтални и вертикални повърхности.

Употребява се в комбинация с Втвърдител за епоксидна смола 5 - 6 %

Живот на сместа: ЕПОКСИ КИТ : ВТВЪРДИТЕЛ - 90 минути.

Време за втвърдяване: 15 часа при 20°C.

Разход: 0,7m²/kg или 1300 - 1400 g/m² за слой с дебелина 1mm.

www.lackprom.com



Дата 19.05.11

ЕПОКСИДЕН ГРУНД ЕП-0710 (БЕЗ РАЗТВОРИТЕЛИ) двукомпонентен

Грундът е изпитан от независима акредитирана лаборатория
„Строителна химия и изолации“ към ИЦС-НИСИ-ЕООД -
протокол № 731-3-238/23.09.2008 г.

• Предназначен е за грундиране плътни, сухи
(под 4 % влага) основи.

• Запълва

• Заздравява

• Подобрява сцепящата способност на стари и
нови плътни основи (бетонни, циментови, мозаечни и други)

основи преди нанасяне на епоксидни покрития

• Подходящ за безцветно запечатване на бетонни
повърхности, без склонност към пожълтяване.

• Защишава новите бетонни подове от замърсяване по време
на монтаж на оборудване.

• Притежава отлично сцепление с основата, здравина,
химическа устойчивост, механична стабилност.

• Епоксидният грунд ЕП - 0710 е подходящ синтетичен
разтвор за напълване с кварцов пясък (чист, сух, накален с
фракция 0,1 - 0,6 mm) в тегловно съотношение (1,5 - 2) : 10. С
така напълненият разтвор се запълват пори, пукнатини и се
заглаждат неравности по бетонната повърхност.

Употребява се в комбинация с Епоксиден втвърдител Н-3 в
тегловно (обемно) съотношение 2 : 1.

Време за втвърдяване: при температура 20°C - 24 часа

Живот на сместа: грунд/втвърдител (100 g/20°C) - 60 минути

Разход: 200 - 400 g/m²



ЕПОКСИДЕН ГРУНД

Водоразредим двукомпонентен

Грундът е изпитан от акредитирана лаборатория „Строителна
химия и изолации“ към ИЦС-НИСИ-ЕООД - протокол № 730-3-
237/23.09.2008 г.

• Предназначен е за грундиране на бетонни, циментови или
други основи, преди нанасяне на Епоксидни покрития. Прилага
се върху влажна основа или суров „свеж“ бетон (на 5 - 6 дни).

• Заздравява основата, чрез образуване на мрежова и
износоустойчива структура.

• Спира отделянето на прах.

• Повишава адхезионната сила между бетона и
епоксидни финални покрития - без разтворители
или емулгируеми с вода системи. Предлага се в
комплект с Епоксиден втвърдител HW - 71 в
съотношение 1 т.ч грунд : 1 т.ч втвърдител
HW - 71 : 1 т.ч. вода

Живот на сместа: грунд/втвърдител/вода - до 90 минути при
20°C

Време за втвърдяване: при температура 20°C до 24 часа

Разход: 200 - 300 g/m²

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Дата 19.09.11

ЛАК ЕПОКСИДЕН ЕП - 78 gВукомпонентен

• Предназначен е за импрегниране и защита на бетонови повърхности разположени на открито и в закрити помещения.

• Защитава бетона от въздействието на висока влажност, алкални разтвори, спиртно бензинови смеси и повишена температура (50 - 60)°C.

Втвърдител ЛАМИД в тегловно съотношение: 100 т. ч. ЕП - 78 : 21 т.ч. и ЛАМИД (обемно съотношение 9 : 2).

Живот на сместа: 24 часа при 20°C

Съхнене: 10 часа при 20°C; 1 час при 120°C

Разход: 80 - 100 g/m² (9 - 10 m²/l)



ЕПОКСИДЕН ЕМАЙЛАК ЕП - 71 gВукомпонентен

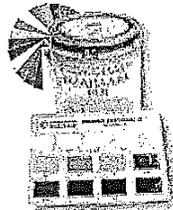
• Предназначен е за боядисване на бетонови повърхности, експлоатирани в условия на активна атмосферна корозия, агресивни среди, включително атмосферни условия на влажен тропически климат в промишлени и приморски райони.

Втвърдител ДТА - 900 в тегловно съотношение: 100 т. ч.

ЕП - 71 : 20 т.ч. и ДТА - 900 (обемно съотношение 7 : 2).

Живот на сместа: 8 часа при 20°C

Съхнене: 18 часа при 20°C; 60 минути при 80°C



ЕПОКСИДЕН ЕМАЙЛАК ЕП - 72 gВукомпонентен

• Предназначен е за боядисване на бетонови повърхности, експлоатирани в условия на активна атмосферна корозия. • Декоративно - защитно финално покритие с изключителна атмосферостойчивост на покритието, устойчивост морска вода и минерални масла.

• Епоксидният емайллак ЕП - 72 обезпечава покритие с дебелина на сухия филм 100 - 150 микрона при еднослойно нанасяне. Втвърдител ЛАМИД в тегловно съотношение 100 т. ч. ЕП - 72 : 19 т.ч. и ЛАМИД (обемно съотношение 7 : 2).

Живот на сместа: 4 часа при 20°C

Съхнене: 28 часа при 20°C; 60 минути при 80°C

Разход: 190 g/m² (7 m²/l) за дебелина на сухия филм 100 микрометра



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Дата 19.09.11

ЕПОКСИДНА БОЯ С ВИСОКО СЪДЪРЖАНИЕ НА ТВЪРДИ ВЕЩЕСТВА *g*ВУКОМПОНЕНТНА

• Предназначена е за директно нанасяне върху бетонни
повърхности, работещи в условия на ерозия, корозия и
агресивни среди. С еднослойно нанасяне се
обезпечава сухо покритие до 150 микрометра.
Втвърдител: Епоксиден втвърдител Н-3 в
тегловно съотношение 100 т. ч. Боя : 19 т. ч. и Н - 3
(обемно съотношение 5 : 1).
Живот на сместа: 2 часа при 20°C
Съхнене: 24 часа при 20°C
Разход: 290 - 310 g/m² (5 - 6 m²/l) за дебелина на
сухия филм 150 микрометра



ЕПОКСИДНО ПОКРИТИЕ ЕП - 500 БЕЗ РАЗТВОРИТЕЛИ *g*ВУКОМПОНЕНТНО

Разрешено за контакт с всички мастни и водни
храни и алкохолни напитки, съгласно Наредба
№ 2/2008 г. за материалите и предметите от
пластмаси, предназначени за контакт с храни.
• Епоксидното покритие ЕП - 500 е
предназначено за експлоатация в помещения
и за защита на съоръжения в месо- и млеко-
преработващи предприятия, спирто - и винопроизводство;
заведения за обществено хранене - обслужващи блокове;
складови помещения за съхранение на всички видове
опаковани и пакетирани хранителни продукти с неядлива
обвивка.
Втвърдител: Епоксиден втвърдител Н - 2 в тегловно
съотношение: 100 т. ч. ЕП - 500 : 32 т. ч. Н-2 (обемно
съотношение 15 : 8).
Втвърдяване: 24 часа при 20°C
Разход: 300 g/m² или 5 - 6 m²/l- за дебелина на сух филм 200
микрометра



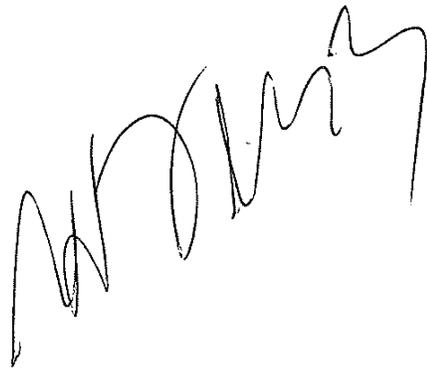
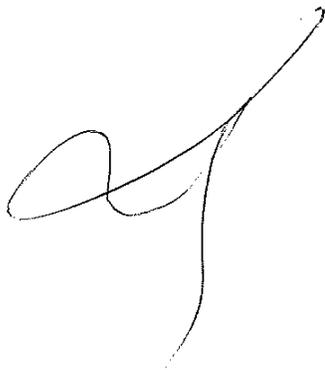
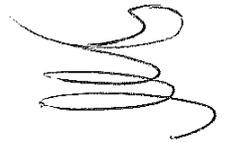
ЛАКПРОМ АД
България София 1252 С. Светоправене ул. „Сунчев“ № 16 тел.: (02) 996 41 46;
996 30 66 факс: (02) 996 31 47, 996 31 89 e-mail: lackprom@bulinfo.net
e-mail: lackprom@lackprom.com http://www.lackprom.com
www.lackprom.com

Дата 19.07.11

КАТАЛОГ

ЗА

Изолатори подпорни композитни 20 kV, OM

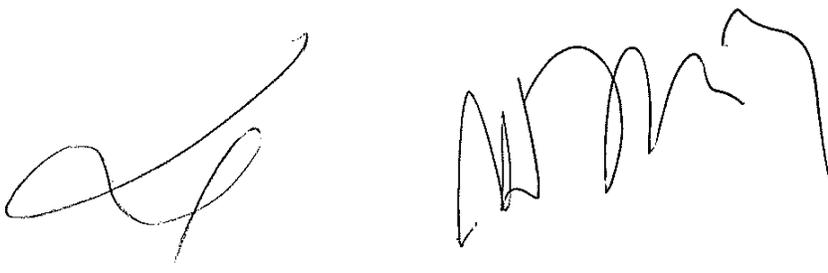


Към Приложение № 2.10

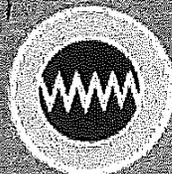
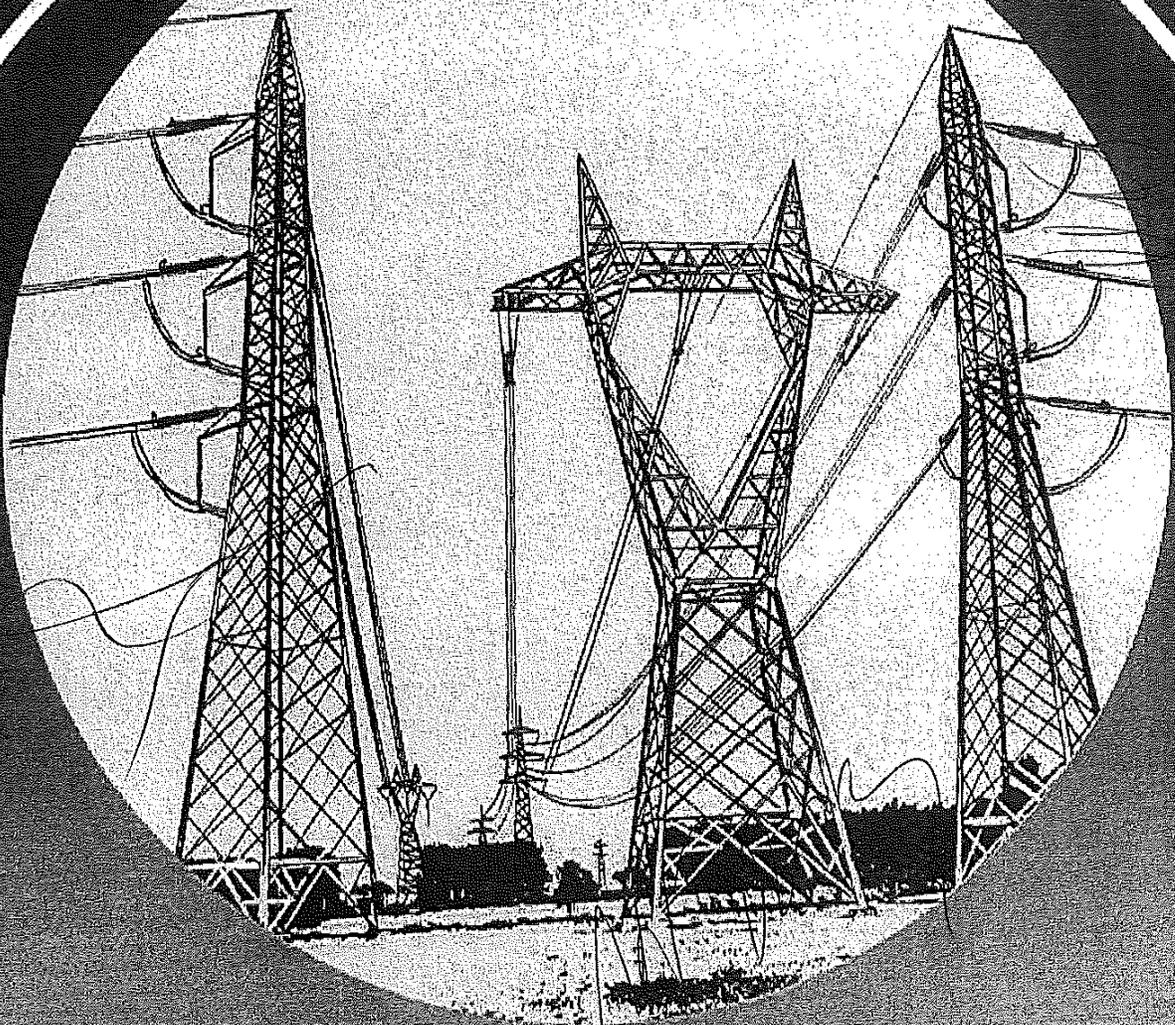
КАТАЛОГ

ЗА

Изолатори подпорни композитни 20 kV, OM



SILISOL



isoelectric

REFERENCES ON COMPOSIT INSULATORS

isoelectric

- ENEL S.p.A. (Italian Electric Company)
- FERROVIE DELLO STATO S.p.A. (Italian Railways Company)
- O.N.E. (National Office of the Electricity of Morocco)
- TRANSELEC (Chilean Electric Company)
- ENDESA (Spanish Electric Company)
- TRINIDAD and TOBAGO ELECTRICITY CO.
- FIJI ELECTRIC COMPANY CO.
- U.T.E. (Uruguayan Electric Company)
- SAESA (Chilean Electric Company)
- RENFE (Spanish Railways)
- S.N.C.B. (Belgian Railways)
- BANVERKET (Swedish Railways)
- R.A.T.P. (Underground of Paris)
- CEMIG (Brazilian Electric Company)
- LUZ y FUERZA (Mexican Electric Company)
- EDELNOR (Peruvian Electric Company)
- P.P.C. (Grecian Electric Company)
- COELBA (Brazilian Electric Company)
- CONECTIV (Delaware - USA Electric Company)
- UNION FENOSA (Spanish Electric Company)
- TANESCO (Tanzanian Electric Company)
- MANUFACTURERS of ELECTRIC EQUIPMENT'S

Note: All the above references can be proved by documents. The above list includes the firsts insulators installed in 1985 and it is revised to JANUARY 2006, more than 20 years !!.

“ SILISOL “

COMPOSITE INSULATORS IN SILICONE RUBBER

“SILISOL“, the composite **SILICONE** insulator, was born through a twenty years experience of the **isoelectric**, which is the market leader in epoxy resin insulators, for indoor use and in cycloaliphatic resin insulators, for outdoor use.

isoelectric work with **ISO 9001-2000 certification**.

In the last 35 years the trend of using technologies making use of composite materials has been developed. These technologies, from a first application to indoor equipment, extended successively to outdoor equipment, especially interesting the field of line insulators of medium and high voltage.

The **isoelectric**, keeping into account the problems of using organic materials, developed a high **quality** product with interesting mechanical and electrical features as well as a good pollution resistance.

WHY THIS CHOICE ?

- High mechanical strength in relation to weight.
- High breaking points with limited overall dimensions.
- High impact resistance (even against gunshots).
- Reduced weight (from 10 to 300 times in relation to the traditional insulators).
- High mechanical strength in relation to weight.
- Lower transport costs.
- Lower packing and storage costs.
- Lower installation costs.
- Lighter support mechanical structures.
- Wider leakage distance with the same spark gap.
- Higher discharge voltage in highly polluted environments.
- Higher resistance to the power arc.
- Higher ultra-violet (UV) radiation resistance.

The properties of **hydrophobicity** and corrosion-proof of the **SILICONE** keep the outer casing of the insulators clean. These properties help the cleaning action of the rain on the insulators and help to avoid damages of the salinity, of dusts and corrosion of the industrial smokes improving the outer casing resistivity.

CONSTRUCTIVE COMPOSITION OF THE INSULATOR

The composite silicone insulators reinforced with ECR fibreglass rod have been introduced because of the high mechanical stresses that post, suspension, tension and mooring insulators are subjected to, allowing greater performances.

The "SILISOL" composite silicone insulators are constituted by 3 main elements:

1. A central rod in **ECR** fibreglass (corrosion resistant) impregnated with epoxy resin or polyester resin.
2. A coating in **silicone rubber** that protects the central rod from external factors (humidity, chemical contamination, and so on).
3. External metal end fittings that are used to transmit the mechanical stresses of the electric line to the central rod.

A special care has to be taken in connecting the ECR fibreglass rod to the metal end fittings. **isoelectric** has developed a system that allows having high bending, traction, torsion and compression loads. Moreover this system allows eliminating water penetration which happens in the usual execution of compression end fittings.

The "SILISOL" insulators are made of a central rod in ECR fibreglass impregnated with epoxy resin or polyester resin and they must have 4 essential requisites:

- The capacity to withstand mechanical stresses that come from a specific use.
- Sufficient insulating properties to withstand, with an adequate safety-margin, the electrical stresses of usage and those resulting from over voltages of internal and external origin.
- Power arc resistance.
- Positive results at the tests according to the standard **IEC 61109, IEC 61952 & ANSI C29-11**.

Even though the glass or porcelain insulators fully satisfy two of the above mentioned requirements, they are not resistant to the power arcs caused by the power-cuts on the lines.

The phenomenon of tracking is the main drawback of insulators made only with the ECR fibreglass rod without any special additives and subjected to a certain determined electrical gradient on the surface. This happens as a result of the simultaneous presence of an electrical gradient between the metal endings of the insulator and the polluted substances full of humidity on the external surface.

Taking this phenomenon into account **isoelectric** has applied an external housing of suitable shape, made of a material with excellent dielectric features, a material that is totally resistant to chemical attack and atmospheric agents.

THE SILICONE "SILIC 1.75"

The adherence of the SILICONE housing to the ECR fibreglass rod is achieved by particular methods that allow very high shearing values. By these methods, at an interface level with the housing in SILICONE, a **one piece injection moulding (monolithic)** construction has been obtained from one end fitting to the other end fitting.

The SILICONE mixture is made of a *pure 100% silicon polymer* and filler. This mixture is characterised by a great resistance to the superficial electrical discharges, "tracking", by a surface with permanent properties of hydrophobicity as well as by a great insulating property under high pollution.

METALLIC END FITTINGS

The metallic end fittings placed at the end of the ECR fibreglass rod must have sufficient mechanical features to take the stresses that insulators are subjected to. These terminals can be manufactured in different shapes and materials, according to the **IEC 60120, IEC 60471, and IEC 61466-1** standard and according to the characteristics requested by the customer or their use. The terminals can be manufactured as follows:

- forged steel C 30 or C 40, worked and then hot dip galvanised
- casting steel C 30 or C 40, worked and then hot dip galvanised
- forged aluminium and then worked
- forged aluminium - bronze and then worked
- casting aluminium, aluminium bronze or other alloys and then worked.

Shapes, dimensions and materials can agree every time, according to the customer's need too.

isoelectric

COMPOSITE INSULATORS ARE PRODUCED ACCORDING TO SAME OF THE FOLLOWING STANDARDS

STANDARD	DESCRIPTION
IEC 61109 Emend. 1	Composite insulators for overhead lines with a nominal voltage greater than 1000 V.
IEC 61952	Composite line post insulators for overhead lines with a nominal voltage greater than 1000 V.
IEC 61466-1	Composite string insulator unit for overhead lines, part 1: standard strength classes and end fittings.
IEC 61466-2 Ed. 1.1 / 2002	Composite string insulator unit for overhead lines, part 2: dimensional and electrical characteristics
IEC 60707	Test for flammability
ANSI C29.11	Composite suspension insulators for overhead transmission lines with voltages greater than 1000 V.
AS 4435.4	Composite line post insulators for overhead power lines.
I.E. TE 127	Composite insulators I621 for contact railways lines with 3 kV dc
ASTM E 662	Test to determine the optical density of the smokes
ASTM G 26	Ageing test by ultra-violet rays (UV)
CEI 20-37	Test to determine the toxicity and corrosion of the smokes
DIN 57441	Accelerated ageing test in saline fog
IEEE Std 1024	Recommended practice for specifying distribution composite insulators (suspension type)
IEC 60060-1	Methods of tests in high voltage
IEC 60071-1	Insulation co-ordination
IEC 60120	Dimensions of ball & socket couplings of string insulators units
IEC 60273	Dimensions of post insulators for lines with voltages >1000 V
IEC 60383	Tests on porcelain and glass insulators for lines >1000 V
IEC 60471	Dimensions of the clevis and tongue couplings of string insulators units
IEC 60507	Artificial pollution test on H.V. insulators to be used in a.c. system
IEC 60815	Guide for the selection of insulators in respect of polluted conditions

The above said standards are taken as reference for design, production and testing. Other standards can be taken into consideration according to the customer's needs.

TESTS PERFORMED ACCORDING THE STANDARD IEC 61109

Some tests were performed on some composite insulators "SILISOL" of the isoelectric according to the IEC 61109 standard, as follows:

PARAG.	DESCRIPTION	REPORT
5	Design tests	 TESTS REPORT OF RECOGNIZED LABORATORY ARE AVAILABLE IN OUR FIRM
5.1	Tests on interfaces and connections of metal fittings	
5.1.1	Test specimens and preliminary tests	
5.1.2	Dry power frequency voltage test	
5.1.3	Pre-stressing	
5.1.3.1	Sudden load release test	
5.1.3.2	Thermal-mechanical test	
5.1.3.3	Water immersion test	
5.1.4	Verification test	
5.1.4.1	Visual examination	
5.1.4.2	Steep-front impulse voltage test	
5.1.4.3	Dry power frequency voltage test	
5.2	Assembled core load-time test	
5.2.1	Test specimens	
5.2.2	Mechanical load test	
5.2.2.1	Determ. ave. failing load of the core of the assem. ins.	
5.2.2.2	Control strength-time curve slope of the insulator	
5.3	Test of housing : tracking and erosion test	
5.3.1	Test specimens "duration of 1.000 & 5.000 hours"	
5.3.2	Test procedure	
5.3.3	Test conditions	
5.3.4	Evaluation of the test	
5.4	Test for the core material	
5.4.1	Dye penetration test	
5.4.1.1	Test specimens	
5.4.1.2	Performance of the test	
5.4.1.3	Acceptance criterion	
5.4.2	Water diffusion test	
5.4.2.1	Test specimens	
5.4.2.2	Pre-stressing	
5.4.2.3	Voltage test	
5.5	Flammability test	
5.5.1	Test procedure	
5.5.2	Evaluation of the test	
6	Type tests	Internal tests at isoelectric
6.1	Dry/lighting impulse withstand voltage test	
6.2	Wet power - frequency test	
6.4	Mechanical load-time test and test of the tightness of	

In the enclosure 1 there are some extracts of the complete tests

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TESTS COMPARABLE TO THE STANDARD ANSI C29.11

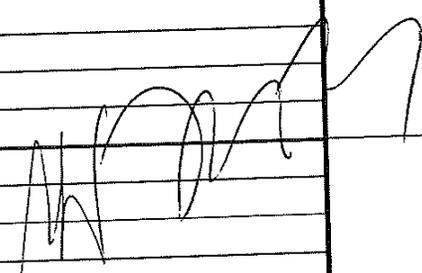
The **isoelectric** composite insulators "SILISOL" performed some tests were comparable to the standard ANSI C29.11 as follows :

PARAG.	DESCRIPTION	REPORT
7	Prototype tests	 TESTS REPORT OF RECOGNIZED LABORATORY ARE AVAILABLE IN OUR FIRM
7.1	Test on interfaces and connection of end fittings	
7.1.1	Test specimens and preliminary test	
7.1.2	Dry power frequency voltage test	
7.1.3	Sudden load release test	
7.1.4	Thermal-mechanical test	
7.1.5	Water penetration test	
7.1.6	Verification test	
7.1.6.1	Visual examination	
7.1.6.2	Steep front impulse voltage test	
7.1.6.3	Dry power frequency voltage test	
7.2	Core time-load test	
7.2.1	Test specimens	
7.2.2	Test to determine the aver. failing load of the core	
7.2.3	Control of the load-time slope of the insulators	
7.3	Housing tracking and erosion test	
7.3.1	Test specimens " duration of 5000 hours "	
7.3.2	Test chamber	
7.3.3	Test conditions	
7.3.4	Evaluation of the test	
7.4	Core material test	
7.4.1	Dye penetration test	
7.4.1.1	Test specimens	
7.4.1.2	Performance of the test	
7.4.1.3	Evaluation of the test	
7.4.2	Water diffusion test	
7.4.2.1	Test specimens	
7.4.2.2	Pre-stressing	
7.4.2.3	Voltage test	
7.4.2.4	Acceptance criterion	
8	Design test	Internal tests at isoelectric
8.1	Lighting critical - impulse flashover test	
8.2	Wet power frequency test	
9.*	All acceptance tests	

In the enclosure 2 there are some extracts of the complete tests.

TESTS PERFORMED ACCORDING THE STANDARD IEC 61952

Some tests were performed on some composite insulators "SILISOL" of the **isoelectric** according to the IEC 61952 standard, as follows:

PARAG.	DESCRIPTION	REPORT	
6	Desion tests	 TESTS REPORT OF RECOGNIZED LABORATORY ARE AVAILABLE IN OUR FIRM	
6.1	General		
6.2	Tests on interfaces and connections of end fittings		
6.2.1	Test specimens		
6.2.2	Pre-stressing		
6.2.2.1	Thermal-mechanical pre-stressing		
6.2.2.2	Water immersion test		
6.2.3	Verification tests		
6.2.3.1	Visual examination		
6.2.3.2	Steep-front impulse voltage test		
6.2.3.3	Dry power frequency voltage test		
6.3	Assembled core load-time tests		
6.3.1	Test for verif. the Maximum Design Cantilever Load MDCL		
6.3.2	Tensile load test		
6.4	Test of sheds and housing material		
6.4.1	Hardness test		
6.4.2	Accelerated weathering test		
6.4.3	Tracking and erosion test		
6.4.3.1 a	Test specimens " duration of 1000 hours "		
6.4.3.1 b	Test specimens " duration of 5000 hours annex C "		
6.4.4	Flammability test acc. to IEC 60707		
6.5	Test for the core material		
6.5.1	Dye penetration test		
6.5.1.1	Test procedure		
6.5.1.2	Acceptance criteria		
6.5.2	Water diffusion test		
6.5.2.1	Test specimens		
6.5.2.2	Pre-stressing		
6.5.2.3	Voltage test		
7	Tvne tests		 Internal tests at isoelectric
7.1	Verification of dimensions		
7.2	Electrical tests		
7.2.1	Mounting arrangements		
7.2.2	Dry lightning impulse withstand voltage test		
7.2.3	Wet power - frequency test		
7.2.4	Wet switching impulse withstand voltage test only >300 kV		
7.3	Mechanical test		
7.3.1	Cantilever failing load test		
8	Sample test		

TESTS PERFORMED ACCORDING TO OTHER STANDARDS

On some composite insulators "SILISOL" of the **isoelectric** some tests were performed according to other standards as follows:

- ◆ Standard **ASTM C 542** Test for flammability
- ◆ Standard **ASTM E 662** Test to determine the optical density of the smokes
- ◆ Standard **ASTM G 26** Ageing tests using ultraviolet rays UV
- ◆ Standard **CEI 20-37** Smoke toxicity and corrosion test
- ◆ Standard **DIN 57441** Accelerated ageing test in saline fog
- ◆ Standard **IEEE Std 1024** Accelerated ageing test in saline fog
- ◆ Standard **AS 4435.4**
Definition, test methods and acceptance criteria for post insulators units
- ◆ Standard **HN 66 S02** Power arc test
- ◆ Standard **IE.TE. 127** Test for railways post insulators (power arc test)
- ◆ Standard **IEC 507** Test for artificial pollution performance in H.V. insulators
80 kg/m³ of salt fog (**heavy pollution** as for IEC 815)
- ◆ Standard **IEC 507** Test for artificial pollution performance in H.V. insulators
224 kg/m³ of salt fog (**very heavy pollution** as for IEC 815)
- ◆ Standard **IEC K-2630/1** Test for power wash in H.V. composite insulators

In the enclosure 3 & 4 there are some extracts of the complete tests.

Tests performed according to standards or specifications in force in European and world-wide Countries are not listed above because they have only a specific interest.

isoelectric, however, has performed tests and got homologations all over the world.

Enclosure 1: tests performed according to the standard IEC 61109 (extract)

Tests performed on composite insulators of different shapes and dimensions in silicone **isoelectric** according to the standard IEC 61109.

Extract of the report of the accelerated ageing test for **5000 hours**.

CESI

test report

LAB-95/001272 pag. 7

6. TEST RESULTS

6.1 Leakage current flowing during the test

No external flashover has been observed during the test.
The maximum peak current measured during the test was 31 mA.

6.2 Surface condition after the test

At the end of the test the sample appeared in good conditions.
No heavy erosions or tracking were visible on the surface.
Light chalking was present over the sheds; salt deposits were visible under the sheds, especially on the side not directly submitted to rain. Rust was present on the fittings.
The insulator appeared still water-repellent.
A view of the insulator and details of the surface at the end of the test are shown in the figures from page 8 to page 11.

7. CONCLUSIONS

Flashover did not appear during the whole test period of 5000 hours.
The maximum peak current measured during the test was 31 mA.
No evident damage was present on the test samples at the end of the test.

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Enclosure 2: tests performed acc. to the standard ANSI C29.11 (extract)

Tests performed on composite insulators fibreglass rod of different shapes and dimensions in silicone **isoelectric** according to the standard ANSI C29.11.

CESI

test report

LAB.94/035995

p.4

4 - Test results :

4.1 - Dye penetration test

The dye did not rise through the core by capillarity, for a test duration longer than 15 min. Picture in of the samples taken after the test is shown in page 5.

4.2 -Water diffusion test

The maximum current value measured on the tested samples during the test are given in the following table. During the test no puncture or surface flaschover occurred. See pictures at pages 7 and 8.

Table of test results relative to water diffusion test

test object No.	applied voltage (kV)	measured current (μ A)
1	12	66.5
2	12	53.2
3	12	46.5
4	12	49.8
5	12	51.5
6	12	53.12

5 - Conclusion :

From the test results given in item 4 the following conclusion may be drawn.

5.1 - Dye penetration test

The test results, given in item 4.1, have proved that the behaviour of the tested samples is satisfactory as the dye did not rise by capillarity through the core; see acceptance criterion given in sub-clause 5.4.1.3 of [1].

5.2 - Water diffusion test

The test result, given in item 3.2, have proved that the behaviour of the tested samples is satisfactory as no puncture or surface flaschover occurred and the current values did not exceed 1 mA: see acceptance criterion given in sub-clause 5.4.2.3 of [1].

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Enclosure 3: tests performed according to the standard DIN 57441 (extract)

Accelerated ageing test in saline fog performed on composite insulators in silicone rubber **isoelectric**, "SILIC 1.75", according to the standard DIN 57441 for 1000 hours with a salinity of 10 Kg/m³.

During the saline phase of the test the maximum absorbing current has been 0,27 mA.

CESI

rapporto di prova

AT- 4035/b:

pag. 14

Prove di verifica finali in nebbia salina richieste dal Cliente

Tipo dell'isolatore	Numero Isolatore	Stato dell'isolatore (invecchiato/nuovo)	Tensione applicata al 1° gradino (kV)	Durata totale della prova (min)	Tensione media di scarica (*) (kV)	Salinità di prova durante la verifica (kg/m ³)
ISI-fs-20	7	invecchiato				
ISI-fs-20	-	nuovo	50	16	37,6	80
	10	invecchiato	50	15	35,2	
ISI-f-20	-	nuovo	50	19	45,3	80
	3	invecchiato	50	21	44,6	
ISI-f-20	17/B	invecchiato				
ISI-n-20	5	invecchiato				
ISI-n-20	-	nuovo	50	20	45,3	80
	16	invecchiato	50	17	46,1	
ISI-s-20	6	invecchiato				
ISI-s-20	-	nuovo	50	18	38,6	80
	20	invecchiato	50	16	35,3	
ISI-n-30	12	invecchiato				

Nota - Per le prove di verifica si sono utilizzati i soli isolatori più invecchiati ed un isolatore nuovo di fabbrica mai provato della stessa formulazione e profilo dell'isolatore invecchiato allo scopo di evidenziare l'influenza del ciclo di invecchiamento.

(*) Media rilevata su n.8 scariche totali, vedi modalità di prova a pag. 17.

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Enclosure 4: tests performed acc. to the standard **IEEE Sdt 1024** (extract)

Accelerated ageing test performed on composite insulators in silicone rubber **isoelectric "SILIC 1.75"** according to the standard **IEEE Sdt 1024** for **40.000** cycles with a conductivity of the solution of 3.0 ± 0.1 mS/cm.

TEST REPORT

Client : ISOELECTRIC

Test object: Three 25 kV composite insulators with silicone rubber sheds and aluminium end fittings.

Date of test: February to July 1991

Tested by: J. Frate

Test method: The three insulators have been tested according to a method described in IEEE Std 1024-1988 : "IEEE Recommended Practice for Specifying Distribution Composite Insulators (suspension type)".

In this wheel test, the insulators go through four positions in one cycle. This is illustrated in Fig. 1. Each specimen remains stationary for about 40 s in each of the four positions. The 90° rotation from one position to the next takes about 8 s.

In the first part of the cycle, the specimen is dipped into a saline solution (NaCl) in demineralized water, conductivity 3.0 ± 0.1 mS/cm). The second part of the cycle permits the excess water saline solution to drip off the specimen ensuring that the light wetting of the surface gives rise to sparking across dry bands that will form during the third part of the cycle. In that part of the cycle, the insulator is submitted to a voltage stress of 35 V/mm of leakage distance. In the last part of the cycle the insulator surface that has been heated by the dry band sparking is allowed to cool.

Acceptance criterion : After completing 30000 cycles of the above test, the insulator must not show signs of tracking. Erosion of the weathershed, if any, must not expose the FRP rod and there must not be any punctured shed.

Test results : *The three insulators passed successfully the required 30000 cycle test. The insulators were then taken through an additional 10000 cycles without showing signs of tracking, erosion or shed puncture. Fig. 2 shows the three insulators after completing the tracking wheel test.*

Claude de Turreil

LIST OF TESTS THAT CAN BE PERFORMED AT OUR LABORATORY

- Dry power frequency test up to 200 kV
- Wet power frequency test up to 200 kV
- Air or oil discharge test up to 200 kV
- Atmospheric lighting impulse test 1,2/50 μ s up to 400 kV
- Atmospheric lighting impulse discharge test 1,2/50 μ s in oil and air up to 400 kV
- Partial discharges test
- Measure of the insulation resistance up to 2000 M Ω , 1000 V
- Accelerated ageing test in saline fog
- Water penetration test
- Test to verify the galvanisation thickness
- Traction test up to 350 kN
- Flexion test up to 160 kN
- Compression test up to 160 kN
- Torsion test up to 60 kN
- Hibernation test up to - 55° C
- Heat test up to + 250° C
- Dimensional verifications test



SOME NOT STANDARDIZED TESTS

• SHOOTING RESISTANCE TEST

Opposite to the fragile porcelain or glass, the composite insulators “**SILISOL**” of **isoelectric** have a high resistance to mechanical shocks.

This property gives a substantially better performance in case of a severe mechanical impact, such as a gunshot.

To study this behaviour the shooting resistance test was performed on MV and HV insulators using the following firearms:

- Revolver cal. 9 mm , distance 10/100 m
- Rifle cal. 7,5 mm , distance 10/100 m
- Rifle cal. 12/70 with a small bullet (3,5 g) , distance 10 m

Tests performed with a small bullet demonstrated that the bullets that struck in the outer casing did not damage the fibreglass rod. Also the revolver shots at a distance of 10 m did not damaged the fibreglass rod, while the bullets that struck the insulators at an angle of 90° damaged the rod without impairing the good working of the insulators. Porcelain or glass insulators - taken by comparison - exploded completely as soon as they are struck.

• HIBERNATION TEST IN NATURAL ENVIRONMENT AT -25° C

As you can note on the enclosures different kind of composed insulators were mounted on the same support.

The white colour insulator at - 25°C suffered the following drawback: the lower and the upper end fittings were short-circuited as a result of the ice. This drawback is caused by the roughness and scarce hydrophobicity of the insulating surface; consequently it keeps the water that at a low temperature forms stalactites of ice.

This phenomenon doesn't happen with composite insulators “**SILISOL**” of **isoelectric**, because the surface has scarce hydrophobicity (like drops of mercury on the table forming small balls) and having sloping sheds the water slips away very easily. As you can see in the picture the ends of the sheds are covered only with light frost. Then the white insulators were submitted to the power frequency test and partial discharge test giving a negative result.

Composite insulators “**SILISOL**” in **SILICONE** of the **isoelectric**, because of the hydrophobicity and elasticity of the coating give positive result without suffering drawbacks.

CONCLUSIONS

Composite insulators "SILISOL" in SILICONE "SILIC 1.75" of the isoelectric have been installing for a long time, namely since June 1985, in many Countries both on MV and HV lines.

The insulators installed are divided as follows:

- Horizontal and vertical line post insulators MV and HV
- Rod insulators for switch gear MV
- Suspension, tension, long rod, dead end insulators MV and HV
- Suspension insulators with horns gap MV
- Pin insulators MV
- Phase spacer insulators
- Insulators for traction railways lines
- Insulators for underground

Special applications (deflectors, insulated connections, additional sheds to lengthen the leakage line of porcelain or glass insulators, etc.) and not least the realisation of composite insulators for transformers in Sf6 gas up to 400 kV.

By the latest laboratory tests and by working the excellent features of the SILICONE "SILIC 1.75" of isoelectric have been demonstrated as a casing material for composite insulators that can be used on distribution line MV and HV and on traction lines especially in high pollution conditions.

All this constitutes an important stage towards the reduction in the use of traditional insulators in favour of an ever growing use of composite insulators in SILICONE "SILIC 1.75" of the ISOELECTRIC.

Particular attention should be given when "COMPACT LINES" are planning where the compactness of the composite insulator and its lightness constitute a great advantage both for dimensional terms of the whole structure and during the installation phase.

Some drawings will be shown on isoelectric composite insulators that are parts of the standard production.

However we are able to offer our customer all the solutions he asks us with any features from 1 kV to 500 kV.

We shall be pleased if you contact us for any requests you need at our web site or e-mail address :

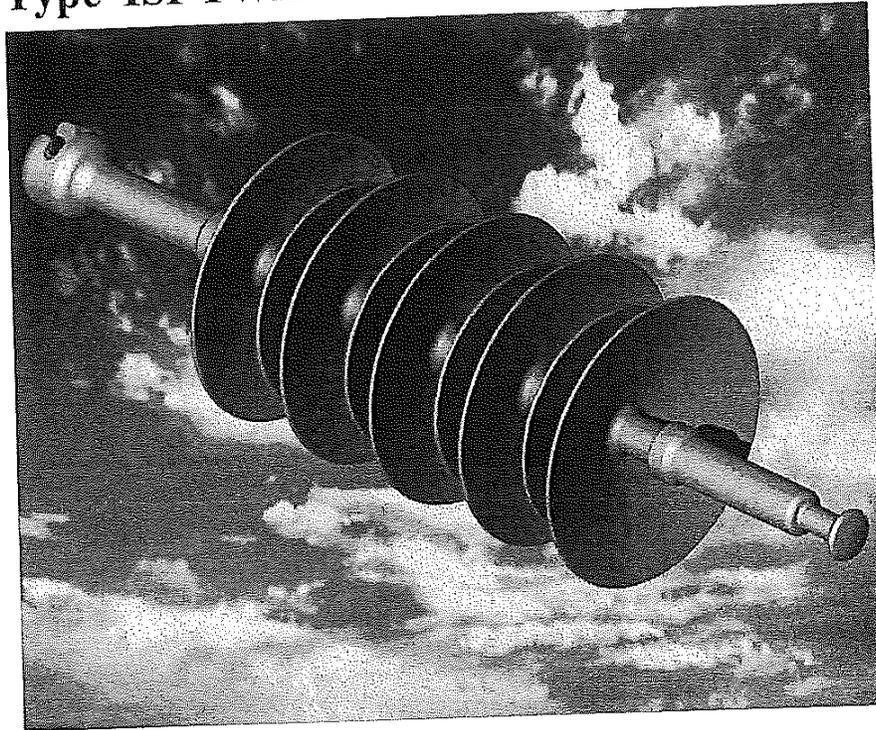
www.isoelectric.it

info@isoelectric.it

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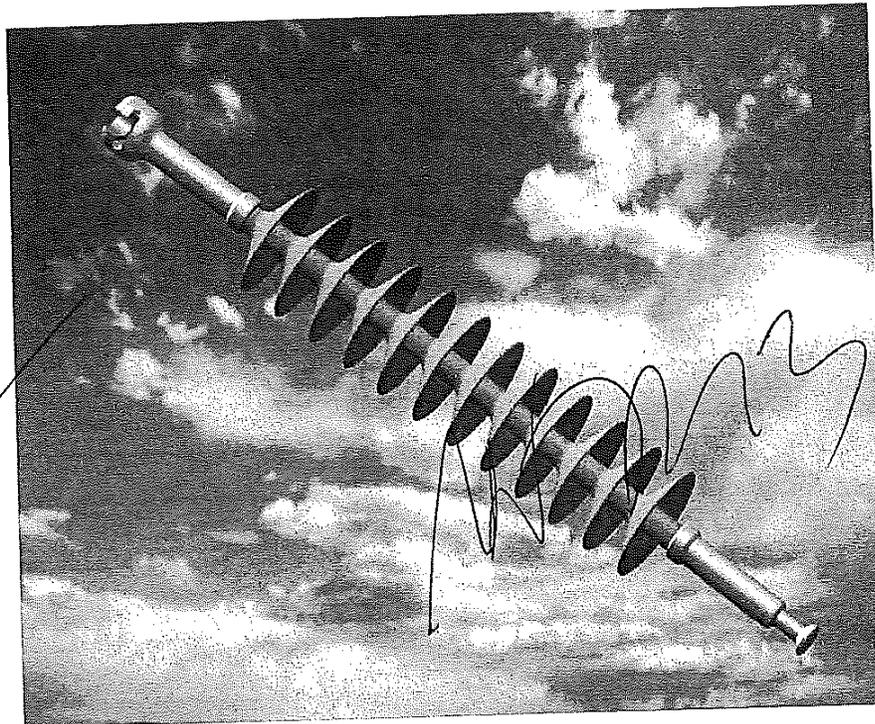
SAME PICTURES OF THE OUR COMPOSITE INSULATORS

Type ISI-TWA



Handwritten signature

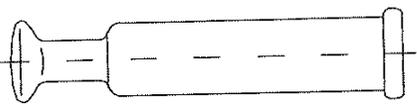
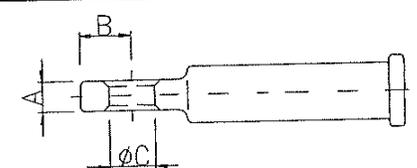
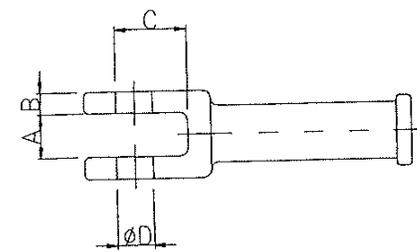
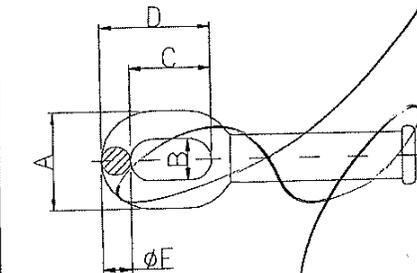
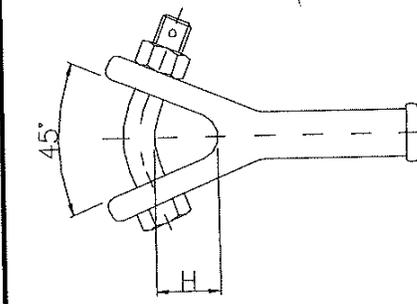
Type ISI-CAN



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COMPOSITE INSULATORS END FITTINGS

All the end fittings listed in the table below refer to what is stated in IEC 61466-1 (02-1997) standard

TYPE	Code	70 kN	120 kN	160 kN	210 kN
	BALL B	Size 16 IEC 60120	Size 16 IEC 60120	Size 20 IEC 60120	Size 20 IEC 60120
	SOCKET S	Size 16 IEC 60120	Size 16 IEC 60120	Size 20 IEC 60120	Size 20 IEC 60120
	TONGUE T	Size 16N A= 14.0 B= 20.0 C= 17.5	Size 19N A= 16 B= 27 C= 24	Size 19N A= 16 B= 27 C= 24	Size 22N A= 22 B= 26 C= 24
	CLEVIS C	Size 16N A= 18.0 B= 8.00 C= 34.8 D= 17.5	Size 19N A= 23.0 B= 11.5 C= 38.0 D= 20.0	Size 19N A= 23.0 B= 11.5 C= 38.0 D= 20.0	Size 22N A= 26.0 B= 15.0 C= 43.0 D= 22.0
	EYE E	Size 17 A= 44 B= 20 C= 31 D= 45 E= 12	Size 24 A= 62 B= 26 C= 52 D= 70 E= 18	Size 24 A= 62 B= 26 C= 52 D= 70 E= 18	Size 25 A= 70 B= 26 C= 52 D= 74 E= 22
	Y-CLEVIS Y	Size 16 H= 40	Size 19 H= 40	Size 22 H= 40	Size 22 H= 40

All this end fittings are in hot dip galvanized steel.

SILICONE DEAD END INSULATOR type ISI-CIN-* class 70 kN

Specified Mechanical Load (SML IEC 61109) = 70 kN						Routine Test Load (RTL IEC 61109) = 35 kN				
Line Voltage kV	Catalogue Code	n° of Sheds A n° (1)	Length L ± 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
						Dry kV	Wet kV	posit. kV	negat. kV	
10 12 15 25	ISI-CIN-A4+3-70CT	4+3	325	440	175	85	75	135	150	1,5

NOTE : This insulator is produced and tested according to IEC 61109.

SILICONE DEAD END INSULATOR type ISI-LEN-* class 70 kN

This insulators performed 80 kg/m³ artificial salt pollution test.

Specified Mechanical Load (SML IEC 61109) = 70 kN						Routine Test Load (RTL IEC 61109) = 35 kN				
Line Voltage kV	Catalogue Code	n° of Sheds A n° (1)	Length L ± 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
						Dry kV	Wet kV	posit. kV	negat. kV	
10 12 15 25	ISI-LEN-A3+2-70TT	3+2	395	630	260	85	80	170	180	1,9

NOTE : This insulator is produced and tested according to IEC 61109.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

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SILICONE DEAD END INSULATOR type ISI-MIG-* class 70 kN

This insulators performed 80 kg/m³ artificial salt pollution test.

Specified Mechanical Load (SML IEC 61109) = 70 kN						Routine Test Load (RTL IEC 61109) = 35 kN				
ATTENTION : Same dimensions of 2 glass disc insulators fittings										
We can made this insulator with Tongue-Tongue										
Line Voltage kV	Catalogue Code	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
						Dry kV	Wet kV	posit. kV	negat. kV	
10 12 15 25	ISI-MIG-A5-70CT	3+2	292	590	240	105	75	135	150	1,5

NOTE : This insulator is produced and tested according to IEC 61109.

SILICONE DEAD END INSULATOR type ISI-TWE-* class 70 kN

This insulators performed 220 kg/m³ artificial salt pollution test.

Specified Mechanical Load (SML IEC 61109) = 70 kN						Routine Test Load (RTL IEC 61109) = 35 kN				
We can made this insulator with Clevis-Tongue fittings										
Line Voltage kV	Catalogue Code	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
						Dry kV	Wet kV	posit. kV	negat. kV	
10 12 15 25	ISI-TWE-A4+3-70TT	4+3	395	900	330	110	100	180	200	1,9

NOTE : This insulator is produced and tested according to IEC 61109.

COMPOSITE DEAD END INSULATOR in SILICONE RUBBER type ISI-SLY-* class 70 kN

Specified Mechanical Load (SML IEC 61109) = 70 kN Routine Test Load (RTL IEC 61109) = 35 kN

Note: we can make this insulator with SML of 45 kN

Dimensions tolerance acc. to IEC 61109

Selection Guide (Line Voltage, kV)				Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	17	24	36						Dry kV	Wet kV	posit. kV	negat. kV	
				ISI-SLY-*	2	245	200	75	65	55	105	120	2,0
				ISI-SLY-*	3	285	305	115	75	65	120	135	2,2
				ISI-SLY-*	4	325	410	155	85	75	135	150	2,4
				ISI-SLY-*	5	365	515	195	95	85	155	185	2,6
				ISI-SLY-*	6	405	620	235	110	100	185	215	2,7
				ISI-SLY-*	7	445	725	275	125	110	210	240	2,9
				ISI-SLY-*	8	485	830	315	140	120	235	270	3,0
				ISI-SLY-*	9	525	935	355	150	140	260	290	3,2

NOTE: Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table:

Ground fitting	Line fitting	Code (2)	Length change (L)
CLEVIS	TONGUE	CT	0
SOCKET	BALL	SB	+45
EYE	EYE	EE	+90
EYE	BALL	EB	+60
EYE	TONGUE	ET	+45
CLEVIS	BALL	CB	+15
SOCKET	EYE	SE	+70
Y-CLEVIS	TONGUE	YT	+45
Y-CLEVIS	EYE	YE	+90

SML - IEC 61109
RTL = 50% of SML

Specified Mechanical Load 70 kN
Routine Test Load 35 kN
Max torsion Load 50 N*m

The metal fittings are in galvanized steel

(♦) Key to the catalog numbers

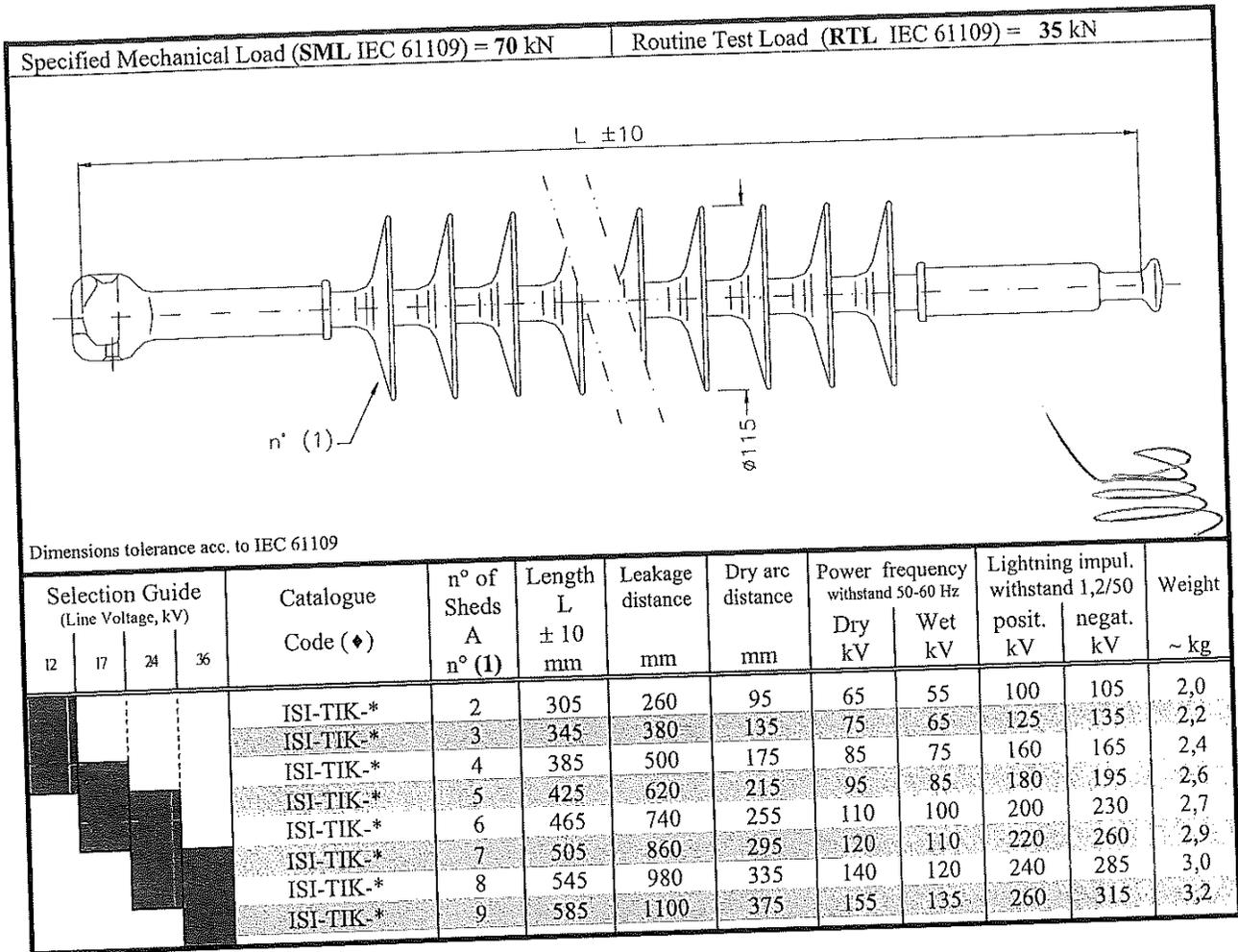
* Key: ISI-SLY- A(1)-70(2)

Example: ISI-SLY-A4-70CT

These insulators are produced and tested according to IEC 61109. It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

COMPOSITE DEAD END INSULATOR in SILICONE RUBBER type ISI-TIK-* class 70 kN



NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
CLEVIS	TONGUE	CT	-40
EYE	EYE	EE	+55
EYE	BALL	EB	+20
EYE	TONGUE	ET	+5
CLEVIS	BALL	CB	-25
SOCKET	EYE	SE	+30
Y-CLEVIS	TONGUE	YT	+5
Y-CLEVIS	EYE	YE	+50

Specified Mechanical Load	SML - IEC 61109
Routine Test Load	RTL = 50% of SML
Specified Mechanical Load	70 kN
Routine Test Load	35 kN
Max torsion Load	50 N*m

The metal fittings are in galvanized steel

(♦) Key to the catalogue numbers

* Key : ISI-TIK - A(1)-70(2)

Example : ISI-TIK - A4-70SB

These insulators are produced and tested according to IEC 61109.
It's possible to have all the other combinations

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions

COMPOSITE SUSPENSION or TENSION INSULATOR in SILICONE RUBBER type ISI-BE-* class 70 kN

Specified Mechanical Load (SML IEC 1109) = 70 kN						Routine Test Load (RTL IEC 1109) = 35 kN					
Dimensions tolerance acc. to IEC 61109											
Selection Guide (Line Voltage, kV)		Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	17						24	36	45	52	
		ISI-BE-*	2	290	175	80	40	35	70	80	2,0
		ISI-BE-*	3	320	250	110	50	45	90	100	2,2
		ISI-BE-*	4	350	325	140	60	55	100	120	2,4
		ISI-BE-*	5	380	400	170	70	65	115	160	2,6
		ISI-BE-*	6	410	475	200	80	75	135	180	2,7
		ISI-BE-*	7	440	550	230	90	85	150	200	2,9
		ISI-BE-*	8	470	625	260	100	90	160	210	3,0
		ISI-BE-*	9	500	700	290	115	100	170	220	3,2
		ISI-BE-*	10	530	780	320	125	110	190	235	3,4
		ISI-BE-*	11	560	855	350	135	120	200	250	3,5
		ISI-BE-*	12	590	930	380	145	130	220	275	3,7
		ISI-BE-*	13	620	1005	410	155	140	235	285	3,9
		ISI-BE-*	14	650	1080	440	170	155	255	305	4,0
		ISI-BE-*	15	680	1160	470	180	165	275	325	4,2
		ISI-BE-*	16	710	1235	500	190	175	290	340	4,4
		ISI-BE-*	17	740	1310	530	200	185	305	355	4,5
		ISI-BE-*	18	770	1385	560	215	200	320	380	4,7
		ISI-BE-*	19	800	1460	590	225	210	345	405	4,9
		ISI-BE-*	20	830	1535	620	235	220	360	420	5,0
		ISI-BE-*	21	860	1610	650	245	230	370	445	5,2

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
CLEVIS	TONGUE	CT	-40
EYE	EYE	EE	+55
EYE	BALL	EB	+20
EYE	TONGUE	ET	+5
CLEVIS	BALL	CB	-25
SOCKET	EYE	SE	+30
Y- CLEVIS	TONGUE	YT	+5
Y- CLEVIS	EYE	YE	+50

Specified Mechanical Load **SML - IEC 61109**
 Routine Test Load **RTL = 50% of SML**
 Specified Mechanical Load 70 kN
 Routine Test Load 35 kN
 Max torsion Load 50 N*m

The metal fittings are in galvanized steel

(♦) Key to the catalogue numbers

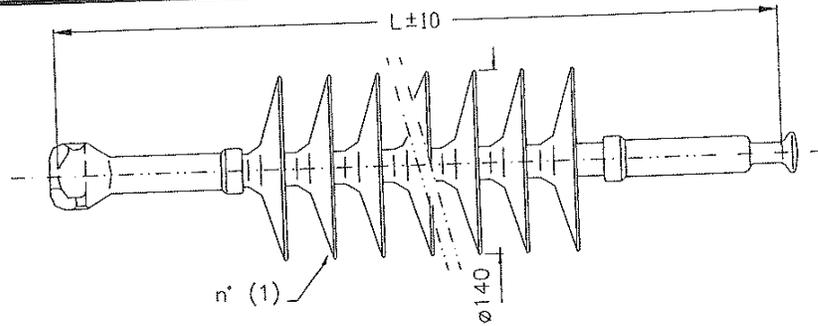
* Key : ISI-BE- A(1)-70(2)

Example : ISI-BE- A7-70SB

These insulators are produced and tested according to IEC 61109.
 It's possible to have all the other combinations

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions

COMPOSITE SUSPENSION or TENSION INSULATOR in SILICONE RUBBER type ISI-NL-* class 70 kN



Dimensions tolerance acc. to IEC 61109

Selection Guide (Line Voltage, kV)							Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	17	24	36	45	52	Dry kV						Wet kV	posit. kV	negat. kV		
						ISI-NL-*	2	295	300	85	60	50	105	130	2,0	
						ISI-NL-*	3	330	440	120	70	60	130	150	2,2	
						ISI-NL-*	4	365	580	155	85	70	150	175	2,4	
						ISI-NL-*	5	400	720	190	100	80	170	200	2,6	
						ISI-NL-*	6	435	865	225	110	95	195	220	2,7	
						ISI-NL-*	7	470	1005	260	125	105	215	245	2,9	
						ISI-NL-*	8	505	1150	295	140	120	240	265	3,0	
						ISI-NL-*	9	540	1290	330	150	130	260	290	3,2	
						ISI-NL-*	10	575	1430	365	165	140	280	315	3,4	
						ISI-NL-*	11	610	1575	400	175	155	305	335	3,5	
						ISI-NL-*	12	645	1715	435	190	165	325	360	3,7	
						ISI-NL-*	13	680	1860	470	200	180	350	380	3,9	
						ISI-NL-*	14	715	2000	505	215	190	370	405	4,0	
						ISI-NL-*	15	750	2140	540	230	200	390	430	4,2	
						ISI-NL-*	16	785	2285	575	240	215	415	450	4,4	
						ISI-NL-*	17	820	2425	610	255	225	435	475	4,5	
						ISI-NL-*	18	855	2570	645	270	240	460	495	4,7	
						ISI-NL-*	19	890	2710	680	280	250	480	520	4,9	
						ISI-NL-*	20	925	2850	715	295	260	500	545	5,0	
						ISI-NL-*	21	960	2995	750	305	275	525	565	5,2	

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table.

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
CLEVIS	TONGUE	CT	-40
EYE	EYE	EE	+55
EYE	BALL	EB	+20
EYE	TONGUE	ET	+5
CLEVIS	BALL	CB	-25
SOCKET	EYE	SE	+30
Y-CLEVIS	TONGUE	YT	+5
Y-CLEVIS	EYE	YE	+50

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML
70 kN
35 kN
90 N*m

The metal fittings are in galvanized steel

*) Key to the catalogue numbers

* Key : ISI-NL- A(1)-70(2)

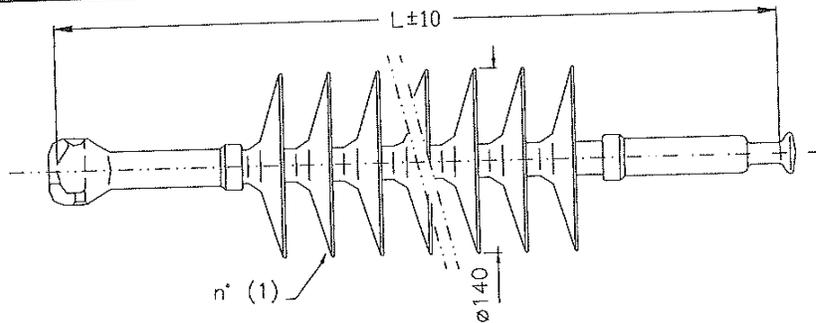
Example : ISI-NL-A7-70SB

These insulators are produced and tested according to IEC 61109.
It's possible to have all the other combinations

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions

isoelectric - Italy 04-2

COMPOSITE SUSPENSION or TENSION INSULATOR in SILICONE RUBBER type ISI-NL-* class 120 kN



Dimensions tolerance acc. to IEC 61109

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	17	24	36	45	52						Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-NL-*	2	385	300	85	60	50	105	130	2,0
						ISI-NL-*	3	420	440	120	70	60	130	150	2,2
						ISI-NL-*	4	455	580	155	85	70	150	175	2,4
						ISI-NL-*	5	490	720	190	100	80	170	200	2,6
						ISI-NL-*	6	525	865	225	110	95	195	220	2,7
						ISI-NL-*	7	560	1005	260	125	105	215	245	2,9
						ISI-NL-*	8	595	1150	295	140	120	240	265	3,0
						ISI-NL-*	9	630	1290	330	150	130	260	290	3,2
						ISI-NL-*	10	665	1430	365	165	140	280	315	3,4
						ISI-NL-*	11	700	1575	400	175	155	305	335	3,5
						ISI-NL-*	12	735	1715	435	190	165	325	360	3,7
						ISI-NL-*	13	770	1860	470	200	180	350	380	3,9
						ISI-NL-*	14	805	2000	505	215	190	370	405	4,0
						ISI-NL-*	15	840	2140	540	230	200	390	430	4,2
						ISI-NL-*	16	875	2285	575	240	215	415	450	4,4
						ISI-NL-*	17	910	2425	610	255	225	435	475	4,5
						ISI-NL-*	18	945	2570	645	270	240	460	495	4,7
						ISI-NL-*	19	980	2710	680	280	250	480	520	4,9
						ISI-NL-*	20	1015	2850	715	295	260	500	545	5,0
						ISI-NL-*	21	1050	2995	750	305	275	525	565	5,2

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
SOCKET	EYE	SE	+35
EYE	EYE	EE	+64
EYE	BALL	EB	+29
EYE	TONGUE	ET	+27
CLEVIS	BALL	CB	-8
CLEVIS	TONGUE	CT	-10
Y-CLEVIS	TONGUE	YT	+15
Y-CLEVIS	EYE	YE	+52

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML
120 kN
60 kN
90 N*m

The metal fittings are in galvanized steel

(♦) Key to the catalogue numbers

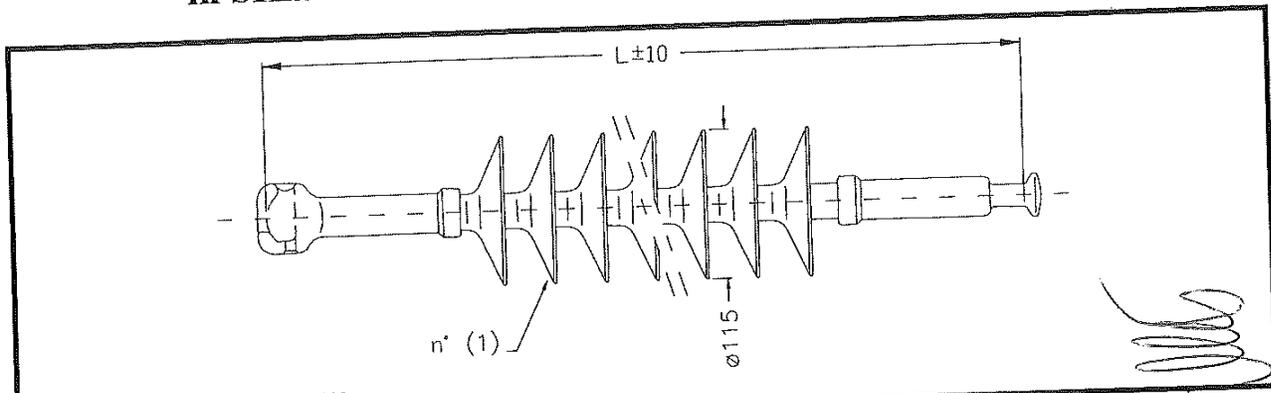
* Key : ISI-NL- A(1)-120(2)

Example : ISI-NL-A7-120SB

These insulators are produced and tested according to IEC 61109.
It's possible to have all the other combinations

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions

COMPOSITE SUSPENSION or TENSION INSULATOR in SILICONE RUBBER type ISI-CAN-* class 70 kN



Dimensions tolerance acc. to IEC 61109

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	17	24	36	45	52						Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-CAN-*	2	305	255	95	65	55	100	110	2,0
						ISI-CAN-*	3	345	370	135	75	60	130	140	2,2
						ISI-CAN-*	4	385	485	175	85	70	160	170	2,4
						ISI-CAN-*	5	425	600	215	100	85	180	200	2,6
						ISI-CAN-*	6	465	715	255	110	100	200	230	2,7
						ISI-CAN-*	7	505	830	295	120	110	220	250	2,9
						ISI-CAN-*	8	545	945	335	135	120	240	285	3,0
						ISI-CAN-*	9	585	1060	375	150	130	260	315	3,2
						ISI-CAN-*	10	625	1175	415	160	140	280	330	3,4
						ISI-CAN-*	11	665	1290	455	175	155	305	355	3,5
						ISI-CAN-*	12	705	1405	495	190	165	325	375	3,7
						ISI-CAN-*	13	745	1520	535	215	180	340	395	3,9
						ISI-CAN-*	14	785	1635	575	230	200	370	430	4,0
						ISI-CAN-*	15	825	1800	615	250	220	410	465	4,2
						ISI-CAN-*	16	865	1915	655	260	230	450	490	4,4
						ISI-CAN-*	17	905	2030	695	280	250	480	520	4,5
						ISI-CAN-*	18	945	2150	735	290	260	500	540	4,7
						ISI-CAN-*	19	985	2265	775	300	270	520	560	4,9
						ISI-CAN-*	20	1025	2380	815	315	280	540	580	5,0
						ISI-CAN-*	21	1065	2520	855	330	300	570	615	5,2

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
CLEVIS	TONGUE	CT	-40
EYE	EYE	EE	+55
EYE	BALL	EB	+20
EYE	TONGUE	ET	+5
CLEVIS	BALL	CB	-25
SOCKET	EYE	SE	+30
Y- CLEVIS	TONGUE	YT	+5
Y- CLEVIS	EYE	YE	+50

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML
70 kN
35 kN
90 N*m

The metal fittings are in galvanized steel

(♦) Key to the catalogue numbers

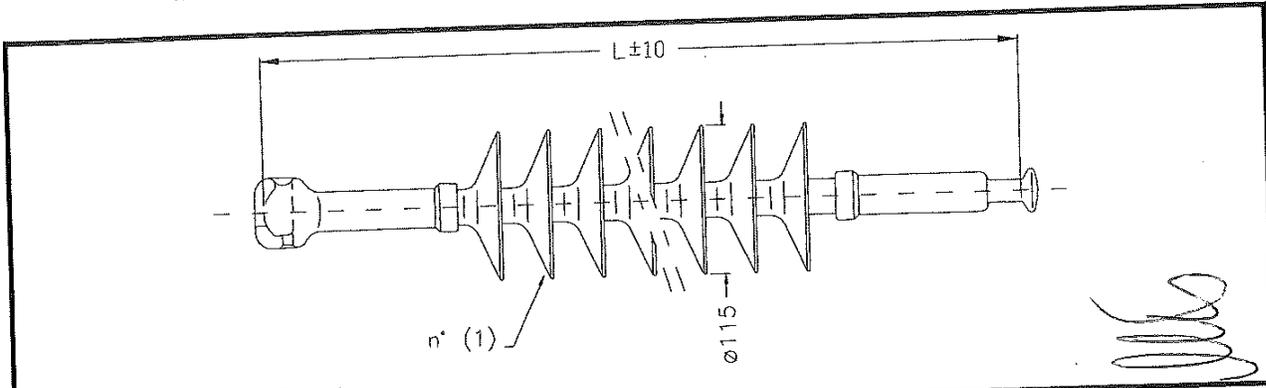
* Key ISI-CAN- A(1)-70(2)

Example : ISI-CAN-A7-70SB

These insulators are produced and tested according to IEC 61109.
It's possible to have all the other combinations

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions

COMPOSITE SUSPENSION or TENSION INSULATOR in SILICONE RUBBER type ISI-CAN-* class 120 kN



Dimensions tolerance acc. to IEC 61109

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lighting impul. withstand 1,2/50		Weight ~ kg
12	17	24	36	45	52						Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-CAN-*	2	395	255	95	65	55	100	110	2,0
						ISI-CAN-*	3	435	370	135	75	60	130	140	2,2
						ISI-CAN-*	4	475	485	175	85	70	160	170	2,4
						ISI-CAN-*	5	515	600	215	100	85	180	200	2,6
						ISI-CAN-*	6	555	715	255	110	100	200	230	2,7
						ISI-CAN-*	7	595	830	295	120	110	220	250	2,9
						ISI-CAN-*	8	635	945	335	135	120	240	285	3,0
						ISI-CAN-*	9	675	1060	375	150	130	260	315	3,2
						ISI-CAN-*	10	715	1175	415	160	140	280	330	3,4
						ISI-CAN-*	11	755	1290	455	175	155	305	355	3,5
						ISI-CAN-*	12	795	1405	495	190	165	325	375	3,7
						ISI-CAN-*	13	835	1520	535	215	180	340	395	3,9
						ISI-CAN-*	14	875	1635	575	230	200	370	430	4,0
						ISI-CAN-*	15	915	1800	615	250	220	410	465	4,2
						ISI-CAN-*	16	955	1915	655	260	230	450	490	4,4
						ISI-CAN-*	17	995	2030	695	280	250	480	520	4,5
						ISI-CAN-*	18	1035	2150	735	290	260	500	540	4,7
						ISI-CAN-*	19	1075	2265	775	300	270	520	560	4,9
						ISI-CAN-*	20	1115	2380	815	315	280	540	580	5,0
						ISI-CAN-*	21	1155	2520	855	330	300	570	615	5,2

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
CLEVIS	TONGUE	CT	+35
EYE	EYE	EE	+64
EYE	BALL	EB	+29
EYE	TONGUE	ET	+27
CLEVIS	BALL	CB	-8
SOCKET	EYE	SE	-10
Y- CLEVIS	TONGUE	YT	+15
Y- CLEVIS	EYE	YE	+52

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML
120 kN
60 kN
90 N*m

The metal fittings are in galvanized steel

(♦) Key to the catalogue numbers

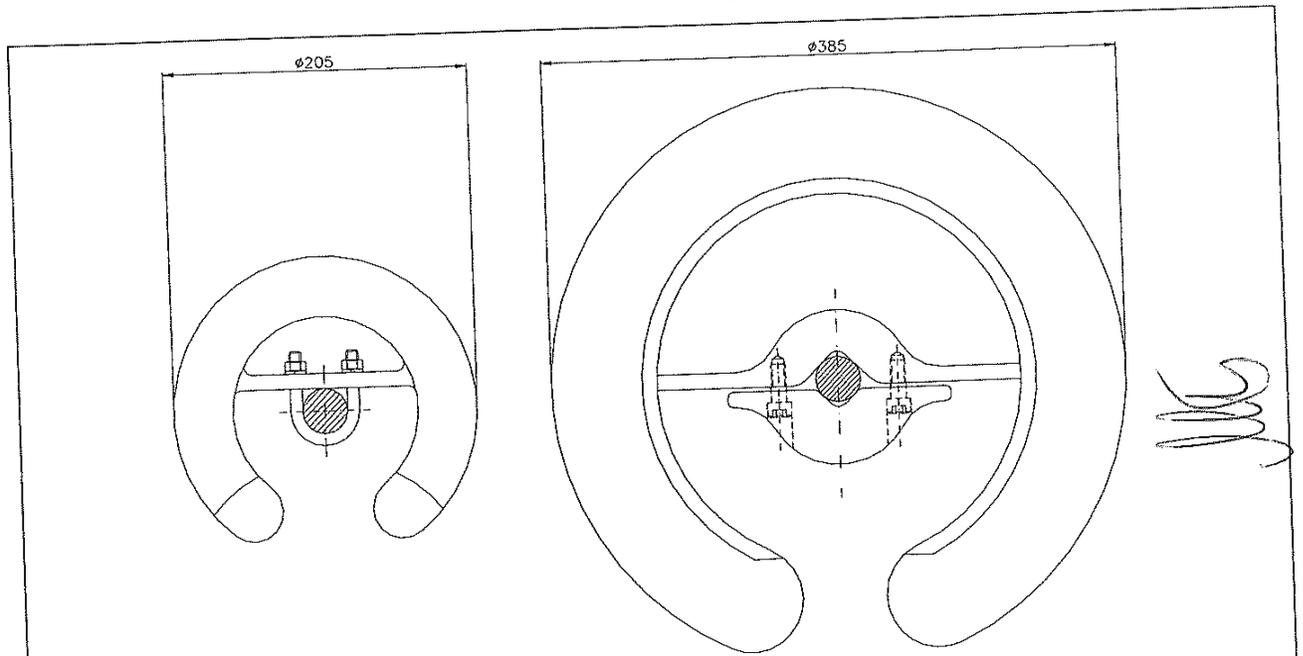
* Key : ISI-CAN- A(1)-120(2)

Example : ISI-CAN-A7-120SB

These insulators are produced and tested according to IEC 61109.
It's possible to have all the other combinations

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions

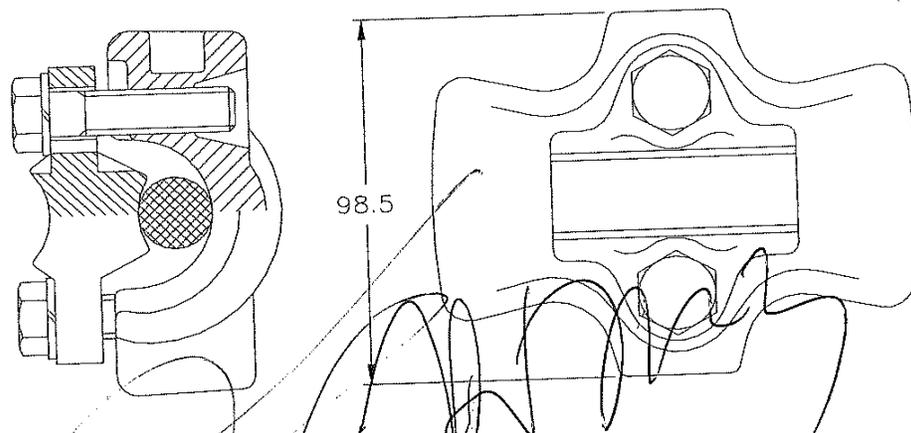
Accessories for Transmission Lines Composite Insulators Corona Rings



All our composite insulators are RIV and corona free through 170 kV, but corona shielding is necessary above 200 kV.
 From 200 kV up to 300 kV is necessary to use one corona ring dia. 205 mm on the live end.
 From 300 kV up to 400 kV is necessary to use two corona rings, dia. 385 mm on the live end & dia. 205 on the ground end.
 From 300 kV up to 400 kV is necessary to use two corona rings, dia. 385 mm on the live end & dia. 205 on the ground end.
 From 400 kV up to 500 kV is necessary to use two corona rings, dia. 385 mm on the live end & ground end.
 When a corona ring is used the electrical characteristics can change.

These information are only for reference, it is necessary to verify the hardware condition to have final decision.
 In this case, please, contact isoelectric.

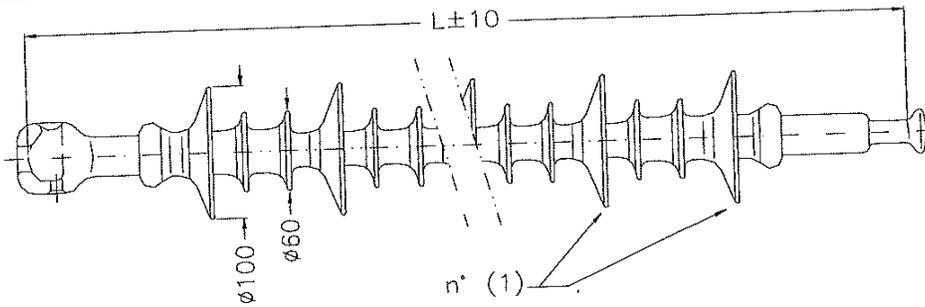
Clamp-top Clamp



Our clamp-top clamp can be mounted on the Horizontal & Vertical line post insulators, that have the VC or the HC top end fitting.
 The clamp-top clamp is in aluminium and can be used with conductors from 10 mm up to 36 mm diameter size.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

Transmission Composite Suspension - Tension Insulators in Silicone Rubber type ISI-PAN-* class 120 kN



Dimensions tolerance acc. to IEC 61109

Note: It's possible to have intermediate numbers of sheds

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
72	123	145	170	250	400						Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-PAN-*	7	870	1360	620	240	210	400	445	3,7
						ISI-PAN-*	8	960	1565	710	270	240	460	500	5,2
						ISI-PAN-*	10	1140	1975	890	340	265	560	610	5,7
						ISI-PAN-*	11	1230	2180	980	370	290	610	660	6,2
						ISI-PAN-*	12	1320	2385	1070	405	325	650	705	6,7
						ISI-PAN-*	14	1500	2795	1250	450	370	720	780	7,2
						ISI-PAN-*	15	1590	3000	1340	480	400	760	825	7,7
						ISI-PAN-*	16	1680	3205	1430	510	425	810	880	8,2
						ISI-PAN-*	17	1770	3410	1520	540	450	880	950	8,7
						ISI-PAN-*	19	1950	3820	1700	615	515	1000	1080	9,2
						ISI-PAN-*	20	2040	4025	1790	625	525	1040	1110	9,7
						ISI-PAN-*	22	2220	4435	1970	675	575	1140	1230	10,2
						ISI-PAN-*	23	2310	4640	2060	710	605	1210	1310	10,7
						ISI-PAN-*	24	2400	4845	2150	760	640	1270	1370	11,2
						ISI-PAN-*	25	2490	5050	2240	810	675	1330	1430	11,7
						ISI-PAN-*	27	2670	5460	2420	840	690	1370	1470	12,2
						ISI-PAN-*	28	2760	5665	2510	855	710	1415	1515	12,7
						ISI-PAN-*	30	2940	6075	2690	890	740	1520	1640	13,2
						ISI-PAN-*	31	3030	6280	2780	905	750	1585	1715	13,7
						ISI-PAN-*	32	3120	6485	2870	915	760	1620	1750	14,2

NOTE: Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table:

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	From 0 up to -140
SOCKET	EYE	SE	From +35 up to -105
EYE	EYE	EE	From +65 up to -75
EYE	BALL	EB	From +30 up to -110
EYE	TONGUE	ET	From +30 up to -110
CLEVIS	BALL	CB	From +10 up to -130
CLEVIS	TONGUE	CT	From -10 up to -150
Y- CLEVIS	TONGUE	YT	From +15 up to -125
Y- CLEVIS	EYE	YE	From +50 up to -90

These insulators are produced and tested according to IEC 61109. It's possible to have all the other combinations.

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML
120 kN
60 kN
90 N*m

For voltages above 170 kV refer to page 29 for Corona Rings, the electrical data can be change.

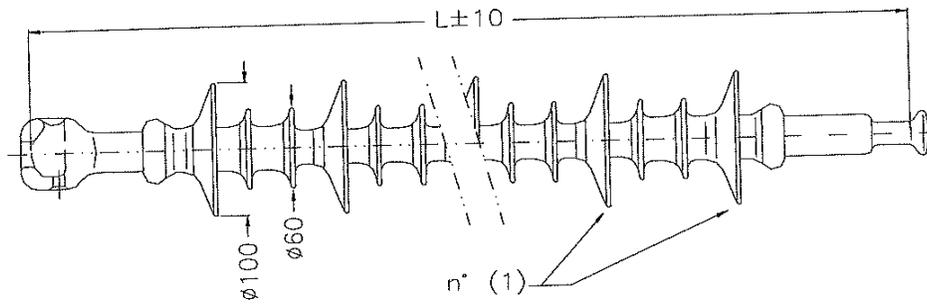
(♦) Key to the catalogue numbers

* Key: ISI-PAN- A(1)-120(2)

Example: ISI-PAN-A20-120SB

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

Transmission Composite Suspension - Tension Insulators in Silicone Rubber type ISI-PAN-* class 160 kN



Dimensions tolerance acc. to IEC 61109

Note: It's possible to have intermediate numbers of sheds

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
72	123	145	170	250	400						Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-PAN-*	7	870	1360	620	240	210	400	445	3,7
						ISI-PAN-*	8	960	1565	710	270	240	460	500	5,2
						ISI-PAN-*	10	1140	1975	890	340	265	560	610	5,7
						ISI-PAN-*	11	1230	2180	980	370	290	610	660	6,2
						ISI-PAN-*	12	1320	2385	1070	405	325	650	705	6,7
						ISI-PAN-*	14	1500	2795	1250	450	370	720	780	7,2
						ISI-PAN-*	15	1590	3000	1340	480	400	760	825	7,7
						ISI-PAN-*	16	1680	3205	1430	510	425	810	880	8,2
						ISI-PAN-*	17	1770	3410	1520	540	450	880	950	8,7
						ISI-PAN-*	19	1950	3820	1700	615	515	1000	1080	9,2
						ISI-PAN-*	20	2040	4025	1790	625	525	1040	1110	9,7
						ISI-PAN-*	22	2220	4435	1970	675	575	1140	1230	10,2
						ISI-PAN-*	23	2310	4640	2060	710	605	1210	1310	10,7
						ISI-PAN-*	24	2400	4845	2150	760	640	1270	1370	11,2
						ISI-PAN-*	25	2490	5050	2240	810	675	1330	1430	11,7
						ISI-PAN-*	27	2670	5460	2420	840	690	1370	1470	12,2
						ISI-PAN-*	28	2760	5665	2510	855	710	1415	1515	12,7
						ISI-PAN-*	30	2940	6075	2690	890	740	1520	1640	13,2
						ISI-PAN-*	31	3030	6280	2780	905	750	1585	1715	13,7
						ISI-PAN-*	32	3120	6485	2870	915	760	1620	1750	14,2

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	From 0 up to -140
SOCKET	EYE	SE	From +35 up to -105
EYE	EYE	EE	From +65 up to -75
EYE	BALL	EB	From +30 up to -110
EYE	TONGUE	ET	From +30 up to -110
CLEVIS	BALL	CB	From +10 up to -130
CLEVIS	TONGUE	CT	From -10 up to -150
Y- CLEVIS	TONGUE	YT	From +15 up to -125
Y- CLEVIS	EYE	YE	From +50 up to -90

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML
160 kN
80 kN
90 N*m

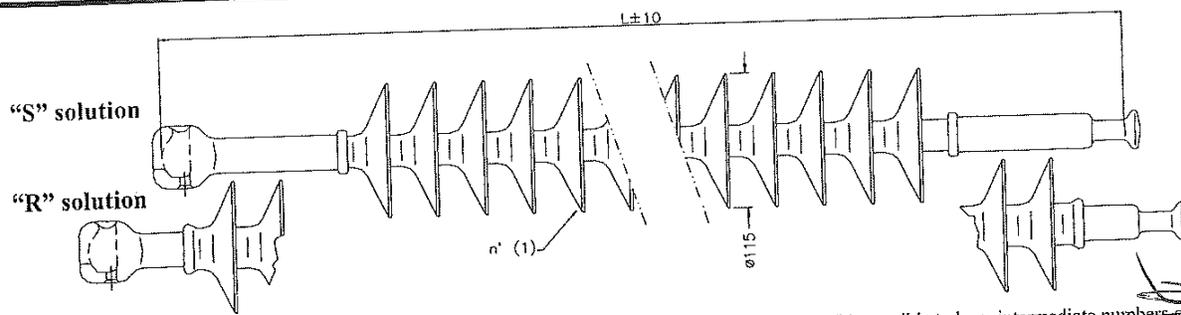
For voltages above 170 kV refer to page 29 for Corona Rings, the electrical data can be change.

(♦) Key to the catalogue numbers
* Key : ISI-PAN- A(1)-160(2)
Example : ISI-PAN-A20-160SB

These insulators are produced and tested according to IEC 61109. It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

Transmission Composite Suspension - Tension Insulators in Silicone Rubber type ISI-CAN-* class 70 kN



Dimensions tolerance acc. to IEC 61109

Note: It's possible to have intermediate numbers of sheds

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
72	123	145	170	250	400						Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-CAN-*	15	825	1800	615	250	220	410	465	4,2
						ISI-CAN-*	18	945	2150	735	290	260	500	540	4,7
						ISI-CAN-*	21	1065	2520	855	340	265	570	615	5,2
						ISI-CAN-*	24	1185	2870	975	380	300	620	670	5,7
						ISI-CAN-*	27	1305	3240	1095	415	335	670	725	6,2
						ISI-CAN-*	30	1425	3605	1215	450	370	720	780	6,7
						ISI-CAN-*	33	1545	3950	1335	485	405	770	835	7,2
						ISI-CAN-*	36	1665	4320	1455	520	435	830	900	7,7
						ISI-CAN-*	39	1785	4690	1575	565	475	915	990	8,2
						ISI-CAN-*	42	1905	5050	1695	615	515	1000	1080	8,7
						ISI-CAN-*	45	2025	5410	1815	645	545	1070	1155	9,2
						ISI-CAN-*	48	2145	5790	1935	675	575	1140	1230	9,7
						ISI-CAN-*	51	2265	6140	2055	710	605	1210	1310	10,2
						ISI-CAN-*	54	2385	6500	2175	760	640	1270	1370	10,7
						ISI-CAN-*	57	2505	6860	2295	810	675	1330	1430	11,2
						ISI-CAN-*	60	2625	7220	2415	860	710	1390	1490	11,7
						ISI-CAN-*	63	2745	7570	2535	875	720	1455	1565	12,2
						ISI-CAN-*	66	2865	7930	2655	890	740	1520	1640	12,7
						ISI-CAN-*	69	2985	8290	2775	905	750	1585	1715	13,2
						ISI-CAN-*	72	3105	8650	2895	920	760	1650	1800	13,7

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
CLEVIS	TONGUE	CT	-40
EYE	EYE	EE	+55
EYE	BALL	EB	+20
EYE	TONGUE	ET	+5
CLEVIS	BALL	CB	-25
SOCKET	EYE	SE	+30
Y- CLEVIS	TONGUE	YT	+5
Y- CLEVIS	EYE	YE	+50

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML
70 kN
35 kN
90 N*m

For voltages above 170 kV refer to page 29 for Corona Rings the electrical data can be change.

(♦) Key to the catalogue numbers

* Key : ISI-CAN- A(1)-70(2)

Example : ISI-CAN-A39-70SB

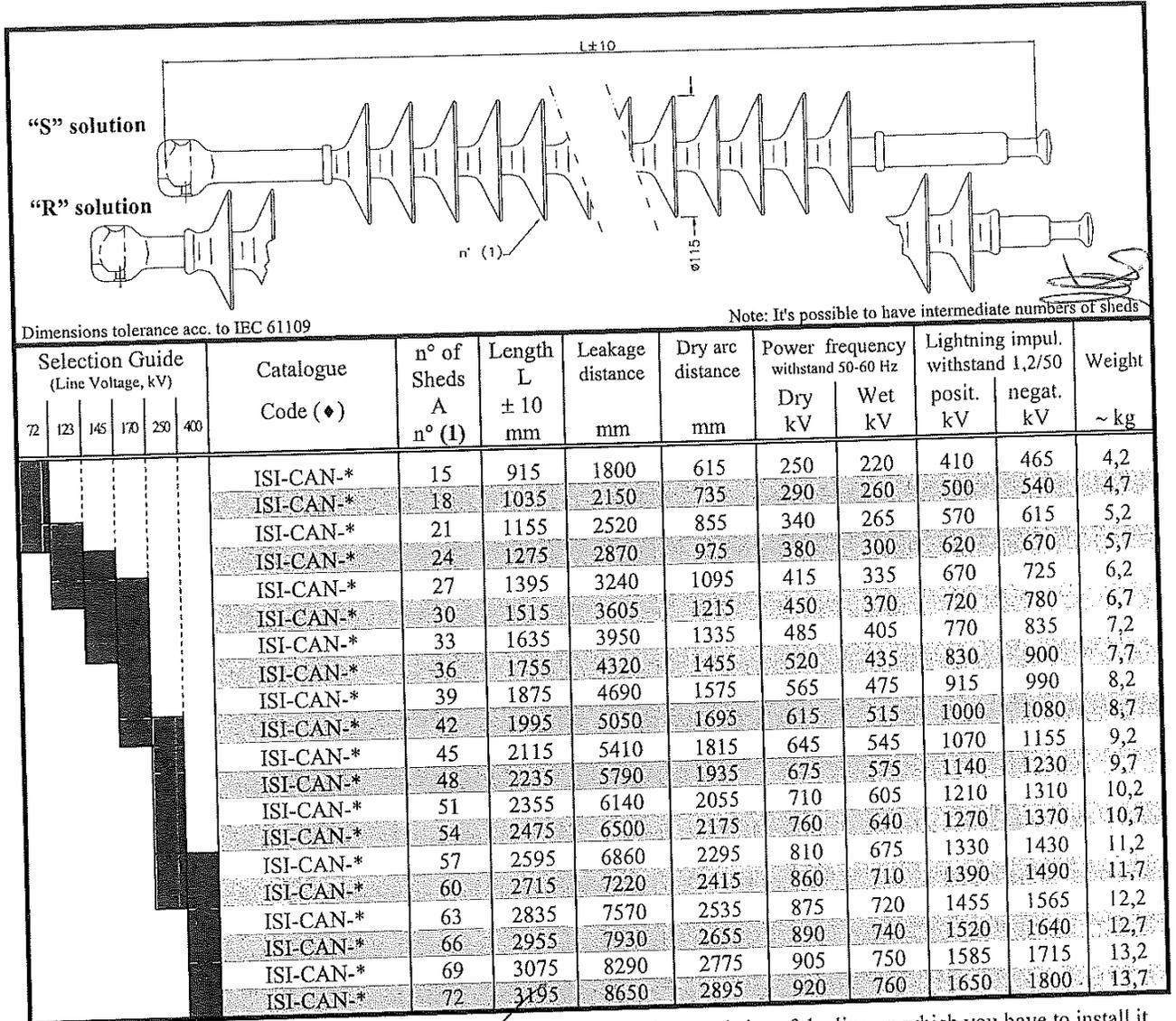
"S" solution = standard solution with uncovered fittings

"R" solution = fittings partially covered with silicone rubber

These insulators are produced and tested according to IEC 61109. It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

Transmission Composite Suspension - Tension Insulators in Silicone Rubber type ISI-CAN-* class 120 kN



NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
CLEVIS	TONGUE	CT	-10
EYE	EYE	EE	+64
EYE	BALL	EB	+29
EYE	TONGUE	ET	+27
CLEVIS	BALL	CB	-8
SOCKET	EYE	SE	-10
Y- CLEVIS	TONGUE	YT	+15
Y- CLEVIS	EYE	YE	+52

Specified Mechanical Load
Routine Test Load

Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML

120 kN
60 kN
90 N*m

For voltages above 170 kV refer to page 29 for Corona Rings, the electrical data can be change.

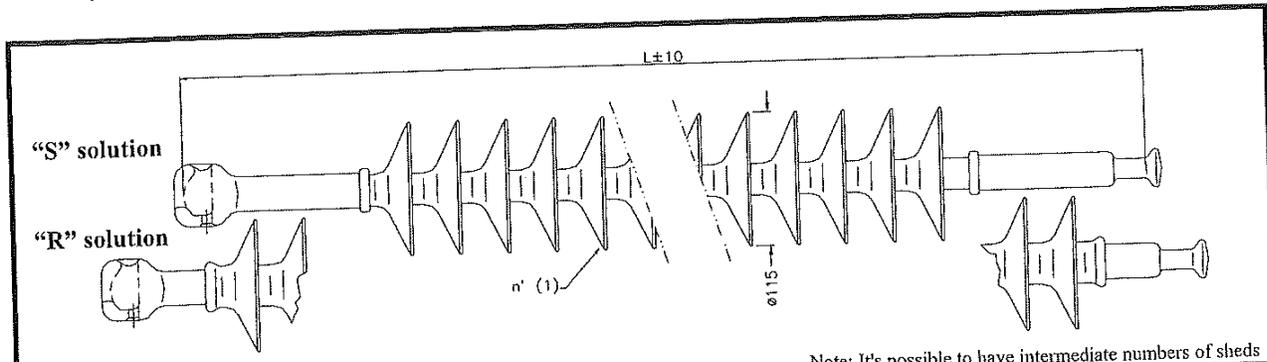
(♦) Key to the catalogue numbers
* Key : ISI-CAN- A(1)-120(2)
Example : ISI-CAN-A39-120SB

“S” solution = standard solution with uncovered fittings

These insulators are produced and tested according to IEC 61109.
It's possible to have all the other combinations.

“R” solution = fittings partially covered with silicone rubber
Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

Transmission Composite Suspension - Tension Insulators in Silicone Rubber type ISI-CAN-* class 160 kN or class 210 kN



Dimensions tolerance acc. to IEC 61109

Note: It's possible to have intermediate numbers of sheds

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
72	123	145	170	250	400						Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-CAN-*	15	925	1800	615	250	220	410	465	4,2
						ISI-CAN-*	18	1045	2150	735	290	260	500	540	4,7
						ISI-CAN-*	21	1165	2520	855	340	265	570	615	5,2
						ISI-CAN-*	24	1285	2870	975	380	300	620	670	5,7
						ISI-CAN-*	27	1405	3240	1095	415	335	670	725	6,2
						ISI-CAN-*	30	1525	3605	1215	450	370	720	780	6,7
						ISI-CAN-*	33	1645	3950	1335	485	405	770	835	7,2
						ISI-CAN-*	36	1765	4320	1455	520	435	830	900	7,7
						ISI-CAN-*	39	1885	4690	1575	565	475	915	990	8,2
						ISI-CAN-*	42	2005	5050	1695	615	515	1000	1080	8,7
						ISI-CAN-*	45	2125	5410	1815	645	545	1070	1155	9,2
						ISI-CAN-*	48	2245	5790	1935	675	575	1140	1230	9,7
						ISI-CAN-*	51	2365	6140	2055	710	605	1210	1310	10,2
						ISI-CAN-*	54	2485	6500	2175	760	640	1270	1370	10,7
						ISI-CAN-*	57	2605	6860	2295	810	675	1330	1430	11,2
						ISI-CAN-*	60	2725	7220	2415	860	710	1390	1490	11,7
						ISI-CAN-*	63	2845	7570	2535	875	720	1455	1565	12,2
						ISI-CAN-*	66	2965	7930	2655	890	740	1520	1640	12,7
						ISI-CAN-*	69	3085	8290	2775	905	750	1585	1715	13,2
						ISI-CAN-*	72	3205	8650	2895	920	760	1650	1800	13,7

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
SOCKET	EYE	SE	+25
EYE	EYE	EE	+54
EYE	BALL	EB	+19
EYE	TONGUE	ET	+17
CLEVIS	BALL	CB	+2
CLEVIS	TONGUE	CT	0
Y- CLEVIS	TONGUE	YT	+5
Y- CLEVIS	EYE	YE	+42

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML

160 kN	210 kN
80 kN	105 kN
120 N*m	120 N*m

For voltages above 170 kV refer to page 29 for Corona Rings, the electrical data can be change.

(♦) Key to the catalogue numbers

* Key : ISI-CAN- A(1)-(160 or 210)(2)

Example : ISI-CAN-A63-(160 or 210)SB

"S" solution = standard solution with uncovered fittings

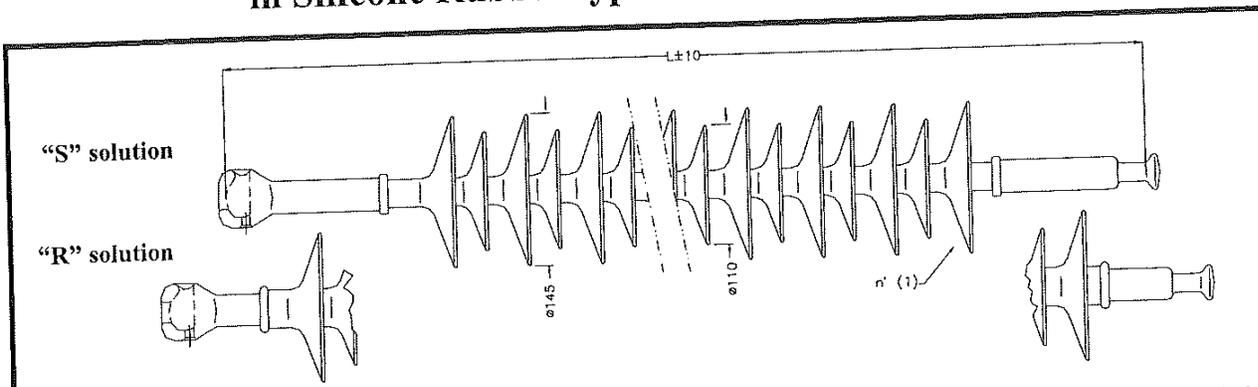
"R" solution = fittings partially covered with silicone rubber

These insulators are produced and tested according to IEC 61109.
It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

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Transmission Composite Suspension - Tension Insulators in Silicone Rubber type ISI-ROK-* class 70 kN



Dimensions tolerance acc. to IEC 61109

Note: It's possible to have intermediate numbers of sheds

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
72	123	145	170	230	400						Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-ROK-*	9+8	850	2270	640	275	195	460	495	4,4
						ISI-ROK-*	10+9	920	2530	710	310	230	515	550	4,9
						ISI-ROK-*	12+11	1060	3050	850	340	265	570	615	5,4
						ISI-ROK-*	14+13	1200	3570	990	380	300	620	670	5,9
						ISI-ROK-*	15+14	1270	3830	1060	415	335	670	725	6,4
						ISI-ROK-*	17+16	1410	4350	1200	450	370	720	780	6,9
						ISI-ROK-*	19+18	1550	4870	1340	485	405	770	835	7,4
						ISI-ROK-*	21+20	1690	5390	1480	520	435	830	900	7,9
						ISI-ROK-*	22+21	1760	5650	1550	565	475	915	990	8,4
						ISI-ROK-*	24+23	1900	6170	1690	615	515	1000	1080	8,9
						ISI-ROK-*	26+25	2040	6690	1830	645	545	1070	1155	9,4
						ISI-ROK-*	27+26	2110	6950	1900	675	575	1140	1230	9,7
						ISI-ROK-*	29+28	2250	7470	2040	710	605	1210	1310	10,4
						ISI-ROK-*	31+30	2390	8100	2180	760	640	1270	1370	10,9
						ISI-ROK-*	33+32	2530	8620	2320	810	675	1330	1430	11,4
						ISI-ROK-*	35+34	2670	9180	2460	860	710	1390	1490	11,9
						ISI-ROK-*	36+35	2740	9440	2530	875	720	1455	1565	12,4
						ISI-ROK-*	38+37	2880	9990	2670	890	740	1520	1640	12,9
						ISI-ROK-*	42+41	3160	11000	2950	920	760	1650	1800	13,9

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table:

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
CLEVIS	TONGUE	CT	-40
EYE	EYE	EE	+55
EYE	BALL	EB	+20
EYE	TONGUE	ET	+5
CLEVIS	BALL	CB	-25
SOCKET	EYE	SE	+30
Y- CLEVIS	TONGUE	YT	+5
Y- CLEVIS	EYE	YE	+50

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML
70 kN
35 kN
90 N*m

For voltages above 170 kV refer to page 29 for Corona Rings, the electrical data can be change.

(♦) Key to the catalogue numbers

* Key : ISI-ROK- A(1)-70(2)

Example : ISI-ROK-A22+21-70SB

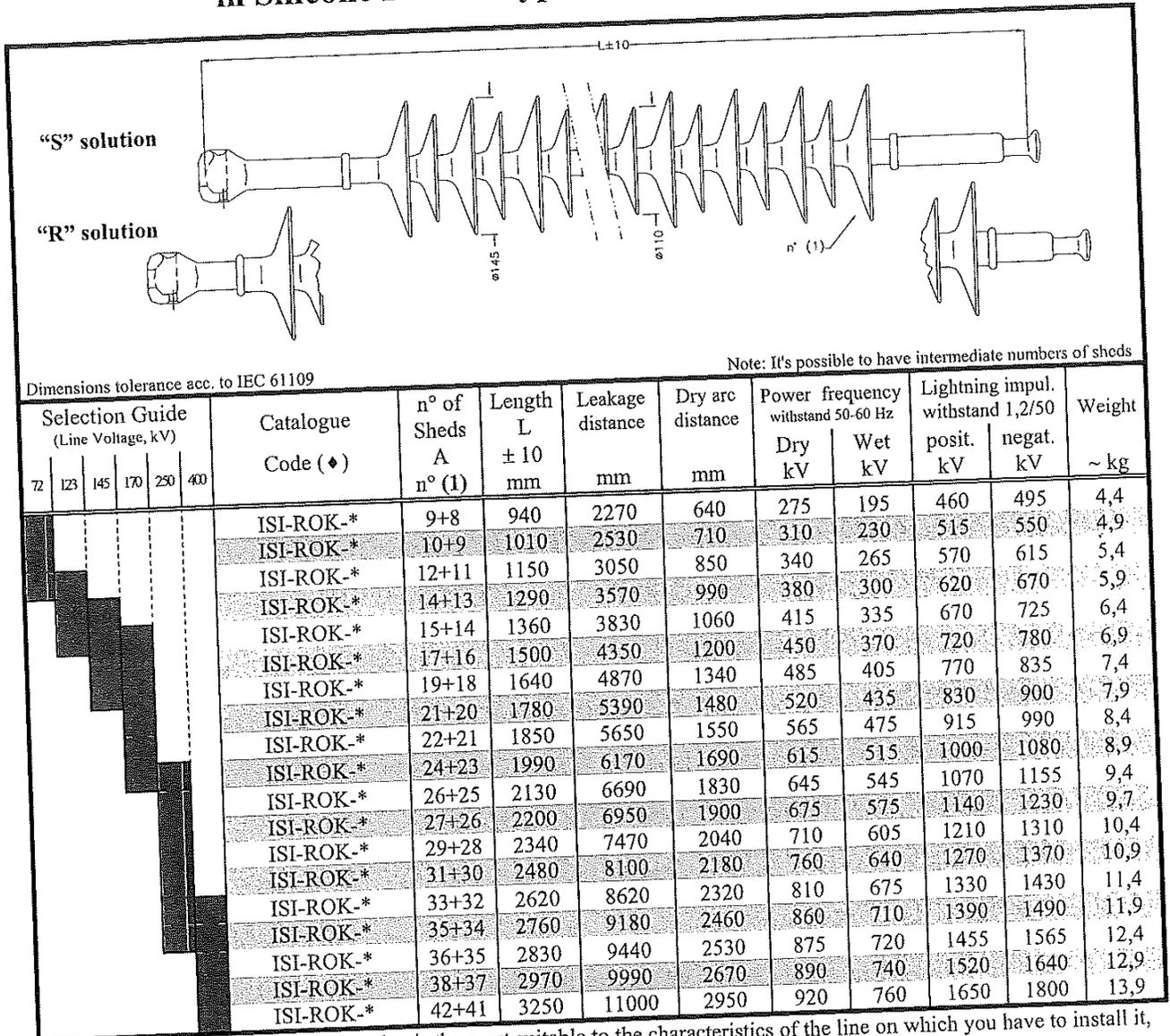
“S” solution = standard solution with uncovered fittings

“R” solution = fittings partially covered with silicone rubber

These insulators are produced and tested according to IEC 61109. It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

Transmission Composite Suspension - Tension Insulators in Silicone Rubber type ISI-ROK-* class 120 kN



Dimensions tolerance acc. to IEC 61109

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
72	123	145	170	250	400						Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-ROK-*	9+8	940	2270	640	275	195	460	495	4,4
						ISI-ROK-*	10+9	1010	2530	710	310	230	515	550	4,9
						ISI-ROK-*	12+11	1150	3050	850	340	265	570	615	5,4
						ISI-ROK-*	14+13	1290	3570	990	380	300	620	670	5,9
						ISI-ROK-*	15+14	1360	3830	1060	415	335	670	725	6,4
						ISI-ROK-*	17+16	1500	4350	1200	450	370	720	780	6,9
						ISI-ROK-*	19+18	1640	4870	1340	485	405	770	835	7,4
						ISI-ROK-*	21+20	1780	5390	1480	520	435	830	900	7,9
						ISI-ROK-*	22+21	1850	5650	1550	565	475	915	990	8,4
						ISI-ROK-*	24+23	1990	6170	1690	615	515	1000	1080	8,9
						ISI-ROK-*	26+25	2130	6690	1830	645	545	1070	1155	9,4
						ISI-ROK-*	27+26	2200	6950	1900	675	575	1140	1230	9,7
						ISI-ROK-*	29+28	2340	7470	2040	710	605	1210	1310	10,4
						ISI-ROK-*	31+30	2480	8100	2180	760	640	1270	1370	10,9
						ISI-ROK-*	33+32	2620	8620	2320	810	675	1330	1430	11,4
						ISI-ROK-*	35+34	2760	9180	2460	860	710	1390	1490	11,9
						ISI-ROK-*	36+35	2830	9440	2530	875	720	1455	1565	12,4
						ISI-ROK-*	38+37	2970	9990	2670	890	740	1520	1640	12,9
						ISI-ROK-*	42+41	3250	11000	2950	920	760	1650	1800	13,9

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
CLEVIS	TONGUE	CT	-10
EYE	EYE	EE	+64
EYE	BALL	EB	+29
EYE	TONGUE	ET	+27
CLEVIS	BALL	CB	-8
SOCKET	EYE	SE	-10
Y- CLEVIS	TONGUE	YT	+15
Y- CLEVIS	EYE	YE	+52

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max tension Load

SML - IEC 61109
RTL = 50% of SML
120 kN
60 kN
90 N*m

For voltages above 170 kV refer to page 29 for Corona Rings, the electrical data can be change.

(♦) Key to the catalogue numbers

* Key : ISI-ROK- A(1)-120(2)

Example : ISI-ROK-A22+21-120SB

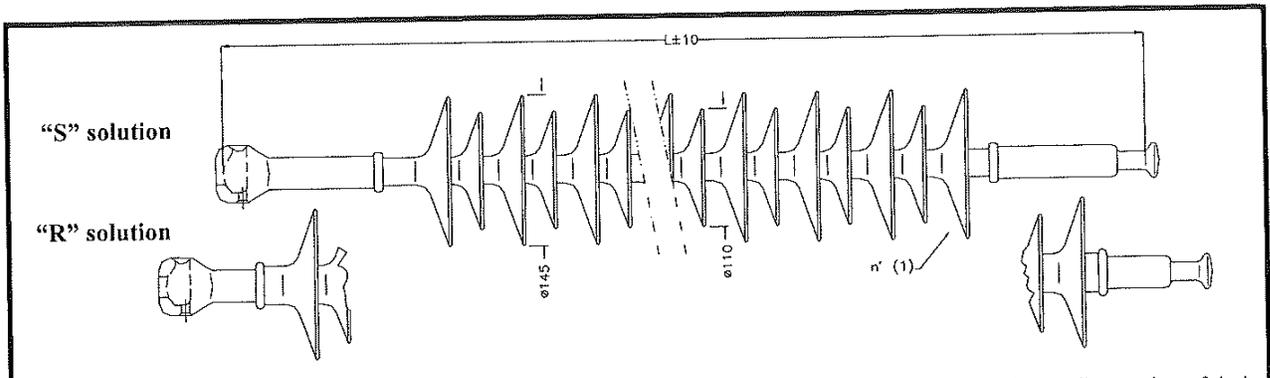
"S" solution = standard solution with uncovered fittings

"R" solution = fittings partially covered with silicone rubber

These insulators are produced and tested according to IEC 61109. It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

Transmission Composite Suspension - Tension Insulators in Silicone Rubber type ISI-ROK-* class 160 kN or class 210 kN



Note: It's possible to have intermediate numbers of sheds

Selection Guide (Line Voltage, kV)							Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
72	123	145	170	230	400	Dry kV						Wet kV	posit. kV	negat. kV		
						ISI-ROK-*	9+8	950	2270	640	275	195	460	495	4,4	
						ISI-ROK-*	10+9	1020	2530	710	310	230	515	550	4,9	
						ISI-ROK-*	12+11	1160	3050	850	340	265	570	615	5,4	
						ISI-ROK-*	14+13	1300	3570	990	380	300	620	670	5,9	
						ISI-ROK-*	15+14	1370	3830	1060	415	335	670	725	6,4	
						ISI-ROK-*	17+16	1510	4350	1200	450	370	720	780	6,9	
						ISI-ROK-*	19+18	1650	4870	1340	485	405	770	835	7,4	
						ISI-ROK-*	21+20	1790	5390	1480	520	435	830	900	7,9	
						ISI-ROK-*	22+21	1860	5650	1550	565	475	915	990	8,4	
						ISI-ROK-*	24+23	2000	6170	1690	615	515	1000	1080	8,9	
						ISI-ROK-*	26+25	2140	6690	1830	645	545	1070	1155	9,4	
						ISI-ROK-*	27+26	2210	6950	1900	675	575	1140	1230	9,7	
						ISI-ROK-*	29+28	2350	7470	2040	710	605	1210	1310	10,4	
						ISI-ROK-*	31+30	2490	8100	2180	760	640	1270	1370	10,9	
						ISI-ROK-*	33+32	2630	8620	2320	810	675	1330	1430	11,4	
						ISI-ROK-*	35+34	2770	9180	2460	860	710	1390	1490	11,9	
						ISI-ROK-*	36+35	2840	9440	2530	875	720	1455	1565	12,4	
						ISI-ROK-*	38+37	2980	9990	2670	890	740	1520	1640	12,9	
						ISI-ROK-*	42+41	3260	11000	2950	920	760	1650	1800	13,9	

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
SOCKET	EYE	SE	+25
EYE	EYE	EE	+54
EYE	BALL	EB	+19
EYE	TONGUE	ET	+17
CLEVIS	BALL	CB	+2
CLEVIS	TONGUE	CT	0
Y- CLEVIS	TONGUE	YT	+5
Y- CLEVIS	EYE	YE	+42

Specified Mechanical Load		SML - IEC 61109	
Routine Test Load		RTL = 50% of SML	
160 kN	210 kN	160 kN	210 kN
80 kN	105 kN	80 kN	105 kN
120 N*m	120 N*m	120 N*m	120 N*m

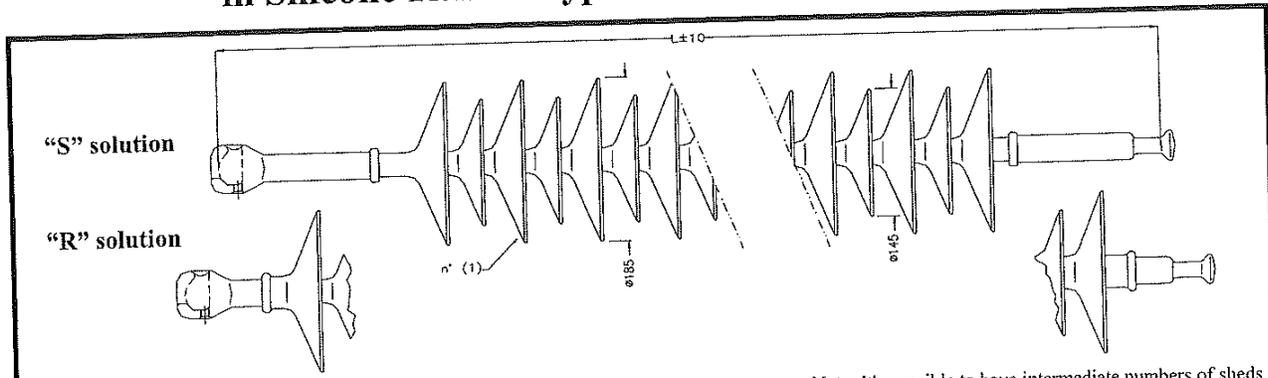
For voltages above 170 kV refer to page 29 for Corona Rings, the electrical data can be change.

(♦) Key to the catalogue numbers
* Key : ISI-ROK- A(1)-(160 or 210)(2)
Example : ISI-ROK-A22+21-(160 or 210)SB

“S” solution = standard solution with uncovered fittings
“R” solution = fittings partially covered with silicone rubber

These insulators are produced and tested according to IEC 61109. It's possible to have all the other combinations.
Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

Transmission Composite Suspension - Tension Insulators in Silicone Rubber type ISI-TWA-* class 120 kN



Dimensions tolerance acc. to IEC 61109

Note: It's possible to have intermediate numbers of sheds

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
72	123	145	170	250	400						Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-TWA-*	8+7	890	2600	590	260	180	435	470	5,2
						ISI-TWA-*	9+8	965	2950	665	285	200	475	510	5,7
						ISI-TWA-*	12+11	1190	4000	890	355	280	585	630	6,2
						ISI-TWA-*	13+12	1265	4300	965	380	300	620	670	6,7
						ISI-TWA-*	16+15	1490	5330	1190	435	355	720	760	7,2
						ISI-TWA-*	17+16	1565	5680	1265	460	380	740	795	7,7
						ISI-TWA-*	18+17	1640	6000	1340	485	405	770	835	8,2
						ISI-TWA-*	20+19	1790	6700	1490	525	440	840	910	8,7
						ISI-TWA-*	21+20	1865	7010	1565	565	475	915	990	9,2
						ISI-TWA-*	23+22	2015	7720	1715	620	520	1010	1100	9,7
						ISI-TWA-*	25+24	2165	8400	1865	645	545	1050	1155	10,2
						ISI-TWA-*	26+25	2240	8750	1940	675	575	1140	1230	10,7
						ISI-TWA-*	27+26	2315	9100	2015	715	615	1215	1310	11,2
						ISI-TWA-*	29+28	2465	9780	2165	760	640	1270	1370	11,7
						ISI-TWA-*	31+30	2615	10500	2315	815	680	1340	1440	12,2
						ISI-TWA-*	32+31	2690	10800	2390	850	700	1370	1470	12,7
						ISI-TWA-*	34+33	2840	11480	2540	875	720	1455	1565	13,2
						ISI-TWA-*	36+35	2990	12200	2690	895	745	1530	1650	13,7
						ISI-TWA-*	37+36	3065	12510	2765	900	745	1580	1710	14,2
						ISI-TWA-*	40+39	3290	13600	2990	950	790	1700	1840	14,7

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
SOCKET	EYE	SE	-10
EYE	EYE	EE	+64
EYE	BALL	EB	+29
EYE	TONGUE	ET	+27
CLEVIS	BALL	CB	-8
CLEVIS	TONGUE	CT	-10
Y- CLEVIS	TONGUE	YT	+15
Y- CLEVIS	EYE	YE	+52

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML
120 kN
60 kN
90 N*m

For voltages above 170 kV refer to page 29 for Corona Rings, the electrical data can be change.

(♦) Key to the catalogue numbers

* Key : ISI-TWA- A(1)-120(2)

Example : ISI-TWA-A21+20-120SB

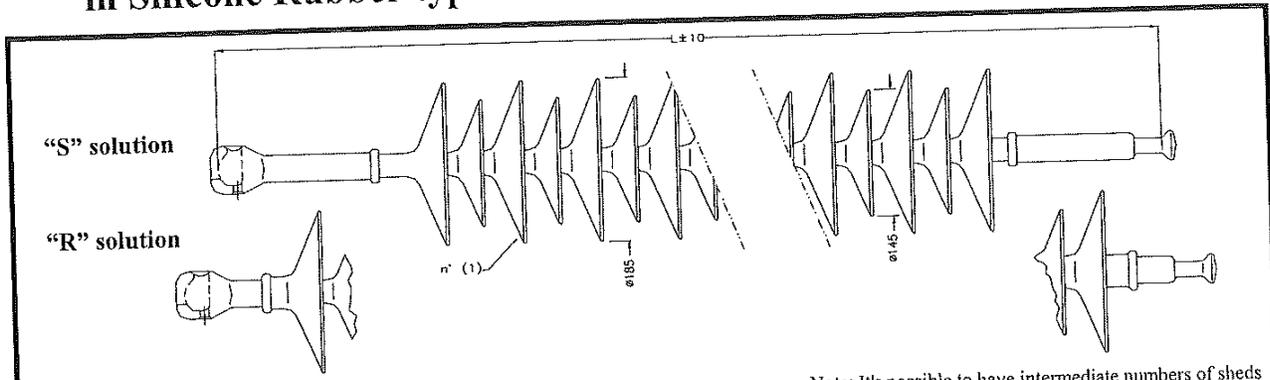
"S" solution = standard solution with uncovered fittings

"R" solution = fittings partially covered with silicone rubber

These insulators are produced and tested according to IEC 61109. It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

Transmission Composite Suspension - Tension Insulators in Silicone Rubber type ISI-TWA-* class 160 kN or class 210 kN



Dimensions tolerance acc. to IEC 61109

Note: It's possible to have intermediate numbers of sheds

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
72	123	145	170	250	400						Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-TWA-*	8+7	900	2600	590	260	180	435	470	5,2
						ISI-TWA-*	9+8	975	2950	665	285	200	475	510	5,7
						ISI-TWA-*	12+11	1200	4000	890	355	280	585	630	6,2
						ISI-TWA-*	13+12	1275	4300	965	380	300	620	670	6,7
						ISI-TWA-*	16+15	1500	5330	1190	435	355	720	760	7,2
						ISI-TWA-*	17+16	1575	5680	1265	460	380	740	795	7,7
						ISI-TWA-*	18+17	1650	6000	1340	485	405	770	835	8,2
						ISI-TWA-*	20+19	1800	6700	1490	525	440	840	910	8,7
						ISI-TWA-*	21+20	1875	7010	1565	565	475	915	990	9,2
						ISI-TWA-*	23+22	2025	7720	1715	620	520	1010	1100	9,7
						ISI-TWA-*	25+24	2175	8400	1865	645	545	1050	1155	10,2
						ISI-TWA-*	26+25	2250	8750	1940	675	575	1140	1230	10,7
						ISI-TWA-*	27+26	2325	9100	2015	715	615	1215	1310	11,2
						ISI-TWA-*	29+28	2475	9780	2165	760	640	1270	1370	11,7
						ISI-TWA-*	31+30	2625	10500	2315	815	680	1340	1440	12,2
						ISI-TWA-*	32+31	2700	10800	2390	850	700	1370	1470	12,7
						ISI-TWA-*	34+33	2850	11480	2540	875	720	1455	1565	13,2
						ISI-TWA-*	36+35	3000	12200	2690	895	745	1530	1650	13,7
						ISI-TWA-*	37+36	3075	12510	2765	900	745	1580	1710	14,2
						ISI-TWA-*	40+39	3300	13600	2990	950	790	1700	1840	14,7

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting and you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
SOCKET	EYE	SE	+25
EYE	EYE	EE	+54
EYE	BALL	EB	+19
EYE	TONGUE	ET	+17
CLEVIS	BALL	CB	+2
CLEVIS	TONGUE	CT	0
Y- CLEVIS	TONGUE	YT	+5
Y- CLEVIS	EYE	YE	+42

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML

160 kN	210 kN
80 kN	105 kN
120 N*m	120 N*m

For voltages above 170 kV refer to page 29 for Corona Rings, the electrical data can be change.

(♦) Key to the catalogue numbers

* Key : ISI-TWA- A(1)-(160 or 210)(2)

Example : ISI-TWA-A22+21-(160 or 210)SB

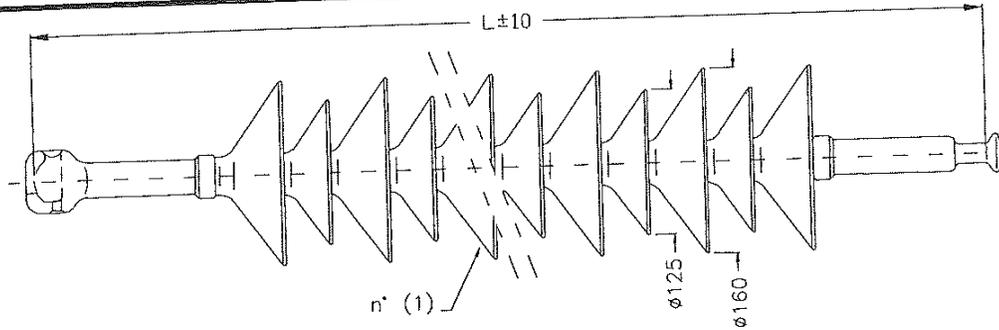
"S" solution = standard solution with uncovered fittings

"R" solution = fittings partially covered with silicone rubber

These insulators are produced and tested according to IEC 61109.
It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

Transmission Composite Suspension - Tension Insulators in Silicone Rubber type ISI-SOR-* class 210 kN



Dimensions tolerance acc. to IEC 61109

Note: It's possible to have intermediate numbers of sheds

Selection Guide (Line Voltage, kV)	Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg	
						Dry kV	Wet kV	posit. kV	negat. kV		
115		ISI-SOR-*	10+9	1225	2910	915	350	275	580	625	7,2
145		ISI-SOR-*	11+10	1315	3210	1005	380	300	620	670	7,7
170		ISI-SOR-*	13+12	1495	3805	1185	415	335	670	725	8,2
250		ISI-SOR-*	14+13	1585	4100	1275	455	375	725	785	8,7
345		ISI-SOR-*	15+14	1675	4400	1365	480	400	765	830	9,2
420		ISI-SOR-*	17+16	1855	5000	1545	525	440	840	910	9,7
500		ISI-SOR-*	18+17	1945	5295	1635	570	480	920	995	10,2
		ISI-SOR-*	19+18	2035	5590	1725	610	510	990	1070	10,7
		ISI-SOR-*	21+20	2215	6190	1905	645	545	1050	1155	11,2
		ISI-SOR-*	22+21	2305	6490	1995	685	585	1150	1240	11,7
		ISI-SOR-*	23+22	2395	6785	2085	700	595	1200	1300	12,2
		ISI-SOR-*	24+23	2485	7080	2175	740	620	1250	1350	12,7
		ISI-SOR-*	26+25	2665	7680	2355	815	660	1340	1440	13,2
		ISI-SOR-*	27+26	2755	7975	2445	845	685	1380	1480	13,7
		ISI-SOR-*	29+28	2935	8570	2625	865	710	1475	1585	14,2
		ISI-SOR-*	33+32	3295	9760	2985	900	750	1670	1820	15,7
		ISI-SOR-*	35+34	3475	10360	3165	930	780	1730	1860	18,2
		ISI-SOR-*	38+37	3745	11150	3435	960	820	1780	1930	20,7
		ISI-SOR-*	42+41	4110	12400	3800	1140	1020	2030	2110	22,8
		ISI-SOR-*	48+47	4645	14200	4335	1280	1100	2400	2510	23,6

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
SOCKET	EYE	SE	+40
EYE	EYE	EE	+70
EYE	BALL	EB	+30
EYE	TONGUE	ET	+40
CLEVIS	BALL	CB	0
CLEVIS	TONGUE	CT	+10
Y- CLEVIS	TONGUE	YT	+20
Y- CLEVIS	EYE	YE	+50

Specified Mechanical Load **SML - IEC 61109**
 Routine Test Load **R/TL = 50% of SML**
 Specified Mechanical Load 210 kN
 Routine Test Load 105 kN
 Max torsion Load 160 N*m

For voltages above 170 kV refer to page 29 for Corona Rings, the electrical data can be change.

(♦) Key to the catalogue numbers

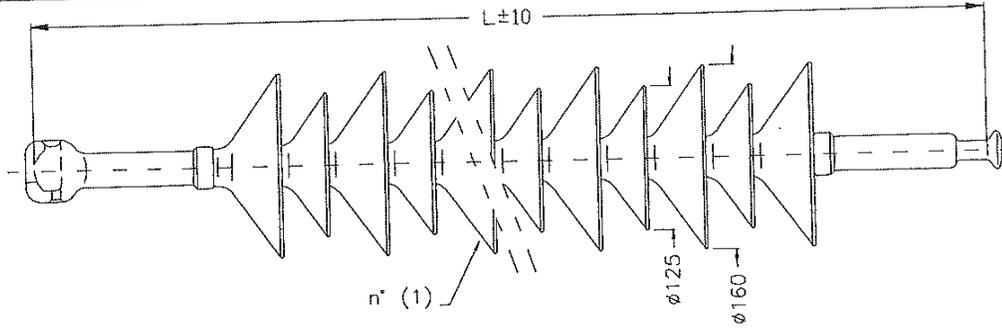
* Key : ISI-SOR- A(1)-210(2)

Example : ISI-SOR-A21+20-210SB

These insulators are produced and tested according to IEC 61109. It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

Transmission Composite Suspension - Tension Insulators in Silicone Rubber type ISI-SOR-* class 300 kN



Dimensions tolerance acc. to IEC 61109

Note: It's possible to have intermediate numbers of sheds

Selection Guide (Line Voltage, kV)								Catalogue Code (♦)	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
115	145	170	230	345	420	500	Dry kV						Wet kV	posit. kV	negat. kV		
							ISI-SOR-*	10+9	1325	2910	915	350	275	580	625	7,2	
							ISI-SOR-*	11+10	1415	3210	1005	380	300	620	670	7,7	
							ISI-SOR-*	13+12	1595	3805	1185	415	335	670	725	8,2	
							ISI-SOR-*	14+13	1685	4100	1275	455	375	725	785	8,7	
							ISI-SOR-*	15+14	1775	4400	1365	480	400	765	830	9,2	
							ISI-SOR-*	17+16	1955	5000	1545	525	440	840	910	9,7	
							ISI-SOR-*	18+17	2045	5295	1635	570	480	920	995	10,2	
							ISI-SOR-*	19+18	2135	5590	1725	610	510	990	1070	10,7	
							ISI-SOR-*	21+20	2315	6190	1905	645	545	1050	1155	11,2	
							ISI-SOR-*	22+21	2405	6490	1995	685	585	1150	1240	11,7	
							ISI-SOR-*	23+22	2495	6785	2085	700	595	1200	1300	12,2	
							ISI-SOR-*	24+23	2585	7080	2175	740	620	1250	1350	12,7	
							ISI-SOR-*	26+25	2765	7680	2355	815	660	1340	1440	13,2	
							ISI-SOR-*	27+26	2855	7975	2445	845	685	1380	1480	13,7	
							ISI-SOR-*	29+28	3035	8570	2625	865	710	1475	1585	14,2	
							ISI-SOR-*	33+32	3395	9760	2985	900	750	1670	1820	15,7	
							ISI-SOR-*	35+34	3575	10360	3165	930	780	1730	1860	18,2	
							ISI-SOR-*	38+37	3845	11150	3435	960	820	1780	1930	20,7	
							ISI-SOR-*	42+41	4210	12400	3800	1140	1020	2030	2110	22,8	
							ISI-SOR-*	48+47	4745	14200	4335	1280	1100	2400	2510	23,6	

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use (see page 19) and refer to the following table :

Ground fitting	Line fitting	Code (2)	Length change (L)
SOCKET	BALL	SB	0
CLEVIS	BALL	CB	0
SOCKET	TONGUE	ST	0
CLEVIS	TONGUE	CT	0

Socket and Ball are size 24 acc. to IEC 60120
Clevis and Tongue are size 25L acc. to IEC 60471

These insulators are produced and tested according to IEC 61109.
It's possible to have all the other combinations.

Specified Mechanical Load
Routine Test Load
Specified Mechanical Load
Routine Test Load
Max torsion Load

SML - IEC 61109
RTL = 50% of SML
300 kN
155 kN
200 N*m

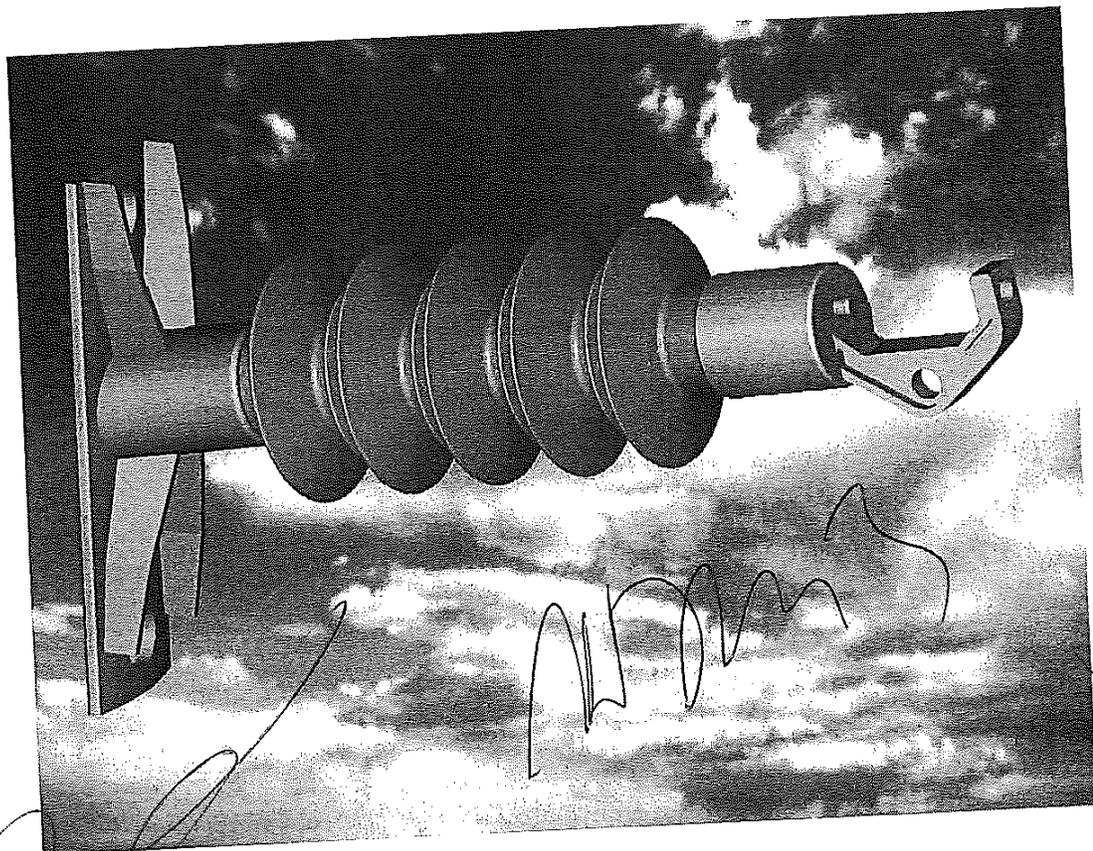
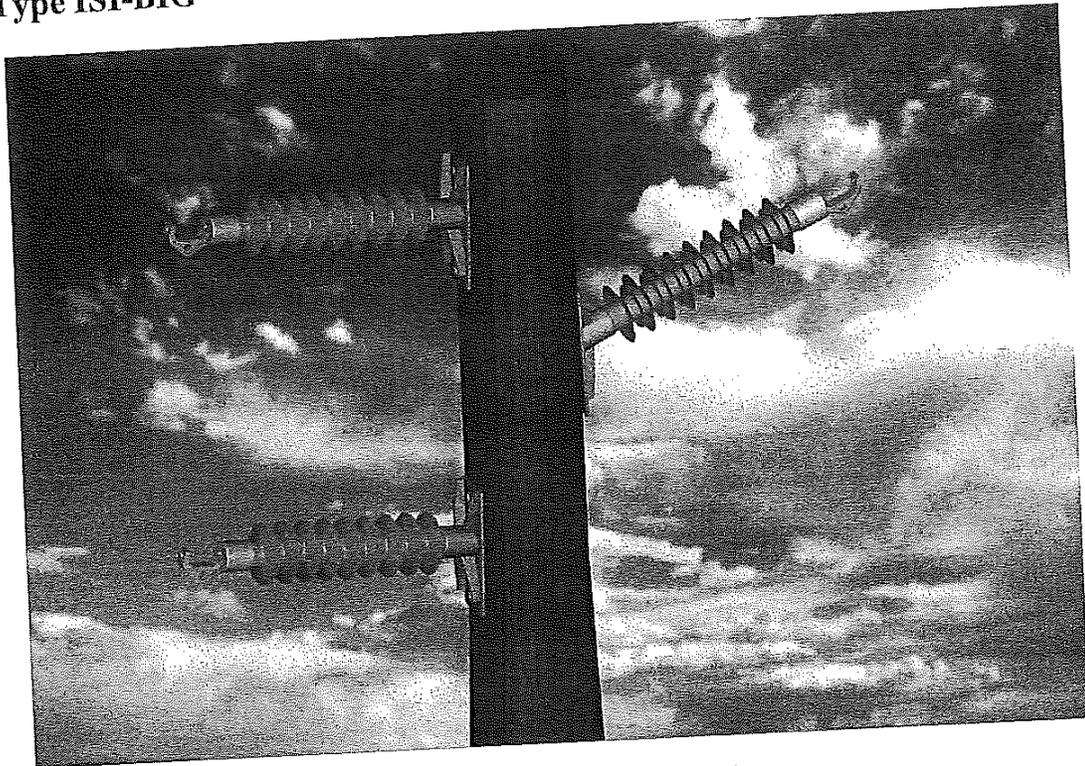
For voltages above 170 kV refer to page 29 for Corona Rings, the electrical data can be change.

(♦) Key to the catalogue numbers
* Key : ISI-SOR- A(1)-300(2)
Example : ISI-SOR-A21+20-300SB

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

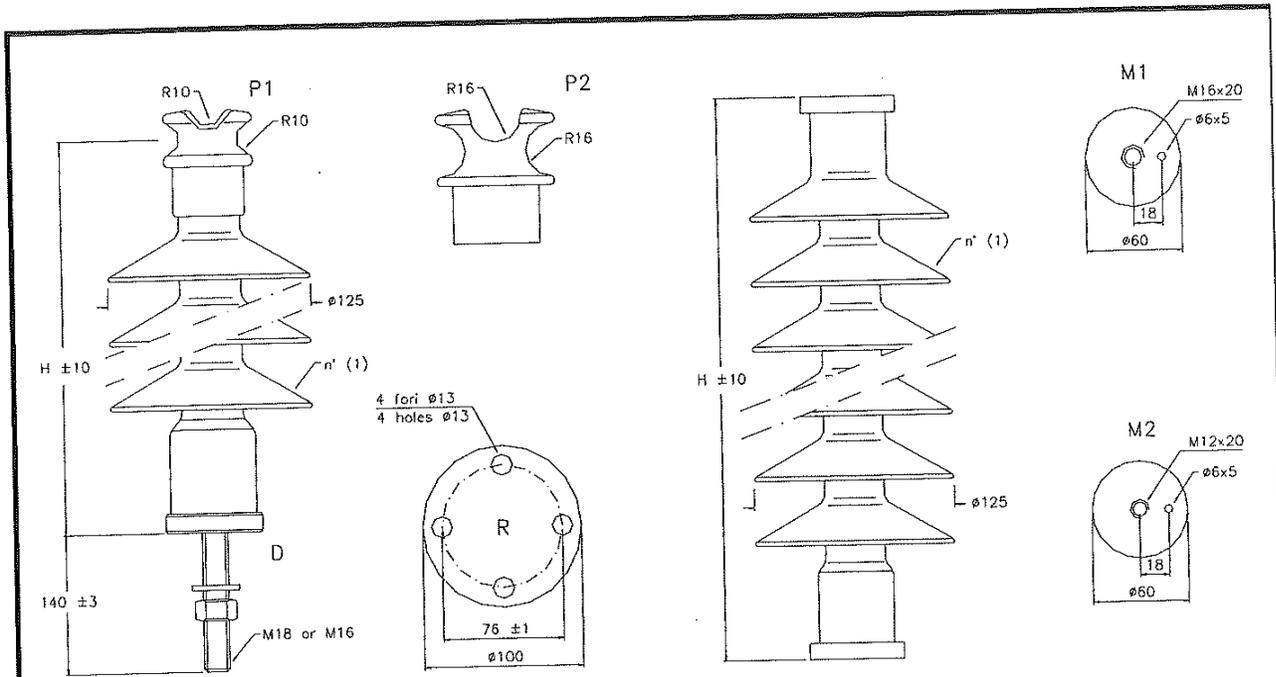
SAME PICTURES OF THE OUR HORIZONTAL POST COMPOSITE INSULATORS

Type ISI-BIG



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COMPOSITE PIN or VERTICAL LINE POST INSULATOR in SILICONE RUBBER type ISI-SAS-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Height H ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	17	24	36	45	52							Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-SAS-*	16,7	2	200	310	135	60	50	90	160	1,0
						ISI-SAS-*	12,9	3	240	445	175	70	60	120	200	1,5
						ISI-SAS-*	10,8	4	280	580	215	80	70	145	240	2,0
						ISI-SAS-*	9,0	5	320	715	255	90	80	160	270	2,5
						ISI-SAS-*	7,7	6	360	850	295	110	100	165	280	3,0
						ISI-SAS-*	6,6	7	400	985	335	120	110	180	310	3,5
						ISI-SAS-*	5,9	8	440	1120	375	135	120	200	340	4,0
						ISI-SAS-*	5,3	9	480	1255	415	150	130	220	370	4,5

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total height of the insulator (H), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table:

Line fitting	Ground fitting	Code (2)	Height change (H)
Fitting P1	Fitting D	P1D	0
Fitting P1	Fitting R	P1R	-10
Fitting M2	Fitting M1	M2M1	-15
Fitting P1	Fitting M1	P1M1	-5
Fitting M1	Fitting R	M1R	-5
Fitting P2	Fitting D	P2D	+10
Fitting P2	Fitting R	P2R	0
Fitting P2	Fitting M1	P2M1	+5
Fitting R	Fitting R	RR	-10

These insulators are produced and tested according to IEC 61952. It's possible to have all the other combinations.

Specified Cantilever Load
Max. Design Cantilever Load
Specified Tensile Load (STL)
Max design compression
Max design torsion

SCL - IEC 61952
MDCL = 65% of SCL
15 kN
15 kN
10 daN*m

The metal fittings can be in aluminium or galvanized steel.

(♦) Key to the catalogue numbers

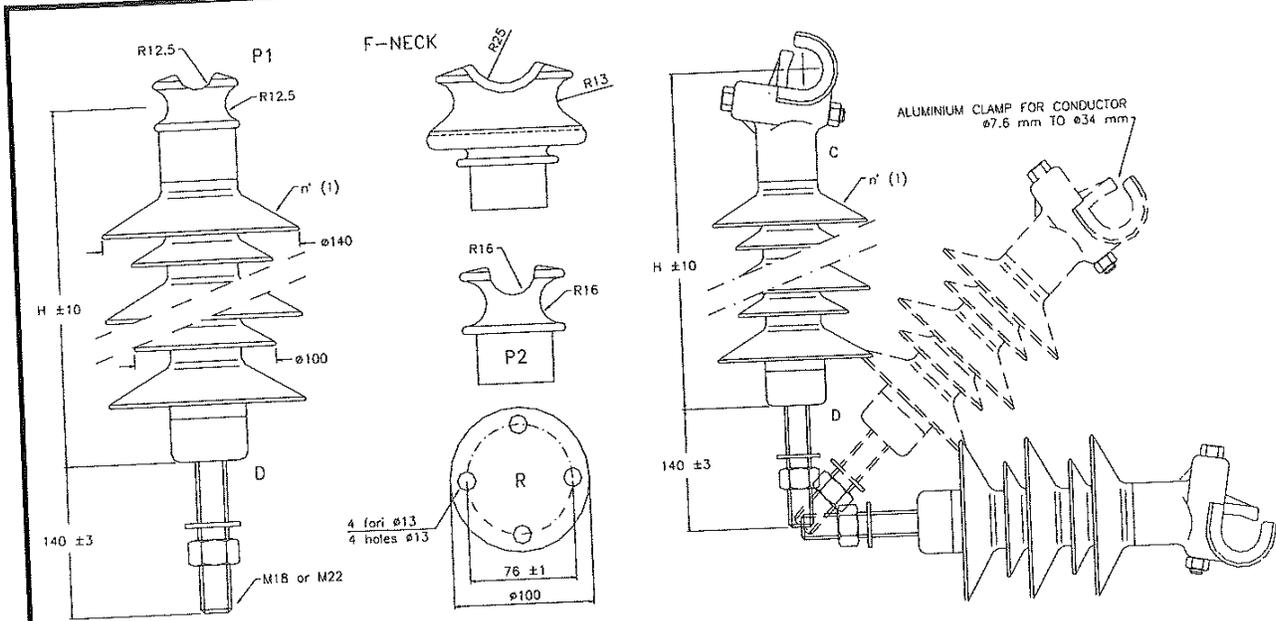
Key : ISI-SAS-A(1) - (2)

Example: ISI-SAS-A3-P1D (specify the screw size)

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

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COMPOSITE PIN INSULATOR in SILICONE RUBBER type ISI-RG-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)				Catalogue Code (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Height H ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	24	36	45							Dry kV	Wet kV	posit. kV	negat. kV	
				ISI-RG-*	16,2	2+1	185	335	110	70	65	115	160	2,0
				ISI-RG-*	12,5	3+2	245	540	170	110	100	150	190	2,5
				ISI-RG-*	9,8	4+3	305	750	230	120	110	180	215	3,0
				ISI-RG-*	8,2	5+4	365	960	290	150	140	235	270	3,5
				ISI-RG-*	7,4	6+5	425	1170	330	160	150	260	300	3,9
				ISI-RG-*	6,6	7+6	485	1380	390	180	165	285	325	4,4
				ISI-RG-*	6,0	8+7	545	1590	450	200	185	305	355	5,0

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total height of the insulator (H), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table :

Line fitting	Ground fitting	Code (2)	Height change (H)
Fitting P1	Fitting D	P1D	0
Fitting P2	Fitting D	P2D	+5
Fitting P1	Fitting R	P1R	0
Fitting P2	Fitting R	P2R	+20
Fitting F-neck	Fitting D	F-neckD	+25
Fitting F-neck	Fitting R	F-neckR	+45
Fitting C	Fitting D	CD	+45
Fitting C	Fitting R	CR	+100

Specified Cantilever Load
Max. Design Cantilever Load
Specified Tensile Load (STL)
Max design compression
Max design torsion
The SCL can be increased, please contact us.
The metal fittings can be in aluminium or galvanized steel.
(♦) Key to the catalogue numbers
Key : ISI-RG-A(1) - (2)
Example: ISI-RG-A4+3-P1D (specify the screw size)

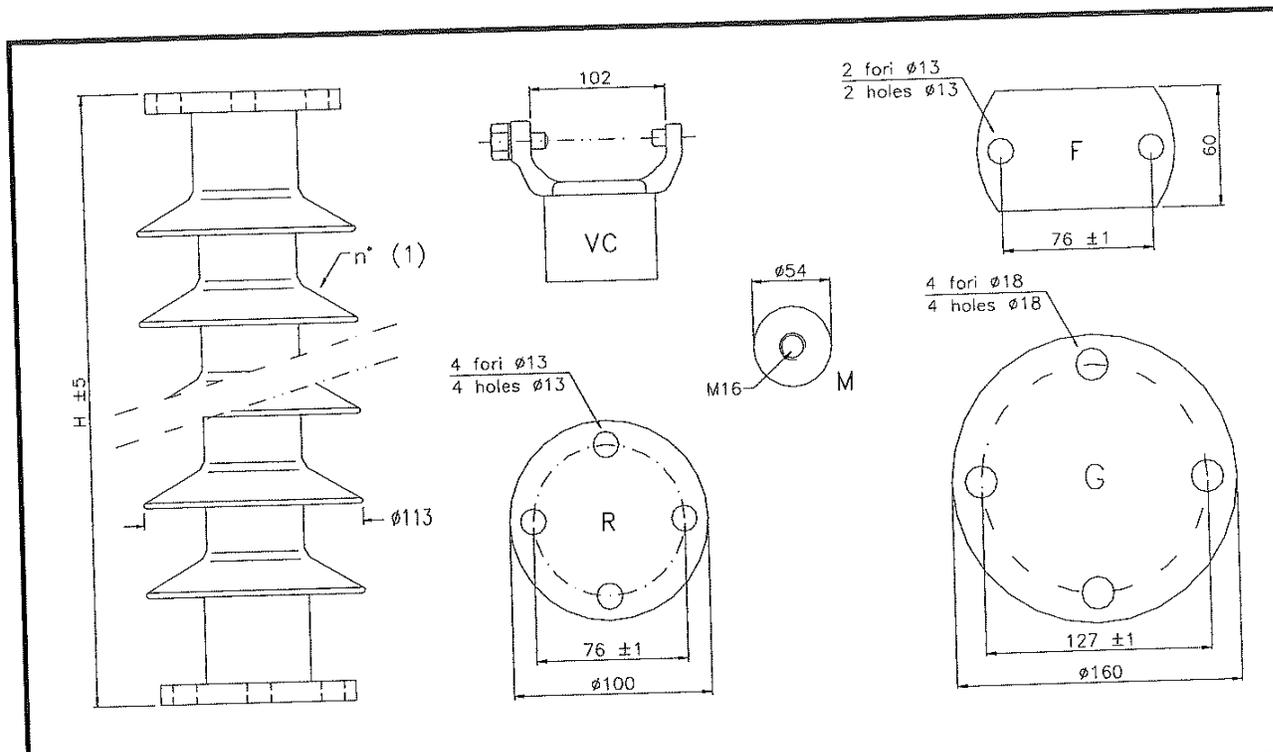
SCL - IEC 61952
MDCL = 65% of SCL

15 kN
15 kN
15 daN*m

These insulators are produced, tested according to IEC 61952.
It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

COMPOSITE VERTICAL LINE POST INSULATOR in SILICONE RUBBER type ISI-Fn-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Height H ± 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	17	24	36	45	52							Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-Fn-*	17,6	2	170	265	150	65	60	100	180	2,0
						ISI-Fn-*	14,0	3	215	370	195	75	65	130	220	2,5
						ISI-Fn-*	11,5	4	260	475	240	85	75	150	250	3,0
						ISI-Fn-*	9,8	5	305	580	295	110	100	165	280	3,5
						ISI-Fn-*	8,5	6	350	685	330	120	110	180	310	4,0
						ISI-Fn-*	7,5	7	395	790	375	135	120	200	340	4,5
						ISI-Fn-*	6,8	8	440	895	420	150	130	220	370	5,0
						ISI-Fn-*	6,1	9	485	1000	465	160	140	245	395	5,5

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total height of the insulator (H), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table :

Line fitting	Ground fitting	Code (2)	Height change (H)
Fitting R	Fitting R	RR	0
Fitting F	Fitting R	FR	0
Fitting G	Fitting G	GG	+160
Fitting M	Fitting R	MR	0
Fitting M	Fitting G	MG	+80
Fitting M	Fitting M	MM	0
Fitting VC	Fitting R	VCR	+95
Fitting VC	Fitting G	VCG	+175
Fitting VC	Fitting M	VCM	+95

These insulators are produced and tested according to IEC 61952. It's possible to have all the other combinations.

Specified Cantilever Load
Max. Design Cantilever Load
Specified Tensile Load (STL)
Max design compression
Max design torsion
The SCL can be increased, please contact us.

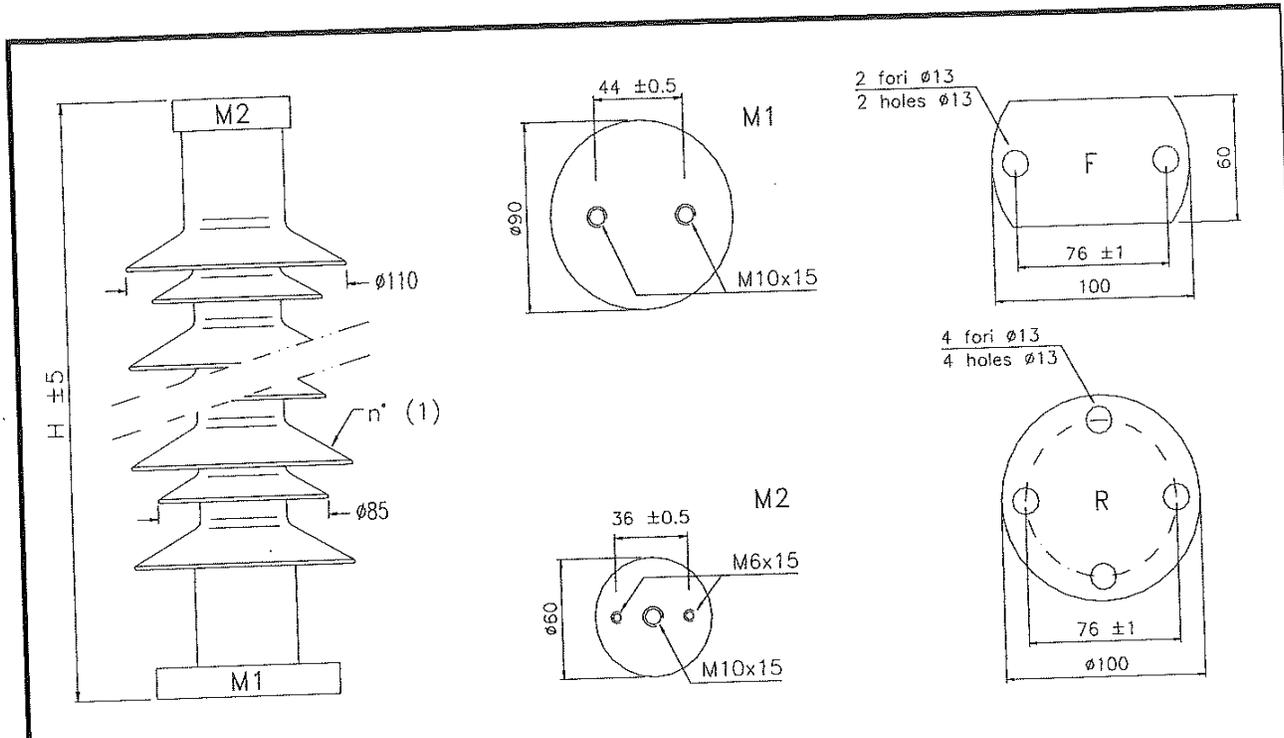
SCL - IEC 61952
MDCL = 65% of SCL
15 kN
15 kN
15 daN*m

The metal fittings can be in aluminium or galvanized steel.

(♦) Key to the catalogue numbers
Key : ISI-Fn-A(1) - (2)
Example: ISI-Fn-A4-RR

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

COMPOSITE VERTICAL LINE POST INSULATOR in SILICONE RUBBER type ISI-SCA-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Height H ± 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	17	24	36	45	52							Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-SCA-*	16,2	2+1	190	315	160	65	60	100	150	2,0
						ISI-SCA-*	12,2	3+2	240	465	210	95	85	130	170	2,5
						ISI-SCA-*	10,0	4+3	285	610	255	110	95	155	190	3,0
						ISI-SCA-*	9,0	5+4	335	760	305	120	110	180	215	3,5
						ISI-SCA-*	7,8	6+5	385	910	355	150	140	235	270	4,0
						ISI-SCA-*	7,1	7+6	430	1055	400	170	155	270	300	4,5
						ISI-SCA-*	6,2	8+7	480	1205	450	180	165	285	325	5,0
						ISI-SCA-*	5,7	9+8	525	1350	495	190	175	300	345	5,5

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total height of the insulator (H), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table :

Line fitting	Ground fitting	Code (2)	Height change (H)
Fitting M2	Fitting M1	M2M1	0
Fitting F	Fitting R	FR	-10
Fitting R	Fitting R	RR	-10
Fitting M2	Fitting R	M2R	-5
Fitting M2	Fitting F	M2F	-5

Specified Cantilever Load **SCL - IEC 61952**
 Max. Design Cantilever Load **MDCL = 65% of SCL**
 Specified Tensile Load (STL) 15 kN
 Max design compression 15 kN
 Max design torsion 15 daN*m
The SCL can be increased, please contact us.

The metal fittings can be in aluminium or galvanized steel.

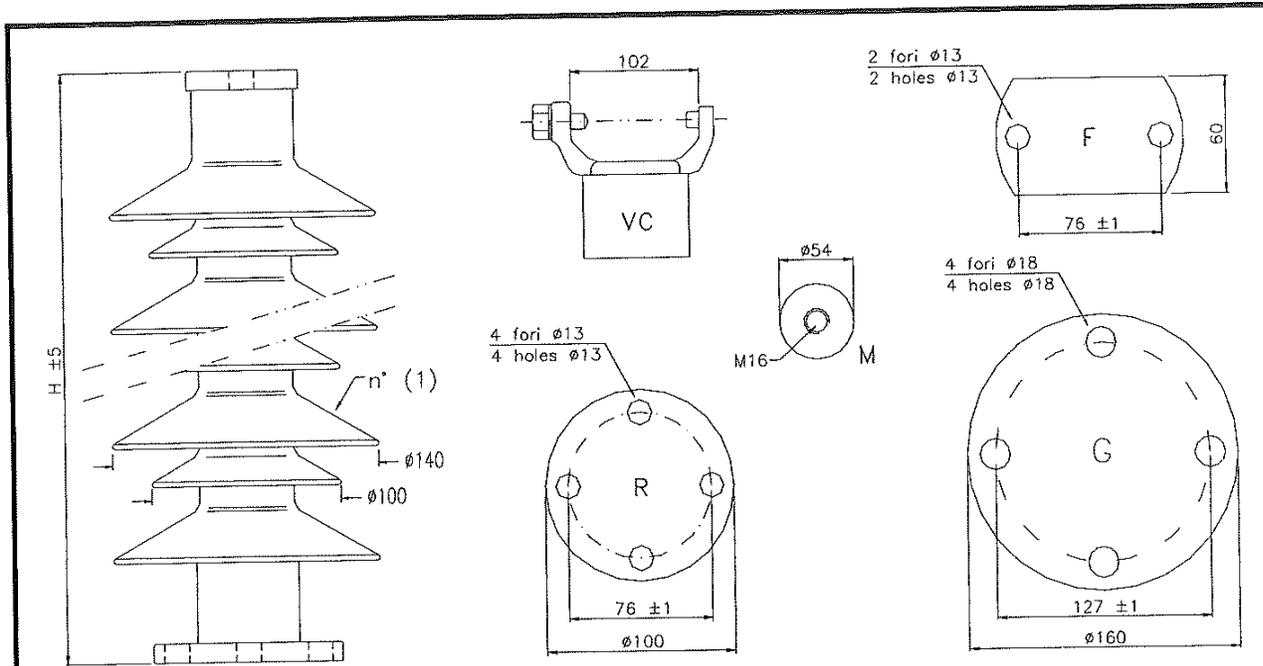
(♦) Key to the catalogue numbers
 Key : ISI-SCA-A(1) - (2)
 Example: ISI-SCA-A4+3-M2M1

These insulators are produced and tested according to IEC 61952.
 It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

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COMPOSITE VERTICAL LINE POST INSULATOR in SILICONE RUBBER type ISI-FC-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Height H ± 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	17	24	36	45	52							Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-FC-*	16,2	2+1	185	390	165	70	65	115	160	2,0
						ISI-FC-*	12,2	3+2	245	585	225	110	100	150	190	2,5
						ISI-FC-*	9,8	4+3	305	780	285	120	110	180	215	3,0
						ISI-FC-*	8,2	5+4	365	975	345	150	140	235	270	3,5
						ISI-FC-*	7,1	6+5	425	1170	405	170	155	270	300	4,0
						ISI-FC-*	6,2	7+6	485	1365	465	180	165	285	325	4,5
						ISI-FC-*	5,5	8+7	545	1560	525	200	185	305	355	5,0
						ISI-FC-*	5,0	9+8	605	1755	585	225	210	345	405	5,5

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total height of the insulator (H), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table :

Line fitting	Ground fitting	Code (2)	Height change (H)
Fitting R	Fitting R	RR	0
Fitting F	Fitting R	FR	0
Fitting G	Fitting G	GG	+160
Fitting M	Fitting R	MR	0
Fitting M	Fitting G	MG	+80
Fitting M	Fitting M	MM	0
Fitting VC	Fitting R	VCR	+95
Fitting VC	Fitting G	VCG	+175
Fitting VC	Fitting M	VCM	+95

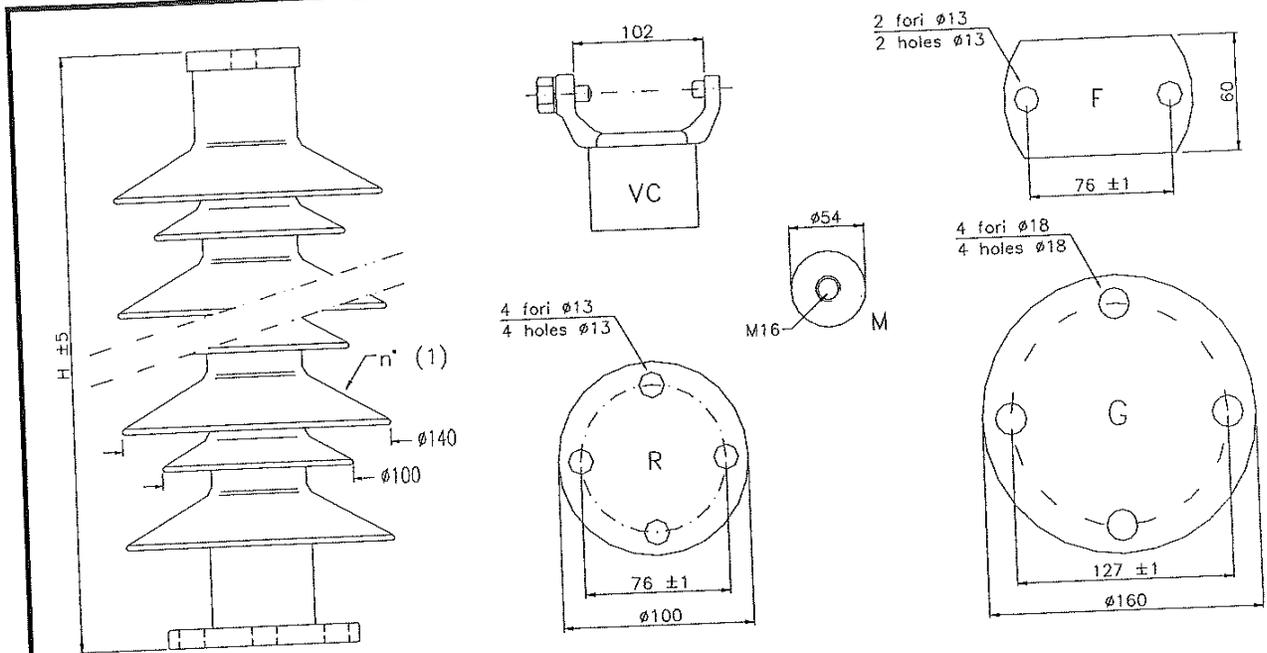
Specified Cantilever Load **SCL - IEC 61952**
 Max. Design Cantilever Load **MDCL = 65% of SCL**
 Specified Tensile Load (STL) 15 kN
 Max design compression 15 kN
 Max design torsion 15 daN*m
The SCL can be increased, please contact us.
 The metal fittings can be in aluminium or galvanized steel.

(♦) Key to the catalogue numbers
 Key : ISI-FC-A(1) - (2)
 Example : ISI-FC-A4+3-FR

These insulators are produced and tested according to IEC 61952.
 It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

COMPOSITE VERTICAL LINE POST INSULATOR in SILICONE RUBBER type ISI-FC-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)			Catalogue Code (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Height H ± 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
72	115	150							Dry kV	Wet kV	posit. kV	negat. kV	
			ISI-FC-*	4,5	10+9	665	1950	645	270	225	450	490	6,0
			ISI-FC-*	3,8	12+11	785	2340	765	310	245	515	550	7,0
			ISI-FC-*	3,3	14+13	905	2730	885	355	285	570	615	8,0
			ISI-FC-*	2,9	16+15	1025	3120	1005	400	320	625	670	9,0
			ISI-FC-*	2,6	18+17	1145	3510	1125	435	355	680	735	10,0
			ISI-FC-*	2,4	20+19	1265	3900	1245	475	390	750	805	11,0
			ISI-FC-*	2,2	22+21	1385	4290	1365	520	430	820	890	12,0
			ISI-FC-*	2,0	24+23	1505	4680	1485	560	475	870	940	13,0

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total height of the insulator (H), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table :

Line fitting	Ground fitting	Code (2)	Height change (H)
Fitting R	Fitting R	RR	0
Fitting F	Fitting R	FR	0
Fitting G	Fitting G	GG	+160
Fitting M	Fitting R	MR	0
Fitting M	Fitting G	MG	+80
Fitting M	Fitting M	MM	0
Fitting VC	Fitting R	VCR	+95
Fitting VC	Fitting G	VCG	+175
Fitting VC	Fitting M	VCM	+95

Specified Cantilever Load
Max. Design Cantilever Load
Specified Tensile Load (STL)
Max design compression
Max design torsion

SCL - IEC 61952
MDCL = 65% of SCL
15 kN
15 kN
15 daN*m

The SCL can be increased, please contact us.

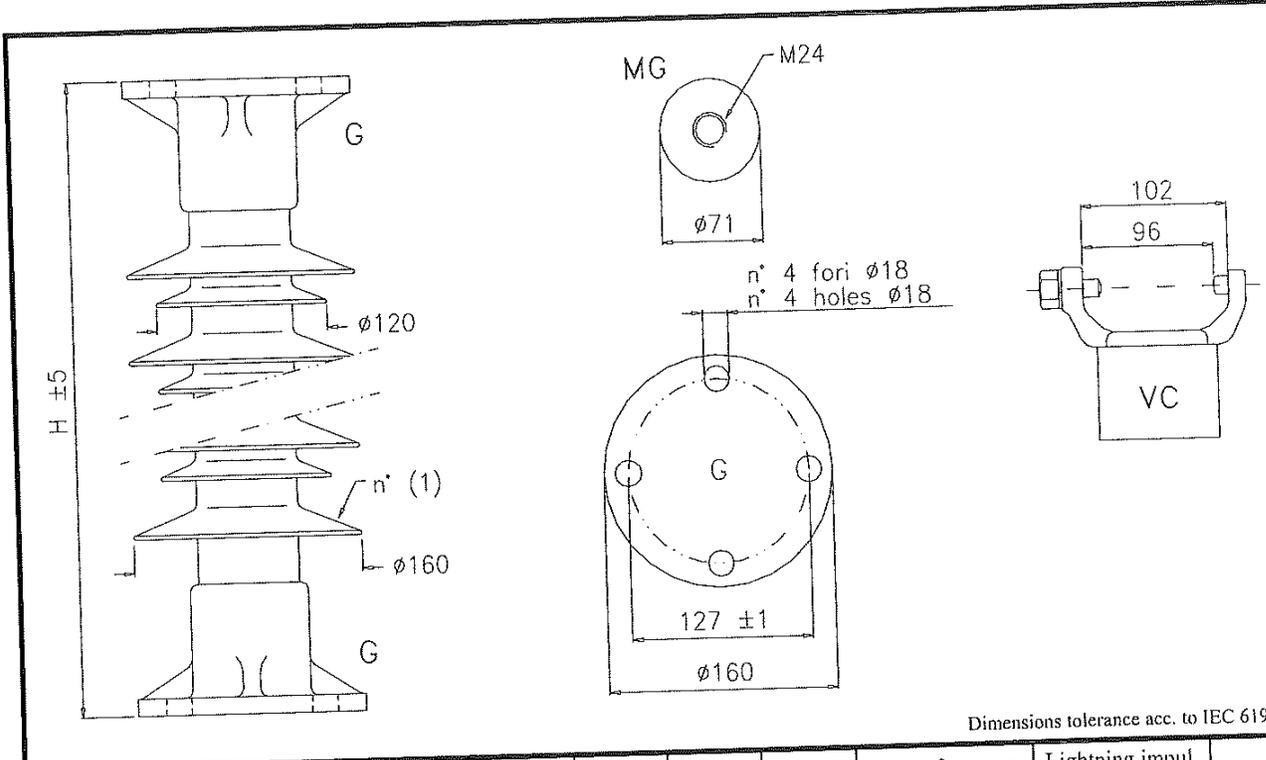
(♦) Key to the catalogue numbers
Key : ISI-FC-A(1) - (2)
Example : ISI-FC-A16+15-FR

These insulators are produced and tested according to IEC 61952.
It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

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COMPOSITE VERTICAL LINE POST INSULATOR in SILICONE RUBBER type ISI-BIG-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Height H ± 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	17	24	36	45	52							Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-BIG-*	40,0	2+1	315	340	135	65	60	100	145	6,5
						ISI-BIG-*	33,0	3+2	375	530	195	80	75	135	180	7,0
						ISI-BIG-*	28,0	4+3	435	710	255	100	90	160	210	7,5
						ISI-BIG-*	24,2	5+4	495	900	315	125	110	190	240	8,0
						ISI-BIG-*	21,5	6+5	555	1100	375	145	130	220	275	8,5
						ISI-BIG-*	19,2	7+6	615	1280	435	170	155	255	310	9,0
						ISI-BIG-*	17,3	8+7	675	1470	495	190	175	290	340	9,5
						ISI-BIG-*	15,8	9+8	735	1660	555	215	200	320	380	10,0

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total height of the insulator (H), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table :

Line fitting	Ground fitting	Code (2)	Height change (H)
Fitting G	Fitting G	GG	0
Fitting MG	Fitting G	MGG	+20
Fitting VC	Fitting G	VCG	+10
Fitting G	Fitting MG	GMG	+20
Fitting VC	Fitting MG	VCMG	+75

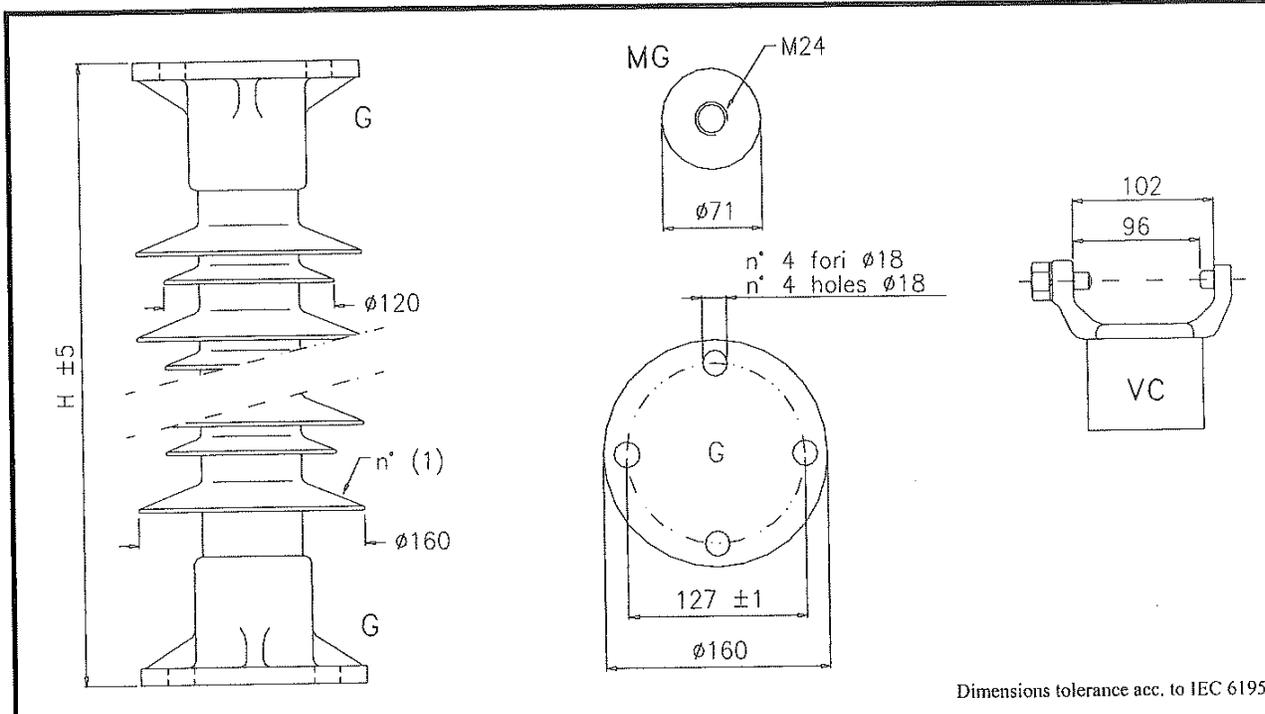
Specified Cantilever Load **SCL - IEC 61952**
 Max. Design Cantilever Load **MDCL = 65% of SCL**
 Specified Tensile Load (STL) 40 kN
 Max design compression 40 kN
 Max design torsion 20 daN*m

(♦) Key to the catalogue numbers
 Key : ISI-BIG-A(1) - (2)
 Example : ISI-BIG-A7+6-GG

These insulators are produced and tested according to IEC 61952.
 It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

COMPOSITE VERTICAL LINE POST INSULATOR in SILICONE RUBBER type ISI-BIG-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)				Catalogue Code (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Height H ± 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
72	115	150	230							Dry kV	Wet kV	posit. kV	negat. kV	
				ISI-BIG-*	14,6	10+9	795	1800	615	275	195	420	480	11
				ISI-BIG-*	12,6	12+11	915	2200	735	310	230	460	540	12
				ISI-BIG-*	11,1	14+13	1035	2600	855	340	265	500	595	13
				ISI-BIG-*	9,9	16+15	1155	2900	975	380	300	560	650	14
				ISI-BIG-*	8,9	18+17	1275	3300	1095	415	335	615	705	15
				ISI-BIG-*	8,2	20+19	1395	3700	1215	450	370	670	760	16
				ISI-BIG-*	7,5	22+21	1515	4100	1335	485	405	725	815	17
				ISI-BIG-*	6,9	24+23	1635	4450	1455	520	435	830	880	18
				ISI-BIG-*	6,0	28+27	1875	5200	1695	615	515	940	1040	22
				ISI-BIG-*	5,3	32+31	2115	5950	1935	675	575	1100	1200	24
				ISI-BIG-*	4,7	36+35	2360	6700	2175	760	640	1230	1340	26

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total height of the insulator (H), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table :

Line fitting	Ground fitting	Code (2)	Height change (H)
Fitting G	Fitting G	GG	0
Fitting MG	Fitting G	MGG	+20
Fitting VC	Fitting G	VCG	+10
Fitting G	Fitting MG	GMG	+20
Fitting VC	Fitting MG	VCMG	+75

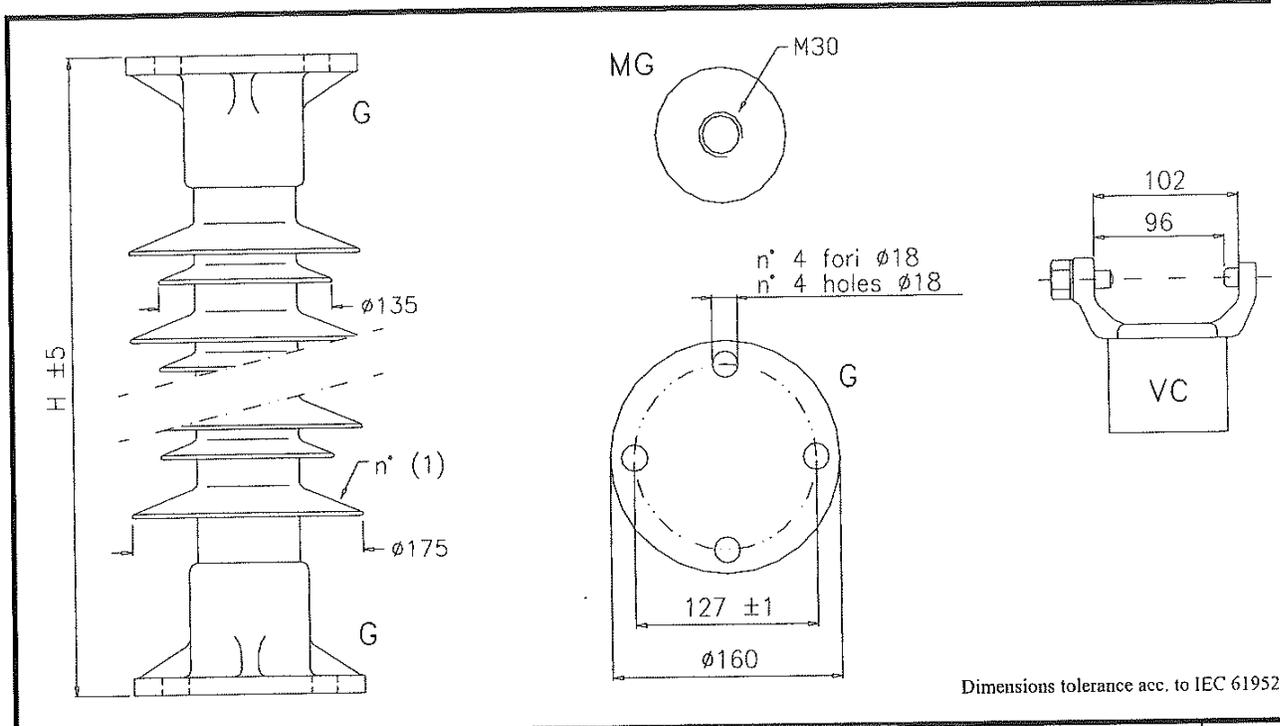
Specified Cantilever Load **SCL - IEC 61952**
 Max. Design Cantilever Load **MDCL = 65% of SCL**
 Specified Tensile Load (STL) 40 kN
 Max design compression 40 kN
 Max design torsion 20 daN*m

(♦) Key to the catalogue numbers
 Key : ISI-BIG-A(1) - (2)
 Example : ISI-BIG-A14+13-GG

These insulators are produced and tested according to IEC 61952.
 It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

COMPOSITE VERTICAL LINE POST INSULATOR in SILICONE RUBBER type ISI-MAX-*



Selection Guide (Line Voltage, kV)				Catalogue Code (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Height H ± 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
115	150	220	345							Dry kV	Wet kV	posit. kV	negat. kV	
				ISI-MAX-*	15,0	14+13	1035	2600	855	340	265	500	595	15,5
				ISI-MAX-*	13,5	16+15	1155	2900	975	380	300	560	650	17,5
				ISI-MAX-*	11,2	18+17	1275	3300	1095	415	335	615	705	18,5
				ISI-MAX-*	11,1	20+19	1395	3700	1215	450	370	670	760	20,0
				ISI-MAX-*	10,2	22+21	1515	4100	1335	485	405	725	815	21,0
				ISI-MAX-*	9,4	24+23	1635	4450	1455	520	435	830	880	22,5
				ISI-MAX-*	8,1	28+27	1875	5200	1695	615	515	940	1040	26,5
				ISI-MAX-*	7,7	32+31	2115	5950	1935	675	575	1100	1200	29,5
				ISI-MAX-*	7,2	38+37	2475	7100	2295	810	675	1330	1430	34,5
				ISI-MAX-*	6,4	43+42	2775	8090	2595	855	750	1460	1565	40,0
				ISI-MAX-*	5,7	46+45	2955	8600	2775	905	780	1585	1715	45,0

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total height of the insulator (H), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table :

Line fitting	Ground fitting	Code (2)	Height change (H)
Fitting G	Fitting G	GG	0
Fitting MG	Fitting G	MGG	+65
Fitting MG	Fitting MG	MGMG	+130
Fitting VC	Fitting G	VCG	+65
Fitting VC	Fitting MG	VCMG	+80

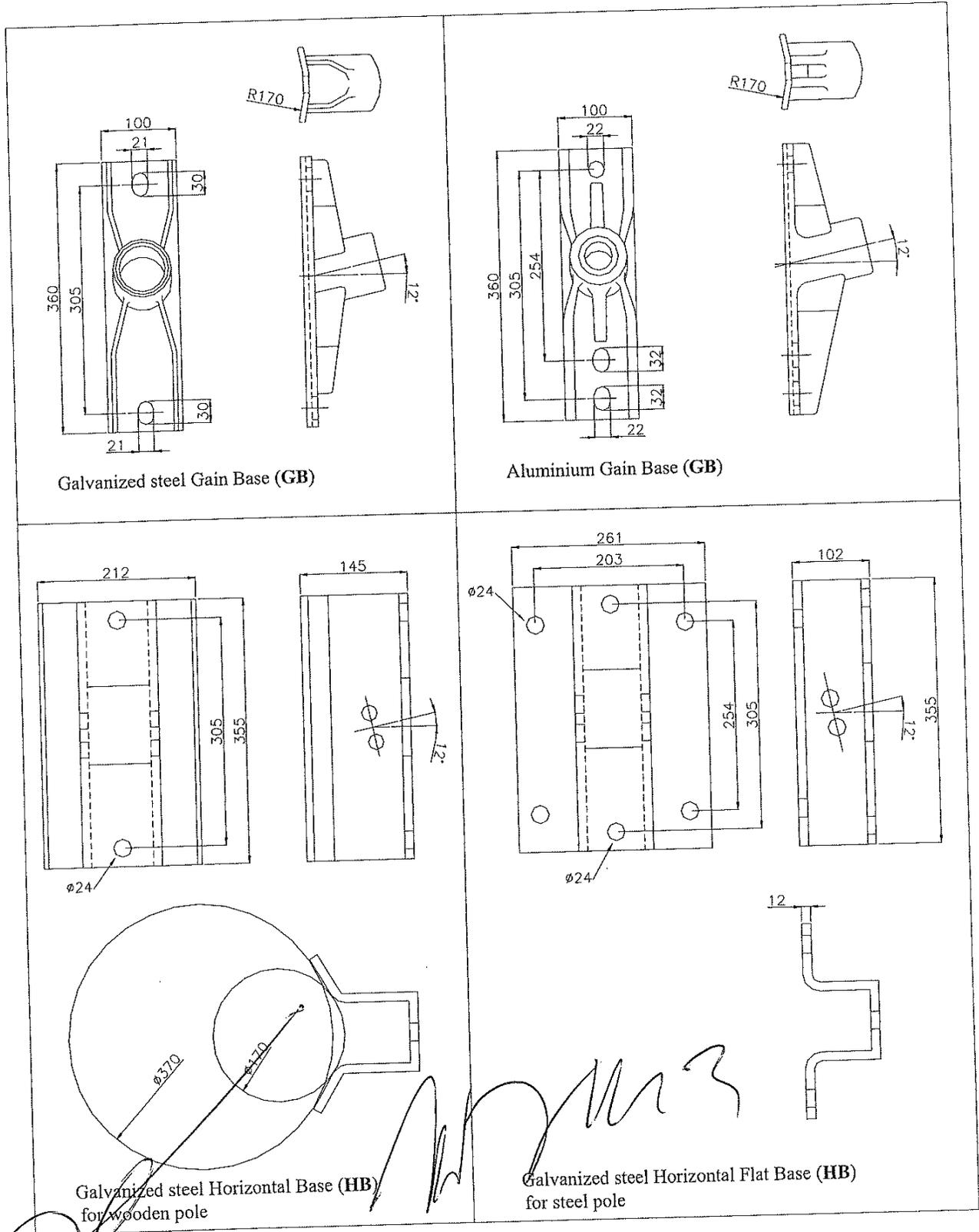
Specified Cantilever Load SCL - IEC 61952
 Max. Design Cantilever Load MDCL = 65% of SCL
 Specified Tensile Load (STL) 50 kN
 Max design compression 50 kN
 Max design torsion 25 daN*m

(♦) Key to the catalogue numbers
 Key : ISI-MAX-A(1) - (2)
 Example : ISI-MAX-A14+13-GG

These insulators are produced and tested according to IEC 61952. It's possible to have all the other combinations.

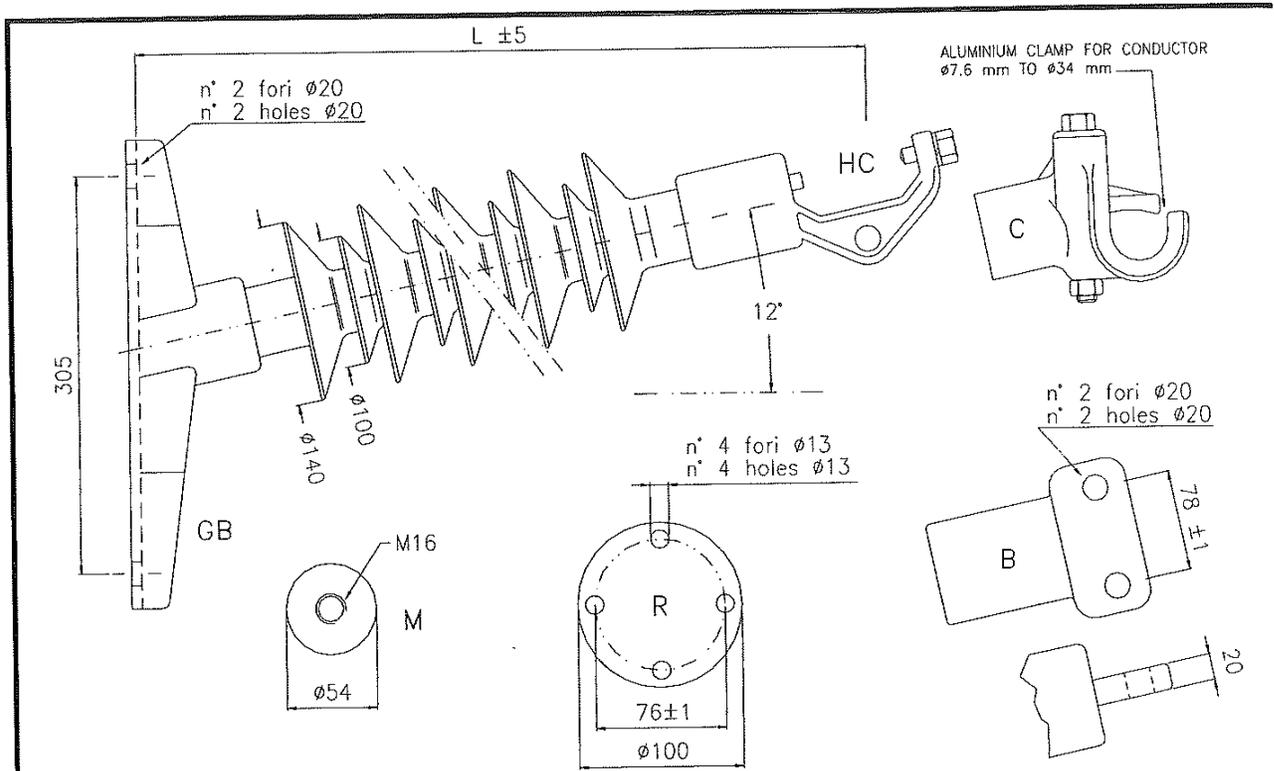
Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

POST INSULATORS FIXING BASE



Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

COMPOSITE HORIZONTAL LINE POST INSULATOR in SILICONE RUBBER type ISI-FC-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)							Catalogue Code, (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Length L ± 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	17	24	35	45	52	Dry kV							Wet kV	posit. kV	negat. kV		
							ISI-FC-*	10,0	2+1	395	390	165	70	65	115	160	6,5
							ISI-FC-*	8,4	3+2	450	585	225	110	100	150	190	7,0
							ISI-FC-*	7,2	4+3	510	780	285	120	110	180	215	7,5
							ISI-FC-*	6,3	5+4	570	975	340	150	140	235	270	8,0
							ISI-FC-*	5,5	6+5	630	1170	400	170	155	270	300	8,5
							ISI-FC-*	5,0	7+6	690	1365	460	180	165	285	325	9,0
							ISI-FC-*	4,5	8+7	745	1560	520	200	185	305	355	9,5
							ISI-FC-*	4,2	9+8	805	1755	575	225	210	345	405	10,0

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table :

Line fitting	Ground fitting	Code (2)	Length change (L)
Fitting HC	Fitting GB	HCGB	0
Fitting HC	Fitting M	HCM	-88
Fitting HC	Fitting R	HCR	-88
Fitting B	Fitting GB	BGB	+7
Fitting B	Fitting M	BM	-80
Fitting B	Fitting R	BR	-80
Fitting C	Fitting GB	CGB	-40
Fitting C	Fitting M	CM	-125
Fitting C	Fitting R	CR	-125

Specified Cantilever Load
Max Design Cantilever Load
Specified Tensile Load (STL)
Max design compression
Max design torsion
The SCL can be increased, please contact us.

SCL - IEC 61952
MDCL = 65% of SCL
15 kN
15 kN
15 daN*m

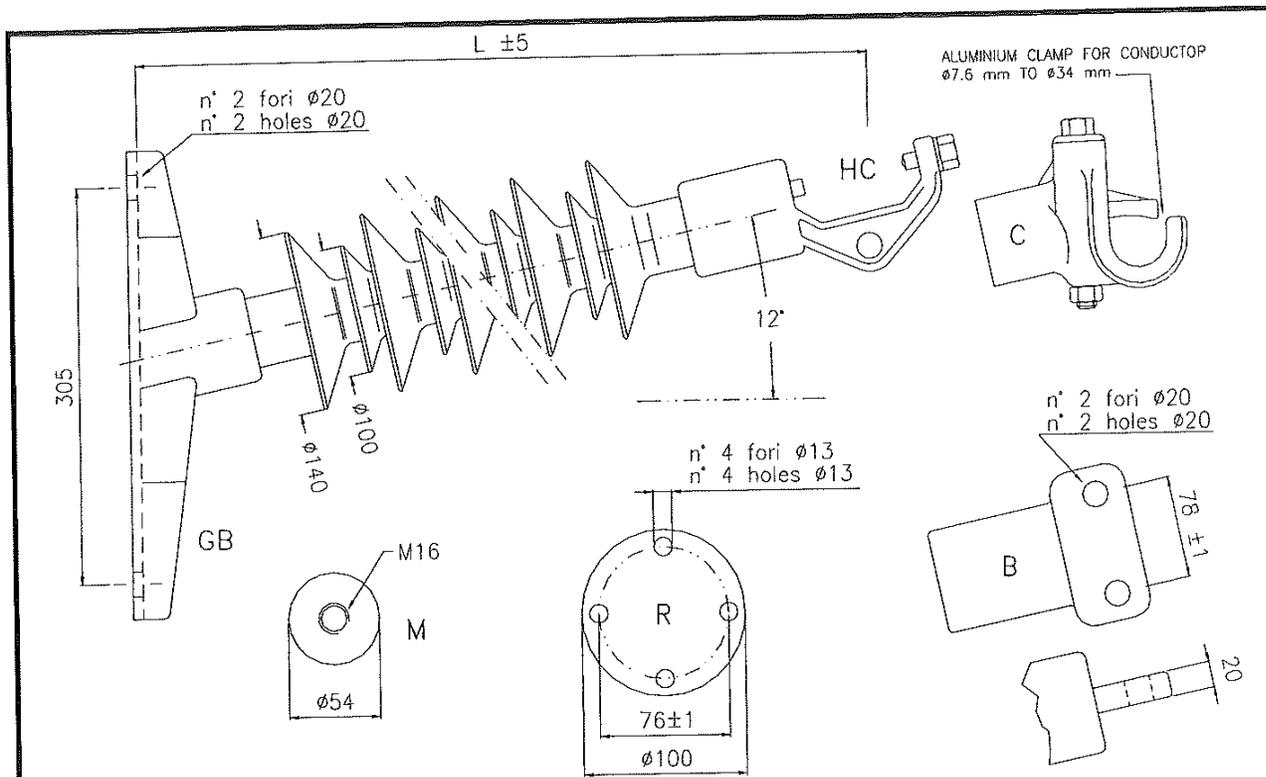
The metal fittings can be in aluminium or galvanized steel.

(♦) Key to the catalogue numbers
Key : ISI-FC-A(1) - (2)
Example : ISI-FC-A4+3-HCGB

These insulators are produced and tested according to IEC 61952.
It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

COMPOSITE HORIZONTAL LINE POST INSULATOR in SILICONE RUBBER type ISI-FC-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)			Catalogue Code (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Length L +/- 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight +/- kg
72	115	150							Dry kV	Wet kV	posit. kV	negat. kV	
			ISI-FC-*	3,9	10+9	865	1950	635	270	225	450	490	10,5
			ISI-FC-*	3,3	12+11	985	2340	750	310	245	515	550	11,5
			ISI-FC-*	3,0	14+13	1100	2730	870	355	285	570	615	12,5
			ISI-FC-*	2,7	16+15	1220	3120	985	400	320	625	670	13,5
			ISI-FC-*	2,4	18+17	1335	3510	1105	435	355	680	735	14,5
			ISI-FC-*	2,2	20+19	1455	3900	1220	475	390	750	805	15,5
			ISI-FC-*	2,0	22+21	1575	4290	1335	520	430	820	890	16,5
			ISI-FC-*	1,8	24+23	1690	4680	1455	560	475	870	940	17,5

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table :

Line fitting	Ground fitting	Code (2)	Length change (L)
Fitting HC	Fitting GB	HCGB	0
Fitting HC	Fitting M	HCM	-88
Fitting HC	Fitting R	HCR	-88
Fitting B	Fitting GB	BGB	+7
Fitting B	Fitting M	BM	-80
Fitting B	Fitting R	BR	-80
Fitting C	Fitting GB	CGB	-40
Fitting C	Fitting M	CM	-125
Fitting C	Fitting R	CR	-125

Specified Cantilever Load **SCL - IEC 61952**
 Max. Design Cantilever Load **MDCL = 65% of SCL**
 Specified Tensile Load (STL) 15 kN
 Max design compression 15 kN
 Max design torsion 15 daN*m
The SCL can be increased, please contact us.

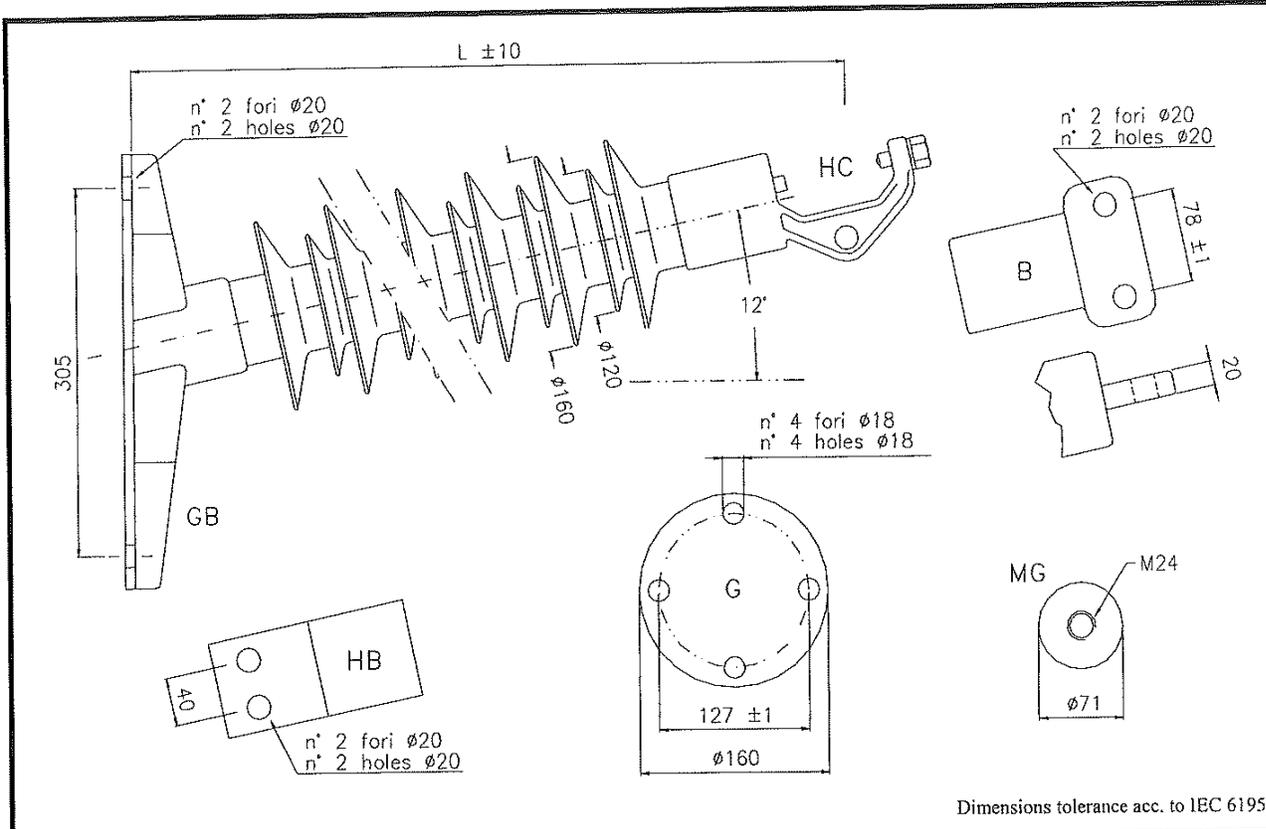
The metal fittings can be in aluminium or galvanized steel.

(♦) Key to the catalogue numbers
 Key : ISI-FC-A(1) - (2)
 Example : ISI-FC-A16+15-HCGB

These insulators are produced and tested according to IEC 61952.
 It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

COMPOSITE HORIZONTAL LINE POST INSULATOR in SILICONE RUBBER type ISI-BIG-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)						Catalogue Code (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
12	17	24	36	45	52							Dry kV	Wet kV	posit. kV	negat. kV	
						ISI-BIG-*	34,5	2+1	360	340	135	65	60	100	145	7,0
						ISI-BIG-*	29,8	3+2	410	530	195	80	75	135	180	7,5
						ISI-BIG-*	25,6	4+3	470	710	255	100	90	160	210	8,0
						ISI-BIG-*	22,5	5+4	530	900	315	125	110	190	240	8,5
						ISI-BIG-*	20,2	6+5	585	1100	375	145	130	220	275	9,0
						ISI-BIG-*	17,6	7+6	645	1280	435	170	155	255	310	10,0
						ISI-BIG-*	16,6	8+7	705	1470	495	190	175	290	340	10,5
						ISI-BIG-*	15,3	9+8	760	1660	555	215	200	320	380	11,0

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table :

Line fitting	Ground fitting	Code (2)	Length change (L)
Fitting HC	Fitting GB	HCGB	0
Fitting HC	Fitting HB	HCHB	+36
Fitting HC	Fitting G	HCG	+20
Fitting B	Fitting GB	BGB	+9
Fitting B	Fitting HB	BHB	+44
Fitting B	Fitting G	BG	+29
Fitting MG	Fitting GB	MGGB	-24

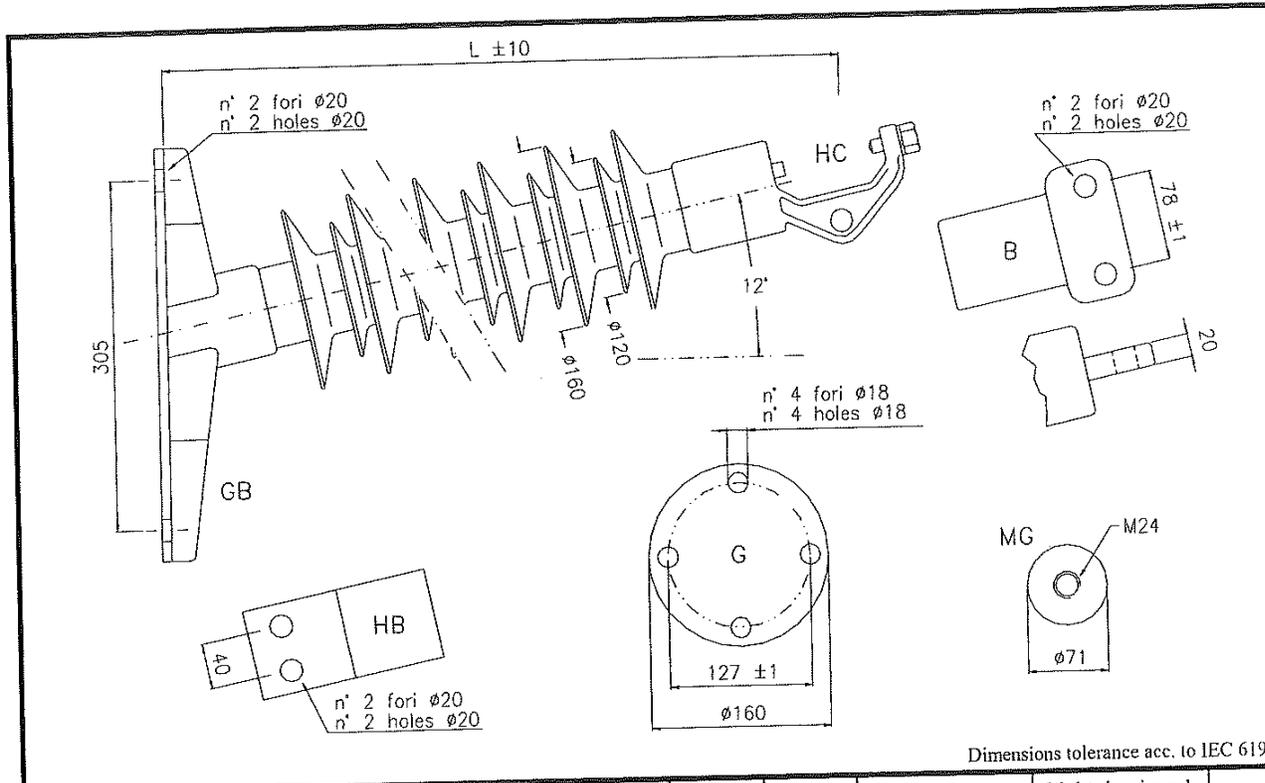
Specified Cantilever Load SCL - IEC 61952
 Max. Design Cantilever Load MDCL = 65% of SCL
 Specified Tensile Load (STL) 40 kN
 Max design compression 40 kN
 Max design torsion 20 daN*m

(♦) Key to the catalogue numbers
 Key : ISI-BIG-A(1) - (2)
 Example : ISI-BIG-A8+7-HCGB

These insulators are produced and tested according to IEC 61952.
 It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

COMPOSITE HORIZONTAL LINE POST INSULATOR in SILICONE RUBBER type ISI-BIG-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)				Catalogue Code (♦)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Length L ± 10 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
72	115	150	230							Dry kV	Wet kV	posit. kV	negat. kV	
				ISI-BIG-*	14,0	10+9	820	1800	615	275	195	420	480	11,5
				ISI-BIG-*	12,0	12+11	940	2200	735	310	230	460	540	12,5
				ISI-BIG-*	10,8	14+13	1060	2600	855	340	265	500	595	13,5
				ISI-BIG-*	9,6	16+15	1175	2900	975	380	300	560	650	14,5
				ISI-BIG-*	8,8	18+17	1290	3300	1095	415	335	615	705	15,5
				ISI-BIG-*	8,0	20+19	1410	3700	1215	450	370	670	760	16,5
				ISI-BIG-*	7,4	22+21	1525	4100	1335	485	405	725	815	17,5
				ISI-BIG-*	6,8	24+23	1645	4450	1455	520	435	830	880	18,5
				ISI-BIG-*	6,0	28+27	1880	5200	1695	615	515	940	1040	22,5
				ISI-BIG-*	5,3	32+31	2115	5950	1935	675	575	1100	1200	24,5
				ISI-BIG-*	4,7	36+35	2350	6700	2175	760	640	1230	1340	26,5

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table

Line fitting	Ground fitting	Code (2)	Length change (L)
Fitting HC	Fitting GB	HCGB	0
Fitting HC	Fitting HB	HCHB	+36
Fitting HC	Fitting G	HCG	+20
Fitting B	Fitting GB	BGB	+9
Fitting B	Fitting HB	BHB	+44
Fitting B	Fitting G	BG	+29
Fitting MG	Fitting GB	MGGB	-24

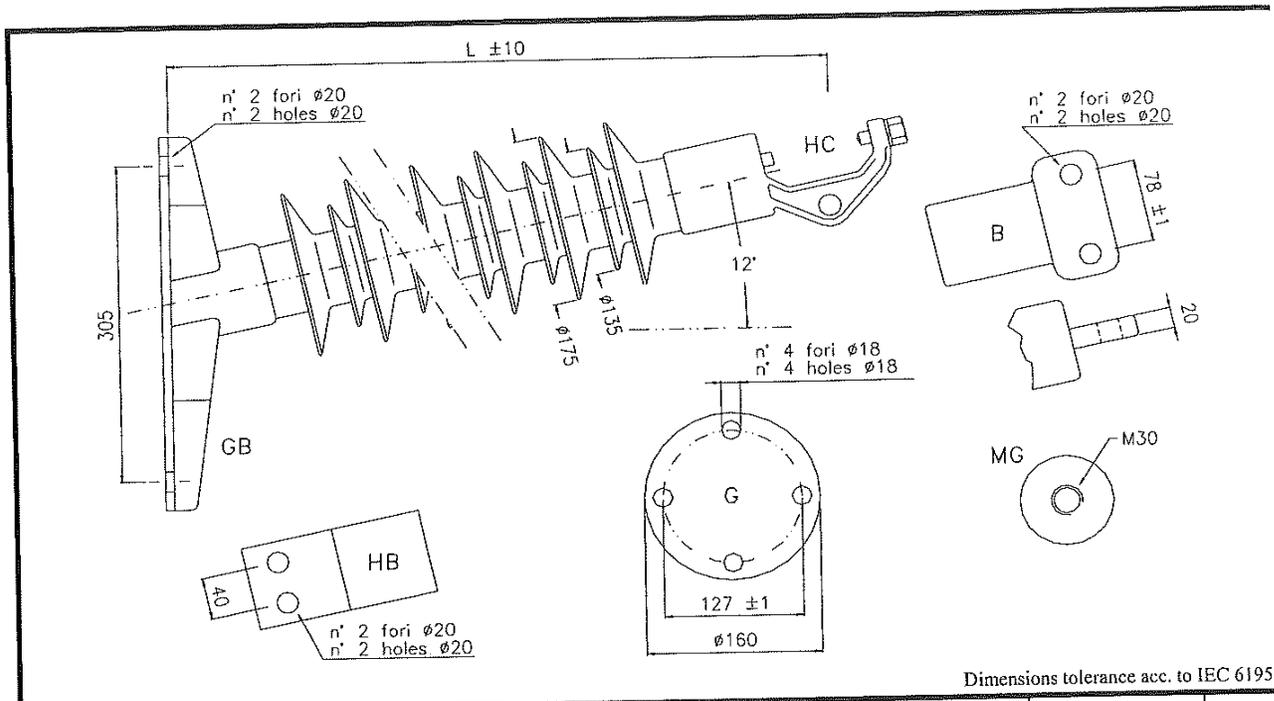
Specified Cantilever Load **SCL - IEC 61952**
 Max. Design Cantilever Load **MDCL = 65% of SCL**
 Specified Tensile Load (STL) 40 kN
 Max design compression 40 kN
 Max design torsion 20 daN*m

(♦) Key to the catalogue numbers
 Key : ISI-BIG-A(1) - (2)
 Example : ISI-BIG-A14+13-HCGB

These insulators are produced and tested according to IEC 61952.
 It's possible to have all the other combinations.

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

COMPOSITE HORIZONTAL LINE POST INSULATOR in SILICONE RUBBER type ISI-MAX-*



Dimensions tolerance acc. to IEC 61952

Selection Guide (Line Voltage, kV)				Catalogue Code (◆)	Specified Cantilever Load kN	n° of Sheds A n° (1)	Length L ± 5 mm	Leakage distance mm	Dry arc distance mm	Power frequency withstand 50-60 Hz		Lightning impul. withstand 1,2/50		Weight ~ kg
115	150	220	345							Dry kV	Wet kV	posit. kV	negat. kV	
				ISI-MAX-*	14,5	14+13	1060	2600	855	340	265	500	595	15,5
				ISI-MAX-*	13,0	16+15	1175	2900	975	380	300	560	650	17,5
				ISI-MAX-*	11,6	18+17	1290	3300	1095	415	335	615	705	18,5
				ISI-MAX-*	10,7	20+19	1410	3700	1215	450	370	670	760	20,0
				ISI-MAX-*	9,8	22+21	1525	4100	1335	485	405	725	815	21,0
				ISI-MAX-*	9,0	24+23	1645	4450	1455	520	435	830	880	22,5
				ISI-MAX-*	7,8	28+27	1880	5200	1695	615	515	940	1040	26,5
				ISI-MAX-*	7,3	32+31	2115	5950	1935	675	575	1100	1200	29,5
				ISI-MAX-*	6,9	38+37	2475	7100	2295	810	675	1330	1430	34,5
				ISI-MAX-*	6,2	43+42	2895	8090	2595	855	750	1460	1565	40,0
				ISI-MAX-*	5,5	46+45	2950	8600	2775	905	780	1585	1715	45,0

NOTE : Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please, select the kind of fitting end you have to use and make the opportune correction with reference to the following table :

Line fitting	Ground fitting	Code (2)	Length change (L)
Fitting HC	Fitting GB	HCGB	0
Fitting HC	Fitting HB	HCHB	+36
Fitting HC	Fitting G	HCG	+20
Fitting B	Fitting GB	BGB	+9
Fitting B	Fitting HB	BHB	+44
Fitting B	Fitting G	BG	+29
Fitting MG	Fitting GB	MGGB	-24
Fitting MG	Fitting HB	MGHB	+12
Fitting MG	Fitting G	MGG	-4

Specified Cantilever Load SCL - IEC 61952
 Max. Design Cantilever Load MDCL = 65% of SCL
 Specified Tensile Load (STL) 50 kN
 Max design compression 50 kN
 Max design torsion 25 daN*m

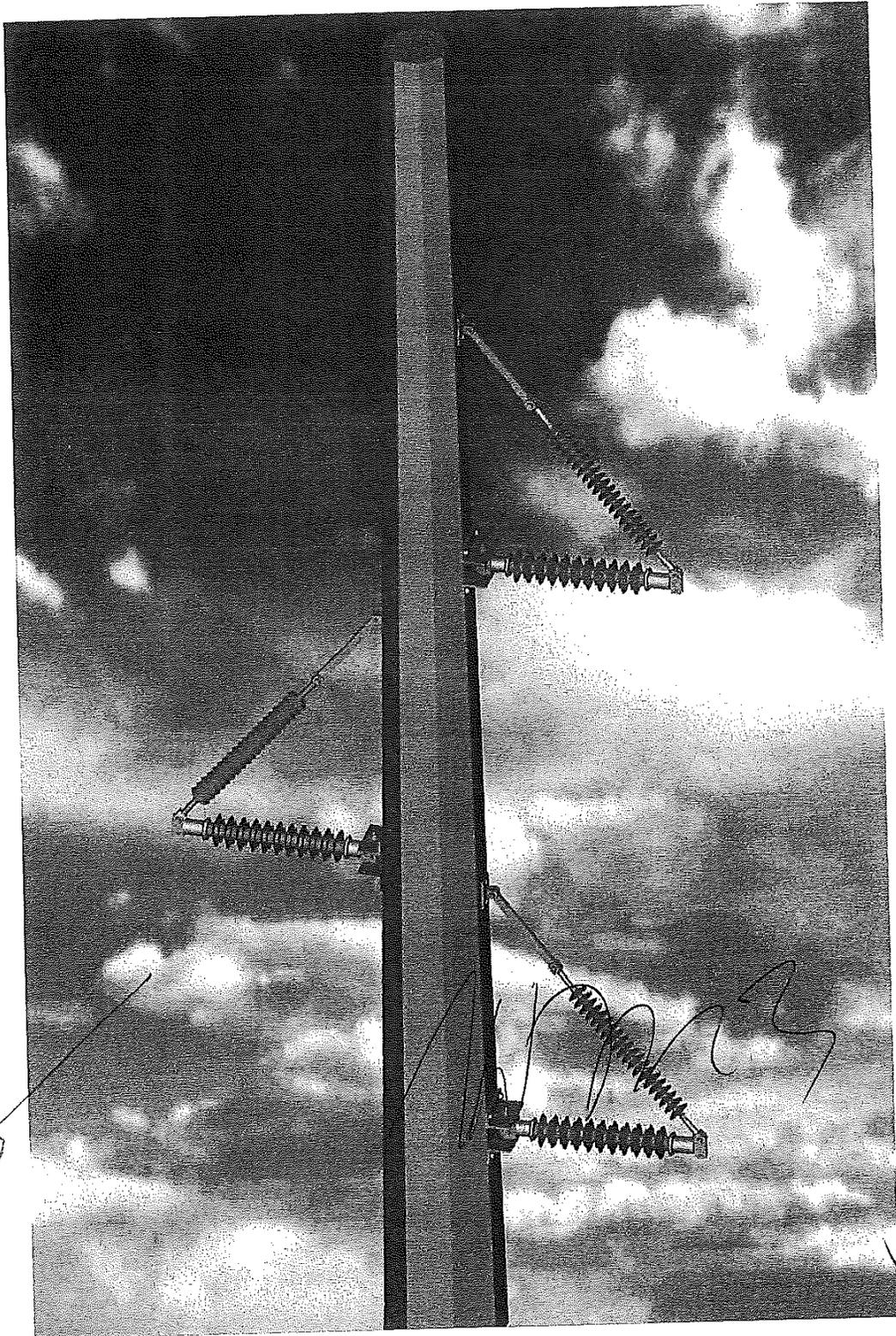
(◆) Key to the catalogue numbers

Key : ISI-MAX-A(1) - (2)
 Example : ISI-MAX-A20+19-HCGB

These insulators are produced and tested according to IEC 61952.
 It's possible to have all the other combinations.

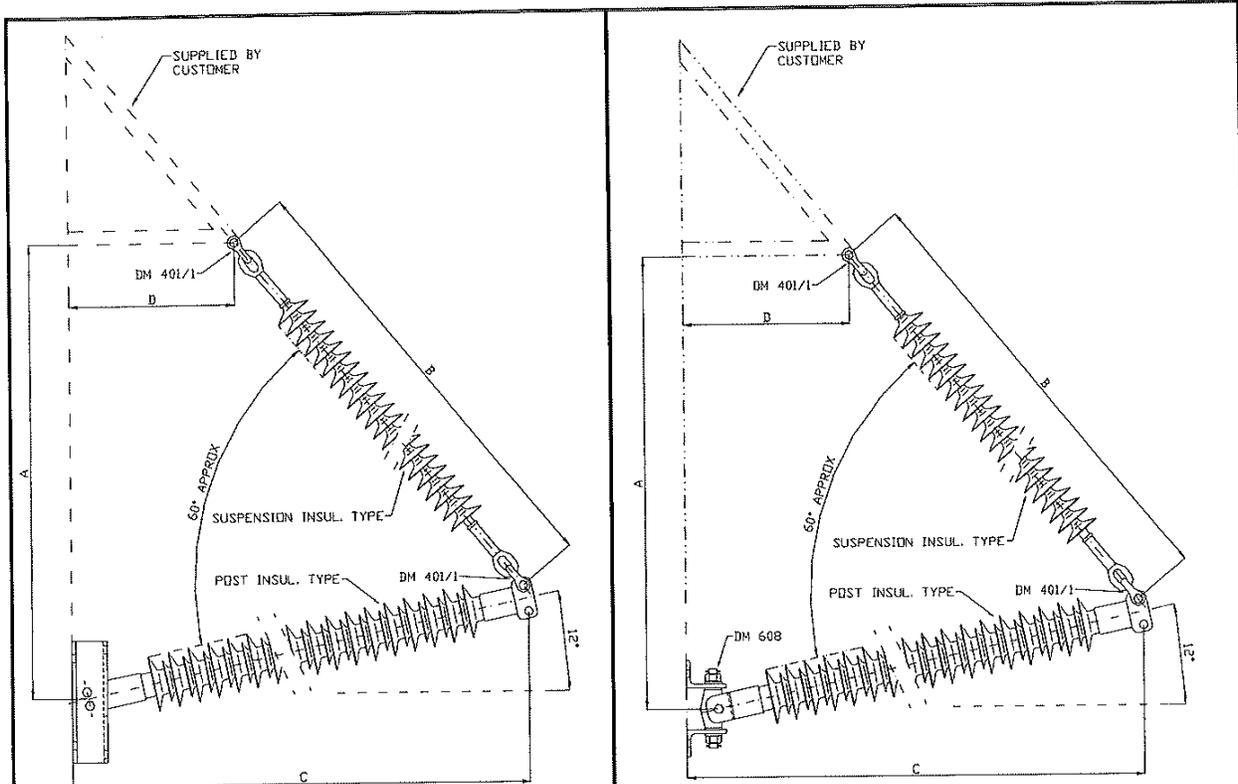
Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

SAME PICTURES OF THE OUR COMPOSITE INSULATING
BRACKET



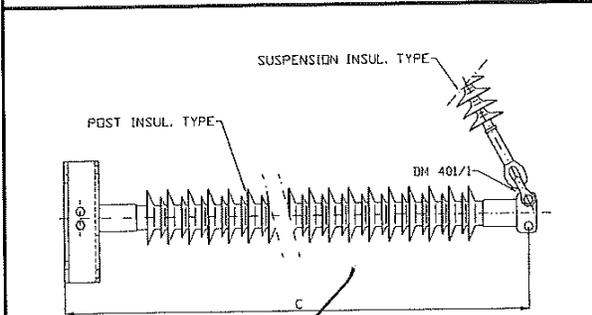
isoelectric - Italy 04-2

INSULATING BRACKET ASSEMBLY DRAWINGS

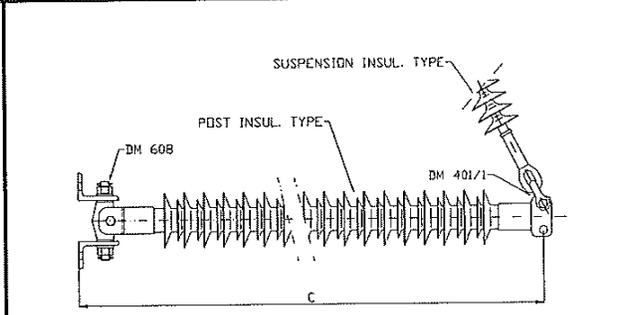


Fixed assembly with 12° inclination

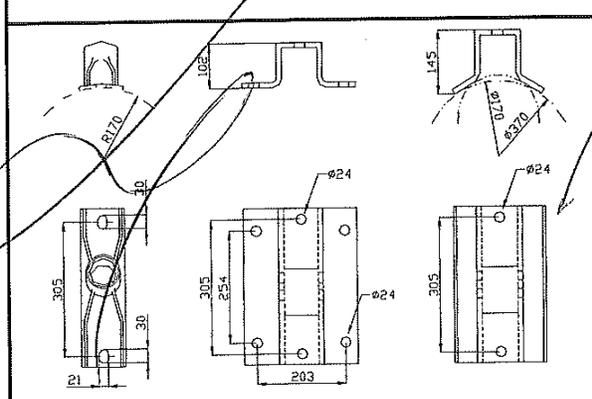
Horizontal & Vertical Pivoting assembly with 12° inclination



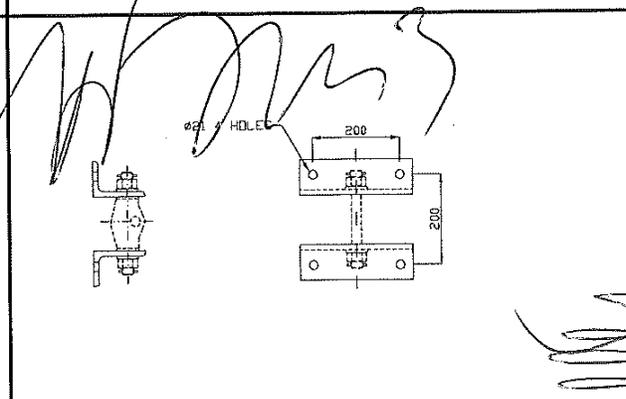
Fixed assembly with 0° inclination



Horizontal & Vertical Pivoting assembly with 0° inclination



Base for Fixed assembly with 0° or 12° inclination



Base for Pivoting assembly with 0° or 12° inclination

Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.

INSULATING BRACKET ASSEMBLY – Dimensions and Strength Rating

FIXED ASSEMBLY with 12° inclination

Typical Voltage	Component insulators		Dimensions (mm)				Maximum Load* (kN)				Pollution mm/kV
	Suspension type	Post type	A	B	C	D	1*	2*	3*	4*	
138	ISI-CAN-A27-120EE	ISI-BIG-A18+17-BHB	1560	1600	1420	370	55	35	55	5,72	> 23
138	ISI-ROK-A17+16-120EE	ISI-BIG-A24+23-BHB	1685	1675	1775	680	55	35	55	4,42	> 31
145	ISI-ROK-A18+17-120EE	ISI-MAX-A24+23-BHB	1740	1745	1775	635	70	45	70	5,85	> 31
161	ISI-ROK-A17+16-120EE	ISI-BIG-A24+23-BHB	1685	1675	1775	680	55	35	50	4,42	> 27
161	ISI-ROK-A20+19-120EE	ISI-BIG-A27+26-BHB	1910	1885	1950	695	55	35	50	4,22	> 31
170	ISI-ROK-A21+20-120EE	ISI-MAX-A29+28-BHB	1990	1960	2065	770	70	45	60	4,87	> 31
230	ISI-CAN-A48-120EE	ISI-BIG-A31+30-BHB	2335	2410	2185	615	55	35	45	3,57	> 25
230	ISI-ROK-A28+27-120EE	ISI-BIG-A38+37-BHB	2450	2445	2595	1005	55	35	45	2,90	> 31
245	ISI-ROK-A30+29-120EE	ISI-MAX-A41+40-BHB	2595	2585	2770	1095	70	45	50	4,22	> 31

FIXED ASSEMBLY with 0° inclination (Horizontal V)

Typical Voltage	Component insulators		Dimensions (mm)				Maximum Load* (kN)				Pollution mm/kV
	Suspension type	Post type	A	B	C	D	1*	2*	3*	4*	
138	ISI-CAN-A27-120EE	ISI-BIG-A18+17-BHB	1400	1600	1445	655	50	35	55	5,50	> 23
138	ISI-ROK-A17+16-120EE	ISI-BIG-A24+23-BHB	1490	1675	1800	965	50	35	55	4,20	> 31
145	ISI-ROK-A18+17-120EE	ISI-MAX-A24+23-BHB	1550	1745	1800	930	65	45	70	5,60	> 31
161	ISI-ROK-A17+16-120EE	ISI-BIG-A24+23-BHB	1490	1675	1800	965	50	35	55	4,20	> 27
161	ISI-ROK-A20+19-120EE	ISI-BIG-A27+26-BHB	1675	1885	1985	1040	50	35	55	4,00	> 31
170	ISI-ROK-A21+20-120EE	ISI-MAX-A29+28-BHB	1735	1960	2105	1125	65	45	70	4,60	> 31
230	ISI-CAN-A48-120EE	ISI-BIG-A31+30-BHB	2125	2410	2225	1015	50	35	55	3,30	> 25
230	ISI-ROK-A28+27-120EE	ISI-BIG-A38+37-BHB	2155	2445	2645	1420	50	35	55	2,70	> 31
245	ISI-ROK-A30+29-120EE	ISI-MAX-A41+40-BHB	2280	2585	2825	1530	65	45	70	4,00	> 31

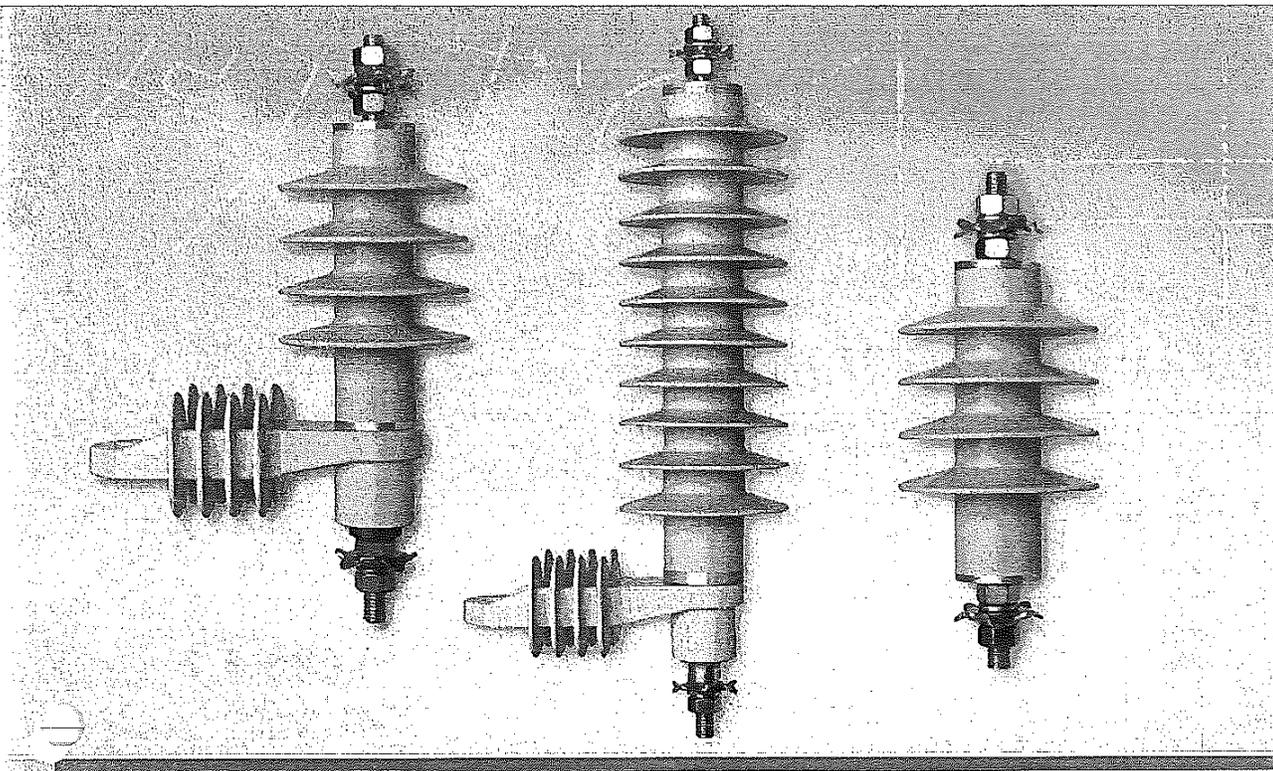
HORIZONTAL & VERTICAL PIVOTING ASSEMBLY with 12° inclination

Typical Voltage	Component insulators		Dimensions (mm)				Maximum Load* (kN)				Pollution mm/kV
	Suspension type	Post type	A	B	C	D	1*	2*	3*	4*	
138	ISI-CAN-A27-120EE	ISI-BIG-A18+17-BC	1555	1600	1435	385	55	35	55	--	> 23
138	ISI-ROK-A17+16-120EE	ISI-BIG-A24+23-BC	1680	1675	1788	695	55	35	55	--	> 31
145	ISI-ROK-A18+17-120EE	ISI-MAX-A24+23-BC	1735	1745	1790	650	70	45	70	--	> 31
161	ISI-ROK-A17+16-120EE	ISI-BIG-A24+23-BC	1680	1675	1790	695	55	35	50	--	> 27
161	ISI-ROK-A20+19-120EE	ISI-BIG-A27+26-BC	1905	1920	1965	710	55	35	50	--	> 31
170	ISI-ROK-A21+20-120EE	ISI-MAX-A29+28-BC	1985	1990	2080	785	70	45	60	--	> 31
230	ISI-CAN-A48-120EE	ISI-BIG-A31+30-BC	2330	2410	2200	630	55	35	45	--	> 25
230	ISI-ROK-A28+27-120EE	ISI-BIG-A38+37-BC	2445	2445	2610	1020	55	35	45	--	> 31
245	ISI-ROK-A30+29-120EE	ISI-MAX-A41+40-BC	2590	2585	2795	1110	70	45	50	--	> 31

HORIZONTAL & VERTICAL PIVOTING ASSEMBLY with 0° inclination

Typical Voltage	Component insulators		Dimensions (mm)				Maximum Load* (kN)				Pollution mm/kV
	Suspension type	Post type	A	B	C	D	1*	2*	3*	4*	
138	ISI-CAN-A27-120EE	ISI-BIG-A18+17-BC	1555	1600	1450	400	50	35	55	--	> 23
138	ISI-ROK-A17+16-120EE	ISI-BIG-A24+23-BC	1680	1675	1805	710	50	35	55	--	> 31
145	ISI-ROK-A18+17-120EE	ISI-MAX-A24+23-BC	1735	1745	1805	665	65	45	70	--	> 31
161	ISI-ROK-A17+16-120EE	ISI-BIG-A24+23-BC	1680	1675	1805	710	50	35	55	--	> 27
161	ISI-ROK-A20+19-120EE	ISI-BIG-A27+26-BC	1905	1920	1980	725	50	35	55	--	> 31
170	ISI-ROK-A21+20-120EE	ISI-MAX-A29+28-BC	1985	1990	2095	800	65	45	70	--	> 31
230	ISI-CAN-A48-120EE	ISI-BIG-A31+30-BC	2330	2410	2215	645	50	35	55	--	> 25
230	ISI-ROK-A28+27-120EE	ISI-BIG-A38+37-BC	2445	2445	2625	1035	50	35	55	--	> 31
245	ISI-ROK-A30+29-120EE	ISI-MAX-A41+40-BC	2590	2585	2810	1125	65	45	70	--	> 31

* Maximum load are for single loads in the specified direction: 1=Vertical, 2=Tension, 3=Compression, 4=Longitudinal
Please, don't hesitate to contact us directly for obtaining possible explanations or different solutions.



MEDIUM VOLTAGE SURGE ARRESTER DA1 SERIES FROM 4 - 39 KV RATED VOLTAGE CLASS 1

KEY FEATURES

- Directly molded housing prevents moisture ingress
- Safe failure mode in the short circuit test (pre-fail method)
- Maintenance free
- Superior TOV performance
- High energy handling capability
- Independently tested in accordance with IEC60099-4
- Superior protection margins
- Hydrophobic silicone housing for outdoor use
- Excellent cantilever and tensile performance
- Excellent mechanical, vibration and impact withstand capability

TE Connectivity's (TE) Bowthorpe EMP pioneered the development of polymeric composite housed surge arresters in the early 1980's and since then has a proven service experience across the globe, operating in the worlds toughest environments.

Bowthorpe EMP surge arresters provide active over voltage protection that contributes directly to protecting expensive assets and improved reliability of your system. Bowthorpe EMP DA class 1 silicone surge arresters have been designed and tested to meet our customers demands with reliability and offering improved operational performance.

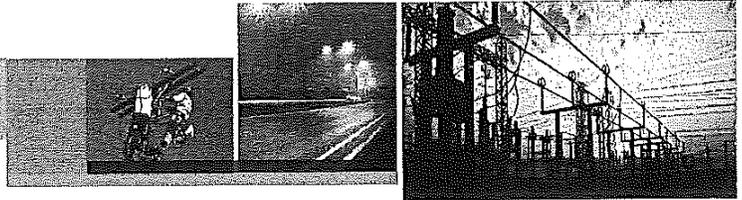
The DA development was based on more than 40 years of experience in arrester design and manufacture within TE Energy. The DA series is independently tested and qualified as per IEC 60099-4 standards and all test reports are independently certified.

Features include proven moisture sealing technology, nontracking insulating silicone materials, fully integrated, single piece and void-less design, reliable earth lead disconnect, safe mode of failure, and quality.

Applications include protection of MV networks and equipment from switching and lightning surge related over-voltages in areas with relatively high iso-keraunic levels. Suitable for both outdoor and indoor use to protect transformers and cable terminations.

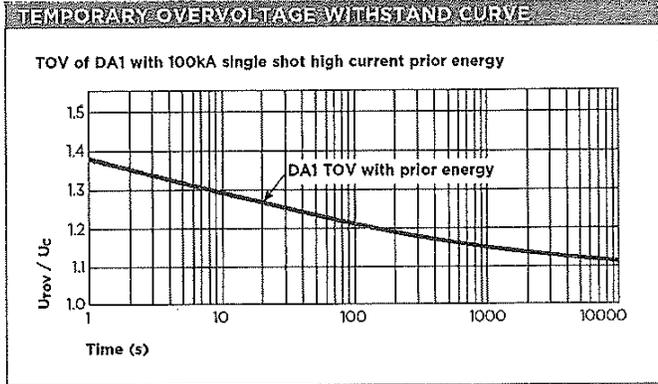
Customers can count on consistent, high quality products, driven by TE's proven innovation and backed by our extraordinary customer support.

Medium Voltage Surge Arrester - DA1 Series



High quality design and manufacturing,
ISO 9001 and 14001 compliant.

DA1 series	4 - 39 kV
Rated discharge current (8/20 μ s)	10 kA
Line discharge class 1 according to	IEC 60099-4
Operating duty impulse withstand current (4/10 μ s)	100 kA
Long duration current impulse (2000 μ s)	325 A
10 second TOV, (U_{TOV} / U_c)	1.29 * U_c
High current short circuit: (pre-failing method) (Safe non-shattering failure mode)	21 kA
Energy	5.6 kJ/kV
Ambient temperature range	- 60°C to + 60°C



U_{TOV} = temporary overvoltage withstand

Description	U_c kV	U_R kV	Residual Voltage - kV (Using IEC Standard Impulses)			Housing size (see Table 3)		
			Lighting - [8/20 μ s]		Steep Lighting - [1/20 μ s]	Switching - [30/60 μ s]	Standard	Extended
			at 10 kA	at 20 kA	at 10 kA	at 500 A		
DA1-04	3,2	4	10,6	11,6	11,1	8,4	A	B
DA1-06	4,8	6	15,9	17,4	16,7	12,7	A	B
DA1-08	6,4	8	21,2	23,2	22,3	16,9	A	B
DA1-10	8	10	26,5	29,1	27,9	21,1	A	B or C
DA1-12	9,6	12	31,8	34,9	33,4	25,3	A	B, C or D
DA1-15	12	15	39,8	43,6	41,8	31,6	B	C or D
DA1-18	14,4	18	47,7	52,3	50,2	38	C	B, F or F
DA1-21	16,8	21	55,7	61	58,5	44,3	C	D or F
DA1-22	17,6	22	58,3	63,9	61,3	46,4	D	F or G
DA1-24	19,2	24	63,6	69,7	66,9	50,6	D	F or G
DA1-27	21,6	27	71,6	78,4	75,2	56,9	F	G or H
DA1-30	24	30	79,5	87,2	83,6	63,3	F	G or H
DA1-33	26,4	33	87,5	95,9	92	69,6	G	H
DA1-36	28,8	36	95,4	104,6	100,3	75,9	G	H
DA1-39	31,2	39	103,4	113,3	108,7	82,2	H	--

U_c = Continuous operating voltage
 U_R = Rated voltage

Housing Size	Spacers	Impulse Voltage (10/50 μ s) kV	Power Frequency (WET) withstand kV	Flashover Distance (mm)	Creepage Length (mm)	Height (body) (mm)	Weight (kg)
A	4	134	50	152	329	147	1,2
B	5	160	56	177	404	172	1,4
C	7	194	66	227	553	222	1,8
D	8	205	75	252	627	247	2
F	10	427	102	302	776	297	2,6
G	12	273	122	352	925	347	2,9
H	14	295	135	402	1074	397	3,4

ORDERING INFORMATION

For accessory range and ordering information please refer to brochure EPP-1098 or e-mail us at surgearresters@te.com.

Example of a complete part description: DA1-12B-FOFONO-S

* FOFONO accessories: M12 studs with fasteners for standard cable lug connection

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Към Приложение № № 2.2; 2.3; 2.4; 2.5

КАТАЛОГ

ЗА

Триполюсни разединители за монтиране на открито -

РОМ 24 kV/16 kA за 200 A и 400 A

Триполюсни разединители секционен тип за монтиране

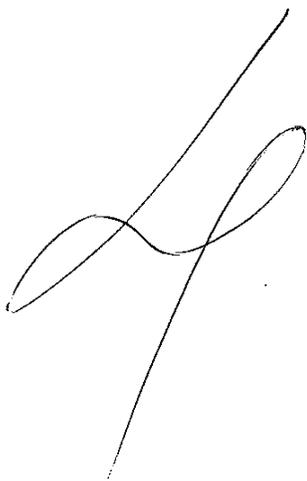
на открито - РОС 24 kV/16 kA за 200 A и
400 A

Изолатори подпорни керамични тип ИППО – 10 kV и 20 kV,

за монтиране на открито

Основа за предпазител 20 kV, с два отвора,

за монтиране на открито



PRODUCT CATALOG

