delvalle®

Enclosures & Enclosures for Special Requirements

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THERMAL INSULATION FOR ELECTRICAL PANELS

TERMOTISA SERIES





WE PUT AT YOUR DISPOSAL

We offer over **45 years** providing solutions to demanding customers who require very specific characteristics and behaviour according to the sector and their needs.

WHEREVER YOU GO

We are committed to working closely with our customers, providing them with **exceptional service** and offering an advanced and extensive range of products with very competitive prices.

HIGH STANDARD OF QUALITY AND SERVICES

We only use materials provided by companies who offer the very **highest quality**, suitable and certified products. Our success is due to top quality assurance: ISO 9001, SGS, UL, TÜV, ISO 14000 and Ohsas 18001.

CUSTOMIZE TOTALLY YOUR ENCLOSURE

Our production systems can give custom-made solutions **on demand.** Every colour from RAL chart is available to be personalized. A variety of protection standards thanks to our own painting facilities.

CONTACT US

Confidentiality, reliability & quality

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ALSO ONLINE

Please contact our technical sales department

A team of professionals with high experience and ability to solve all your queries



THERMAL INSULATION FOR ELECTRICAL PANELS
TERMOTISA X100 SERIES



Example

Stable, Self-Extinguishing and High Quality Material

In Delvalle we know our customers concerns to avoid enclosures overheating from external sources, such as the sun, heat, extreme heat locations,...
Delvalle I+D deparment has specially designed the insulating TermoTisa X100, in 15mm polyurethane with a coated porous braided polyestar support sheet, to be installed on the enclosure walls and so ensure a thermal insulation of 0.0365 W/mk.
Given these properties we assure a perfect insulation between the outside and the inside of the enclosure.
The material is resistant to liquids; doesn´t peel off, is self extinguishing and insulates the electrical current.

APPLICATIONS

- All our range of enclosures and especially the outdoor enclosures.
- Applications for outdoors.
- Enclosures near heat sources.
- When we want to save energy.
- For electrical insulation of the walls inside the enclosure.

FOR MORE INFORMATION CLICK HERE



THERMAL INSULATION FOR ELECTRICAL PANELS **TERMOTISA X100 SERIES**

DATA SHEET

THERMAL AND ELECTRICAL INSULATION - TERMOTISA X100 SERIES (FILM TECHNICAL CHARACTERISTICS)				
TESTS / PROPERTIES	MAX. DATA OR VALUE	MIN. DATA	UNIT OF MEASUREMENT	STANDARD
Base (composition)	Thermoadhesive film in polyurethane	-	-	-
Thickness	30	20	Microns	ISO 4593:1993
Density	1.18	-	g/cc	DIN 53479/54
Longitudinal tensile strength	45	35	Mpa	ISO 527-3/2/200
Elongation at longitudinal rupture	500	400	%	
Transverse tensile strength	30	20	Mpa	
Elongation at transverse rupture	550	450	%	
100% longitudinal elastic module	10	6	Mpa	
100% transverse elastic module	10	6		
300% longitudinal elastic module	23	15		
300% transverse elastic module	14	8		
Tear resistance (transverse)	>45	-	N/m	DIN 53515/90
Tear resistance (longitudinal)	>70	-	N/m	
Working temperature range	170-180 (film) and 85-100 (thermoadhesive)	-	°C	ISO 11357-1
Reach Directive	Meet	-	-	1907/2006
RoHS Directive				2002/95/CE

THERMAL AND ELECTRICAL INSULATION - TERMOTISA X100 SERIES (FOAM TECHNICAL CHARACTERISTICS)				
TESTS / PROPERTIES	MAX. DATA OR VALUE	MIN. DATA	UNIT OF MEASUREMENT	STANDARD
Base (composition)	Polyester	-	-	-
Cell structure	Open cells	-	-	-
Density	11	4	kg/m³	ISO 845
Tensile strength	>120	-	kPa	ISO 1798
Elongation	>110	-	%	
Indentation hardness (ILD) 25%	164	122	N	ISO 2439
Indentation hardness (ILD) 40%	202	150	N	
Indentation hardness (ILD) 65%	403	298	N	
40% compressive strength	5	3.8	kPa	ISO 3386/1
Thermal conductivity at 10°C	0.0365	-	W/mk	DIN EN 12667
75% remaining deformation	<5	-	%	ISO 1856
Working temperature range	120	-40	°C	-
Fire resistance "automotive" (C.C.)	<100	-	mm / min.	FMVSS302
"French" fire resistance	M1 (10mm) and M4 (40mm)	-	Category	NF P92-501
Reach Directive	Meet	-	-	1907/2006
RoHS Directive				2002/95/CE

THERMAL AND ELECTRICAL INSULATION - TERMOTISA X100 SERIES (ADHESIVE TECHNICAL CHARACTERISTICS)				
TESTS / PROPERTIES	MAX. DATA OR VALUE	MIN. DATA	UNIT OF MEASUREMENT	STANDARD
Base (composition)	Acrílico modificado	-	-	-
Adhesive weight	80	-	gr/m²	-
Support type	Malla Polyester multidireccional	-	-	-
Weight of the protector	80	-	gr/m²	-
Adhesive Thickness	0,09	0,05	mm	-
Adhesion power stripped 90° in 10´ steel	17 (longitudinal) and 13 (transverse)	-	N/25mm	UNE-EN 1939
Adhesion power stripped 90° in 24h steel	16 (longitudinal) and 12 (transverse)			
Adhesion power stripped 90° in 48h steel	18 (longitudinal) and 13 (transverse)			
Adhesion power stripped 180° in 10´ steel	15.25 (longitudinal) and 15.80 (transverse)			
Adhesion power stripped 180° in 24h steel	14.39 (longitudinal) and 15.67 (transverse)			
Adhesion power stripped 180° in 48h steel	15.27 (longitudinal) and 16.16 (transverse)			
1´ steel tack	13.5	-	N/625mm²	FINAT N° 9
Temperature resistance	100	-	°C	MEF 002-A
Reach Directive	Meet	-	-	1907/2006
RoHS Directive				2002/95/CE

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THERMAL INSULATION FOR ELECTRICAL PANELS
TERMOTISA X220 SERIES



Example

Resistant Up to 220°C

TermoTisa X220 is an insulating product resistant to extreme temperatures of 220°C for 1.000 hours, it contains the high quality melamine based foam. From the combination between its chemical composition, essentially of highly crosslinked melamine resin and its open cell structure, a non-combustible low-density foam emerges, with great flexibility at low temperatures and excellent thermal and acoustic insulation properties.

FOR MORE INFORMATION CLICK HERE

APPLICATIONS

TermoTisa X220 is a perfect material for multiple industrial electrical applications in the railway sector, aeronautics, petrochemicals,... and gives adequate response to the needs of thermal insulation in electrical assemblies that require thermal insulation to protect the interior from high external temperatures.



THERMAL INSULATION FOR ELECTRICAL PANELS **TERMOTISA X220 SERIES**

DATA SHEET

THERMAL AND ELECTRICAL INSULATION - TERMOTISA X220 SERIES (FILM TECHNICAL CHARACTERISTICS)				
TESTS / PROPERTIES	MAX. DATA OR VALUE	MIN. DATA	UNIT OF MEASUREMENT	STANDARD
Base (composition)	Aluminum foil 12-18 mic + fiberglass mesh + LDPE	-	-	-
Weight	86 (aprox.)	70 (aprox.)	gr/m²	EN ISO 2286-2
Tensile strength	250	-	N/50mm	DIN 53354
Elongation	4	-	%	
Water vapor permeability	< 0.02	-	g/m²x24h	DIN 53122
Infrared ray reflection	85 (aprox.)	-	%	-
Acid resistance	Good resistance to organic acids	-	-	-
"French" fire resistance	M0	-	Category	NF P92-501
Tear resistance (transverse)	>45	-	N/m	DIN 53515/90
Temperature resistance	+350	-40	°C	-
Reach Directive	Meet	-	-	1907/2006
RoHS Directive 2				2011/65/CE
Observations	Aluminum surface with corona treatment			

THERMAL AND ELECTRICAL INSULATION - TERMOTISA X220 SERIES (FOAM TECHNICAL CHARACTERISTICS)				
TESTS / PROPERTIES	MAX. DATA OR VALUE	MIN. DATA	UNIT OF MEASUREMENT	STANDARD
Base (composition)	Flexible melamine resin foam	-	-	-
Cell structure	Open cells	-	-	-
Density	11	4	kg/m³	ISO 845
Tensile strength	>90	-	kPa	ISO 1798
Elongation	>21	-	%	
Compressive strength	>4	-	hPa	EN ISO 3386-1
Thermal conductivity at 10°C	0.038	0.032	W/mk	DIN EN 12667
Fire resistance "DIN 5510 Classification Railway Vehicles" (German standard)	S4-ST2-SR2 (60mm)	-	Category	DIN 5510
"German" fire resistance	B1	-	Category	DIN 4102-1
Fire resistance "EN 45545-2 Classification Railway Vehicles"	HL3 (>= 5mm)	-	Category	EN 45545-2
Toxicity of fumes "Rail Vehicles"	FED <=1 (25mm) - Meet	-	Category	DIN 5510 - ISO 5659-2
Application maximum temperature	220 (1000 h), 200 ISO 3386-1 (5000 h), 180 (20000 h)	-40	°C	ISO 3386-1
Reach Directive	Meet	-	-	1907/2006
RoHS Directive				2002/95/CE

THERMAL AND ELECTRICAL INSULATION - TERMOTISA X220 SERIES (ADHESIVE TECHNICAL CHARACTERISTICS)				
TESTS / PROPERTIES	MAX. DATA OR VALUE	MIN. DATA	UNIT OF MEASUREMENT	STANDARD
Base (composition)	Modified double sided acrylic	-	-	-
Adhesive weight	120	-	gr/m²	-
Support type	Cellulose	-	-	-
Type of protector	Yellow silicone paper	-	-	-
Weight of the protector	80	-	gr/m²	-
Thickness del protector	0.07 aprox.	-	mm	-
Colour protector	Yellow	-	-	-
Adhesion power stripped 180° in 10´ steel	15	2	N/25mm	UNE-EN 1939 C - D
Adhesion power stripped 90° in 24h steel	18	4		
Adhesion power stripped 90° in 48h steel	19	5		
Adhesion power stripped 180° in 10´ steel	35	7		
Adhesion power stripped 180° in 24h steel	35	8		
Adhesion power stripped 180° in 48h steel	35	9		
1´ steel tack	17.5	-	N/625mm²	FINAT Nº 9
Moisture resistance	30	-	Horas	MEF 001-A
Working temperature range	120	-30	°C	-
Reach Directive	Meet	-	-	1907/2006
RoHS Directive				2002/95/CE

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Enclosures & Enclosures for Special Requirements





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Contact us, we will be available at any time

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