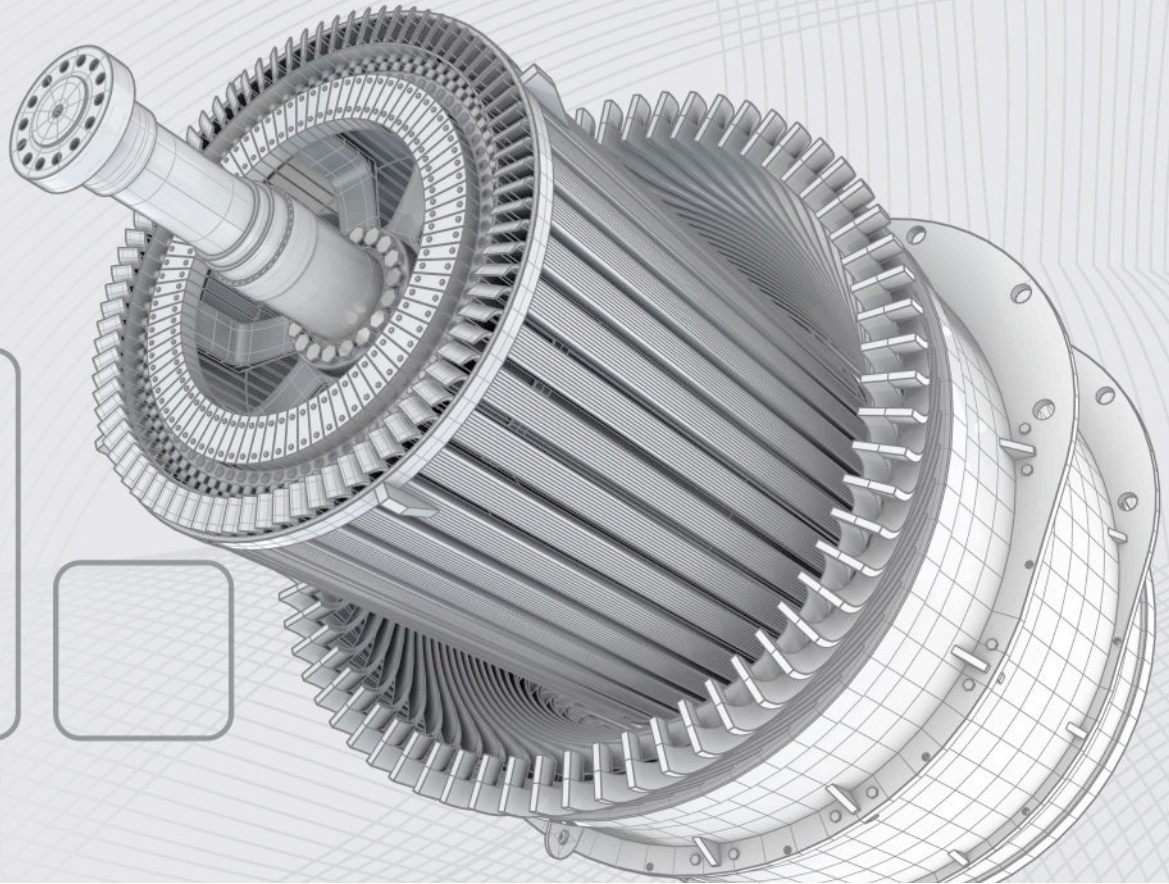
T-E-Klebetechnik
Anwendungs-, Verfahrens- und Dosiertechnik
40 Jahre Klebstofferfahrung

HUNTSMAN
Enriching lives through innovation

Advanced Materials

Raising insulation performance in generators and motors



Quarter 2, 2012

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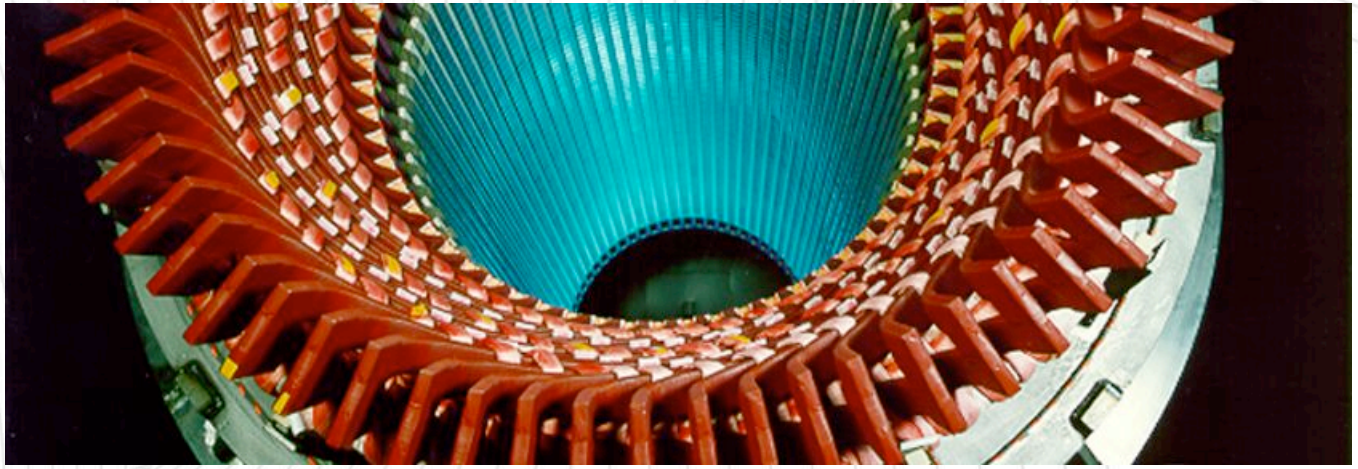
Raising safety and performance



Encapsulation and impregnation solutions for low and high voltage applications

- High mechanical strength
- Strong adhesion to various metals and substrates
- Excellent dielectric properties
- Low resin viscosity ensures homogenous impregnation
- Very high temperature resistance
- Withstand extreme thermal cycling
- The trend to an increased power
- Heat conductive

Improved endurance for small motors

Main features and benefits

- Vibration damping
- High temperature resistance
- High service temperature

Solutions for high thermal conductivity

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Araldite®
build
bond
protect

Araldite® XB 2710 / Aradur® XB 2711

Curing conditions	Hot	
Tg	120°C	ISO 11357-2
CTE	24 / 67 $10^{-6}K^{-1}$	Below Tg / Above Tg
Thermal class	H	IEC 60085
Thermal conductivity at 25°C	1.5 W/mK	ISO 8894-1
Flammability	UL 94 / V-0 (12 mm)	Class / Requirements

Aratherm® XB 2731

Curing conditions	Hot	
Tg	160°C	ISO 11357-2
CTE	20 / 55 $10^{-6}K^{-1}$	Below Tg / Above Tg
Thermal class	H*	IEC 60085
Thermal conductivity at 25°C	3.0 W/mK	ISO 8894-1
Flammability	UL 94 / V-0 (12 mm)	Class / Requirements

*estimated

Solutions for high thermal conductivity

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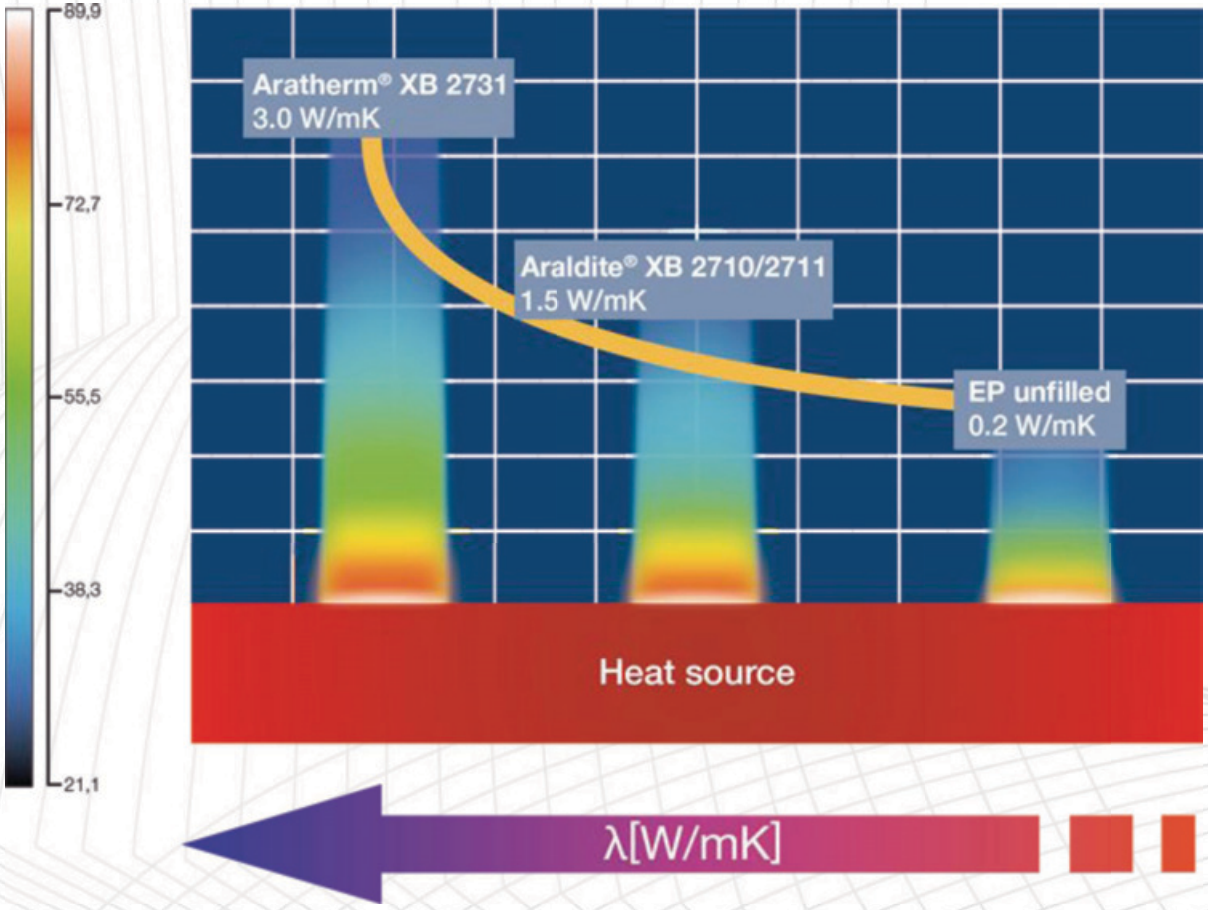
Thermal conductive epoxy solutions



Solutions for fast processibility

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protect

Araldite® CW 5725-3 / Aradur® HY 5726

Curing conditions	Hot	
Tg	144°C	ISO 11357-2
CTE	35 $10^{-6}K^{-1}$	Below Tg / Above Tg
Thermal class	H*	IEC 60085
Thermal conductivity at 25°C	0.6 W/mK	ISO 8894-1
Viscosity at 60°C	42 mPa.s	Class / Requirements

*estimated

Araldite® XB 2252 / Aradur® XB 2253

Curing conditions	Cold	
Tg	68°C	ISO 11357-2
CTE	60 / 100 $10^{-6}K^{-1}$	Below Tg / Above Tg
Thermal class	F	IEC 60085
Thermal conductivity at 25°C	0.66 W/mK	ISO 8894-1
Viscosity at 40°C	23 000 mPa.s	Class / Requirements

Solutions for crack and thermal resistance

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Araldite®
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protect

Araldite® CW 229-3 / Aradur® HW 229-1

Curing conditions	Hot	
Tg	110 - 125°C	ISO 11357-2
CTE	30 / 100 $10^{-6}K^{-1}$	Below Tg / Above Tg
Thermal class	H	IEC 60085
Thermal conductivity at 25°C	0.65 - 0.75 W/mK	ISO 8894-1
Flammability	UL 94 / V-1 (12 mm), HB (4 mm), NF 16-101/102, I3F0/2	Class / Requirements
K_{1c}	2.8 - 3.0 mPa.s/m2	
G_{1c}	70 - 750 J/m2	
Mechanical properties	Rigid	

Solutions for crack and thermal resistance

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build
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protect

Araldite® CW 5730N / Aradur® HY 5731

Curing conditions	Hot	
Tg	30°C	ISO 11357-2
CTE	40 / 100 $10^{-6}K^{-1}$	Below Tg / Above Tg
Thermal class	F	IEC 60085
Thermal conductivity at 25°C	D70 W/mK	ISO 8894-1
Flammability	UL 94 / V-0 (6 mm)	Class / Requirements
K_{1c}	n.a.	
G_{1c}	n.a.	
Mechanical properties	Flexible	

Solutions for crack and thermal resistance

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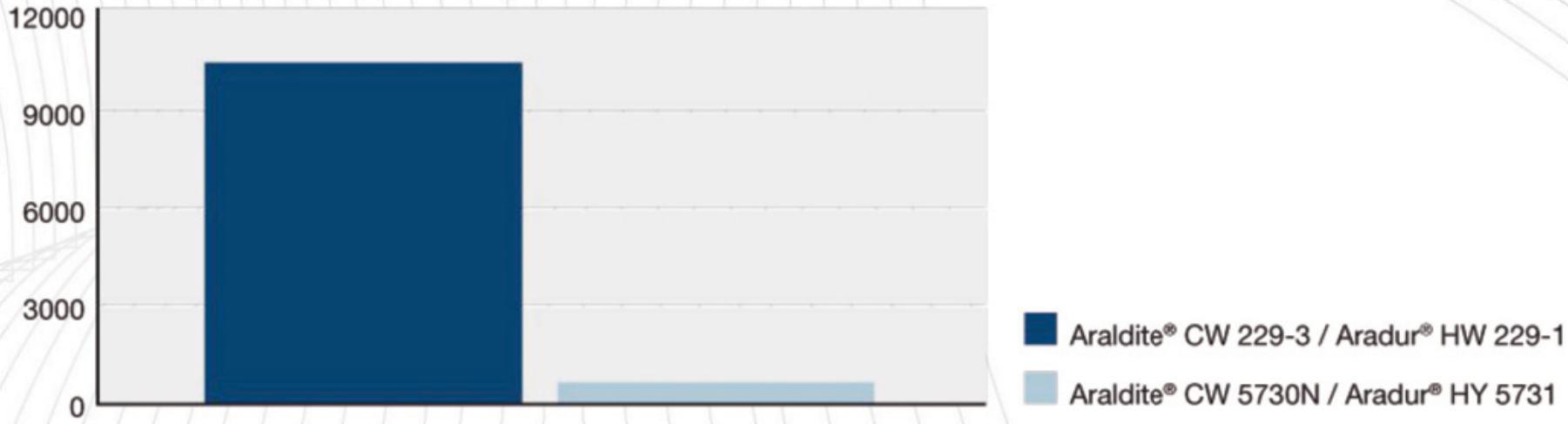
Tensile modulus Emod

in MPa (ISO 527-2)



VPI systems for all insulation processes

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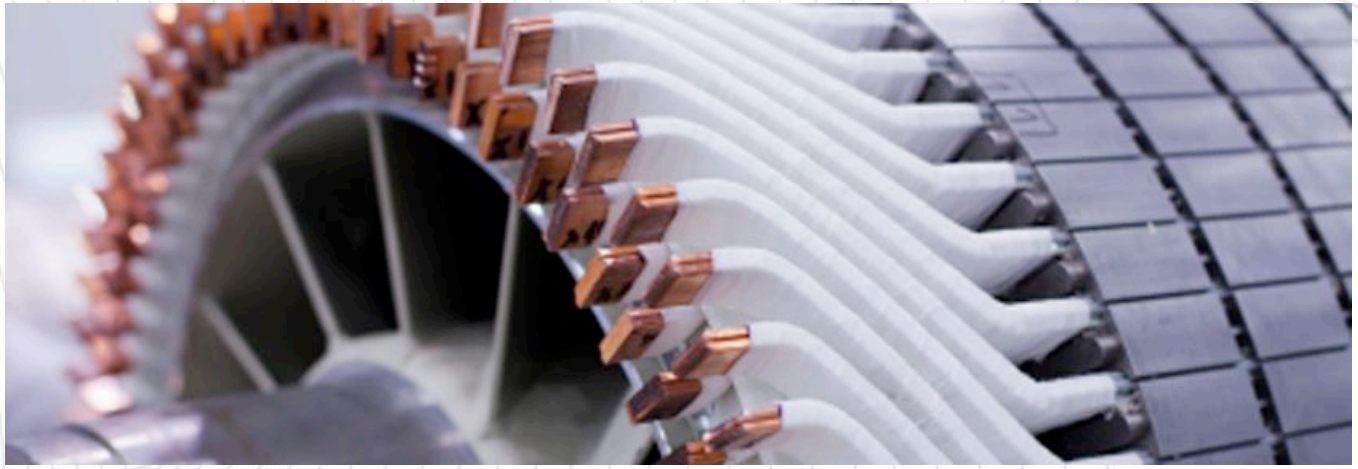

Vacuum Pressure Impregnation (VPI) process steps

- Drying the winding
- Flooding with the impregnating system under vacuum
- Impregnating under pressure
- Draining the resin and removing the system to a storage tank
- Gelling and curing

VPI systems for all insulation processes

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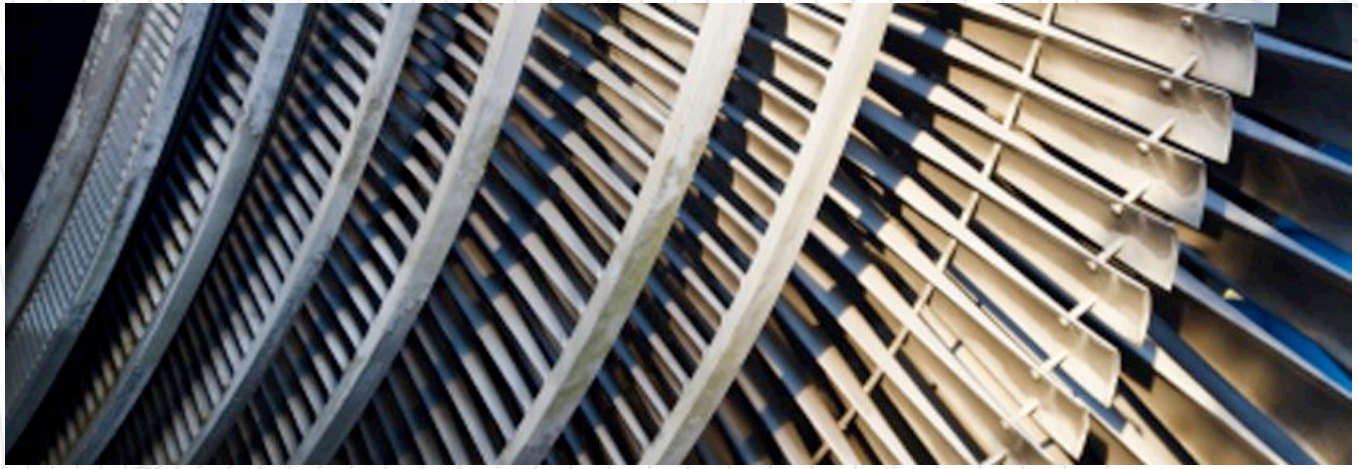

VPI vs prepreg

Depending on the size of the machine and the size of the impregnating plant the choice will be between either single bar or global impregnation. The majority of manufacturers have switched to Vacuum Pressure Impregnation, because VPI offers some advantages in mechanical and electrical properties compared to the prepreg method.

For example with global impregnation, in addition to the lower risk of voids, much better fixation of the coils and especially the end windings is possible.

Solution for easy processing

Resin XD 4410

Mix ratio	One-component
Tg	125°C
Thermal class	F
Viscosity at 25°C	1 500 mPa.s
Manufacturing process	Vacuum Pressure Impregnation
Key properties	• One-component • Excellent dielectric properties

Solution for high temperature resistance

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Araldite® MY 790-1 CH / Aradur® HY 1102

Mix ratio	100 / 90 - 120 pbw
Tg	143°C
Thermal class	H
Viscosity at 25°C	400 mPa.s
Manufacturing process	Vacuum Pressure Impregnation
Key properties	• Most widely used. Proven with all major mica tapes. • Thermal class H • High Tg

Solution for high tracking resistance

Araldite
build
bond
protect

Araldite® CY 192-1 / Aradur® HY 918

Mix ratio	100 / 100 pbw
Tg	92°C
Thermal class	F
Viscosity at 25°C	400 mPa.s
Manufacturing process	Vacuum Pressure Impregnation
Key properties	• Outstanding arc and tracking resistance • High flexibility • Crack resistance

Powerful partnership with Isovolta

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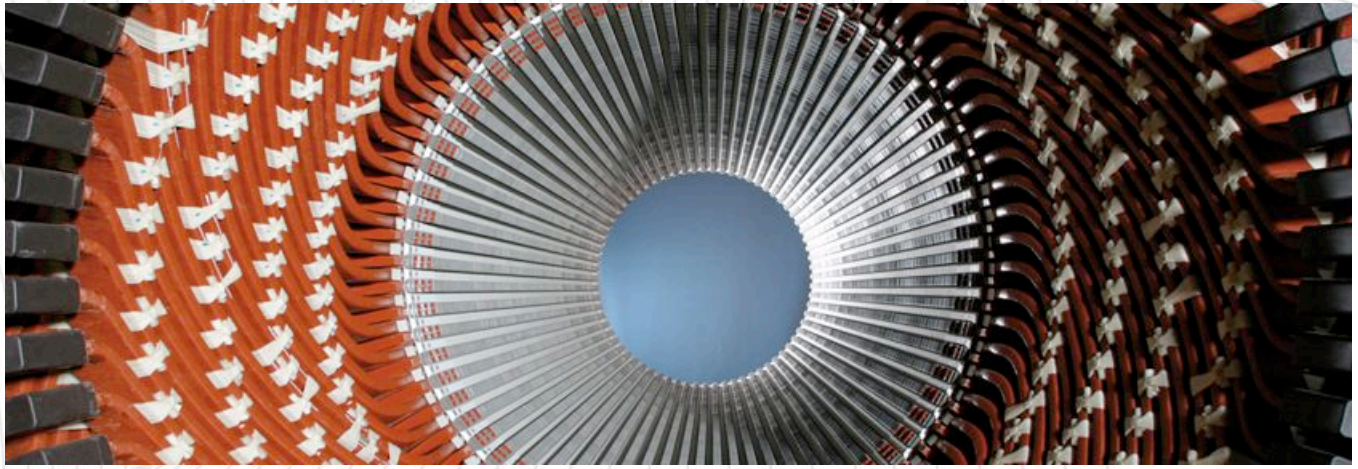

A reliable high performance electrical insulation system

Insulation is the key for electrical power generation.
We offer a reliable quality of insulation systems which is required for technical and economic success of power generation.

In partnership with
isovolta GROUP

Powerful partnership with Isovolta

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Araldite impregnation systems

Poroband® / Porofab® / mica tape

Main features

- Certified as combination of impregnation system and mica tape
- Solvent free
- Class H
- Tested and approved by Isovolta

Advantages

- Mica tape and impregnation resin tested as system
- Thermal and electrical resistance
- Combined know how of two market leaders
- Proven performance of Araldite® and Poroband® / Porofab® brand

In partnership with

isovolta GROUP

Keep our products at your fingertips

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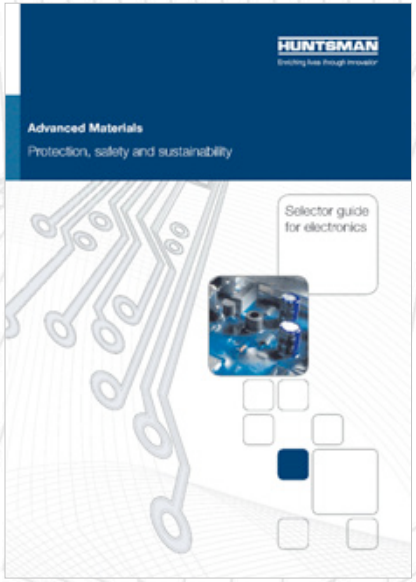
View the brochure on SlideShare

With this brochure get an overview of our comprehensive range of insulation systems for electronics applications.



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For more information

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