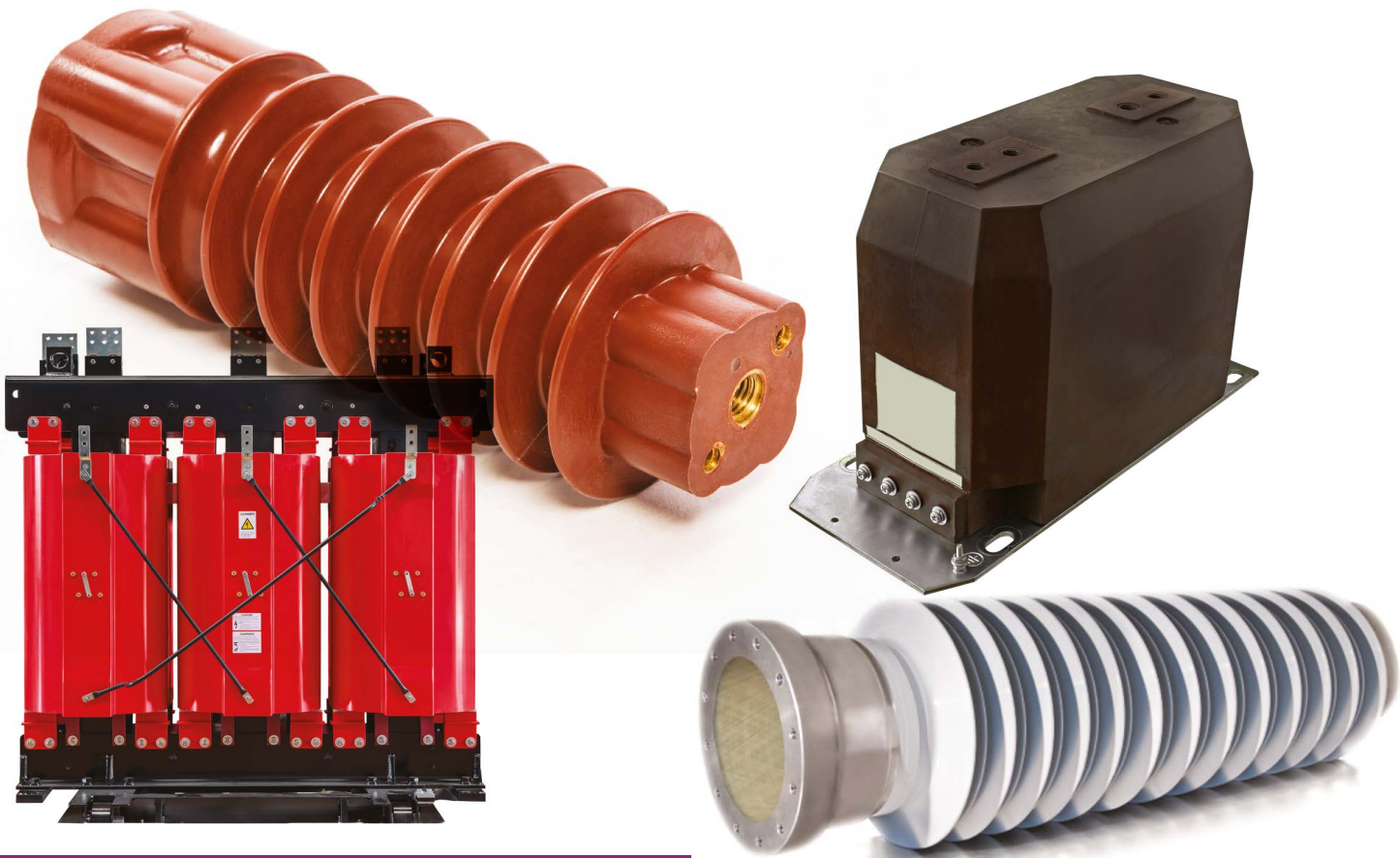


ULTICAST® POWER PRODUCTS

MV & HV Insulating Resins



Guide To Selection

Advanced Insulating Materials for the Electrical Industry

Insulators & Bushings



Ulticast® Hot Cure resin systems allow cost effective castings to be produced time after time. These systems have been adapted for ease of application and lack of waste.

Composite Insulators & Filament Wound Applications



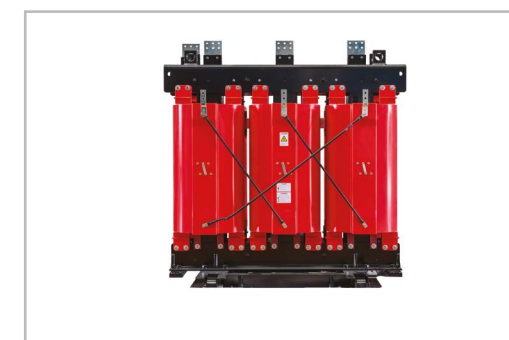
Ulticast® offer the most diverse range of resins for use with Glass Fibre applications designed specifically for each type of product. Pigmented or otherwise, the products exhibit outstanding performance characteristics in demanding applications.

Instrument & Current Transformers



Instrument & Current Transformer applications require high crack resistance from the casting resin. Ulticast® Casting systems offer very resilient, high performance casting systems specifically designed for this application.

Dry-type Distribution Transformers



Ulticast® Casting resins for large castings are offered in multiple formats to suit a variety of application equipment. Whether it be 2 or 4 component resin, the quality delivered is the same time after time.

Insulators & Bushings



Epoxy resins are used in the manufacture of electrical bushings and insulators. They comprise of a combination of materials adapted to suit the specific application.

Standard Epoxy resins mixed with diluents and hardeners, are then mixed with Silica Flour or Quartz to make a final formulation. This mixture is usually applied by Automatic Pressure Gelation (APG) or Vacuum Casting to provide a 'Shrinkage free' casting. Ulticast® resins are formulated for both indoor and outdoor applications, to the highest standard allowing trouble free application each and every time.

Ulticast® Hot Cure resin systems allow cost effective castings to be produced time after time. These systems have been adapted for ease of application and lack of waste.

Monolithic Insulators & Bushings - Casting systems

Product Designation	Mix Ratio	Tg	Thermal Class	Manufacturing Process	Main Features
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Indoor Applications

Ulticast® A-1 NM/G/Z/Quartz flour	100:85:(0-25):(0,2-1,0):(320-440)	95-105	F	Vacuum casting, automatic pressure gelation	Excellent overall properties. The manufacturer can optimise the amount of flexibiser, accelerator and quartz flour depending on the final product and applied technology *Depends on amount of Flex G.
Ulticast® TC-24 A/B/Z Quartz flour	100:100:0,7:(320-400)	95-105	F	Vacuum casting, automatic pressure gelation	Good thermal shock and crack resistance
Ulticast® TC-243 A/B/Quartz flour	100:100:(320-400)	95-105	F	Vacuum casting, automatic pressure gelation	As Ulticast® TC-24, but being 2K system easier dosage
Ulticast® A-1 NT/G/Z/Quartz flour	100:90:(5-20):(0,2-1):(320-420)	95-105	H	Vacuum casting, automatic pressure gelation	As Ulticast® A-1/NM/G/Z/Quartz flour, but class H. *Depends on amount of Flex G.

Outdoor Applications - all types show excellent UV resistance

Ulticast® KT-5 A/B/D/Quartz flour	100:100:(0,2-1):(320-400)	60-70	F	Vacuum casting, automatic pressure gelation	Excellent overall properties
Ulticast® KT-6 A/B/D/Quartz flour	100:92:(0,2-1):(320-400)	105-110	F	Vacuum casting, automatic pressure gelation	Very high Tg and mechanical properties
Ulticast® KT-51 A/B/Quartz flour	100:100:(300-400)	50-60	F	Vacuum casting, automatic pressure gelation	Very good thermal shock and crack resistance, and being 2K system easier dosage

Composite Insulators & Bushings - Impregnation systems



The manufacture of composite insulators is a complex process. The manufacture of the Glass Tube inside the insulator requires a Roving wound Spiral wet winding process, where the Glass fibres are passed through a combination Epoxy formulation to provide a strong, thermally stable and crack free composite tube after curing. Ulticast® resins offer a combination of formulations for Rods and Tubes for Class F & H applications with excellent wetting properties to the glass fibres.

Ulticast® offer the most diverse range of resins for use with Glass Fibre applications designed specifically for each type of product. Pigmented or otherwise, the products exhibit outstanding performance characteristics in demanding applications.

Composite Insulators & Bushings - Impregnation Systems

Product Designation	Mix Ratio	Tg	Thermal Class	Manufacturing Process	Main Features
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For Rods

Ulticast® ER168 and Ulticast® HA081 AC1	100:90	130-135	F	Pultrusion, filament winding	High thermal resistance, Tg and HDT, very good wetting properties to glass fibres, 2K system
Ulticast® FK-8 A/B/Z	100:85:1	130-135	F	Pultrusion, filament winding	As Ulticast® ER168/HA081AC1, but improved wetting properties to glass fibres
Ulticast® FK-11 A/B/Z	100:90:1	150-160	H	Pultrusion, filament winding	As Ulticast® FK-8, but class H

For Tubes

Ulticast® ER168 and Ulticast® HA081 AC1	100:90	130-135	F	Pultrusion, filament winding	High thermal resistance, Tg and HDT, very good wetting properties to glass fibres, 2K system
Ulticast® FK-8 A/B/Z	100:85:1	130-135	F	Pultrusion, filament winding	As Ulticast® ER168/HA081AC1, but improved wetting properties to glass fibres
Ulticast® FK-11 A/B/Z	100:90:1	150-160	H	Pultrusion, filament winding	As Ulticast® FK-8, but class H

For Resin Impregnated Paper Bushings

Ulticast® PI-3 A/B/Z	100:110:0,7		F	Vacuum impregnation	Very low viscosity, excellent mechanical and dielectric properties, good thermal-shock resistance, solvent free system
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Instrument & Current Transformers



Current and Instrument transformers require cost effective solutions and high productivity. Ulticast® resins offer formulations for indoor and outdoor CT and VT applications where outstanding performance and a consistent effective solution are required.

Instrument & Current Transformer applications require high crack resistance from the casting resin. Ulticast® Casting systems offer very resilient high performance casting systems specifically designed for this application.

Systems For Medium Voltage

Product Designation	Mix Ratio	Tg	Thermal Class	Manufacturing Process	Main Features
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Indoor Applications

Ulticast® A-1/ NM/G/Z/ Quartz flour	100:85:(0-25):(0,2-1,0):(320-440)	*	F	Vacuum casting, automatic pressure gelation	Excellent overall properties . The manufacturer can optimise the amount of flexibiser, accelerator and quartz flour depending on the final product and applied technology. *Depends on amount of Flex G.
Ulticast® TC-321 A/B/ Quartz flour	100:75:(250-320)	50-60	F	Vacuum casting, automatic pressure gelation	Very good thermal shock, crack and low temperature resistance, 2K system
Ulticast® D-5ML/NM/Z/ Quartz flour	100:80:(0,2-0,7):(250-320)	55-65	F	Vacuum casting, automatic pressure gelation	Excellent mechanical and dielectrical properties, very good thermal shock, crack and chemical resistance.
Ulticast® D-5MTL/NT/Z/ Quartz flour	100:84:(0,2-0,7):(250-320)	65-75	H	Vacuum casting, automatic pressure gelation	As Ulticast® D-5ML/NM/Z/Quartz flour, but class H

Outdoor Applications - all types show excellent UV resistance

Ulticast® KT-5 A/B/D/Quartz flour	100:100:(0,2-1):(320-400)	60-70	F	Vacuum casting, automatic pressure gelation	Excellent overall properties
Ulticast® KT-51 A/B/Quartz flour	100:100:(300-400)	50-60	F	Vacuum casting, automatic pressure gelation	Very good thermal shock and crack resistance, and being 2K system easier dosage
Ulticast® KT-6 A/B/D/Quartz flour	100:92:(0,2-1):(320-400)	105-110	F	Vacuum casting, automatic pressure gelation	Very high Tg and mechanical properties

Dry-type Distribution Transformers



Dry Type transformers can be manufactured in a variety of ways. In recent years Cast Resin Transformers have become the most cost effective solution to mass manufacture, of MV and HV transformers. AEV offer a variety of Class F or H Casting resins for this application available from manufacturing locations around the world.

Filament winding of Coils in MV and HV transformers offers a flexible and diverse manufacturing method. Ulticast® have long established relationships with a variety of well respected transformer manufacturers using this method.

To find out more please visit www.theaevgroup.com.

Ulticast® Casting resins for large castings are offered in multiple formats to suit a variety of application equipment. Whether it be 2 or 4 component resin, the quality delivered is the same time after time.

Indoor Applications

Product Designation	Mix Ratio	Tg	Thermal Class	Manufacturing Process	Main Features
Ulticast® D-5ML/NM/Z	100:80: (0,2-0,7)	55-65	F	Pultrusion, filament winding	Excellent mechanical and dielectrical properties, very good thermal shock, crack and chemical resistance. Special system for production of Resiblock transformers.
Ulticast® D-5MTL/NT/Z	100:84: (0,2-0,7)	65-75	H	Pultrusion, filament winding	As Ulticast® D-5ML/NM/Z but class H
Ulticast® D-5569/NM/Z	100:55: (0,2-0,5)	55-65	F	Pultrusion, filament winding	As Ulticast® D-5ML/NM/Z but flame retardant V1/4mm
Ulticast® D-5MTL/NTZ-1	100:86	65-76	H	Pultrusion, filament winding	As Ulticast® D-5MTL/NT/Z but 2K system
Ulticast® TC-243 A/B/ Quartz flour	100:100: (320-400)	95-105	F	Vacuum casting, automatic pressure gelation	As Ulticast® TC-24, but being 2K system easier dosage
Ulticast® TC-248 A/B/ Quartz flour	100:100: (320-400)	50-55	F	Vacuum casting, automatic pressure gelation	As Ulticast® TC-243, but very good thermal shock, crack and low temperature resistance.
Ulticast® TC-321 A/B/ Quartz flour	100:75: (250-320)	50-60	F	Vacuum casting, automatic pressure gelation	Very good thermal shock, crack and low temperature resistance. 2K system

Ancillaries - Coloring Pastes Product Designation	Benefits
Coloring pastes for epoxy systems - available in different RAL colors	Uniform and homogenous coloration. Minor effects on the processing and end properties of a casting resin system. Light and heat resistance. Pigment particle size below 50 µm.

Flexibilisers Product Designation	Color	Viscosity	Benefits
Conditions	visual	dynamic 25°C	In combination with Ulticast® epoxy resin systems
Norm		ISO 12058	
Unit	pbw	mPa.s	
Flex G	Colorless liquid	45-95	Low viscosity, solvent-free, non-reactive, applied mainly as a plasticizer of epoxy resin-acid-anhydride systems hardening at high temperature.
Flex D	Clear liquid	45-95	Low viscosity, solvent-free, non-reactive, applied mainly as a plasticizer of epoxy resin-acid-anhydride systems hardening at high temperature.



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