Datasheet

3M

RoHS
2002/95/EC
REACH
1907/2007/EC

Scotchcast™ Resin N°1402FR

Electrical Insulating Resin

Product Description

Scotchcast™ 1402FR Resin is a halogen free, flame retardant, two component polyurethane resin for room temperature curing. The resin has been designed for flame retardant and chemical resistant property as well as electrical insulation and mechanical protection of electrical cables joints.

Scotchcast™ 1402FR resin is classified as MIW (medium voltage insulation water curable) according Cenelec HD 631.1 S2 Standard.
Once the hardening is complete, the resin provides impact resistance and durability against moisture, hydro carbons and atmospheric corrosion.

Application

Electrical insulation and mechanical protection of low and medium voltage electrical joints installed for indoor and outdoor, underground and submerged applications in heavy conditions were flame retardancy or resistance against chemicals like hydro carbons is required.

Features

Flame retardant
Halogen Free
Chemical resistant
Good adhesion on metals and different plastics.
Hydrophobic behaviour during the curing stage.
Excellent hydrolytic stability
Available with Closed Mix and Pour Delivery System
Low exothermic reaction temperature.

Process Figures

Mixing Ratio (pbw)	A : B	100 : 21
Pot Life	At 5 °C	35min
	At 23°C	20min
	At 40°C	8min

Typical Properties

Note: This data is not to be used for specifications.
Values listed are typical and should not be considered minimum or maximum.

Property	Value	Specification
Part A		
Density	1,60 g/cm³	ISO 3675
Viscosity 23°C	10.000 mPa.s	EN ISO 2555
Part B		
Density	1,23 g/cm³	ISO 3675
Viscosity 23°C	140 mPa.s	EN ISO 2555
Part A&B (mixed)		
Density	1,57 g/cm³	ISO 3675
Viscosity 5°C	mPa.s	EN ISO 2555
Viscosity 23°C	2.500 mPa.s	EN ISO 2555
Exothermic Reaction Temp 40°C	65 °C	HD 631.1 S2
Hydrophobic Behaviour	Passed	HD 631.1 S2
Volume Shrinkage	3,0 %	EN ISO 3521

Part A&B (cured*)

Mechanical properties

Property	Value	Specification
Hardness Shore D	75	EN ISO 868
Tensile Strength	25 MPa	EN ISO 527
Elongation at Break	2 %	EN ISO 527
Impact Strength (without notch)	>5 KJ/m²	EN ISO 179

Electrical properties

Property	Value	Specification
Volume resistivity		IEC 60250
at 23 °C	8,0E+14 Ωcm	
at 80 °C	2,5E+11 Ωcm	
Dielectric Strength		EN 60243-1
at 23 °C	>20 kV/mm	
at 80 °C	>20 kV/mm	
Dissipation factor		IEC 60250
at 23 °C	<0,04	
at 80 °C	<0,13	
Dielectric constant		IEC 60250
at 23 °C	<6	
at 80 °C	<8	

Elect. prop. after dry ageing

Property	Value	Specification
Volume resistivity at 23 °C	> 1,0E+14 Ωcm	IEC 60250
Dielectric Strength at 23 °C	> 20 kV/mm	EN 60243-1
Dielectric constant at 23°C	<6	IEC 60250
Property	Value	Specification

Elect. prop. after wet ageing

Property	Value	Specification
Volume resistivity at 23 °C	> 1,0E+14 Ωcm	IEC 60250
Dielectric Strength at 23 °C	> 20 kV/mm	EN 60243-1
Dielectric constant at 23 °C	<6	IEC 60250

Flame retardant properties

Property	Value	Specification
Flammability	V0 (3mm)	UL94
Content of halogen	<0,5 %	EN 5067-2-1
Conductivity of smoke gas	<10 µS/mm	EN 5067-2-2
Acidity of smoke gas	>4,3	EN 5067-2-2

Chemical resistance

Property	Value	Specification
Unleaded petrol (Super 95)	<4,0 %	EN 60455-2
Diesel fuel	<0,05 %	EN 60455-2
Insulating Oil	<0,10 %	EN 60455-2
Hydraulic Oil	<0,10 %	EN 60455-2
Salt solution 10%	<0,30 %	EN 60455-2

*curing and aging cycles according to Cenelec HD631.1 S2

Usage Information:

The resin will be supplied, in two-chamber plastic pouches with peelable barrier in the correct stoichiometric proportion. This type of packaging will assure the correct mixing ratio for applying the resin. The packaging includes a Closed Mix and Pour Delivery System. The integrated pouring spout will be opened while attaching the mixed resin bag to the housing of the joint or by using the supplied piercing key.
For other information, relevant for the usage of the resin, like Gel-Time, Pot-Life, viscosity, density etc. please see above the typical properties.

Storage:

Scotchcast™ 1402FR Resin has a shelf life of at least 36 months when stored between 15 °C and 35 °C with a humidity level < 75 % in the originally sealed bag. The expiration date of each product appears on the product label. Storage beyond the date specified on the label does not necessarily mean that the product is no longer usable. In this case however, it is the responsibility of the user to determine applicability of the resin.

Safety and Handling:

3M provides its customers with a product specific Material Safety Data Sheet (MSDS) to cover potential health effects, safe handling, storage, use and disposal information. 3M strongly encourages its customers to review the MSDS on its products prior to their use.

Product Stewardship:

3M has a fundamental concern for all who make, distribute and use its products, and for the environment in which we live. This concern is the basis of our philosophy and policies by which we assess the health and environmental information on our products and then take the appropriate steps to protect employee, the public health and the environment.

Customer Notice:

3M encourages its customers and potential users of 3M products to review their applications for such products from the standpoint of human health and environmental quality. To help ensure that 3M products are not used in ways for which they were not intended or tested. 3M personnel are available to assist customers in dealing with ecological and product safety considerations. Your 3M sales representative can arrange for the proper contacts.

Regulatory Status:

Scotchcast™ No. 1402FR Resin is in compliance with all European directives and regulations, relevant for this product.
Scotchcast™ No. 1402FR Resin is in compliance to EU directive 2002/95/EC (RoHS) and EU regulation 1907/2007/EC (REACH)

Important Notice

All statements, technical information and recommendations related to the Seller's products are based on information believed to be reliable, but the accuracy or completeness thereof is not guaranteed. Before utilizing the product, the user should determine the suitability of the product for its intended use. The user assumes all risks and liability whatsoever in connection with such use.

Any statements or recommendations of the Seller which are not contained in the Seller's current publications shall have no force or effect unless contained in an agreement signed by an authorized office of the Seller.

The statements contained herein are made in lieu of all warranties, expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose which warranties are hereby expressly disclaimed.

SELLER SHALL NOT BE LIABLE TO THE USER OR ANY OTHER PERSON UNDER ANY LEGAL THEORY; INCLUDING BUT NOT LIMITED TO NEGLIGENCE OR STRICT LIABILITY; FOR ANY INJURY OR FOR ANY DIRECT; INDIRECT; INCIDENTAL OR CONSEQUENTIAL DAMAGES SUSTAINED OR INCURRED BY REASON OF THE USE OF ANY OF THE SELLER'S PRODUCTS.

3M Electrical Markets Division
Carl-Schurz-Straße 1
D-41453 Neuss
Germany