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3M Scotchcast™



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| <p>RoHS 2002/95/EC REACH 1907/2007/EC</p> |
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Electrical Insulating Resin 1402FR

Product Description

3M™ Scotchcast™ Resin 1402FR 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 properties as well as electrical insulation and mechanical protection of electrical cable joints.

The 1402FR resin is classified as MIW (medium voltage insulation water curable) according Cenelec HD 631.1 S2 Standard.

Once cured, the resin provides impact resistance and durability against moisture, hydro carbons and atmospheric corrosion.

Continuous operating temperature of installed product; -40°C to + 110°C

Application

Electrical insulation and mechanical protection of low and medium voltage electrical joints installed for indoor and outdoor, underground and submerged applications in conditions where flame retardancy and/or resistance to chemicals such as hydro carbons is required.

Features

- Flame retardant
- Halogen Free
- Chemical resistant
- Good adhesion to metals and different plastics
- Hydrophobic behaviour during curing
- 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/cm ³ | ISO 3675 |
| Viscosity 23°C | 10.000 mPas | EN ISO 2555 |
| Part B | | |
| Density | 1,23 g/cm ³ | ISO 3675 |
| Viscosity 23°C | 140 mPas | EN ISO 2555 |
| Part A&B (mixed) | | |
| Density | 1,57 g/cm ³ | ISO 3675 |
| Viscosity 23°C | 2.500 mPas | 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 | | |
| 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/m ² | EN ISO 179 |
| Electrical properties | | |
| Volume resistivity | | |
| at 23 °C | 8,0E+14 Ωcm | IEC 60250 |
| at 80 °C | 2,5E+11 Ωcm | |
| Dielectric Strength | | |
| at 23 °C | >20 kV/mm | EN 60243-1 |
| at 80 °C | >20 kV/mm | |
| Dissipation factor | | |
| at 23 °C | <0,04 | IEC 60250 |
| at 80 °C | <0,13 | |
| Dielectric constant | | |
| at 23 °C | <6 | IEC 60250 |
| at 80 °C | <8 | |
| Electrical Properties after dry ageing | | |
| 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 |
| Electrical Properties after wet ageing | | |
| 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

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

Chemical resistance

| | | |
|----------------------------|---------|------------|
| 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, ensuring the correct mixing ratio for applying the resin. This packaging includes a Closed Mix and Pour Delivery System. The integrated pouring spout is opened while attaching the mixed resin bag to the housing of the joint, or by using the supplied opener.

For the 7.18 Litre Mix-pack version of this product, the resin will be supplied in separate cans for component parts A & B in the correct stoichiometric proportion, ensuring the correct mixing ratio when the cans are mixed together. The Mix-pack also includes protective gloves, and a mixing spatula, along with instructions.

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

3M™ Scotchcast™ Resin 1402FR 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

3M™ Scotchcast™ Resin 1402FR is in compliance with all European directives and regulations, relevant for this product.

The 1402FR Resin is in compliance to EU directive 2002/95/EC (RoHS) and EU regulation 1907/2007/EC (REACH)

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