

# 3M™ Scotchcast™

## Electrical Insulating Resin 4 GS in bags

### 1. Product description

3M™ Scotchcast™ Resin 4 GS is a two-component epoxy resin for room temperature curing. The resin has been designed for electrical insulation and mechanical protection of electrical cables joints. The product comes as 2-component resin bags or as a highly practical resin kit. There are various sizes and form factors available for different cable jointing applications.

3M™ Scotchcast™ 4 GS is classified as L-I-W, L-OP-W and M-OP-W according IEC 60455-3-8. Once hardening is complete, the resin provides impact resistance and durability against moisture and atmospheric corrosion. The resin is SVHC-free, free of CMR-substances and does not contain isocyanates.

When combining Part A and Part B, sufficient mixing is indicated by the resin turning a homogenous green colour, changing to darker green when fully cured. Note that colour gradation can change depending on storage conditions and application temperature.

Features of 3M™ Scotchcast™ 4 GS and 3M™ Scotchcast™ 4 GS Resin Kits include:

- ▶ CMR-, Isocyanate-, Halogen-, SVHC-free resin
- ▶ Colour indicator for mixing and curing of resin
- ▶ Strong adhesion of resin to metals and different plastics
- ▶ Enhanced water and humidity resistance during resin curing
- ▶ Greater resistance of resin to humidity whilst in storage
- ▶ Operating temperature: -40°C to +110°C continuous use, 130°C overload
- ▶ Resin bags designed with fully integrated delivery spout
- ▶ Resin kits available with Closed Mix and Pour Delivery System



### 2. Applications

Electrical insulation of low voltage electrical joints up to 0.6/1.0(1.2) kV and mechanical protection of electrical joints up to 20.8/36(42) kV installed for indoor and outdoor, underground and submerged applications.

### 3. Typical properties

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

Physical properties	Typical value	Specification
Part A		
Density	1.17 g/cm <sup>3</sup>	ISO 3675
Viscosity 23°C	4500 mPas	EN ISO 2555
Colour	Blue	
Part B		
Density	1.50 g/cm <sup>3</sup>	ISO 3675
Viscosity 23°C	7000 mPas	EN ISO 2555
Colour	Yellow-brown	
Part A&B (mixed)		
Density	1.34 g/cm <sup>3</sup>	ISO 3675
Viscosity 5°C	14000 mPas	EN ISO 2555
Viscosity 23°C	3800 mPas	EN ISO 2555
Exothermic peak temp. 23°C	130°C	IEC 60455-2

**Part A&B (cured\*)**

Mechanical properties	Typical value	Specification
Hardness Shore D	82	EN ISO 868
Tensile strength	34 MPa	EN ISO 527
Elongation at break	1%	EN ISO 527
Impact strength (without notch)	≥6 kJ/m <sup>2</sup>	EN ISO 179

Electrical properties	Typical Value	Specification
Volume resistivity at 23°C	1.3E+15 Ωcm	IEC 60250
Volume resistivity at 80°C	2.1E+11 Ωcm	
Dielectric strength at 23°C	33 kV/mm	EN 60243-1
Dissipation factor at 23°C	0.02	IEC 60250
Dissipation factor at 80°C	0.17	
Dielectric constant at 23°C	5	IEC 60250
Dielectric constant at 80°C	10	

Properties after dry ageing	Typical Value	Specification
Mass loss	≤1%	IEC 60455-2
Impact strength without notch	≥4 kJ/m <sup>2</sup>	EN ISO 179

Properties after wet ageing	Typical Value	Specification
Elongation at break (retention/original)	≥65%	ISO 527
Tensile strength (retention/original)	≥65%	ISO 527
Dielectric strength 23°C	22 kV/mm	EN 60243-1
Hardness (retention/original)	≥95%	ISO 868

**4. User Information****4.1 Available sizes**

Size A90: Scotchcast 4 GS	90 ml / 121 g
Size B200: Scotchcast 4 GS	200 ml / 268 g
Size C370: Scotchcast 4 GS	370 ml / 496 g

**4.2 Process figures**

Mixing Ratio (pbw)	A : B	100 : 144
Pot Life	At 5°C	52 min
	At 23°C	25 min
	At 40°C	11 min

### 4.3 Usage information

Keep resin bags at 10 C or warmer before mixing. In cooler ambient conditions keep resin bags in a warmer area until ready to mix. The resin is delivered in two chamber pouches with an integrated spout, and a peelable adhesive barrier packed in an aluminium bag. To take out the 2-component resin pouches, the guard bag can be opened by tearing.

The resin is then filled into the two-chamber plastic pouches in the correct stoichiometric proportion. This type of packaging will assure the correct mixing ratio for applying the resin.

The packaging of the 3M™ Scotchcast™ 4 GS resin kits includes a Closed Mix and Pour Delivery System. To pierce the membrane of the spout, a separate opener is added. When turning the device onto the spout, the membrane will be opened for pouring the resin.

All necessary information for handling, service and safety are printed on the guard bag.

### 4.4 Storage

3M™ Scotchcast™ Resin 4 GS has a shelf life of at least 36 months after manufacturing when stored between 5°C and 40°C with a humidity level <75% in the originally sealed guard bag. Storage at elevated temperatures can result in bleaching of the blue colourant and deviations of the mixed or cured colour gradation from the colour code printed on the packaging. This has no influence on any other resin characteristics.

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.

### 4.5 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.

### 4.6 Important information

According to EU. Regulation this product is not to be sold to consumers.

## 5. Additional information

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To request additional product information, see address below.

#### Important notice

All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluates the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method or application.

Values presented have been determined by standard test methods and are average values not meant to be used for specification purposes.

All questions of warranty and liability relating to 3M products are governed by the terms of the respective sale subject, where applicable, to the prevailing law.

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