



STYCAST[®] L 28

Unfilled Epoxy Impregnating And Laminating Resin

| Key Feature: | Benefit: |
|--|--|
| <ul style="list-style-type: none"> Unfilled resin | <ul style="list-style-type: none"> No filler to prevent impregnation into tightly wound coils |
| <ul style="list-style-type: none"> Variety of catalysts available | <ul style="list-style-type: none"> Versatility of resin system |
| <ul style="list-style-type: none"> General purpose | <ul style="list-style-type: none"> Used in a wide variety of applications |

Product Description:

STYCAST L 28 is a clear red, unfilled epoxy encapsulating and impregnating resin. It can be used with a wide variety of catalysts to yield various cured properties.

Applications:

STYCAST L 28 is designed as an epoxy encapsulating and impregnating resin. It has also been used as a laminating resin in combination with glass cloth or mat.

Instructions For Use:

Thoroughly read the information concerning health and safety contained in this bulletin before using. Observe all precautionary statements that appear on the product label and/or contained in individual Material Safety Data Sheets (MSDS).

To ensure the long term performance of the potted or encapsulated electrical / electronic assembly, complete cleaning of components and substrates should be performed to remove contamination such as dust, moisture, salt, and oils which can cause electrical failure, poor adhesion or corrosion in an embedded part.

Accurately weigh resin and hardener into a clean container in the recommended ratio. Weighing apparatus

having an accuracy in proportion to the amounts being weighed should be used.

Blend components by hand, using a kneading motion, for 2-3 minutes. Scrape the bottom and sides of the mixing container frequently to produce a uniform mixture. If possible, power mix for an additional 2-3 minutes. Avoid high mixing speeds which could entrap excessive amounts of air or cause overheating of the mixture resulting in reduced working life.

To ensure a void-free embedment, vacuum deairing should be used to remove any entrapped air introduced during the mixing operation. Vacuum deair mixture at 1-5 mm mercury. The foam will rise several times the liquid height and then subside. Continue vacuum deairing until most of the bubbling has ceased. This usually requires 3-10 minutes.

To facilitate deairing in difficult to deair materials, add 1-3 drops of an air release agent, such as ANTIFOAM 88, into 100 grams of mixture. Gentle warming will also help, but working life will be shortened.

Pour mixture into cavity or mold. Gentle warming of the mold or assembly reduces the viscosity. This improves the flow of the material into the unit having intricate shapes or tightly packed coils or components. Further vacuum deairing in the mold may be required for critical applications.

To eliminate moisture absorbed in coils, paper, and other insulation components, the part to be impregnated or potted should be preheated to 100-120°C. For coil molding, preheat the components and mold to 70-90°C prior to pouring.

Properties of Material As Supplied:

| Property | Test Method | Unit | Value |
|----------------------|-------------|-------------------|------------------|
| Chemical Type | | | Epoxy |
| Appearance | Visual | | Clear red liquid |
| Density | ASTM-D-792 | g/cm ³ | 1.20 |
| Brookfield Viscosity | ASTM-D-2393 | Pa.s cP | 13 13,000 |

Properties of Material As Mixed:

| Property | Test Method | Unit | Value | | |
|--|-------------|-------------------|------------|-------------|----------------|
| | | | Catalyst 9 | Catalyst 11 | Catalyst 24 LV |
| Mix Ratio - Amount of Catalyst per 100 parts of STYCAST L 28 | | By Weight | 14.5 | 17 | 29.5 |
| Working Life (100 g @ 25°C) | ERF 13-70 | | 45 minutes | >4 hours | 30 minutes |
| Density | ASTM-D-792 | g/cm ³ | 1.17 | 1.18 | 1.15 |

Choice of Curing Agents

| Curing agent | Catalyst 9 | Catalyst 11 | Catalyst 24 LV | |
|--------------|--|---|---|----------------------------|
| Description | General purpose with good chemical resistance and physical strength. | Long pot life, excellent chemical resistance, good physical and chemical properties at elevated temperatures. | Low viscosity, excellent adhesion, thermal shock and impact resistance. Excellent low temperature properties and fast cure. | |
| Type of cure | Room | Heat | Room | |
| Viscosity | Pa.s cP | 0.080 to 0.105 80 to 105 | 0.035 to 0.060 @ 65 °C 35 to 60 @ 65 °C | 0.010 to 0.025 10 to 25 |

Cure Schedule:

Cure at any one of the recommended cure schedules. For optimum performance, follow the initial cure with a post cure of 2 - 4 hours at the highest expected use temperature. This product generates moderate heat during cure. Alternate cure schedules may also be possible. Contact your Henkel Corporation Specialty Polymers Technical Representative for further information.

| Temperature | Cure Time | | |
|-------------|------------|-------------|----------------|
| | Catalyst 9 | Catalyst 11 | Catalyst 24 LV |
| 25 | 16-24 hr | | 8-16 hr |
| 45 | 4-6 hr | | 4-6 hr |
| 65 | 2-4 hr | | 1-2 hr |
| 80 | | 8-16 hr | |
| 100 | | 2-4 hr | |
| 125 | | 30-60 min | |

Properties of Material After Application:

| Property | Test Method | Unit | Value | | |
|---------------------------|-------------|----------------|-------------------|-------------------|-------------------|
| | | | Catalyst 9 | Catalyst 11 | Catalyst 24 LV |
| Hardness | ASTM-D-2240 | Shore D | 85 | 87 | 78 |
| Temperature Range of Use | | °C | -40 to +130 | -55 to +155 | -65 to +105 |
| Outgassing ⁽¹⁾ | ASTM-E-595 | | | | |
| TML | | % | 0.59 | | 0.73 |
| CVCM | | % | 0.03 | | 0.05 |
| Dielectric Strength | ASTM-D-149 | kV/mm V/mil | 15.7 400 | 15.7 400 | 15.7 400 |
| Volume Resistivity @ 25°C | ASTM-D-257 | Ohm-cm | >10 ¹⁴ | >10 ¹⁴ | >10 ¹⁴ |

⁽¹⁾ per NASA Reference Publication 1124. Catalyst 9 sample was cured for 30 minutes hours @ 25°C plus 2 hours @ 70 °C. Catalyst 24 LV sample was cured for 4 days @ 25 °C plus 24 hours @ 66 °C.

Storage and Handling:

The shelf life of STYCAST® L 28 is 12 months at 25°C. For best results, store in original, tightly covered containers. Storage in cool, clean and dry areas is recommended. Usable shelf life may vary depending on method of application and storage conditions.

Certain resins and hardeners are prone to crystallization. If crystallization does occur, warm the contents of the shipping container to 50-60°C until all crystals have dissolved. Be sure the shipping container is loosely covered during the warming stage to prevent any pressure build-up. Allow contents to cool to room temperature before continuing.

Health and Safety:

The STYCAST L 28, like most industrial compounds, possesses the ability to cause skin and eye irritation upon contact. Certain individuals may also develop an allergic reaction after exposure (skin contact, inhalation of vapors, etc.) which may manifest itself in a number of ways including skin rashes and an itching sensation. Components of this product may be absorbed through the skin. Handling this product at elevated

temperatures may also generate vapors irritating to the respiratory system.

Good industrial hygiene and safety practices should be followed when handling this product. Proper eye protection and appropriate chemical resistant clothing should be worn to minimize direct contact and to prevent possible skin absorption. Consult the Material Safety Data Sheet (MSDS) for detailed recommendations on the use of engineering controls and personal protective equipment.

This information is only a brief summary of the available safety and health data. Thoroughly review the MSDS for more complete information before using this product.

Attention Specification Writers:

The values contained herein are considered typical properties only and are not intended to be used as specification limits. For assistance in preparing specifications, please contact Henkel Corporation Quality Assurance for further details.

Medical Implantable Disclaimer

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