

Fortasun™ PV-7030R Potting Agent

Silicone potting material providing environmental protection and thermal management

Features

- Improved adhesion with PV substrates
- Compatible with automated dispensing equipment
- Fast room temperature or heat cure
- Minimal shrinkage
- No solvents or cure byproducts
- Thick section cure
- UL 94 V1; HAI/CTI=0; HWI=2
- UL RTI 105°C

Composition

- Two-part silicone elastomer supplied as flowable liquid
- 1:1 mix ratio by weight

Applications

- Potting of solar module junction boxes

Typical properties

Specification writers: These values are not intended for use in preparing specifications. Please contact your local DuPont sales office before writing specifications on this product.

| Property | Unit | Results |
|---|---------------------|--|
| Cure system | | Addition cure |
| Color | | Black |
| Viscosity | Centipoise or mPa s | Part A 2835 Part B 2733 |
| Durometer, shore OO ¹ | | 67 |
| Specific gravity ² | | 1.2 |
| Snap time ³ | Minutes | 8-10 |
| Room temperature cure time ⁴ | Hours | 3.25 |
| Heat cure time ⁴ | Minutes | TC90 18.5min@50°C TC90 4.3 min@75°C |
| Dielectric strength | Volts/mil kV/mm | 534.8 21.1 |
| Thermal conductivity | Watts/meter °K | 0.28 |
| CTE | Ppm/degree C | 307 |

¹Measured by durometer rather than penetration

²Cured or uncured A & B

³Time to non-flow/cure

⁴Time to cure material to 90% of final properties; additional time may be required for a part to warm to oven temperature. Time to adhesion may take longer.

Description

Fortasun™ PV-7030R Potting Agent is supplied as two-part liquid component kits comprised of Part A/Part B to be mixed in a 1:1 ratio by weight. It is suitable for manual mixing or automated mixing and dispensing. When liquid components are thoroughly mixed, the mixture cures to a flexible elastomer.

How to use

Mixing two-part elastomers

Fortasun™ PV-7030R Potting Agent is supplied in two parts that are mixed in a 1:1 ratio (Parts A and B).

Fortasun™ PV-7030R Potting Agent can be dispensed manually or by using one of the available types of meter mix equipment. The two components are readily mixed with static or dynamic mixers, with automated meter-mix normally used for high-volume processes. For low-volume applications, manual weighing and simple hand mixing may be appropriate.

Inaccurate proportioning or inadequate mixing may cause localized or widespread problems affecting the elastomers properties or cure characteristics. If possible, the potential for entrapment and incorporation of gas (typically air) should be considered during design of the part and selection of a process to mix and dispense the elastomers. Degassing at >28 inches (10-20 mm) Hg vacuum may be necessary to ensure a void-free, protective layer.

It is expected that some settling of the solids in this material will develop over time. It is recommended that the material be mixed, such as with a pail or drum roller upon receipt. The material should then be applied from an agitated dispensing tank.

Working time and cure time

Working time (or pot life) is the time required for the initial mixed viscosity to double at room temperature (RT). For two-part, addition-cure products, such as Fortasun™ PV-7030R Potting Agent, the cure reaction begins when Parts A and B are mixed. As the cure progresses, viscosity increases until the material becomes a soft gel. Cure conditions are shown in the typical properties table. Full cure is defined as the time required for a specific gel to reach 90% of its final properties. This has been tested at Room Temperature and the result is 3.25 hours. Gels will reach a no-flow state prior to full cure. Fortasun™ PV-7030R Potting Agent can be cured at room temperature or via heat-accelerated cure.

Fortasun™ PV-7030R Potting Agent does not require heat to develop adhesion. Cure schedules should be verified in each new application.

Useful temperature ranges

For most uses, Fortasun™ PV-7030R Potting Agent should be operational over a temperature range of -45 to 150°C (-49 to 302°F) for long periods. However, at both the low and high ends of the temperature range, behavior of the materials and performance in particular applications can become more complex and require additional considerations. For low-temperature performance, thermal cycling to conditions such as -55°C (67°F) may be possible, but performance should be verified for specific parts and assemblies. Factors that may influence performance are configuration and stress sensitivity of components, cooling rates and hold times, and prior temperature history. At the high-temperature end, durability of cured silicone gels is time and temperature dependent. As expected, the higher the temperature, the shorter the time the material will remain usable.

Repairability

In the manufacture of electronic devices, salvage or rework of damaged or defective units is often required. Removal of Fortasun™ PV-7030R Potting Agent to allow necessary repairs can be assisted by using OS Fluids. Additional information regarding these products is available from DuPont. Digestive stripping agents, such as SU100 Silicone Remover from Silicones Unlimited, can also be used. In addition, if only one component needs to be replaced, a soldering iron may be applied directly through the gel to remove the component. After work has been completed, the repaired area should be cleaned with forced air or a brush, dried, and patched with additional silicone gel.

Cure compatibility

Certain materials, chemicals, curing agents and plasticizers can inhibit the cure of Fortasun™ PV-7030R Potting Agent. Most notable of these include:

- Organotin and other organometallic compounds
- Silicone rubber containing organotin catalyst
- Sulfur, polysulfides, polysulfones, or other sulfur-containing materials
- Amines, urethanes, or amine-containing materials
- Unsaturated hydrocarbon plasticizers
- Acidic materials (usually organic acids)
- Some solder flux residues

If a substrate or material is questionable with respect to potentially causing inhibition of cure, a small-scale compatibility test should be run to ascertain suitability in a given application. The presence of liquid or uncured product at the interface between the questionable substrate and the cured gel indicates incompatibility and inhibition of cure.

Handling precautions

Product safety information required for safe use is not included in this document. Before handling, read product and material safety data sheets and container labels for safe use, physical, and health hazard information. The material safety data sheet is available on the photovoltaics.dupont.com, or from your DuPont representative.

Usable life and storage

When stored at or below 35°C (95°F) in the original unopened containers, Fortasun™ PV-7030R Potting Agent has a usable life of 12 months from the date of manufacture. Storage conditions and shelf life ("Use By" date) are indicated on the product label.

Packaging information

Fortasun™ Potting Agent is available in batch-matched kits containing both Part A and Part B components and are available in standard cartridge, pail and drum packaging. Detailed container size information should be obtained from your DuPont contact.

Limitations

Under certain conditions in specific designs or applications, Fortasun™ PV-7030R Potting Agent may lose adhesion. Full environmental exposure testing is recommended.

Use of this product must be based on the results of your product testing, manufacturing processes, and end applications. Full environmental exposure testing is recommended for all applications.

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Health and environmental information

To support Customers in their product safety needs, DuPont has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our Web site, photovoltaics.dupont.com or consult your local DuPont representative.

Limited warranty information—please read carefully

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that our products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

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Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

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