



1001 Trout Brook Crossing
 Rocky Hill, CT 06067-3910
 Telephone: (860) 571-5100
 FAX: (860) 571-5465

Technical Data Sheet

Product Resinol[®] RTC

Worldwide Version, February 1999

PRODUCT DESCRIPTION

LOCTITE[®] Resinol[®] RTC is a low viscosity liquid sealant designed for sealing porosity in metal castings and powder metal parts. It may also be used to seal microscopic voids in other materials. Resinol RTC sealant is typically applied with a vacuum impregnation process that removes air from the pores then fills the pores with liquid sealant. The liquid Resinol RTC polymerizes to form a tough thermoset polymer that permanently seals the pores. Liquid sealant is easily washed off with plain water. Parts treated with Resinol RTC are unchanged cosmetically or dimensionally.

Resinol RTC contains a proprietary surfactant monomer that provides excellent washing from parts without degrading the cured polymer. Parts can be processed and sealed without surface residues typical of older technologies.

TYPICAL APPLICATIONS

Resinol RTC is used to seal castings and powder metal parts against leakage of coolants, lubricants, fuels, hydraulic fluids, air and other fluids in automotive powertrains, steering systems, air conditioning and other components. The product is also used in a wide variety of applications in aerospace, military, general industry, electronics and telecommunications. Resinol RTC sealing of porosity is a preparatory step for plating and coating operations and a means of improving machinability of powdered metal parts.

PROPERTIES OF UNCURED MATERIAL

| | Typical | |
|-----------------------------|----------------------------------|---------|
| | Value | Range |
| Chemical Type | Methacrylate monomers | |
| Appearance | Clear, amber, fluorescent liquid | |
| Specific Gravity @ 25°C | 1.0 | |
| Viscosity @ 25°C mPa.s (cP) | 10 | 5 to 15 |
| Surface Tension, Dynes/cm | 32.1 | |
| Flash Point (TCC), °C | >93 | |

TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties

| | |
|---|---------|
| Hardness, Shore D | 82 |
| Compression Modulus (ASTM D695) Modulus, psi, | 157,850 |
| Compressive Strength @ Failure, psi, | 15,678 |
| % Compression @ Failure, psi, | 37.9 |
| % VCM | 0.02 |

TYPICAL ENVIRONMENTAL RESISTANCE

Solvent Resistance

Resinol RTC has passed all requirements of Mil-I-17563 Rev. C and is QPL listed. The following solvent conditions were tested and approved per Mil-I-17563 Rev. C - Class 1.

| Solvent | Results |
|--------------------------|------------|
| Water | No Leakage |
| Oil | No Leakage |
| Hydraulic Fluid | No Leakage |
| Hydrocarbon Fluid | No Leakage |
| Carbon Removing Compound | No Leakage |
| Turbine Fuel | No Leakage |
| Lubricating Oil | No Leakage |

Contact the Loctite Corporation for additional test data specific to your needs.

Product Certifications

Military Specification Mil-I-17563 Rev. C- Class 1

Resinol[®] RTC is certified by NSF International to ANSI/NSF Standard 61 for use in commercial and residential potable water systems not exceeding 82°C (180°F).

Classified by Underwriters Laboratories Inc.[®] MH15585 as a casting impregnation material for exposure to gasoline, kerosene, fuel oils, naphtha and gasoline-ethanol and gasoline-methanol mixtures with a maximum of 15% ethanol or methanol.

GENERAL INFORMATION

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.

For safe handling information on this product, consult the Material Safety Data Sheet (MSDS).

Directions for use

Use of process equipment designed and built by Loctite, or approved by Loctite is strongly recommended. Consult Loctite Impregnation Technical Service for specific process requirements or application equipment.

1. Impregnate Resinol RTC into the parts using any of the following impregnation methods.
 - Wet Vacuum
 - Wet Vacuum/Pressure
 - Dry Vacuum/Pressure
 - Pressure Impregnation
2. Centrifuge or drip drain the parts to reclaim excess sealant from the parts.
3. Wash parts in water (detergent solution optional) with agitation as necessary to achieve good cleaning.
4. Soak parts in activator rinse to initiate catalytic cure of sealant at porosity surface sites.
5. Soak parts in final rinse at 110 °F (43°C) to remove activator rinse and warm the parts for quick drying upon removal. Note: corrosion inhibitors may be added to final rinse if required.

Cure Mechanism

Liquid Resinol RTC self-cures at room temperature by a free radical polymerization reaction that occurs within the part substrate, isolated from the air. Curing occurs gradually and is sufficiently complete to allow most pressure tests to be accomplished after 1 to 4 hours. Parts can be handled and be submitted to most other operations while sealant is curing.

Cure Rate

The polymerization (curing) of Resinol RTC takes place within the pores of the parts in the absence of air. Conditions for the polymerization reaction are established by chemical interaction with Loctite Accelerator additive and with certain metal surfaces. The rate at which the sealant cures may be influenced by several factors:

Loctite Accelerator additive makes the sealant cure more quickly.

Loctite Concentrated Stabilizer slows the rate of cure.

Cure may be accelerated by contact with certain metals, particularly copper and copper alloys.

Cure rate is influenced by temperature. Heat accelerates curing. Lower temperature slows the cure rate.

Cure rate may be influenced by chemical interaction with various contaminants, such as oils, acids, gases, corrosion inhibitors or water.

Storage and Pot Life

Products shall be ideally stored in a cool, dry location in unopened containers at a temperature between 8 to 28°C (46 to 82°F) unless otherwise labeled. Optimal storage is at the lower half of this temperature range. To prevent contamination of unused product, do not return any material to its original container. For specific shelf-life information, contact your local Technical Service Center.

Active Resinol RTC in an impregnation tank with normal use has unlimited pot life if recommended controls are maintained, including temperature controls and aeration.

Waste Disposal

Wastes generated during the impregnation process can, in general, be adequately handled by conventional biological treatment methods. Since both the circumstances of use and local environmental requirements vary, waste disposal recommendations are somewhat application specific. The details of an effective waste disposal program must be determined on an individual basis, therefore consult Loctite Impregnation Technical Service.

Data Ranges

The data contained herein may be reported as a typical value and/or range. Values are based on actual test data and are verified on a periodic basis.

Consult Loctite

Information provided herein is typical for general purpose use of Resinol RTC. Consult your Loctite Impregnation Specialist or Loctite Impregnation Technical Service for evaluation of your specific application needs, sample processing and specific recommendations.

Note

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Loctite Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Loctite Corporation's products. Loctite Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Loctite Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.