Technical Data Sheet

LOCTITE® IMP Resinol™ RTC™

Known as LOCTITE® Resinol™ RTC™
March 2015

PRODUCT DESCRIPTION

LOCTITE® IMP Resinol™ RTC™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	Methacrylate monomers
Appearance (uncured)	Clear liquid[LMS]
Fluorescence	Positive under UV light[LMS]
Emulsification	Homogeneous milky white dispersion[LMS]
Components	One component - requires no mixing
Viscosity	Low
Cure	Room temperature cure
Application	Sealing

LOCTITE® IMP 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. This product is typically applied with a vacuum impregnation process that removes air from the pores and then fills the pores with liquid sealant. The liquid polymerizes to form a tough thermoset polymer that permanently seals the pores. Liquid sealant is easily washed off with plain water and parts treated with this product are unchanged cosmetically or dimensionally. LOCTITE® IMP 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. This product 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. It can be used in military as well as general industrial threadlocking and sealing applications. The sealing of porosity done by this product is a preparatory step for plating and coating operations and a means of improving machinability of powdered metal parts. LOCTITE® IMP Resinol™ RTC™ resists short term exposure up to 250°C.

UL Classification

Classified by Underwriters Laboratories Inc.® MH15585 as a casting impregnation material for exposure to gasoline, kerosene, fuel oils, naptha and gasoline-ethanol and gasoline-methanol mixtures with a maximum of 15% ethanol or methanol. **Note:** This is a regional approval. Please contact your local Technical Service Center for more information and clarification.

Mil-I-17563

LOCTITE® IMP Resinol™ RTC™ has passed all requirements of Military Specification Mil-I-17563 Rev. C - Class 1 & 3. **Note:** This is a regional approval. Please contact your local Technical Service Center for more information and clarification.

NSF International

Certified to ANSI/NSF Standard 61 for use in commercial and residential potable water systems not exceeding 82° C. **Note:** This is a regional approval. Please contact your local Technical Service Center for more information and clarification.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.0
Surface Tension, ASTM D 1590, dynes/cm	36.9
Viscosity, Cannon Fenske, ISO 3104, mPa·s (cP):	
Cannon Fenske #100	5 to 15[LMS]

Flash Point - See SDS

TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties

Glass Transition Temperature, °C		38
Coefficient of Thermal Expansion, ISO 11359-2 K^{-1}:		
Alpha 1		100×10^{-06}
Alpha 2		140×10^{-06}
Shore Hardness, ISO 868, Durometer D		82
Density @ 25 °C, g/cm³		1.1
Design Limit, Continuous Temperature, °C		177
Design Limit, Temperature Exposure less than 24 hours, °C		205
Compressive Modulus, ISO 604	N/mm² (psi)	1,100 (158,000)
Compressive Strength, at failure	N/mm² (psi)	110 (15,700)
% Compression , at failure		38
Flexural Modulus	N/mm² (psi)	1,200 (174,000)

TYPICAL ENVIRONMENTAL RESISTANCE

Data shown herein should not be used in place of actual part testing. Sealing performance depends as much upon the surrounding substrate as it does upon the sealant. The parent material provides substantial protection against oxygen and pressure loads. Smaller pores, longer leak paths and lower differential pressures yield better durability. The testing described herein provides standard comparisons of LOCTITE® sealants on a consistent interface. *Predicting the performance of real world applications using extrapolations from this data is not recommended*. The performance of any sealant should be experimentally validated against the specific demands of a particular application, preferably using actual production methods.

Durability Performance

Standard test pieces were sealed with LOCTITE® IMP Resinol™ RTC™ and subjected to accelerated life testing under adverse conditions. The test specimen was 3.2 mm thick FC0208 sintered powder metal of 6.8 g/mL density (12% porous substrate). Samples were tested at 4 atmospheres internal pressure. Leak rates were measured using volume/time at pressure under water. Initial leak rates were over 10,000 mL/minute.

		% of initial leak			
Environment	**°C**	**500 h**	**1000 h**	**2000 h**	**4100 h**
21% Oxygenated Air (control)	23	0	0	0	0
Unleaded gasoline	23	0	0	0	0
Motor oil (10W-30)	121	0	0	0	0
ATF (Dexron III)	121	0	0	0	0
Water/glycol 50/50	121	0	0	0	0
Brake Fluid (Dot 3)	121	0	0	0	0
21% Oxygenated Air	121	0.0	0.0	0.0	0.0

High Temperature Resistance

At temperatures above 160 °C, organic polymers may react with available oxygen. In porosity, the surrounding substrate typically protects the sealant from air. Oxidation may cause the sealant to discolor without compromising the seal. Exterior surfaces are affected first; therefore, cross-sections that are thicker than 3.2 mm enjoy proportionately higher resistance. Applications that include working fluids other than oxygenated air resist elevated temperatures better.

Conditioning	**Environment**	% Leak
4100 hours salt fog	40 °C, Condensing	0
1000 Thermal Cycles	-40 °C to + 121 °C, 2 hour period	*0.0
Acid Exposure	24 hours in pH 1 sulfuric acid	0
Caustic Exposure	24 hours in pH 13 sodium hydroxide	0
Hot Strength	100 psi air, part @ 176 °C	0

*0.0 signifies a leak that is too small to quantify (<0.03%)

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 Safety Data Sheet (SDS).

Directions for use

Porosity sealants typically require catalyzation and must be handled with chemically compatible materials and equipment.

Use of process equipment designed, built and maintained to LOCTITE® standards is recommended to ensure consistent performance. Consult a LOCTITE® Porosity Sealing Specialist for specific application assistance, process development and equipment selection.

1. Impregnate LOCTITE® IMP Resinol™ RTC™ into the parts by 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. Parts can be placed in an optional surface activator rinse to help cure excessive surface porosity.
5. Soak parts in final rinse at temperatures between 21°C and 50°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.

Anaerobic Cure Mechanism

Liquid LOCTITE® IMP Resinol™ RTC™ cures in the absence of freely available oxygen. Surface bleedout normally associated with hot water cure is eliminated.

Cure rate depends on the part temperature, dimension and chemical activity of the surrounding porosity. In general, parts can be pressure tested within 5 to 30 minutes after processing.

Waste Rinse Water Disposal

Waste rinse water generated during the porosity sealing 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 location specific. Depending on the particular parameters, a LOCTITE® Porosity Sealing Specialist can characterize effective waste disposal options for a wide range of solutions from passive handling to zero discharge.

Loctite Material Specification[LMS]

LMS dated September 1, 1995. Test reports for each batch are available for the indicated properties. LMS test reports include selected QC test parameters considered appropriate to specifications for customer use. Additionally, comprehensive controls are in place to assure product quality and consistency. Special customer specification requirements may be coordinated through Henkel Quality.

Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

Optimal Storage: 8 °C to 21 °C. Storage below 8 °C or greater than 28 °C can adversely affect product properties. Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Conversions

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
µm / 25.4 = mil
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa x 145 = psi
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

Note:

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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Reference 1.5