Research, Development & Engineering
North America

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LABORATORY DATA SHEET

Product Name **Resinol® 90R** (recyclable sealant)

Product Description

LOCTITE *Resinol 90R* is a low viscosity liquid sealant designed for sealing porosity in metal castings. It may also be used to seal microscopic voids and tight interfaces in other materials. This sealant is specifically formulated for wash water removal and reuse. This is accomplished with the aide of a Loctite Resinol 90R Recycling System. RESINOL 90R sealant is typically applied with a vacuum impregnation process that removes air from porosity and then saturates the part with liquid sealant. At an elevated temperature, the liquid rapidly polymerizes to form a tough thermoset polymer that permanently seals the internal cavities. Excess liquid sealant is rinsed from the outside of the part with plain water. Parts processed with RESINOL 90R are sealed internally but remain cosmetically and dimensionally unchanged.

Typical Applications

RESINOL 90R is used to seal castings and powder metal components against leakage of air, water, coolants, oils and other fluids. Engines, heads, manifolds, and housings in automotive powertrains and fluid handling systems have been sealed successfully for decades.

Physical Properties

Liquid Sealant

Chemical Type:	Methacrylate monomers
Appearance under white light	Clear, straw colored liquid
Appearance in ultraviolet light	fluorescent sky (blue)
Viscosity @ 25°C mPa.s	6 – 10 cP
Density	0.94 g/ml
Flash Point	>200°F (93°C)
Shelf Life	1 year
Solubility in water	readily emulsifable for ease of washing

Polymerized Sealant

Base Polymer Type	Acrylic, crosslinked thermoset
Sealing performance	Excellent
Chemical resistance	Excellent
Design Temperature	>200°C

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Use Instructions

This product is not recommended for use in pure oxygen and/or oxygen rich applications 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).

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 Loctite's Porosity Sealing Specialists for specific application assistance, process development and equipment selection.

1. Typically, a basket of parts is submerged in sealant. Air is expanded out of the porosity under reduced pressure.
2. A pressure increase causes the Resinol 90R to flow into the pore. Ambient pressure is typical but may be augmented.
3. The basket is lifted and spun to reclaim excess sealant.
4. The parts basket is washed in water with agitation as necessary to achieve good cleaning.
5. The sealant is cured by submerging the basket into 88°C water, typically for >8 minutes. The parts are then allowed to cool at ambient conditions prior to pressure testing.

Elevated Temperature Cure Mechanism

Liquid RESINOL 90R cures when heated above 88°C (190.4°F) for a sufficient time period. Cure rate depends on the temperature, mass, heat transfer rate, chemistry and dimensions of the surrounding porosity. Once at temperature, curing occurs rapidly and is sufficiently complete to allow pressure testing immediately after processing.

Accreditations

Loctite Manufacturing and Research and Development are QS9000 Certified

Storage and Pot Life

Catalyzed RESINOL 90R used in a process storage tank, with typical sealant additions and no foreign contamination, has an indefinite shelf life. In stagnant storage, with no usage or contamination, catalyzed product maintained in a proper equipment system has a one year pot life when stored below 15°C (59°F).

Liquid Resinol 90R cures to form a thermoset plastic by a free radical polymerization reaction, by exposure to elevated temperatures.
Liquid Resinol 90R that is trapped within a clean porous metal part will cure completely when exposed to 88°C in 6 to 10 minutes.

Resinol 90R will remain in a liquid state in the impregnation vessel by maintaining the storage temperature at 15°C (59°F).

Equipment for the application of Resinol 90R is designed to provide the necessary controls for maintaining the sealant and impregnation process. This processing equipment is available from Loctite Corporation.

The reactivity of activated Resinol 90R is routinely monitored by performing a "polymerization test. The reactivity of the sealant can easily be adjusted in two ways:

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- Adjustment of the level of Loctite Resinol Initiator Paste to the catalyzed Resinol 90R
- Add uncatzlyed sealant to the existing catalyzed sealant tank.

Recycling of Resinol 90R is accomplished with a specifically designed equipment module for sealant separation from wash water. Specifics on this are available from your Loctite Porosity Sealing Sales Engineer.

The optimal reactivity for a particular application should be determined by consultation with your Loctite Porosity Sealing Sales Engineer.

Safety Data

Refer to the Loctite Material Safety Data Sheet (MSDS) for safety information.

Storage Conditions

The uncatalyzed product should be stored in a cool, dry and sunlight free location in unopened container at temperatures between 8-28°C (46-82°F) unless otherwise labeled.
Optimal storage is at the lower half of this temperature range.
To prevent contamination of unused product, never return any material to its original container.
For specific shelf-life information, contact a Loctite Customer Service representative.

Disclaimers

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected for use with chlorine or other strong oxidizing materials unless otherwise specifically stated.

Originator	**Preparation/Revision Date**
Charles M. Muisener	January 17, 2001/Revision 1