



Research, Development & Engineering

Tallaght Business Park,
Dublin, Ireland

Technical Data Sheet LOCTITE® 5020

April 2004

PRODUCT DESCRIPTION

LOCTITE® Product 5020 is a low viscosity low odor, low volatile, single component, room temperature vulcanizing (RTV) silicone adhesive/sealant. Product exhibits excellent resistance to drive train oils and fluids. It has been designed for easy manual dispensing from tubes and cartridges.

TYPICAL APPLICATIONS

Designed primarily for flange sealing with good oil resistance and to withstand high joint-movement requirements. For example, stamped sheet metal covers (timing covers and oil sumps).

PROPERTIES OF UNCURED MATERIAL

Chemical Type	Oxime Silicone Rubber
Appearance	Grey Homogeneous Paste
Specific Gravity @ 25 °C	1.3
Viscosity @ 25 °C	Thixotropic Paste
Extrusion Rate gm/min:	
(1/8 inch nozzle, 0.62 MPa, 25 °C)	1,600

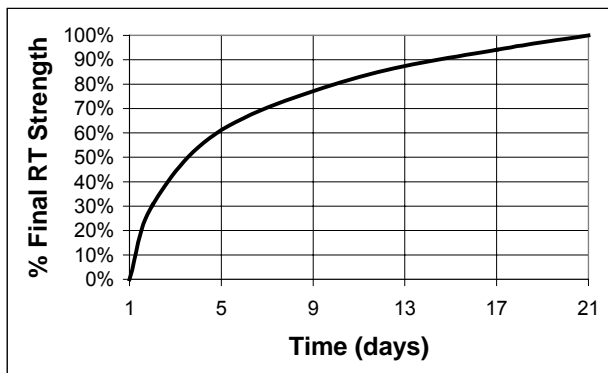
TYPICAL CURING PERFORMANCE

Tack Free Time

The surface of this adhesive becomes dry to touch on exposure to atmospheric moisture in less than 60 minutes at 23 °C, 50 % RH.

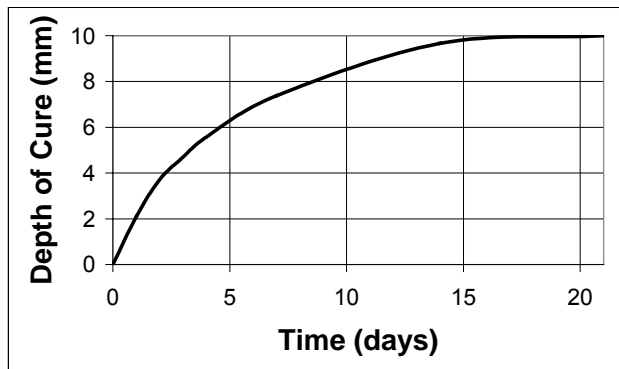
Cure Speed vs. Time

The graph below shows shear strength developed with time on aluminum (Alclad) at a bond gap of 0.5 mm. Cure condition 23 °C, 50 % RH. Strength is determined according ISO 4587.



Depth of Cure

The following graph shows the increase in depth of cure with time when cured at 22 °C, 50% RH. This is determined by peeling away the product from a 10 mm wide channel in a PTFE block. The channel gradually increases in depth from 0 to 10 mm. The point where the product remains in the channel is measured.



TYPICAL PROPERTIES OF CURED MATERIAL

Cured for 21 days at 23 °C, 50 % RH.

Physical Properties

Shore Hardness, ASTM D 2240, Durometer D	25
Elongation, ASTM D 412, %	260
Tensile Strength, at break, ISO 527-3, MPa	1.1
Tensile Strength, ultimate, ISO 527-3, MPa	1.1

Electrical Properties

Dielectric Constant / Dissipation Factor, ASTM D 150:

1 kHz	4.2 / 0.0380
100 kHz	3.8 / 0.0041
1,000 kHz	3.7 / 0.0036
10,000 kHz	3.8 / 0.0038
Surface Resistivity, ASTM D 257, Ω	19×10^{15}
Volume Resistivity, ASTM D 257, $\Omega \cdot \text{cm}$	15×10^{15}

PERFORMANCE OF CURED MATERIAL

Cured for 21 days at 23 °C, 50 % RH and a bond gap of 0.5 mm

Shear Strength, ISO 4587, MPa

Mild Steel	1.2
Al 2024-T3	0.3
Al Alclad	1.1
Zn DiChromate	2.2
Nylon 6.6	1.0

NOT FOR PRODUCT SPECIFICATIONS.

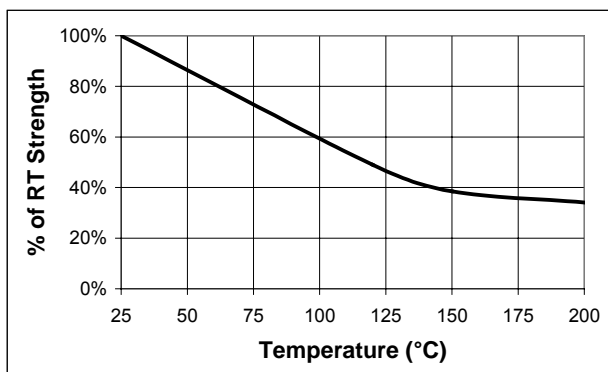
THE TECHNICAL DATA CONTAINED HEREIN ARE INTENDED AS REFERENCE ONLY.

PLEASE CONTACT LOCTITE CORPORATION QUALITY DEPARTMENT FOR ASSISTANCE AND RECOMMENDATIONS ON SPECIFICATIONS FOR THIS PRODUCT.
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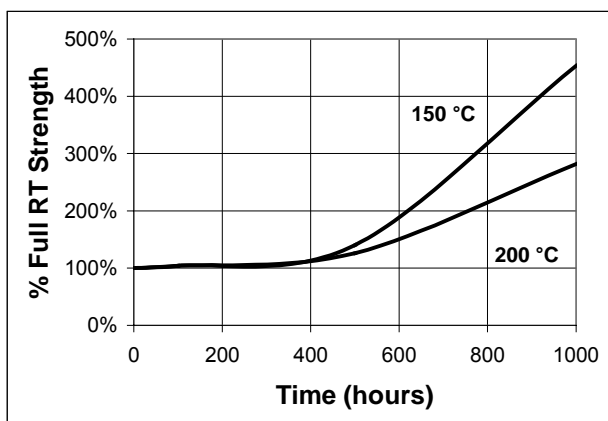
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TYPICAL ENVIRONMENTAL RESISTANCE**Hot Strength**

Test Procedure : Shear Strength, ISO 4587
 Substrate: Aluminium (Alclad), 0.5 mm gap
 Cure procedure: 21 days at 23 °C, 50 % RH.
 Tested at temperature.

**Heat Ageing**

Test Procedure : Shear Strength, ISO 4587
 Substrate: Aluminium (Alclad), 0.5 mm gap
 Cure procedure: 21 days at 23 °C, 50 % RH.
 Aged at temperature indicated and tested at 22 °C.

**Environmental Ageing - Effect on Bulk Properties**

Test Procedure : Tensile properties, ISO 527-3
 Film thickness: 2 mm
 Cure procedure: 21 days at 23 °C, 50 % RH.
 Test temperature: 22 °C

Solvent		Tensile Strength, MPa (% Elongation at break)		
		Ageing time		
Solvent	°C	100 h	500 h	1000 h
		1.3 (220)	1.3 (240)	1.1 (155)
Motor Oil	150			
Water/Glycol	120	0.5 (690)	0.7 (505)	0.5 (590)
ATF	120	0.9 (225)	1.3 (190)	1.3 (235)

Environmental Ageing - Effect on Adhesion

Test Procedure : Shear Strength, ISO 4587
 Substrate: Aluminium (Alclad), 0.5 mm gap
 Cure procedure: 21 days at 23 °C, 50 % RH.

% Initial Strength Retained
 Ageing time

Alclad Aluminium, 0.5 mm Gap

Solvent	°C	100 h	500 h	1000 h
Motor Oil	150	170	185	145
Water/Glycol	120	40	60	40
ATF	120	80	115	135

Zinc DiChromate, 0.5 mm Gap

Solvent	°C	100 h	500 h	1000 h
Motor Oil	150	105	120	125
Water/Glycol	120	35	40	30
ATF	120	65	90	95

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).

Where aqueous washing systems are used to clean the surfaces before bonding, it is important to check for compatibility of the washing solution with the adhesive. In some cases these aqueous washes can affect the cure and performance of the adhesive.

This product is not normally recommended for the use on plastics (particularly thermoplastic materials where stress cracking of the plastic could result). Users are recommended to confirm compatibility of the product with such substrates.

Directions for use

LOCTITE® 5020 should be applied as a bead to clean surface. Assemble parts within 40 minutes. When the joint is assembled pressure should be applied to spread the adhesive out and fill the joint completely. The bond should be allowed to cure (e.g. minimum seven days), before subjecting to heavy service loads.

Storage

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

Product shall be ideally stored in a cool, dry location in unopened containers at a temperature between 8 °C and 28 °C unless otherwise labeled. Optimal storage is at the lower half of this temperature range.

Material removed from containers may be contaminated during use. Do not return product to the original container. Loctite 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.

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, **Henkel 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 Henkel Loctite Corporation's products. Henkel Loctite**

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Bulk Number: 0198420