

LOCTITE® DRI 2020™

Known as LOCTITE® 2020™ Brass-Loc™
March 2015

PRODUCT DESCRIPTION

LOCTITE® DRI 2020™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	Methacrylate ester
Appearance (uncured)	Purple homogeneous liquid ^{LMS}
Appearance (pre-applied)	Soft dry purple, pre-applied film
Components	One component - requires no mixing
Cure	Anaerobic
Application	Threadlocking
Strength	Low

LOCTITE® DRI 2020™ is a low strength, water-based, pre-applied adhesive/sealant coating for threaded fasteners and fittings. As a pre-applied film, the product is dry-to-the-touch and remains an inert coating until assembly. During assembly of the fitting/fastener, a microencapsulated activator is released, initiating the curing process. The coating fills all the voids in the threads and cures to securely lock and seal the assembly. The product can be applied using automatic or semi-automatic equipment. LOCTITE® DRI 2020™ is designed for sealing brass fittings against a range of typical fluids such as motor oils and water/glycol solutions.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.18
pH @ 25 °C	7.5 to 9.0 ^{LMS}
Flash Point - See SDS	
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 6, speed 2.5 rpm,	70,000 to 228,000 ^{LMS}
Spindle 6, speed 20 rpm	22,000

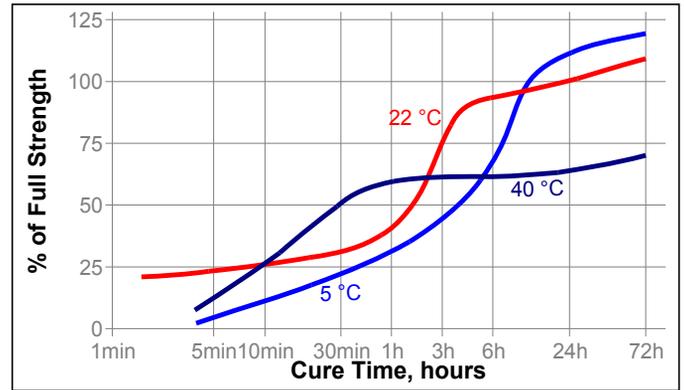
TYPICAL PROPERTIES OF PRE-APPLIED MATERIAL

On Part Life, years	4
---------------------	---

TYPICAL CURING PERFORMANCE

Cure Speed vs. Temperature

The rate of cure will depend on the ambient temperature. The graph below shows the breakaway strength developed with time at different temperatures on M10 brass bolts and degreased steel nuts and tested according to ISO 4587.



TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 24 hours @ 22 °C

Breakaway Torque, ISO 10964:

M10 brass bolts and steel nuts	N·m	7.9
	(lb.in.)	(70)

Prevail Torque, ISO 10964:

M10 brass bolts and steel nuts	N·m	1.1
	(lb.in.)	(10)

Cured for 72 hours @ 22 °C

On - Torque, ISO 10964:

M10 brass bolts and degreased steel nuts	N·m	≤3 ^{LMS}
	(lb.in.)	(≤26.5)

Breakaway Torque, ISO 10964:

M10 brass bolts and degreased steel nuts	N·m	≥2 ^{LMS}
	(lb.in.)	(≥17.7)

Prevail Torque, ISO 10964:

M10 brass bolts and degreased steel nuts	N·m	≥1 ^{LMS}
	(lb.in.)	(≥8.8)

TYPICAL ENVIRONMENTAL RESISTANCE

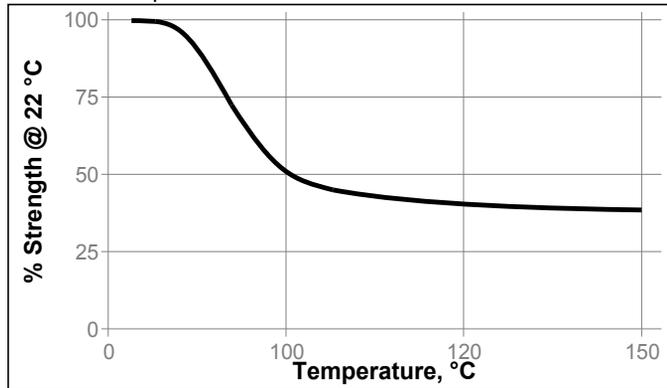
Cured for 72 hours @ 22 °C

Breakaway Torque, ISO 10964:

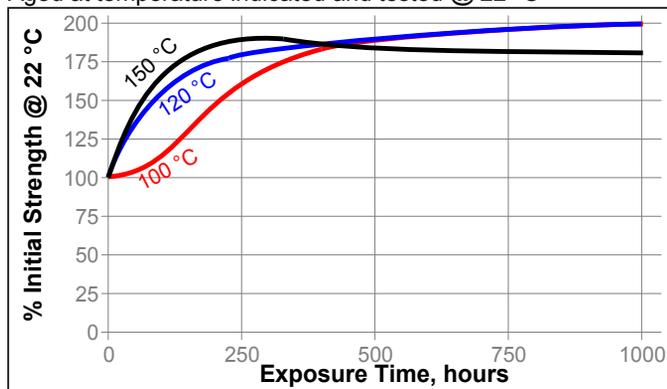
M10 brass bolts and degreased steel nuts	
--	--

Hot Strength

Tested at temperature

**Heat Aging**

Aged at temperature indicated and tested @ 22 °C

**Chemical/Solvent Resistance**

Aged for 30 days at temperatures indicated and tested @ 22°C.

Leak test, Navistar D-31:

3/8 - 18 brass pipe tees and brass plugs

Solvent	Temperature	Result
Motor oil	120 °C	No Leaks
Water/glycol (50/50)	100 °C	No Leaks
Diesel fuel	22 °C	No Leaks
Transmission fluid	120 °C	No Leaks
Power steering fluid	120 °C	No Leaks

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).

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 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:

1. This coating is produced from an aqueous two component system consisting of a liquid binder and microencapsulated chemical initiators. Usually these components are mixed in specific ratios, applied to fasteners and dried at an elevated temperature. Guidelines on recommended mixing and drying conditions are available from your local Technical Service Center.
2. The coated fastener is ready for immediate use and can be assembled to its mating threaded component at any time within its on-part shelf life period.
3. For best performance the mating surface should be clean and free of grease.
4. Product is normally pre-applied to the bolt in sufficient quantity to fill all engaged threads. Very large thread sizes may create gaps which will affect performance.
5. After assembly and cure a fastener coated with LOCTITE® DRI 2020™ should not be re-used if the joint is disassembled. In the case of disassembly a fastener coated with LOCTITE® DRI 2020™ or a liquid threadlocker of similar performance should be used.

Loctite Material Specification^{LMS}

LMS dated August 14, 1998. 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

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$
 $\text{kV/mm} \times 25.4 = \text{V/mil}$
 $\text{mm} / 25.4 = \text{inches}$
 $\mu\text{m} / 25.4 = \text{mil}$
 $\text{N} \times 0.225 = \text{lb}$
 $\text{N/mm} \times 5.71 = \text{lb/in}$
 $\text{N/mm}^2 \times 145 = \text{psi}$
 $\text{MPa} \times 145 = \text{psi}$
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$
 $\text{mPa}\cdot\text{s} = \text{cP}$

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.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:

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. 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.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Corporation, Resin Technology Group, Inc., or Henkel Canada Corporation, the following disclaimer is applicable:

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 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 Corporation's products. Henkel 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 Henkel 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.

Trademark usage

Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.

Reference 1.3