

LOCTITE® DRI 2040™

Known as LOCTITE® 2040™
March 2016

PRODUCT DESCRIPTION

LOCTITE® DRI 2040™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	Methacrylate ester
Appearance (uncured)	Red, homogeneous, viscous liquid ^{LMS}
Components	One component - requires no mixing
Viscosity	Medium
Cure	Anaerobic
Application	Threadlocking

LOCTITE® DRI 2040™ is a general purpose medium to high strength pre-applied threadlocker with good substrate compatibility, suitable for use on plain and passivated metal surfaces. The pre-applied film is dry-to-the-touch and remains an inert coating until assembly. During assembly, microcapsules, which are contained within the coating, are crushed thereby releasing an active ingredient which initiates the curing process. LOCTITE® DRI 2040™ prevents loosening of threaded fasteners. It is particularly suitable in situations where threaded parts are required to be ready for immediate use in an adhesive joint in a high volume production environment where it may not be possible to apply a liquid product on line. When cured, this product will also act as a thread sealant.

TYPICAL PROPERTIES OF UNCURED MATERIAL

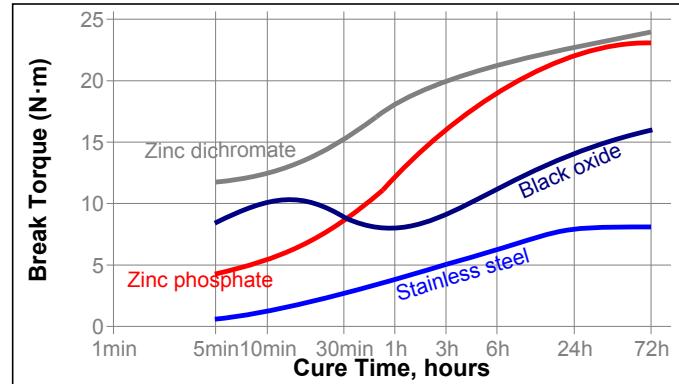
Flash Point - See SDS

Viscosity @ 25°C, mPa·s (cP):

Haake cone & plate:

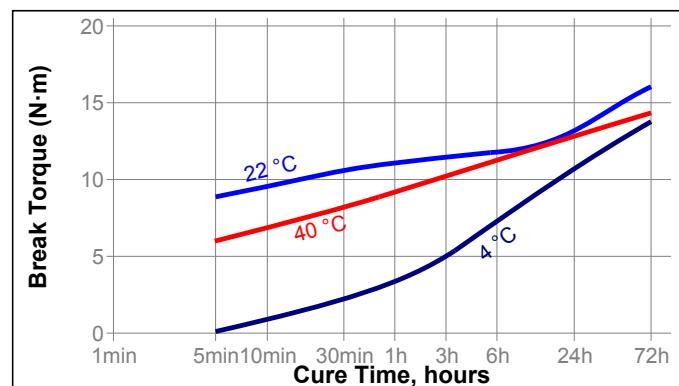
PK100 @ 36 S⁻¹

pH @ °C

1,600 to 4,000^{LMS}7.5 to 11.0^{LMS}

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 X 1.5 black oxide bolts and steel nuts and tested according to ISO 10964.



TYPICAL CURING PERFORMANCE

Cure Speed vs. Substrate

This product has a similar cure profile for various metal substrates. The graph below shows the breakaway strength developed with time on M10 X 1.5 black oxide bolts and steel nuts compared to different materials and tested according to ISO 10964.

TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties

Coefficient of Thermal Expansion, ISO 11359-2, K ⁻¹	10×10 ⁻⁴
Coefficient of Thermal Conductivity, ISO 8302, W/(m·K)	0.1
Specific Heat, kJ/(kg·K)	0.3

TYPICAL PERFORMANCE OF CURED MATERIAL**Adhesive Properties**

After 24 hours @ 22 °C

Breakaway Torque, ISO 10964:

M10 X 1.5 steel bolts

N·m
(lb.in.) $\geq 12^{\text{LMS}}$
(106.2)

Prevail Torque, ISO 10964:

M10 X 1.5 steel bolts

N·m
(lb.in.) $\geq 17^{\text{LMS}}$
(150.4)

Breakloose Torque, DIN 267-27:

M10 X 1.5 steel bolts

N·m
(lb.in.) 27
(238)

Lubricity, K-Factor:

M10 X 1.5 black oxide bolts

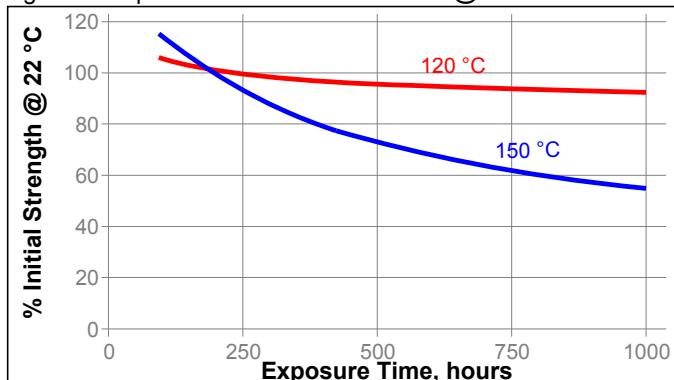
0.29

M10 X 1.5 zinc dichromate bolts

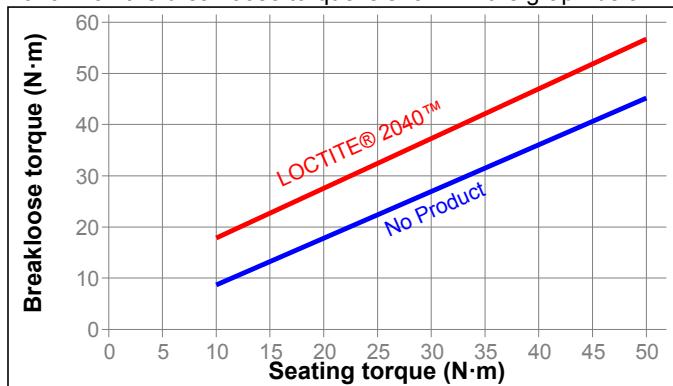
0.3

Heat Aging

Aged at temperature indicated and tested @ 22 °C

**Torque Augmentation**

Breakloose torque of an uncoated fastener will normally be 15 to 30% less than the on-torque. The effect of LOCTITE® DRI 2040™ on the breakloose torque is shown in the graph below.

**TYPICAL ENVIRONMENTAL RESISTANCE**

After 72 hours @ 22 °C

Breakaway Torque, ISO 10964:

M10 X 1.5 steel bolts

Chemical/Solvent Resistance

Aged under conditions indicated and tested @ 22°C.

Breakaway Torque, DIN 267-27:

M10 X 1.5 black oxide bolts and steel nuts

Environment	°C	% of initial strength		
		100 h	500 h	1000 h
Motor oil (MIL-L-46152)	120	70	70	45
Motor oil (MIL-L-46152)	150	55	50	40
Unleaded gasoline	22	85	80	40
Brake fluid	90	85	80	40
Water/glycol 50/50	120	90	70	40
Transmission fluid	120	70	70	40
Transmission fluid	150	65	55	35
Gear oil	120	75	70	55

Note: This product meets the requirements of DIN 267-27 on seated and unseated grade 8.8 M10 mild steel, zinc dichromate and zinc phosphate bolts. LOCTITE® DRI 2040™ performs close to or surpasses the environmental resistance requirements of DIN 267-27

GENERAL INFORMATION

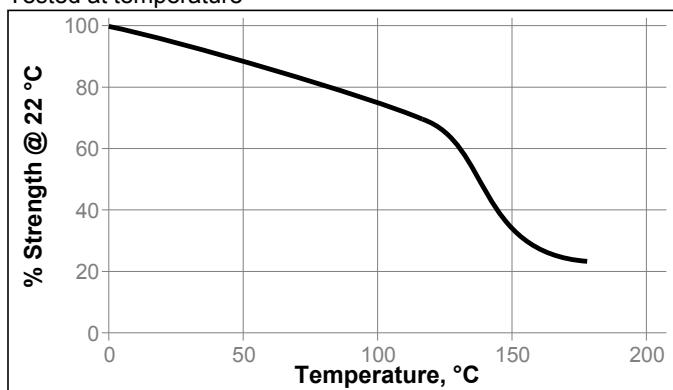
This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.

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

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.

Hot Strength

Tested at temperature



Directions for use:

1. This coating is produced from an aqueous two component system consisting of a liquid binder and microencapsulated chemical initiators. The components are coated onto threads at approved Loctite® coating centers. Details 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 bond surfaces should be clean and free from 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 2040™ should not be re-used if the joint is disassembled. In the case of disassembly a fastener coated with LOCTITE® DRI 2040™ or a liquid threadlocker of similar performance should be used.

Loctite Material Specification^{LMS}

LMS dated March 28, 2000. 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. 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 0.2