

## LOCTITE® 243™

November 2020

### PRODUCT DESCRIPTION

LOCTITE® 243™ provides the following product characteristics:

<b>Technology</b>	Acrylic
<b>Chemical Type</b>	Dimethacrylate ester
<b>Appearance (uncured)</b>	Blue
<b>Fluorescence</b>	Positive under UV light
<b>Components</b>	One component - requires no mixing
<b>Viscosity</b>	Medium, thixotropic
<b>Cure</b>	Anaerobic
<b>Secondary Cure</b>	Activator
<b>Application</b>	Threadlocking
<b>Strength</b>	Medium

LOCTITE® 243™ is designed for the locking and sealing of threaded fasteners which require normal disassembly with standard hand tools. The product cures when confined in the absence of air between close fitting metal surfaces and prevents loosening and leakage from shock and vibration. The thixotropic nature of LOCTITE® 243™ reduces the migration of liquid product after application to the substrate. LOCTITE® 243™ provides robust curing performance. It not only works on active metals (e.g. brass, copper) but also on passive substrates such as stainless steel and plated surfaces. The product offers high temperature performance and oil tolerance. It tolerates minor surface contaminations from various oils, such as cutting, lubrication, anti-corrosion and protection fluids. LOCTITE® 243™ is particularly suited for locking threaded fasteners of various equipment such as pumps, gearboxes, motors and vehicles.

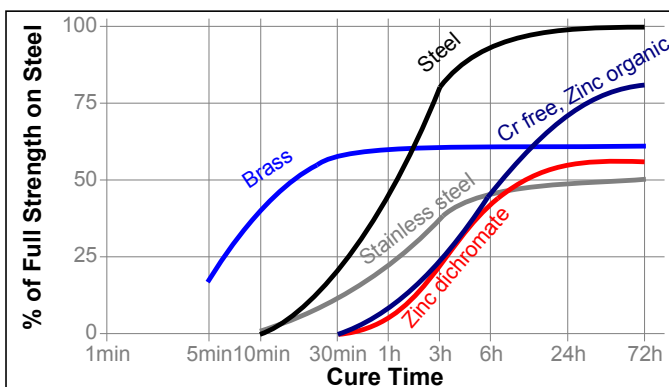
### TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 23°C	1.08
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	2,000
Viscosity, Cone & Plate, 25 °C, mPa·s (cP):	350
Cone 35/2 @ 129 s <sup>-1</sup>	

### TYPICAL CURING PERFORMANCE

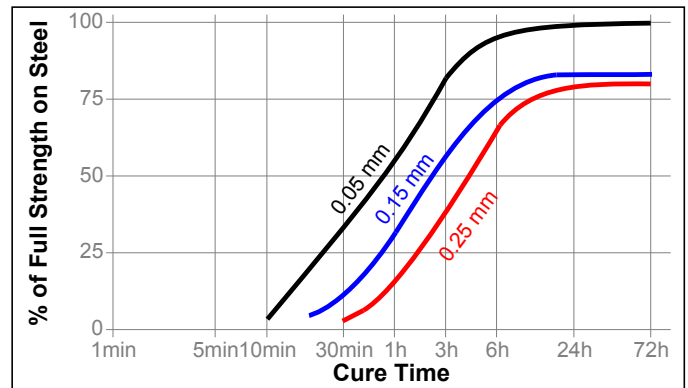
#### Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The graph below shows the breakaway strength developed with time @ 23°C on M10 steel nuts and bolts compared to different materials and tested according to ISO 10964.



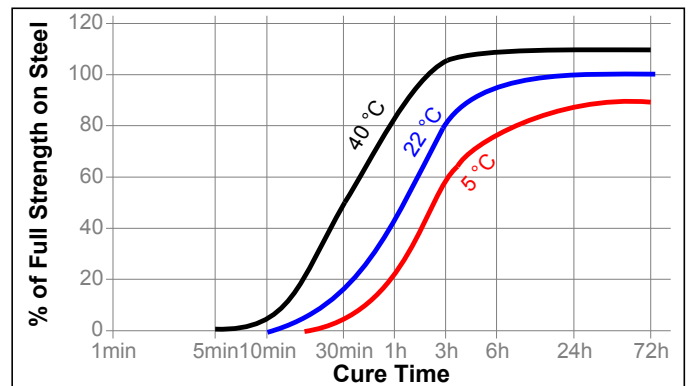
#### Cure Speed vs. Bond Gap

The rate of cure will depend on the bondline gap. Gaps in threaded fasteners depends on thread type, quality and size. The following graph shows shear strength developed with time @ 23°C on steel pins and collars at different controlled gaps and tested according to ISO 10123



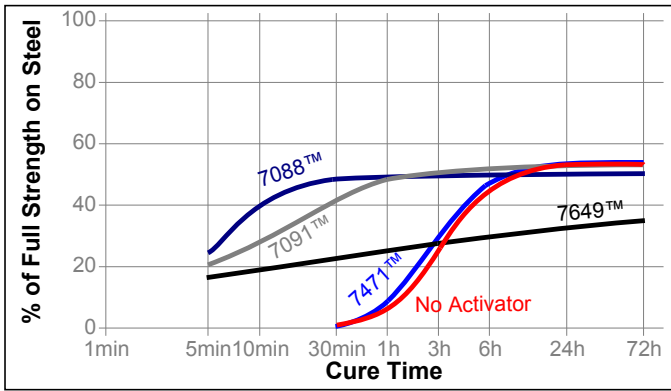
#### Cure Speed vs. Temperature

The rate of cure will depend on the temperature. The graph below shows the breakaway strength developed with time at different temperatures vs @ 23°C on M10 steel nuts and bolts and tested according to ISO 10964.



#### Cure Speed vs. Activator

Where cure speed is unacceptably long, or large gaps are present, applying activator to the surface will improve cure speed. The graph below shows the breakaway strength developed with time @ 23°C on M10 zinc dichromate steel nuts and bolts using Activator 7471™, 7649™, 7088™ or 7091™ and tested according to ISO 10964.



Breakloose Torque, ISO 10964, Pre-torqued to 5 N·m:

M10 zinc phosphate nuts and bolts	N·m	26
	(lb·in)	(230)
M10 stainless steel bolts and nuts	N·m	17
	(lb·in)	(150)

**TYPICAL ENVIRONMENTAL RESISTANCE**

Cured for 1 week @ 23°C

Breakloose Torque, ISO 10964, Pre-torqued to 5 N·m:

M10 zinc phosphate steel nuts and bolts

**TYPICAL PERFORMANCE OF CURED MATERIAL**

**Physical Properties**

Cured for 24hours @ 23°C:

Glass Transition Temperature, ISO 11359-2, °C	100
Coefficient of Thermal Expansion, ISO 11359-2, K <sup>-1</sup> :	
Below Tg	80×10 <sup>-6</sup>
Above Tg	90×10 <sup>-6</sup>
Coefficient of Thermal Conductivity, ISO 8302, W/(m·K)	0.1
Specific Heat, kJ/(kg·K)	0.3

**Adhesive Properties**

Cured for 72 hours @ 23°C:

Breakaway Torque, ISO 10964, Unseated:

M10 black oxide bolts and mild steel nuts	N·m	26	(lb·in)	(230)
M6 black oxide bolts and mild steel nuts	N·m	3	(lb·in)	(26)
M16 black oxide bolts and mild steel nuts	N·m	44	(lb·in)	(390)
3/8 x 16 steel nuts and bolts	N·m	12	(lb·in)	(110)

Prevail Torque @ 180°, ISO 10964, Unseated:

M10 black oxide bolts and mild steel nuts	N·m	5	(lb·in)	(40)
M6 black oxide bolts and mild steel nuts	N·m	1	(lb·in)	(8)
M16 black oxide bolts and mild steel nuts	N·m	13	(lb·in)	(120)
3/8 x 16 steel nuts and bolts	N·m	3	(lb·in)	(26)

Breakloose Torque, ISO 10964, Pre-torqued to 5 N·m:

M10 black oxide bolts and mild steel nuts	N·m	24	(lb·in)	(210)
3/8 x 16 steel nuts and bolts	N·m	15	(lb·in)	(130)

Prevail Torque @ 180°, ISO 10964, Pre-torqued to 5 N·m:

M10 black oxide bolts and mild steel nuts	N·m	4	(lb·in)	(35)
3/8 x 16 steel nuts and bolts	N·m	3.5	(lb·in)	(30)

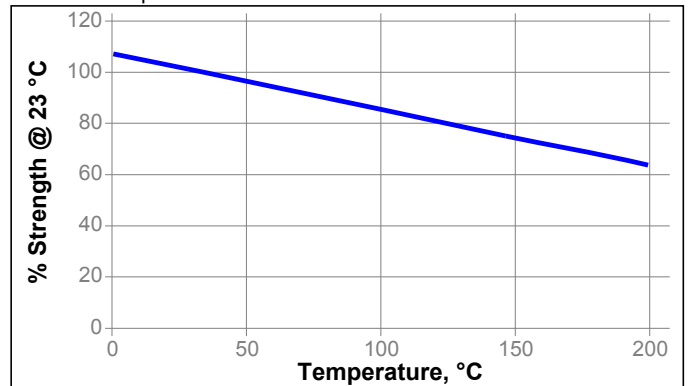
Compressive Shear Strength, ISO 10123 Steel pins and collars

N/mm <sup>2</sup>	7.6
(psi)	(1,100)

Cured for 1 week @ 23°C

**Hot Strength**

Tested at temperature

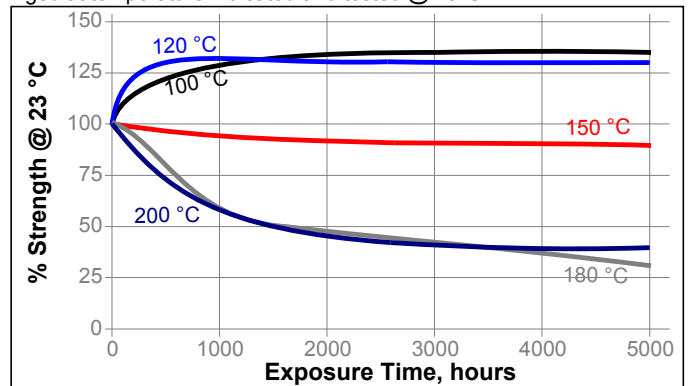


**Cold Strength**

This product has been tested to -75°C (-100°F). This product may work below this temperature, but has not been tested.

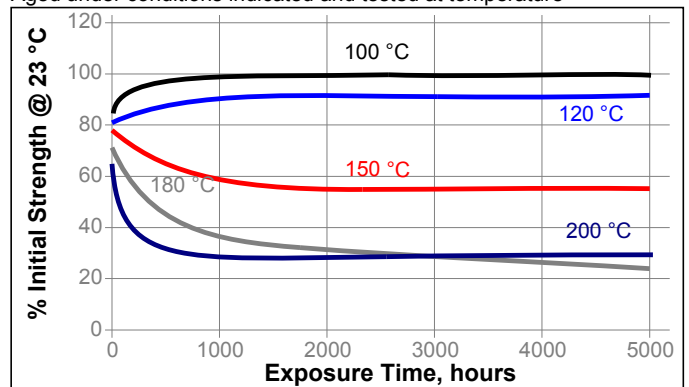
**Heat Aging**

Aged at temperature indicated and tested @ 23°C.



**Heat Aging/Hot Strength**

Aged under conditions indicated and tested at temperature



**Chemical/Solvent Resistance**

Aged under conditions indicated and tested @ °C

Environment	°C	% of initial strength		
		500 h	1000 h	5000 h
Motor oil	125	110	115	115
Unleaded gasoline	23	100	95	100
Brake fluid	23	105	110	125
Water/glycol 50/50	87	120	125	130
Acetone	23	85	85	80
Ethanol	23	95	90	90
E85 Ethanol fuel	23	95	100	95
B100 Bio-Diesel	23	110	110	125
DEF (AdBlue®)	23	61	59	70

Breakloose Torque, ISO 10964, Pre-torqued to 5 N·m:  
M10 stainless steel bolts and nuts

Environment	°C	% of initial strength		
		500 h	1000 h	5000 h
Sodium Hydroxide, 20%	23	105	105	95
Phosphoric Acid, 10%	23	110	105	110

**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:****For Assembly**

1. For best results, clean all surfaces (external and internal) with a LOCTITE® cleaning solvent and allow to dry.
2. If the cure speed is too slow, use appropriate activator. Please see the Cure Speed vs. Activator graph for reference. Allow the activator to dry when needed.
3. Shake the product thoroughly before use.
4. To prevent the product from clogging in the nozzle, do not allow the tip to touch metal surfaces during application.
5. **For Thru Holes**, apply several drops of the product onto the bolt at the nut engagement area.
6. **For Blind Holes**, apply several drops of the product to the lower third of the internal threads in the blind hole, or the bottom of the blind hole.
7. **For Sealing Applications**, apply a 360° bead of product to the leading threads of the male fitting, leaving the first thread free. Force the material into the threads to thoroughly fill the voids. For bigger threads and voids, adjust product amount accordingly and apply a 360° bead of product on the female threads also.
8. Assemble and tighten as required.

**For Disassembly**

1. Remove with standard hand tools.
2. In rare instances where hand tools do not work because of excessive engagement length, apply localized heat, approximately 250°C to nut or bolt. Disassemble while hot.

**Clean-up**

1. Cured product can be removed with a combination of soaking in a LOCTITE® solvent and mechanical abrasion such as a wire brush.

**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 Henkel representative.

**Product Specification**

The technical data contained herein are intended as reference only and are not considered specifications for the product. Product specifications are located on the Certificate of Analysis or please contact Henkel representative.

**Approval and Certificate**

Please contact a Henkel representative for related approval or certificate of this product.

**Data Ranges**

The data contained herein may be reported as a typical value. Values are based on actual test data and are verified on a periodic basis.

Temperature/Humidity Ranges: 23 °C / 50% RH = 23±2 °C / 50±5% RH

**Conversions**

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

**Disclaimer**

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 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 or Henkel Canada, Inc. 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 0.7