Technical data sheet

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Manufacturer:	HENKEL KGAA
Product group:	KLEBSTOFF
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LOCTITE 243

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Technical Data Sheet

LOCTITE® 243™

November 2020

PRODUCT DESCRIPTION

LOCTITE® 243™ provides the following product characteristics:

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

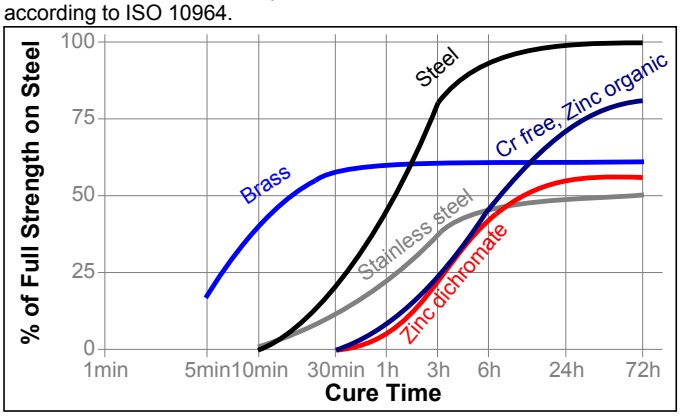
TYPICAL PROPERTIES OF UNCURED MATERIAL

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

TYPICAL CURING PERFORMANCE

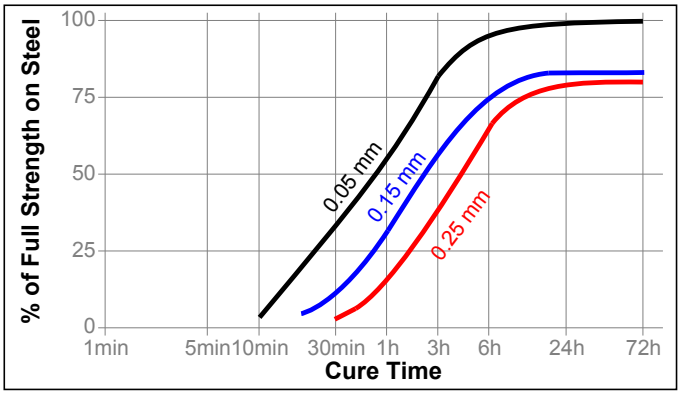
Cure Speed vs. Substrate

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.



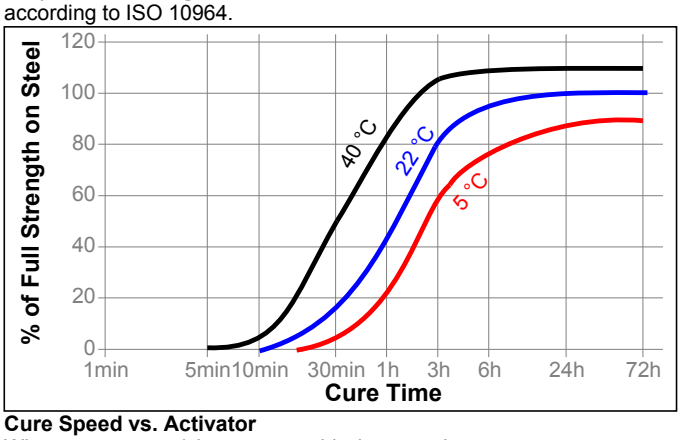
Cure Speed vs. Bond Gap

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.



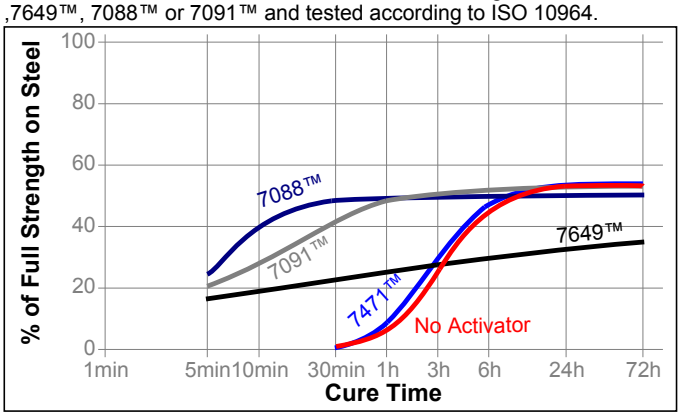
Cure Speed vs. Temperature

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.



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^{-1}:	
Below Tg	80×10^{-6}
Above Tg	90×10^{-6}
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 (lb·in)	26 (230)
M6 black oxide bolts and mild steel nuts	N·m (lb·in)	3 (26)
M16 black oxide bolts and mild steel nuts	N·m (lb·in)	44 (390)
3/8 x 16 steel nuts and bolts	N·m (lb·in)	12 (110)

Prevail Torque @ 180°, ISO 10964, Unseated:

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

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

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

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

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

Compressive Shear Strength, ISO 10123

Steel pins and collars	N/mm² (psi)	7.6 (1,100)

Cured for 1 week @ 23°C

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

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

TYPICAL ENVIRONMENTAL RESISTANCE

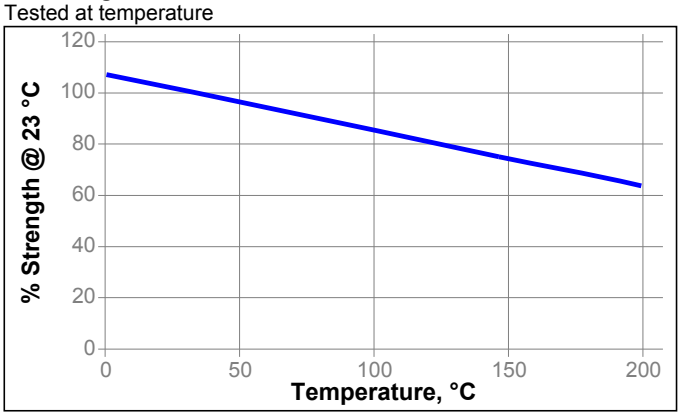
Cured for 1 week @ 23°C

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

M10 zinc phosphate steel nuts and bolts

Hot Strength

Tested at temperature

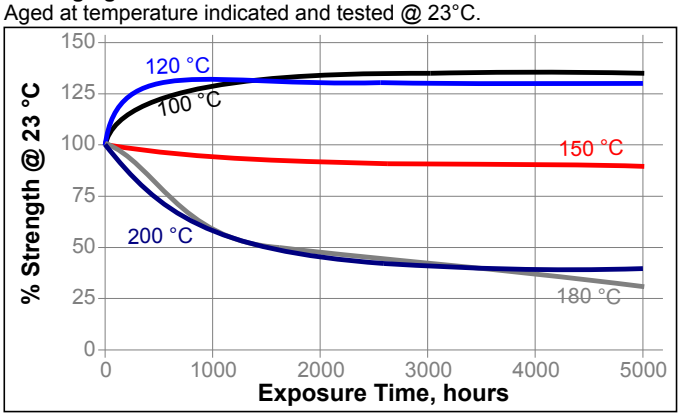


Cold Strength

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

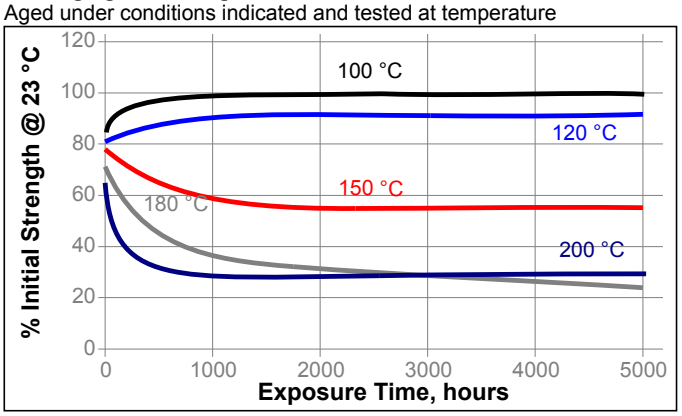
Heat Aging

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 @ 23 °C.

		% of initial strength		
Environment	**°C**	**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

		% of initial strength		
Environment	**°C**	**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

(°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

Disclaimer

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