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Technical Data Sheet

LOCTITE® 222MS™

April 2025

PRODUCT DESCRIPTION

LOCTITE® 222MS™ provides the following product characteristics:

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

LOCTITE® 222MS™ is designed for the locking and sealing of threaded fasteners which require easy 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. Particularly suitable for applications such as adjustment of set screws, small diameter or long engagement length fasteners, where easy disassembly is required without shearing the screw. The thixotropic nature of LOCTITE® 222MS™ reduces the migration of liquid product after application to the substrate.

Mil-S-46163A

LOCTITE® 222MS™ is tested to the lot requirements of Military Specification Mil-S-46163A. **Note:** This is a regional approval. Please contact your local Technical Service Center for more information and clarification.

ASTM D5363

Each lot of adhesive produced in North America is tested to the general requirements defined in paragraphs 5.1.1 and 5.1.2 and to the Detail Requirements defined in section 5.2.

NSF International

This product is acceptable for use as a sealant (S2) in and around food processing areas. The compound must be used in a manner which prevents direct or indirect contamination with edible products. **Note:** This is a regional approval. Please contact your local Technical Service Center for more information and clarification.

TYPICAL PROPERTIES OF UNCURED MATERIAL

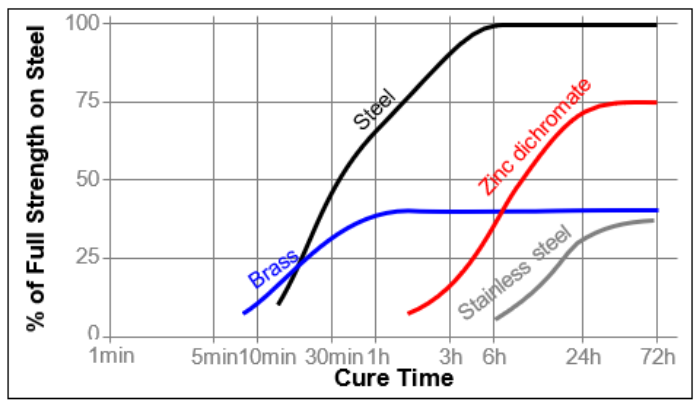
Specific Gravity @ 25 °C	1.05
Flash point - see SDS	
Viscosity, Brookfield - RVT, 25°C , mPa·s (cP): Spindle 3, speed 2 rpm, helipath	≥5,000
Spindle 3, speed 20 rpm, helipath	800 to 1,600
Lubricity, ASTM D5648, K value, ASTM D 5648, %: 3/8 x 16 steel GR 2 nuts & GR 5 bolts	-10 to +10

(In critical applications, it is necessary to determine the K values independently. Henkel corporation makes no warranty of specific performance on any individual fastener)

TYPICAL CURING PERFORMANCE

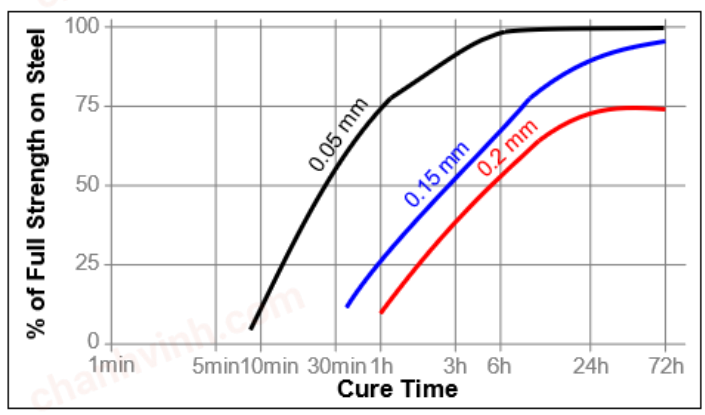
Cure Speed vs. Substrate

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



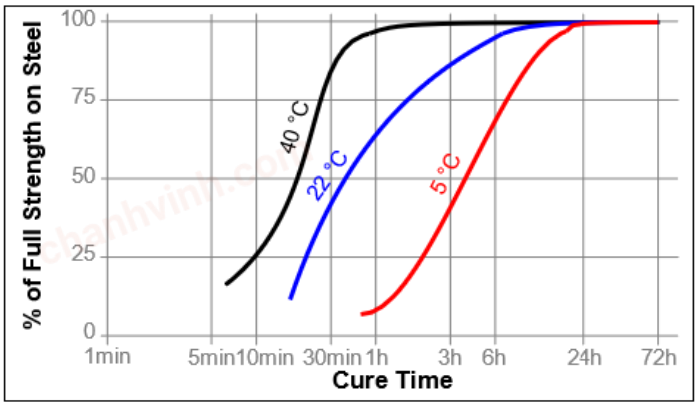
Cure Speed vs. Bond Gap

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 on steel pins and collars at different controlled gaps and tested according to ISO 10123.

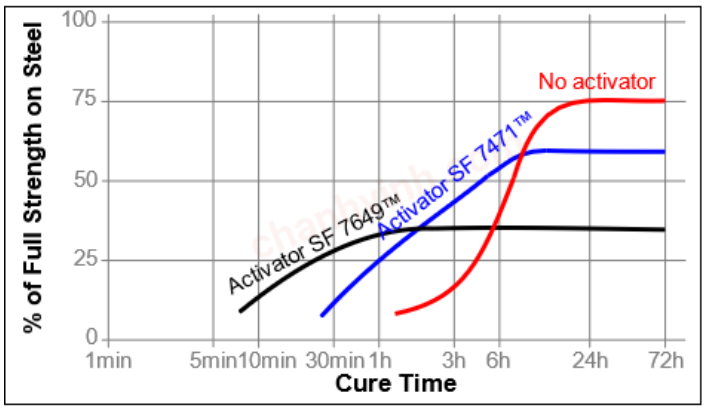


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Cure Speed vs. Temperature
The rate of cure will depend on the temperature. The graph below shows the breakaway strength developed with time at different temperatures on M10 steel nuts and bolts and tested according to ISO 10964.



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 on M10 zinc dichromate steel nuts and bolts using Activator SF 7471™ or SF 7649™ and tested according to ISO 10964.



TYPICAL PROPERTIES OF CURED MATERIAL

Physical properties:

Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}:	80×10^{-6}
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 steel nuts and bolts	N·m (lb·in)	3 to 9 (25 to 80)
3/8 x 16 steel nuts (grade 2) and bolts (grade 5)	N·m (lb·in)	2.8 to 9.0 (25 to 80)
3/8 x 16 cadmium nuts and bolts	N·m (lb·in)	1.1 to 4.5 (10 to 40)
3/8 x 16 zinc nuts and bolts	N·m (lb·in)	1.1 to 4.5 (10 to 40)

Prevail Torque, ISO 10964:

M10 steel nuts and bolts	N·m (lb·in)	1 to 6 (9 to 50)
3/8 x 16 steel nuts (grade 2) and bolts (grade 5)	N·m (lb·in)	1.1 to 5.6 (10 to 50)
3/8 x 16 cadmium nuts and bolts	N·m (lb·in)	0.5 to 2.8 (4 to 25)
3/8 x 16 zinc nuts and bolts	N·m (lb·in)	0.5 to 2.8 (4 to 25)

Breakloose torque, ISO 10964, pre-torqued to 5N·m:

M10 steel nuts and bolts	N·m (lb·in)	8 to 20 (70 to 180)

Max. prevail torque, ISO 10964, pre-torqued to 5 N·m:

M10 steel nuts and bolts	N·m (lb·in)	8 to 20 (70 to 180)

After 1 hour @ 22°C
Breakaway torque, ISO 10964:

3/8 x 16 steel nuts (grade 2) and bolts (grade 5)	N·m (lb·in)	1.1 to 9.0 (10 to 80)

Prevail Torque, ISO 10964:

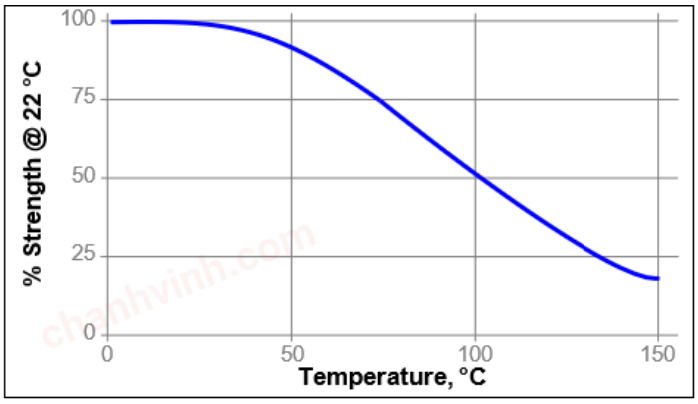
3/8 x 16 steel nuts (grade 2) and bolts (grade 5)	N·m (lb·in)	0.5 to 5.6 (4 to 50)

TYPICAL ENVIRONMENTAL RESISTANCE

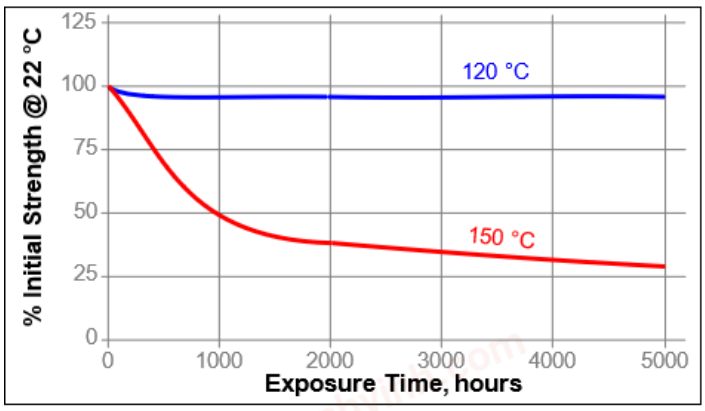
Cured for 1 week @ 22 °C
Breakloose torque, ISO 10964, Pre-torqued to 5 N·m:
M10 zinc phosphate nuts and bolts

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Hot Strength
Tested at temperature



Heat Aging
Aged at temperature indicated and tested @ 22 °C.



Chemical/Solvent Resistance
Aged under conditions indicated and tested @ 22°C.

		% of initial strength			
Environment	**°C**	**100** h	**500 h**	**1000 h**	**5000 h**
Motor oil	125	100	95	90	85
Leaded petrol	22	95	95	95	95
Brake fluid	22	95	95	95	90
Water/glycol 50/50	87	80	80	80	80
Acetone	22	100	90	90	90
Ethanol	22	95	95	90	90

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 material is an inactive metal or the cure speed is too slow, spray all threads with Activator SF 7471™ or SF 7649™ and allow to dry.
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. Assemble and tighten as required.
8. **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 thouroughly fill the voids. For bigger threads and voids, adjust product amount accordingly and apply a 360° bead of product on the female threads also.

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.

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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
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.

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