Safety Data Sheet according to (EC) No 1907/2006 - ISO 11014-1

Loctite 225

sds no. : 153491
V002.0
Revision: 17.05.2010
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1. Identification of the substance/preparation and of the company/undertaking

Trade name:
Loctite 225

Intended use:
Adhesive

Company name:
Henkel Limited
Technologies House
Wood Lane End
HP2 4RQ Hemel Hempstead

Great Britain

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ua-productsafety.uk@uk.henkel.com

Emergency information:
24 Hours Emergency Tel: +44 (0)1442 278497

2. Hazards identification

R20 Harmful by inhalation.
R36/37 Irritating to eyes and respiratory system.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. Composition / information on ingredients

General chemical description:
Anaerobic Sealant

Declaration of ingredients according to (EC) No 1907/2006:

Hazardous components CAS-No.	EINECS ELINCS	content	Classification
Cumene hydroperoxide 80-15-9	201-254-7	1 - < 3 %	T - Toxic; R23 Xn - Harmful; R21/22, R48/20/22 O - Oxidizing; R7 C - Corrosive; R34 N - Dangerous for the environment; R51, R53
Cumene 98-82-8	202-704-5	0,1 - 1 %	R10 Xn - Harmful; R65 Xi - Irritant; R37 N - Dangerous for the environment; R51, R53
N,N-dimethyl-o-toluidine 609-72-3	210-199-8	0,1 - 1 %	R52, R53 T - Toxic; R23/24/25 R33

For full text of the R-Phrases indicated by codes see section 16 'Other Information'.

Substances without classification may have community workplace exposure limits available.

4. First aid measures

Inhalation:
Move to fresh air. If symptoms persist, seek medical advice.

Skin contact:
Rinse with running water and soap.
If adverse health effects develop seek medical attention.

Eye contact:
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
If adverse health effects develop seek medical attention.

Ingestion:
Rinse out mouth, drink 1-2 glasses of water, do not induce vomiting.
In case of adverse health effects seek medical advice.

5. Fire fighting measures

Combustion behaviour:
Non flammable product (flash point is greater than 100°C (CC))

Suitable extinguishing media:
foam, extinguishing powder, carbon dioxide.

Hazardous combustion products:
Trace amounts of toxic and/or irritating fumes may be released and the use of breathing apparatus is recommended.

6. Accidental release measures

Personal precautions:
Ensure adequate ventilation.
Avoid skin and eye contact.

Environmental precautions:
Do not let product enter drains.

Clean-up methods:
For small spills wipe up with paper towel and place in container for disposal.
For large spills absorb onto inert absorbent material and place in sealed container for disposal.

7. Handling and storage

Handling:
Use only in well-ventilated areas.
Prolonged or repeated skin contact should be avoided to minimise any risk of sensitisation.
Avoid skin and eye contact.

Storage:
Store in original containers at 8-21C (46.4-69.8F) and do not return residual materials to containers as contamination may reduce the shelf life of the bulk product.

8. Exposure controls / personal protection

Components with specific control parameters for workplace:

Valid for
Great Britain
Basis
UK EH40 WELs

Ingredient	ppm	mg/m3	Type	Category	Remarks
CUMENE 98-82-8	25	125	Time Weighted Average (TWA).		EH40 WEL
CUMENE 98-82-8	50	250	Short Term Exposure Limit (STEL):		EH40 WEL
CUMENE 98-82-8			Skin designation:	Can be absorbed through the skin.	EH40 WEL
CUMENE 98-82-8			Skin designation:	Can be absorbed through the skin.	ECTLV
CUMENE 98-82-8	50	250	Short Term Exposure Limit (STEL):	Indicative	ECTLV
CUMENE 98-82-8	20	100	Time Weighted Average (TWA).	Indicative	ECTLV

Respiratory protection:

Ensure adequate ventilation.
Do not inhale vapors and fumes.

Hand protection:

Chemical-resistant protective gloves (EN 374).
Suitable materials for short-term contact or splashes (recommended: at least protection index 2, corresponding to > 30 minutes permeation time as per EN 374):
nitrile rubber (IIR; >= 0.4 mm thickness)
Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374):
nitrile rubber (IIR; >= 0.4 mm thickness)
This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

Eye protection:

Wear protective glasses.

General protection and hygiene measures:

Good industrial hygiene practices should be observed.

9. Physical and chemical properties

General characteristics:

Appearance	Paste Brown
Odor:	Characteristic

Phys./chem. properties:

pH-value ()	3,00 - 6,00
Flash point	> 100,0 °C (> 212 °F)
Vapor pressure	0,1330000 mbar
Density ()	1,0800 g/cm3
Solubility (qualitative) (Solvent: Water)	Not miscible
Melting point	Not available
VOC content	< 3 %

(1999/13/EC)

10. Stability and reactivity

Conditions to avoid:
Stable under normal conditions of storage and use.
No decomposition if stored and applied as directed.

Materials to avoid:
Peroxides.

11. Toxicological information

Oral toxicity:
May cause irritation to the digestive tract.

Inhalative toxicity:
Harmful by inhalation.
Irritating to respiratory system

Skin irritation:
This product is considered to have low dermal toxicity.
Prolonged or repeated contact may cause skin irritation.

Eye irritation:
Irritating to eyes.

12. Ecological information

Ecotoxicity:

Hazardous components CAS-No.	Species	Exposure time	Value type	Value
Cumene hydroperoxide 80-15-9 Cumene hydroperoxide 80-15-9	Ide, silver or golden orfe (Leuciscus idus) Water flea (Daphnia magna)	48 h 24 h	LC 50 EC 50	14 mg/l 7 mg/l
Cumene 98-82-8	Trout family (Salmonidae)	96 h	LC 50	4,8 mg/l
N,N-dimethyl-o-toluidine 609-72-3	Fathead minnow (Pimephales promelas)	96 h	LC 50	46 mg/l

General ecological information:
Harmful to aquatic organisms.
May cause long-term adverse effects in the aquatic environment.
Do not empty into drains / surface water / ground water.

13. Disposal considerations

Product disposal:
Dispose of in accordance with local and national regulations.
Contribution of this product to waste is very insignificant in comparison to article in which it is used

14. Transport information

General information:
Not hazardous according to RID, ADR, ADNR, IMDG, IATA-DGR.

15. Regulations - classification and identification

Indication of danger:

Xn - Harmful

Contains
Cumene hydroperoxide

Risk phrases:
R20 Harmful by inhalation.
R36/37 Irritating to eyes and respiratory system.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases:
S23 Do not breathe vapour.
S25 Avoid contact with eyes.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S51 Use only in well-ventilated areas.
S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

Additional labeling:
For consumer use only: S2 Keep out of the reach of children
S46 If swallowed, seek medical advice immediately and show this container or label.

16. Other information

The labelling of the product is indicated in Section 15. The full text of the R-phrases indicted by codes in this safety data sheet are as follows:

R10 Flammable.
R21/22 Harmful in contact with skin and if swallowed.
R23 Toxic by inhalation.
R23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
R33 Danger of cumulative effects.
R34 Causes burns.
R37 Irritating to respiratory system.
R48/20/22 Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R51 Toxic to aquatic organisms.
R52 Harmful to aquatic organisms.
R53 May cause long-term adverse effects in the aquatic environment.
R65 Harmful: may cause lung damage if swallowed.
R7 May cause fire.

Further information:

This information is based on our current level of knowledge and relates to the product in the state in which it is delivered. It is intended to describe our products from the point of view of safety requirements and is not intended to guarantee any particular properties.

This safety data sheet was prepared in accordance with Council Directive 67/548/EEC and it's subsequent amendments, and Commission Directive 1999/45/EC.

Technical Data Sheet

LOCTITE® 225

November 2016

PRODUCT DESCRIPTION

LOCTITE® 225 provides the following product characteristics:

Technology	Acrylic
Chemical Type	Dimethacrylate ester
Appearance (uncured)	Brown liquid[LMS]
Fluorescence	Positive under UV light[LMS]
Components	One component - requires no mixing
Viscosity	Medium
Cure	Anaerobic
Secondary Cure	Activator
Application	Threadlocking
Strength	Medium

LOCTITE® 225 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.

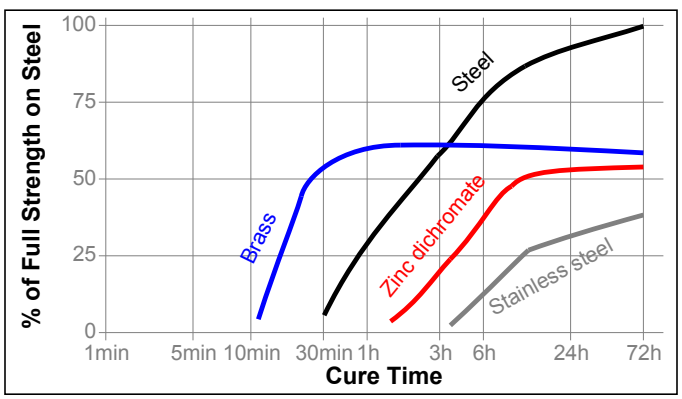
TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.08
Flash Point - See SDS	
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 5, speed 2.5 rpm	17,500 to 52,500
Spindle 5, speed 20 rpm	5,900 to 10,300[LMS]
Viscosity, EN 12092 - MV, 25 °C, after 180 s, mPa·s (cP):	
Shear rate 129 s^{-1}	550 to 1,100

TYPICAL CURING PERFORMANCE

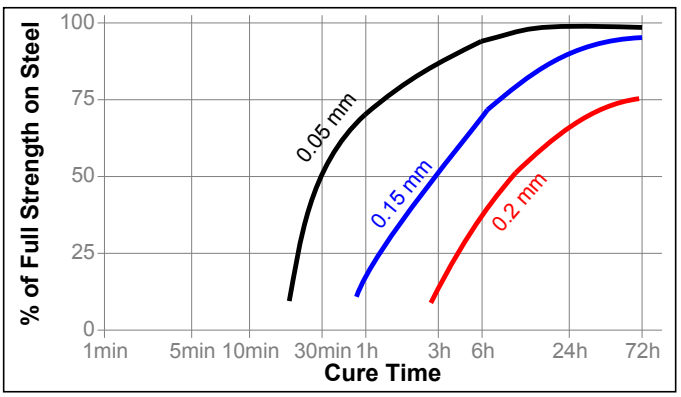
Cure Speed vs. Substrate

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



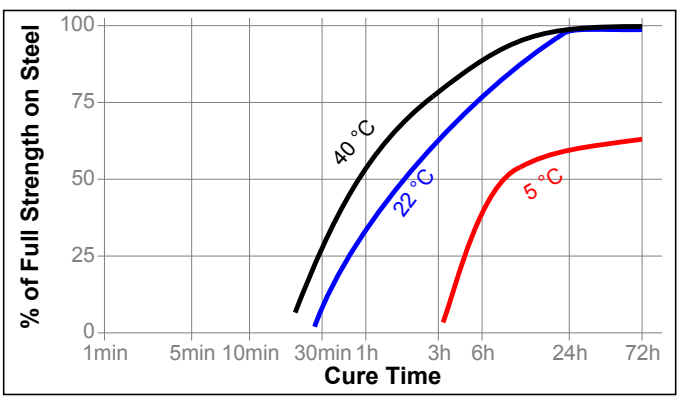
Cure Speed vs. Bond Gap

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.



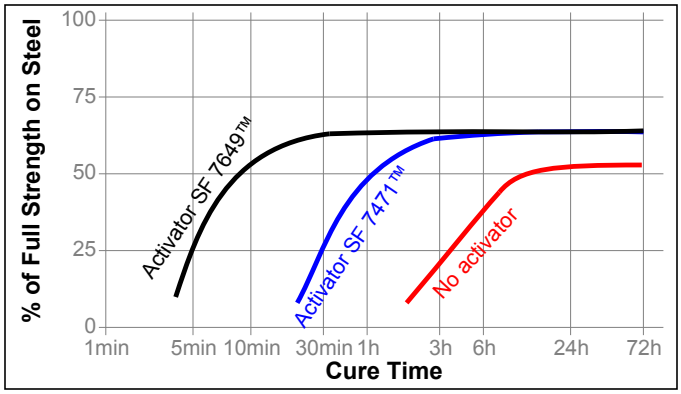
Cure Speed vs. Temperature

The rate of cure will depend on the temperature. The graph below shows the breakaway strength developed with time at different temperatures on M10 black oxide bolts and steel nuts 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 M10 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}	100×10^{-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 black oxide bolts and steel nuts	N·m	2.5 to 12[LMS]
	(lb.in.)	(22 to 106)

Prevail Torque, ISO 10964:

M10 black oxide bolts and steel nuts	N·m	0.5 to 5[LMS]
	(lb.in.)	(4 to 44)

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

M10 black oxide bolts and steel nuts	N·m	6 to 18
	(lb.in.)	(53 to 159)

Max. Prevail Torque, ISO 10964, Pre-torqued to 5 N·m:

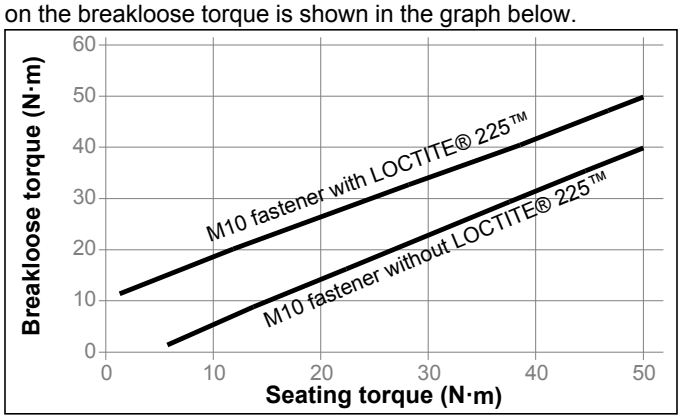
M10 black oxide bolts and steel nuts	N·m	6 to 18
	(lb.in.)	(53 to 159)

Compressive Shear Strength, ISO 10123:

Steel pins and collars	N/mm^2	3 to 10
	(psi)	(435 to 1,450)

Torque Augmentation

Breakloose torque of an uncoated fastener will normally be 15 to 30% less than the on-torque. The effect of LOCTITE® 225 on the breakloose torque is shown in the graph below.



TYPICAL ENVIRONMENTAL RESISTANCE

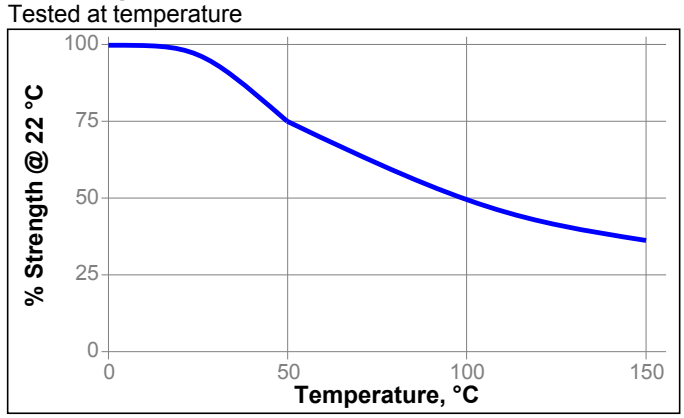
Cured for 1 week @ 22 °C

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

M10 zinc phosphate steel nuts and bolts

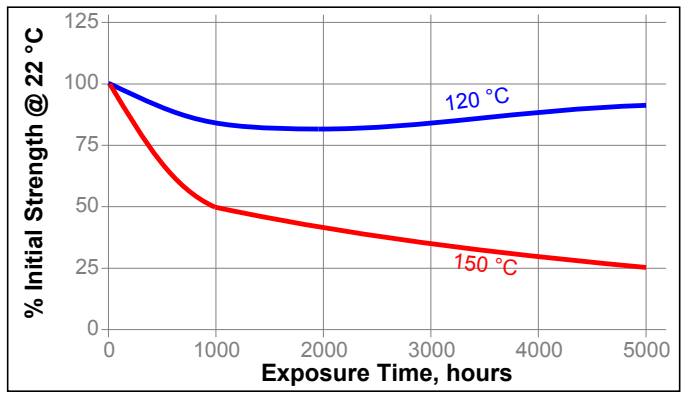
Hot Strength

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**
Motor oil (MIL-L-46152)	125	100	95	95
Water/glycol 50/50	87	80	80	80
Gasoline	22	95	95	95
Brake fluid	22	95	95	90
Ethanol	22	95	95	90
Acetone	22	100	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 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 down the internal threads to the bottom of the 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 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.
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 to nut or bolt to approximately 250 °C. Disassemble while hot.

For Cleanup

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

Loctite Material Specification[LMS]

LMS dated October 08, 1999. 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.

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Reference 2.1