**Revision Number:** 002.0 **Issue date:** 08/21/2014

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product name:** **LOCTITE® Quickstix™ 248™ THREADLOCKER MEDIUM STRENGTH**
**IDH number:** 462476
**Product type:** Anaerobic Adhesive
**Item number:** 37087
**Restriction of Use:** None identified
**Region:** United States

**Company address:**
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067

**Contact information:**
Telephone: (860) 571-5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

## 2. HAZARDS IDENTIFICATION

| EMERGENCY OVERVIEW | |
|---|---|
| WARNING: | CAUSES SKIN IRRITATION.<br>MAY CAUSE AN ALLERGIC SKIN REACTION.<br>CAUSES SERIOUS EYE IRRITATION. |

| HAZARD CLASS | HAZARD CATEGORY |
|---|---|
| SKIN IRRITATION | 2 |
| EYE IRRITATION | 2A |
| SKIN SENSITIZATION | 1 |

**PICTOGRAM(S)**

**Precautionary Statements**

**Prevention:** Avoid breathing dust or fumes. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wear eye and face protection. Wear protective gloves.

**Response:** IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. If skin irritation or rash occurs: Get medical attention. If eye irritation persists: Get medical attention. Take off contaminated clothing.

**Storage:** Not prescribed

**Disposal:** Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

**See Section 11 for additional toxicological information.**

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

| Hazardous Component(s) | CAS Number | Percentage* |
|---|---|---|
| Polyglycol dimethacrylate | Proprietary | 30 - 60 |
| Methacrylate resin | Proprietary | 10 - 30 |
| Rheological additive | Unknown | 10 - 30 |
| Silica, amorphous, fumed, crystal-free | 112945-52-5 | 1 - 5 |
| Cumene hydroperoxide | 80-15-9 | 0.1 - 1 |
| 1-Acetyl-2-phenylhydrazine | 114-83-0 | 0.1 - 1 |
| Cumene | 98-82-8 | 0.1 - 1 |

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

## 4. FIRST AID MEASURES

**Inhalation:** Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Skin contact:** Immediately flush skin with plenty of water (using soap, if available). Remove contaminated clothing and footwear. Wash clothing before reuse. Get medical attention.

**Eye contact:** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

**Ingestion:** DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**Symptoms:** See Section 11.

## 5. FIRE FIGHTING MEASURES

**Extinguishing media:** Water spray (fog), foam, dry chemical or carbon dioxide.

**Special firefighting procedures:** Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear. In case of fire, keep containers cool with water spray.

**Unusual fire or explosion hazards:** Uncontrolled polymerization may occur at high temperatures resulting in explosions or rupture of storage containers.

**Hazardous combustion products:** Oxides of nitrogen. Oxides of carbon. Irritating organic vapours.

## 6. ACCIDENTAL RELEASE MEASURES

**Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.**

**Environmental precautions:** Do not allow product to enter sewer or waterways.

**Clean-up methods:** Remove all sources of ignition. Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment during clean-up. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Scrape up as much material as possible. Store in a partly filled, closed container until disposal. Refer to Section 8 "Exposure Controls / Personal Protection" prior to clean up.

## 7. HANDLING AND STORAGE

**Handling:** Use only with adequate ventilation. Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. Keep container closed. Refer to Section 8.

**Storage:** For safe storage, store at or below 38 °C (100.4 °F)
Keep in a cool, well ventilated area away from heat, sparks and open flame.
Keep container tightly closed until ready for use.

**For information on product shelf life contact Henkel Customer Service at (800) 243-4874.**

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.**

| Hazardous Component(s) | ACGIH TLV | OSHA PEL | AIHA WEEL | OTHER |
|---|---|---|---|---|
| Polyglycol dimethacrylate | None | None | None | None |
| Methacrylate resin | None | None | None | None |
| Rheological additive | 10 mg/m3 TWA Total dust.<br>3 mg/m3 TWA Respirable fraction. | 15 mg/m3 TWA Total dust.<br>5 mg/m3 TWA Respirable fraction. | None | None |
| Silica, amorphous, fumed, crystal-free | 10 mg/m3 TWA Inhalable dust.<br>3 mg/m3 TWA Respirable fraction. | 20 MPPCF TWA<br>0.8 mg/m3 TWA | None | None |
| Cumene hydroperoxide | None | None | 1 ppm (6 mg/m3) TWA (SKIN) | None |
| 1-Acetyl-2-phenylhydrazine | None | None | None | None |
| Cumene | 50 ppm TWA | 50 ppm (245 mg/m3) PEL (SKIN) | None | None |

**Engineering controls:** Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits.

**Respiratory protection:** Use NIOSH approved respirator if there is potential to exceed exposure limit(s).

**Eye/face protection:** Safety goggles or safety glasses with side shields. Full face protection should be used if the potential for splashing or spraying of product exists. Safety showers and eye wash stations should be available.

**Skin protection:** Use chemical resistant, impermeable clothing including gloves and either an apron or body suit to prevent skin contact. Neoprene gloves. Nitrile gloves.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical state:** Solid, Paste
**Color:** Blue
**Odor:** Characteristic
**Odor threshold:** Not available.
**pH:** Not applicable
**Vapor pressure:** < 5 mm hg (80 °F (26.7 °C))
**Boiling point/range:** > 300 °F (> 148.9 °C) None
**Melting point/ range:** Not available.
**Specific gravity:** 1.1
**Vapor density:** Not available.
**Flash point:** Product is a solid.
**Flammable/Explosive limits - lower:** Not available.
**Flammable/Explosive limits - upper:** Not available.

| | |
|---|---|
| **Autoignition temperature:** | Not available. |
| **Evaporation rate:** | Not available. |
| **Solubility in water:** | Slight |
| **Partition coefficient (n-octanol/water):** | Not available. |
| **VOC content:** | 0.37 %; 4.08 g/l |
| **Viscosity:** | Not available. |
| **Decomposition temperature:** | Not available. |

## 10. STABILITY AND REACTIVITY

**Stability**: Stable under normal conditions of storage and use.

**Hazardous reactions:** None under normal processing. Polymerization may occur at elevated temperature or in the presence of incompatible materials.

**Hazardous decomposition products:** Oxides of nitrogen. Oxides of carbon. Irritating organic vapours.

**Incompatible materials:** Strong oxidizing agents.

**Reactivity:** Not available.

**Conditions to avoid:** Elevated temperatures. Heat, flames, sparks and other sources of ignition. Store away from incompatible materials.

## 11. TOXICOLOGICAL INFORMATION

**Relevant routes of exposure:** Skin, Inhalation, Eyes, Ingestion

**Potential Health Effects/Symptoms**

| | |
|---|---|
| **Inhalation:** | Inhalation of vapors or mists of the product may be irritating to the respiratory system. |
| **Skin contact:** | Causes skin irritation. May cause allergic skin reaction. |
| **Eye contact:** | Causes serious eye irritation. |
| **Ingestion:** | May cause gastrointestinal tract irritation if swallowed. |

| Hazardous Component(s) | LD50s and LC50s | Immediate and Delayed Health Effects |
|---|---|---|
| Polyglycol dimethacrylate | None | Allergen, Irritant |
| Methacrylate resin | None | Irritant, Allergen |
| Rheological additive | None | No Data |
| Silica, amorphous, fumed, crystal-free | None | Nuisance dust |
| Cumene hydroperoxide | None | Allergen, Central nervous system, Corrosive, Irritant, Mutagen |
| 1-Acetyl-2-phenylhydrazine | None | Allergen, Blood, Kidney, Mutagen, Some evidence of carcinogenicity |
| Cumene | Oral LD50 (RAT) = 2.91 g/kg<br>Oral LD50 (RAT) = 1,400 mg/kg<br>Inhalation LC50 (RAT, 4 h) = 8000 ppm | Central nervous system, Irritant, Lung |

| Hazardous Component(s) | NTP Carcinogen | IARC Carcinogen | OSHA Carcinogen (Specifically Regulated) |
|---|---|---|---|
| Polyglycol dimethacrylate | No | No | No |
| Methacrylate resin | No | No | No |
| Rheological additive | No | No | No |
| Silica, amorphous, fumed, crystal-free | No | No | No |
| Cumene hydroperoxide | No | No | No |
| 1-Acetyl-2-phenylhydrazine | No | No | No |
| Cumene | No | Group 2B | No |

## 12. ECOLOGICAL INFORMATION

**Ecological information:** Not available.

## 13. DISPOSAL CONSIDERATIONS

**Information provided is for unused product only.**

**Recommended method of disposal:** Follow all local, state, federal and provincial regulations for disposal.

**Hazardous waste number:** Not a RCRA hazardous waste.

## 14. TRANSPORT INFORMATION

**The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.**

**U.S. Department of Transportation Ground (49 CFR)**

**Proper shipping name:** Not regulated
**Hazard class or division:** None
**Identification number:** None
**Packing group:** None

**International Air Transportation (ICAO/IATA)**

**Proper shipping name:** Not regulated
**Hazard class or division:** None
**Identification number:** None
**Packing group:** None

**Water Transportation (IMO/IMDG)**

**Proper shipping name:** Not regulated
**Hazard class or division:** None
**Identification number:** None
**Packing group:** None

## 15. REGULATORY INFORMATION

**United States Regulatory Information**

**TSCA 8 (b) Inventory Status:** All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
**TSCA 12 (b) Export Notification:** None above reporting de minimis

**CERCLA/SARA Section 302 EHS:** None above reporting de minimis
**CERCLA/SARA Section 311/312:** Immediate Health, Delayed Health
**CERCLA/SARA Section 313:** None above reporting de minimis
**CERCLA Reportable quantity:** Cumene hydroperoxide (CAS# 80-15-9) 10 lbs. (4.54 kg)

**California Proposition 65:** This product contains a chemical known in the State of California to cause cancer.

**Canada Regulatory Information**

**CEPA DSL/NDSL Status:** All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

## 16. OTHER INFORMATION

**This safety data sheet contains changes from the previous version in sections:** New Safety Data Sheet format.

**Prepared by:** Sheila Gines, Regulatory Affairs Specialist

**Issue date:** 08/21/2014

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Technical Data Sheet

# LOCTITE® 248™

August 2016

## PRODUCT DESCRIPTION

LOCTITE® 248™ provides the following product characteristics:

| | |
|---|---|
| **Technology** | Acrylic |
| Chemical Type | Dimethacrylate ester |
| Appearance (uncured) | Blue, wax consistency[LMS] |
| Appearance (form) | Stick |
| Fluorescence | Positive under UV light[LMS] |
| Components | One component - requires no mixing |
| **Cure** | Anaerobic |
| **Application** | Threadlocking |
| Strength | Medium |

LOCTITE® 248™ is a medium strength anaerobic threadlocking material. It is supplied as a wax-like semi-solid, conveniently packaged in a self-feeding stick applicator. As with liquid anaerobic products, this material develops its cured properties in the absence of air when confined between close fitting metal surfaces. It achieves consistent strength and can be used on a variety of metal substrates. It is particularly well suited for applications where a liquid product may be too fluid to stay on a part or be difficult to apply. It stores easily and allows for direct contact to a threaded part during application to ensure even coverage.

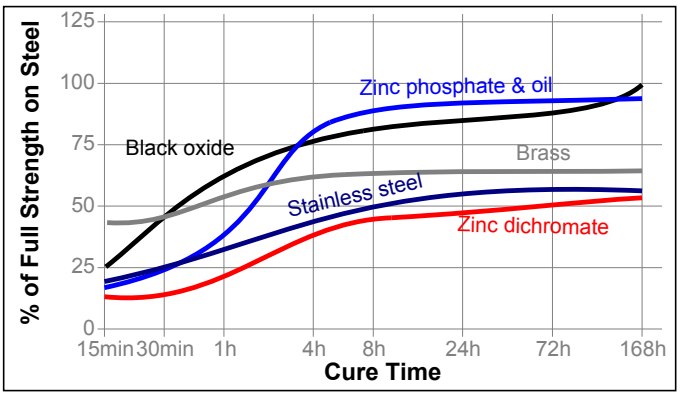
## TYPICAL PROPERTIES OF UNCURED MATERIAL

| | |
|---|---|
| Specific Gravity @ °C | 1.03 |
| Unworked Penetration, ISO 2137, 1/10 mm | 90 to 140 |
| Melting Point, °C | >65 |

## TYPICAL CURING PERFORMANCE

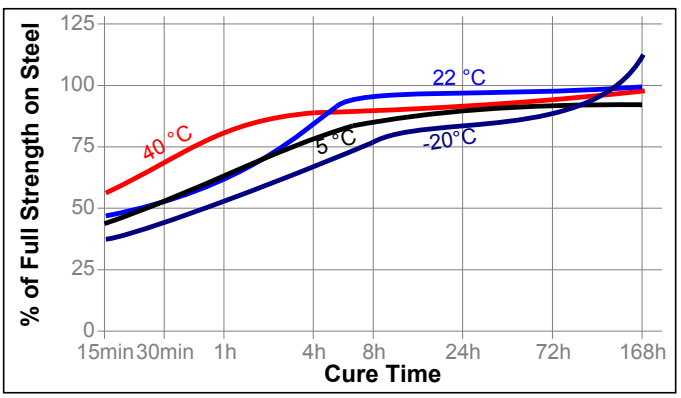
### Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The graph below shows the breakloose strength developed with time on M10 black oxide steel bolts and mild steel nuts compared to different materials and tested according to ISO 10964. All samples pre-torqued to 5 N·m. Product applied to bolts only.



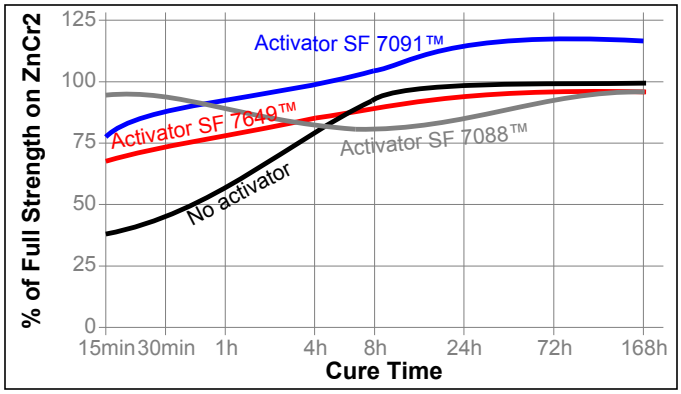

### Cure Speed vs. Temperature

The rate of cure will depend on the temperature. The graph below shows the breakloose strength developed with time at different temperatures on 3/8 x 16 degreased steel nuts & bolts and tested according to ISO 10964. All samples pre-torqued to 5 N·m. Product applied to bolts only.




### Cure Speed vs. Activator

Where cure speed is unacceptably long due to large gaps, applying activator to the surface may improve cure speed. However, this can reduce ultimate strength of the bond and therefore testing is recommended to confirm effect. The graph below shows the breakloose strength developed with time using Activator SF 7471™ and SF 7649™ on 3/8 x 16 zinc dichromate nuts and bolts and tested according to ISO 10964. All samples pre-torqued to 5 N·m. Product applied to bolts, activator to nuts.




## TYPICAL PERFORMANCE OF CURED MATERIAL

**Adhesive Properties**

Cured for 1 hour @ 25 °C

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

| | | |
|---|---|---|
| 3/8 x 16 steel nuts (grade 2) and bolts (grade 5) (degreased) | N·m (lb.in.) | ≥7[LMS] (≥62) |

Cured for 4 hours @ 25 °C

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

| | | |
|---|---|---|
| 3/8 x 16 stainless steel nuts and bolts | N·m (lb.in.) | ≥6[LMS] (≥53) |

Cured for 24 hours @ 25 °C

Breakaway Torque, ISO 10964, Unseated:

| | | |
|---|---|---|
| 3/8 x 16 steel nuts (grade 2) and bolts (grade 5) (degreased) | N·m (lb.in.) | 13 (120) |
| M10 black oxide bolts and steel nuts (degreased) | N·m (lb.in.) | 23 (200) |
| 3/8 x 16 stainless steel nuts and bolts (degreased) | N·m (lb.in.) | 12 (110) |

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

| | | |
|---|---|---|
| 3/8 x 16 steel nuts (grade 2) and bolts (grade 5) (degreased) | N·m (lb.in.) | 8 to 32[LMS] (70 to 285) |
| M10 black oxide steel nuts and bolts (degreased) | N·m (lb.in.) | 25 (225) |
| 3/8 x 16 stainless steel nuts and bolts | N·m (lb.in.) | 18 (160) |

Cured for 168 hours @ 22 °C

Breakaway Torque, ISO 10964, Unseated,
Oil Tolerance: M10 black oxide steel bolts and mild steel nuts degreased and then reoiled in noted oil type. Data presented as a % of unoiled control.

| | |
|---|---|
| Emulsion Oil: Aquasafe 21 | 61 |
| Solvent-Based oil: SafeCoat DW 30X | 96 |

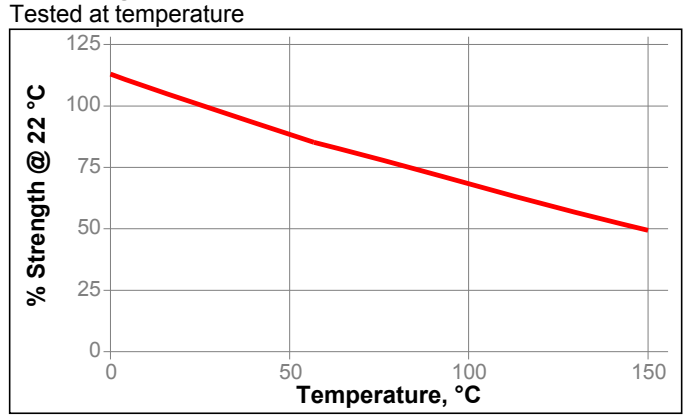
## TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 72 hours @ 22 °C

Breakloose Torque, ISO 10964, Pre-torqued to 5 N·m:
3/8 x 16 zinc phosphate & oil nuts and bolts

### Hot Strength

Tested at temperature

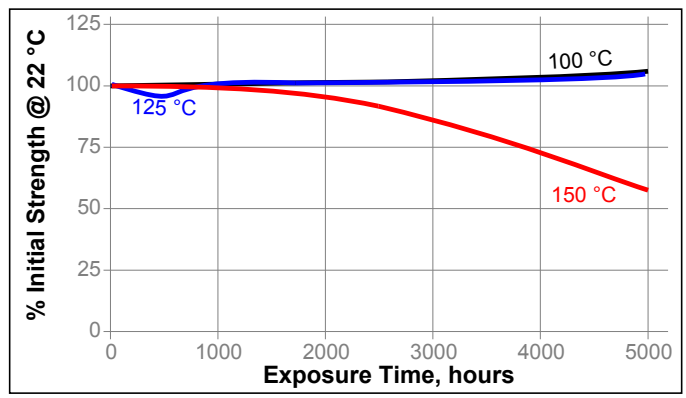



### Cold Strength

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 @ 22 °C



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

| | | % of initial strength | |
|---|---|---|---|
| **Environment** | **°C** | **1000 h** | **5000 h** |
| Motor oil (MIL-L-46152) | 125 | 90 | 90 |
| Gasoline | 22 | 85 | 65 |
| Brake fluid | 22 | 100 | 100 |
| Water/glycol 50/50 | 87 | 95 | 110 |
| Ethanol | 22 | 80 | 75 |
| Acetone | 22 | 85 | 75 |
| B100 Bio-Diesel | 22 | 100 | 105 |
| E85 Ethanol fuel | 22 | 80 | 70 |
| DEF (AdBlue® ) | 22 | 95 | 105 |
| Sodium Hydroxide, 20% | 22 | 90 | 75 |
| Phosphoric Acid, 10% | 22 | 125 | 140 |

## 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. Advance only enough product to use at the time of application.
3. Remove any skin that may have formed on the top of the stick.
4. Apply sufficient product to fill the threads in the area where the nut will be engaged on the bolt.
5. Recap product after use.
6. 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 July 24, 2013. 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

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Reference 1.2