

### PRODUCT DESCRIPTION

Loctite 8013 is a specially formulated metal-free anti-seize lubricant produced under controlled conditions for highest purity. Product 8013 is formulated with high purity raw materials and contains only trace levels of halogens, sulphur, copper, aluminium and heavy metals. Developed to protect steel, stainless steel and other proprietary alloys.

### Advantages:

- Recommended for the nuclear power industry
- Superior anti-seize: tests show stuck studs reduced by 90%
- More uniform torque tension: smaller difference in torque coefficients between bolting materials
- High purity: made from highest purity ingredients
- Free from copper: less than 50 ppm copper
- Typically used in applications with a dry surface temperature of -29 to 1315°C (-20 to 2400°F)

### TYPICAL APPLICATIONS

- Bolts, studs, valves, pipe fittings, slip fits and press fits in nuclear electric power generating plants, chemical plants, pharmaceutical plants, paper mills and other locations where stainless steel fasteners are used.

### Operational Benefits:

- During assembly - prevents high friction, galling and seizing. Promotes uniform and predictable clamping.
- During operation - high purity prevents stress corrosion
  - Disassembly - prevents seizing, galling, destruction of threads

### PROPERTIES OF MATERIAL

	Typical Value
Appearance	Dark-grey paste
Specific Gravity	1.12 - 1.24
Penetration, ASTM D 217-88 unworked, mm	325 - 375
Flash Point, ASTM D 92-85, °C (°F)	218 (424)

### TYPICAL PERFORMANCE

An anti-seize lubricant used on a bolt helps to develop greater clamp load for the same torque compared to an unlubricated bolt. An additional benefit is greater uniformity in clamp load among a series of bolts. The relationship between torque and clamp load is expressed in the following equation:

$$T = K \times F \times D$$

- T = Torque (N.m)
- K = Torque coefficient or nut factor
- F = Clamp Load (N)
- D = Nominal diameter of bolt (m), determined experimentally.

### K Factor:

K factors are obtained on Grade 8, 1/2" steel bolts and Grade 5 nuts by a test procedure which measures torque tension properties. Lubricant was applied to the bolt threads and both faces of the washer. See properties chart for the torque coefficient or K value for the anti-seize compounds. We feel that this data fairly represents performance to be expected. However, Loctite makes no warranty of specific performance on any individual fastener. In critical applications, it is necessary to determine K values independently.

### Properties

	Typical Value
Torque coefficient, k on steel nuts and bolts	.16
Type 304 stainless steel	.18
Torque coefficient, k (solvent cleaned, not lubricated)	.27

### TYPICAL PURITY

Impurities	Test Method	ASTM or (SM16)	Max. Value	Typical Value
Halogen, Chlorine, Bromine, Iodine	Parr Bomb, Turbidimetric	D808-87, C69979	50 ppm	<15 ppm
Fluorine	Parr Bomb, Specific ION Electrode	D3761-84	200 ppm	<10 ppm
Sulphur	Parr Bomb, Turbidimetric Wet	D129-64, D1266-87	100 ppm	<5 ppm
Lead	Digestion, AAS Wet	(302D), D3559-84	25 ppm	<0.5 ppm
Cadmium	Digestion, AAS Wet	(302D), D3557-84	2 ppm	<15 ppm
Tin	Digestion, AAS Wet	(302D), E37-76	25 ppm	<5 ppm
Zinc	Digestion, AAS Wet	(302D), D1691-84	25 ppm	<5 ppm
Copper	Digestion, AAS Wet	(302D), D1688-94	50 ppm	<5 ppm
Mercury	Digestion, Cold Vapour, AAS	(302D), D3223-80	2 ppm	<0.1 ppm

### DIRECTIONS FOR USE

- Before or during assembly, wipe brush onto threads and other joint surfaces needing protection.
- Use full strength. Do not thin.

#### **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 Material Safety Data Sheet, (MSDS).**

#### **Limitations:**

Product 8013 contains calcium derivatives and may not be compatible with some lithium based products. Therefore, all areas of application must be thoroughly cleaned before applying.

#### **Storage**

Product shall be ideally stored in a cool, dry location in unopened containers at a temperature between 8°C to 28°C (46°F to 82°F) unless otherwise labelled. Optimal storage is at the lower half of this temperature range. To prevent contamination of unused product, do not return any material to its original container. For further specific shelf life information, contact your local Technical Service Centre.

#### **Data Ranges**

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

#### **Note**

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

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