



## ND Microspheres® 1193LE Technical Data Sheet

### Product Description

ND Microspheres® 1193LE is a pre-applied adhesive film for locking and sealing. ND Microspheres 1193 is factory pre-applied to either internal or external threads. It remains inert on the fastener until assembly of the threads mixes the resin. The resin fills the voids of the threads and cures to lock and seal the assembly. ND Microspheres 1193LE has less tendency for the material to be extrude (push) out of the thread during assembly. This allows a work area to stay cleaner during a shift. Once assembled, full adhesive strength will be achieved after 72 hours at room temperature but will have good working strength in as little as 12 hours. ND Microspheres® 1193LE is compatible with most commonly used metal surfaces.

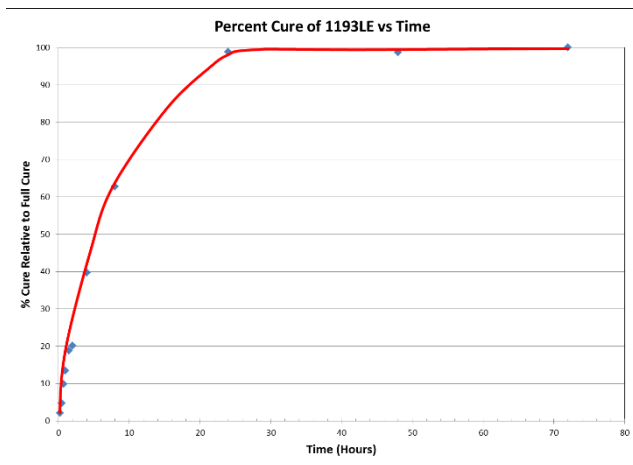
### Typical Applications

Microspheres 1193LE prevents loosening through vibration to provide locking and sealing of threaded assemblies including but not limited to:

- Ring gear bolts
- Head bolts
- Intake manifold bolts
- Transmission bolts

### Curing Performance (fastener assembly)

The graph shows the rate of cure of an M-10 nut and bolt plated with a dry phosphate coating. The breakaway strength was determined using industrial procedures.



### Performance of Cured Material

	Typical Values
<b>Installation Torque</b>	0.55 N-m
<b>Breakaway Torque</b>	30 N-m
<b>Prevailing off-torque</b>	22 N-m
<b>k-Value</b>	0.19
<b>Cure time at 23°C</b>	72 Hours

Please note that installation, breakaway, and prevailing off-torque data are from test results conducted on an M-10 x 1.5 class 10.9 zinc organic finish bolts and M010 x 1.5 class 10 zinc nuts. Performance may vary depending on fastener finish.

### Environmental and Fluid Resistance

Environment	Temperature	% of Initial Strength
5W30 Synthetic Engine Oil	150°C	60%
50/50 Long Life Coolant	100°C	55%
Transmission Fluid	150°C	65%

Heat age testing was conducted on M-10 x 1.5 zinc organic finish bolts and zinc plate nuts. Assembled fasteners were aged at 150°C for 168 hours and allowed to cool to room temperature before breakaway test. Immersion testing was conducted using M-10 x 1.5 Zinc organic finish bolts and zinc plate nuts. Assembled fasteners were submerged in each fluid for 168 hours at the temperature. Assemblies were allowed to cool to room temperature before breakaway test.

### General Information

#### Storage

Fasteners coated with product are to be stored in a cool and dry location at temperatures between -10°C to 35°C. Optimal storage is 25±4°C.

#### Note

The data 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 recommended that the product be tested in the application for which it is to be used.

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