

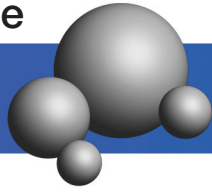
# ND MICROSPHERES<sup>®</sup>

## Fastener Adhesive

PreApplied

ND Industries<sup>®</sup> is ISO9001:2000 / AS9001B / QPL-18240F Listed / QSLM Registered

Epoxy Type



Automotive Approved

ND  
INDUSTRIES

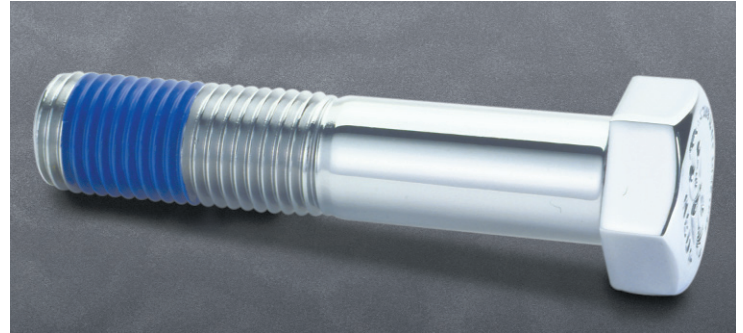
### DESCRIPTION:

- ❑ ND Microspheres are microencapsulated, room temperature curing adhesives that can be applied to **male** or **female** threaded fasteners of all sizes and configurations.
- ❑ ND Microspheres remain inert until the coated fastener is assembled to its mating part. The forces of engagement crush the microscopic capsules of epoxy resin, mix the separate reactant components, and initiate a chemical reaction which locks the parts together.
- ❑ Within minutes of assembly, ND Microspheres forms a substantial bond between the mating surfaces. Curing continues, normally, for 72 hours following installation in order to achieve full strength.
- ❑ ND Microspheres 593 DPC is available in powder form which, once reconstituted with the recommended solvent, exhibits the same properties as factory supplied liquid material.

COMPARE TO 3M\*\*\* Scotch-Grip\*\*\*

### FEATURES:

- ❑ **Low Prevailing On Torque:** Assembles easily with common hand tools.
- ❑ **Exceptional Locking Power:** Extensive testing indicates that ND Microspheres provides two to four times greater breakaway torque than conventional “plastic” fastener locking devices.
- ❑ **Versatile:** ND Microspheres are compatible with most sizes, configurations, materials and finishes.
- ❑ **Surpasses Industrial Fastener Institute Standards:** ND Microspheres meets or exceeds all performance requirements of IFI 125 and IFI 525 as well as automotive specifications when used on clean, dry and/or dry phosphated surfaces.
- ❑ **Long Shelf Life:** Once applied, ND Microspheres remains inert until a cure is activated by engagement with a mating thread. Store in cool dry environment.



### FEATURES CONTINUED:

- ❑ **Unaffected By Foreign Substances:** Oil, gasoline, salt-spray, acids, solvents, water, and air have virtually no effect on Microspheres when introduced after a final cure has been achieved. The cross-linked molecular structure of ND Microspheres makes it one of the most resistant types of adhesives.
- ❑ **Saves Money:** ND Microspheres brand pre-applied thread adhesive is less expensive than applying bottled thread locking compounds at the point of assembly.

ND Microspheres meets or exceeds the performance requirements of the following specifications and/or standards:

#### AUTOMOTIVE

- ❑ DaimlerChrysler PF-6616 & MS-CC-76
- ❑ Ford ES-20007-S100, ES-20010-S100  
ESS-M11P24-A1 & ESS-M11P24-A2
- ❑ General Motors GM6175M, GM6194M

#### INDUSTRIAL FASTENER INSTITUTE

- ❑ IFI 125
- ❑ IFI 525

#### OEM

- ❑ Detroit Diesel 80K15
- ❑ Rockwell International Q-29
- ❑ Caterpillar 1E2486
- ❑ International Harvester PF-200

For a complete list, contact ND INDUSTRIES.

**SPECIFICATIONS:**

<b>Bulk Properties:</b>			
Formula*	ND Microspheres® 593-S	ND Microspheres® 1193-S	ND Microspheres® 593 DPC
Typical Colors (see Note 1)...	Blue or Yellow	Orange or Neutral	Blue or Yellow
Appearance	Liquid	Liquid	Dry Powder
Base	Synthetic Resin	Synthetic Resin	Synthetic Resin
Base Solvent	Toluene	Toluene	Toluene
Flashpoint	40°F TCC	40°F TCC	N/A
Net Weight	8.6 ± 0.2 lbs./gal.	8.6 ± 0.2 lbs./gal.	
Viscosity	1600 - 2000 cPs	1600-2500 cPs	300-2000 cPs*****
Solids Content	59.5 ± 2.5%	59.5 ± 2.5%	
Shelf Life	1 year**	1 year**	1 year**
<b>As Applied Properties</b>			
Primary Usage	Heavy Duty Lock	Heavy Duty Lock	Heavy Duty Lock
Reusability	Limited (Approx. 3 Times)	Limited (Approx. 3 Times)	Limited (Approx. 3 Times)
Installation (on) Torque	Minimal****	Minimal****	Minimal****
Breakaway Torque*	Exceeds IFI 125 & IFI 525****	Exceeds IFI 125 & IFI 525****	Exceeds IFI 125 & IFI 525****
Prevailing (off) Torque*	Exceeds IFI 125 & IFI 525*	Exceeds IFI 125 & IFI 525*	Exceeds IFI 125 & IFI 525*
Typical Lead Threads	1 to 3	1 to 3	1 to 3
Typical Coating Length <small>See Note 2</small>	1.5 x Diameter	1.5 x Diameter	1.5 x Diameter
Service Temperature Range...	-65°F to +240°F	-65°F to +300°F (intermittently 400°F)	-65°F to + 275°F (on bolt after applied)
Compare to	3M Scotch-Grip 2353 & 4844	3M Scotch-Grip 2451 & 2510	
Shelf Life	2 years**	2 years**	2 years**

Note: See MSDS for Safety & Material Handling Instructions.  
 Note1: Other colors available upon request.  
 Note 2: Customer may specify location & coating length.

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 \* Data provided is for Liquid Slurry utilizing Toluene as solvent. DPC (Dry Powder Concentrate) version is available to applicators... contact ND Industries for more information.  
 \*\* When stored in dry, cool environment.  
 \*\*\* 3M and Scotch-Grip are registered trademarks of Minnesota Mining and Manufacturing Co.  
 \*\*\*\* On clean, dry or dry phosphated surfaces.  
 \*\*\*\*\* Depending on machine, temperature, humidity, fastener size, fastener surface and pretreatments, such as oil.

**For more information on ND Microspheres, or any of ND Industries' other quality fastening products, contact your nearest ND Service Center:**

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