



## Our Story

**Nanotech Industrial Solutions is the only manufacturer of nano and submicron spherical closed caged particles of Inorganic Fullerene-like Tungsten Disulfide.**

These revolutionary particles were first created in 1992 by Prof. Reshef Tenne at the Weizmann Institute of Science. The technology is exclusively licensed to Nanotech Industrial Solutions (NIS) for commercialization Worldwide. NIS has attracted the best minds in the fields of nano technology, chemistry, and various targeted industry applications like lubricating oils, greases, coatings, metal working fluids, polymers and composites.

# **NIS manufactures and blends a variety of lubricants and additives to allow max performance and reduced wear in different mechanical applications.**

The specific engineered NanoLub® IF-WS<sub>2</sub> products are based on a patented platform technology of proprietary super strong tungsten disulfide (WS<sub>2</sub>) spherical closed-caged particles. These unique WS<sub>2</sub> spheres lower friction and reduce wear. At the same time, contact pressure causes spheres to release tribofilms that attach to surface asperities and smooth them, thereby reducing friction and wear, improving overall mechanical efficiency while extending machinery life.

## **Additives**



**Automotive  
Lubricant  
Additives**



**Grease Additives**



**Industrial Oil and  
Metalworking  
Additives**

## **Fully Formulated**

**Grease  
Products**

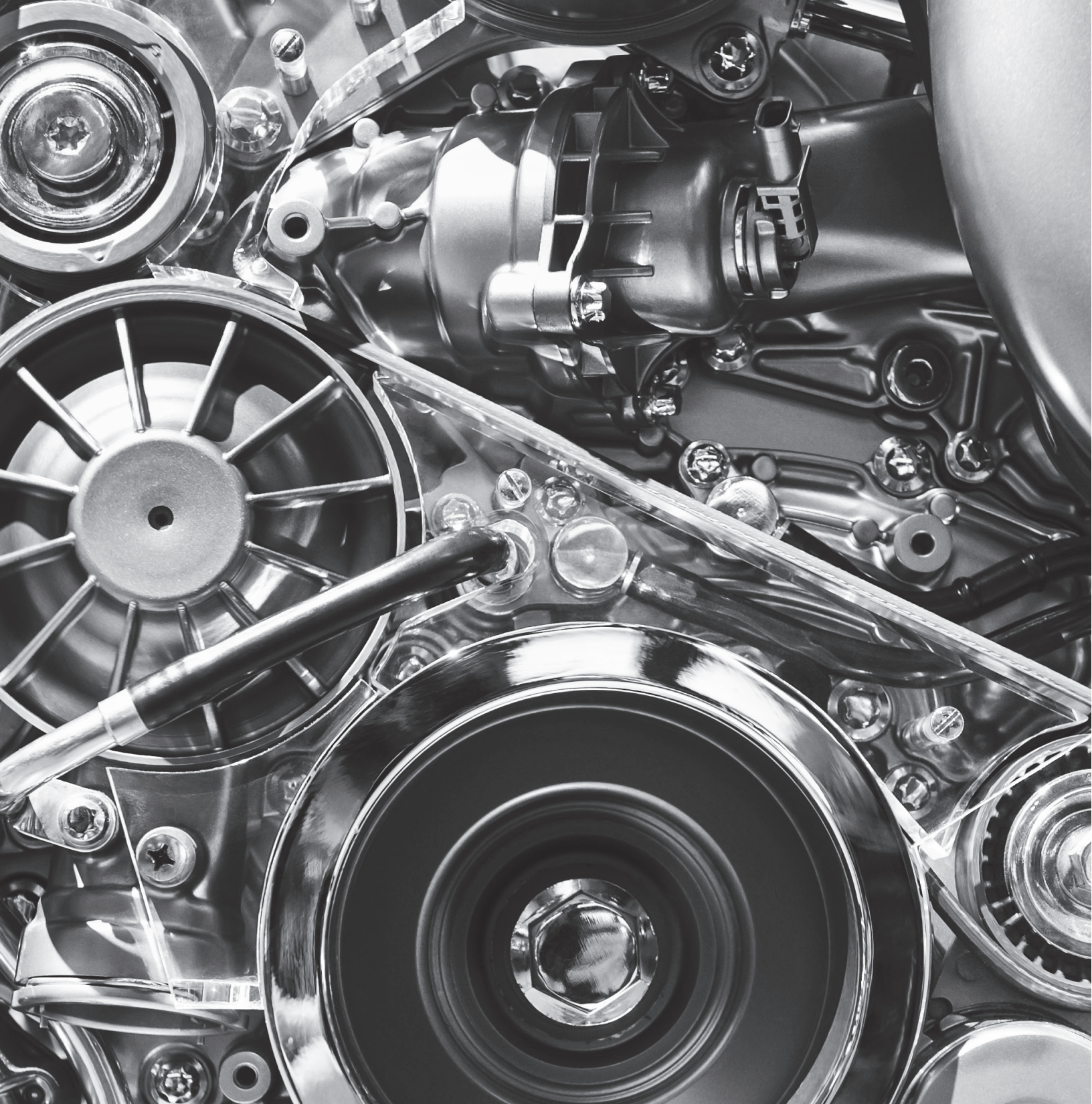




# Cutting Edge Technology

NanoLub® is based on NIS's award winning, patented platform technology of proprietary super strong tungsten disulfide  $WS_2$  spherical closed-caged particles. Our product range includes Anti-wear (AW), Anti-Friction (AF) Extreme Pressure (EP) Oil, Grease and MWF additives as well as fully formulated oils and greases.





# **Automotive Lubricant Additives**



# NanoLub® Gasoline Engine Additive w/ Nano Formulated Protection

Recommended for use when you want to enhance the Anti-Wear and Anti-Friction properties of your **gasoline** engine oil.

## Applications:

- Specifically formulated to boost the performance in 6 and 8 cylinder (150 ml bottle) gasoline engines and 4-cylinder (100 ml bottle) engines.
- Anti-Friction (AF), and Anti-Wear (AW) properties.
- Compatible with both mineral and synthetic oils.
- Can be used as part of the additives package for fully-formulated ready to use engine oil or as a top up after market product.

## Format and Packaging

- 100 ml bottle
- 150 ml bottle
- 20 L / 5.3 gal (pail)
- 200 L / 53 gal (drum)
- 1000 L / 264 (tote)

## Technical Specs

**Color:** Dark Grey

**Dosage:**

|                    |              |
|--------------------|--------------|
| 1 x 100 ml bottle  | 3 - 6 liter  |
| 1 x 150 ml bottles | 6 - 12 liter |

**Carrier:** Full synthetic oil

**Viscosity:** 600 -750 cSt at 40°C

**Density:** 0.9 - 0.97 g/cm<sup>3</sup>

**Health:** Non-toxic closed caged particles as per OECD protocols

**Safety:** Reach Compliant

**Industries:** Automotive

## Benefits

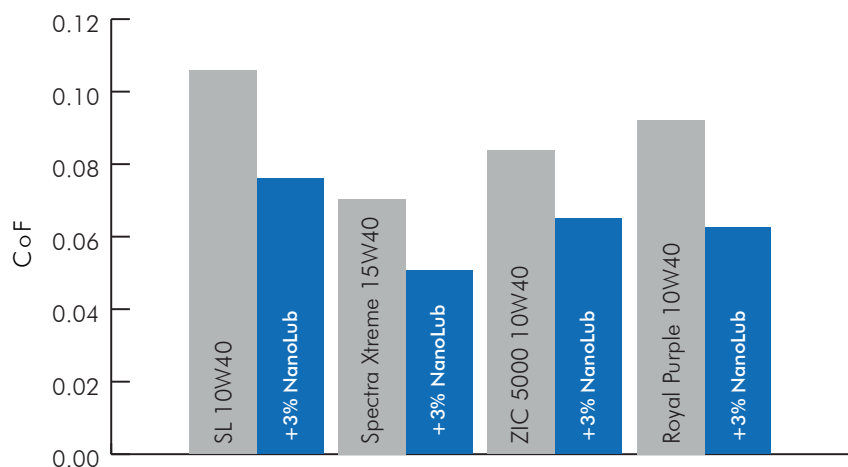
- Reduce Fuel Consumption
- Increase Horse Power
- Decrease Engine Noise
- Lower Harmful Emissions
- Extend Engine Life



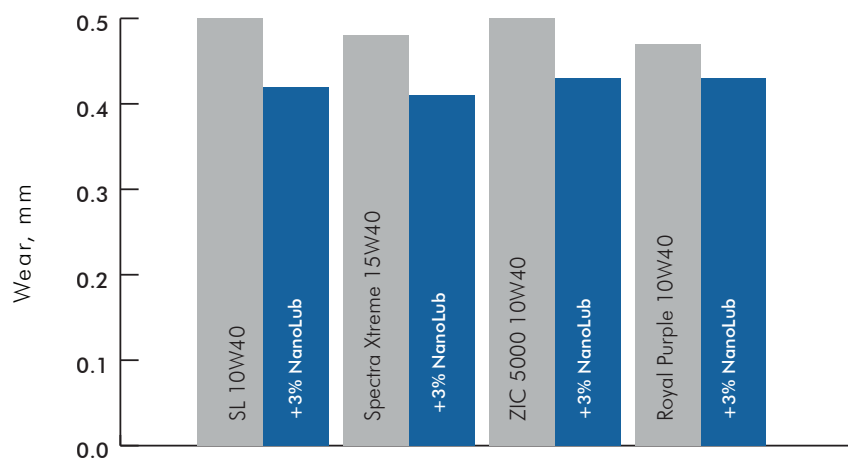


## NanoLub® Gasoline Engine Additive w/ Nano Formulated Protection

### Coefficient of Friction NanoLub® GEM series VS other additives



### 4 ball wear ASTM D4172 NanoLub® GEM series VS other additives



### Competition

AF/AW additive it is suitable to any applications automotive/industrial as Anti-Wear or Anti-Friction additive. Afton, Lubrizol, and IPAC.

### After Market Competition

STP Ultra 5 in 1, STP High Mileage, Lucas HD Oil Stabilizer, Slick 50, LiquiMoly, 3000 Engine Oil Treatment, ZMAX, Prolong, Duralube, Motorkote, Lucas Oil Stabilizer

### How to use

The 150 ml bottle is specially formulated for 6 and 8 – Cylinder engines, while the 100 ml bottle is formulated for 4 - Cylinder engines. After your routine oil change, add one bottle to your gasoline engine.



# NanoLub® Diesel Engine Additive w/ Nano Formulated Protection

Recommended for use when you want to enhance the Anti-Wear and Anti-Friction properties of your **diesel** engine oil.

## Applications:

- Specifically formulated for trucks, mining dump trucks, buses, marine engines and diesel power generators to boost the performance of all types of 4 stroke diesel engines.
- Anti-Friction (AF), and Anti-Wear (AW) properties.
- Compatible with both mineral and synthetic oils.
- Can be used as part of the additives package for fully-formulated ready to use engine oil or as a top up after market product.

## Format and Packaging

- 250 ml bottle
- 20 L / 5.3 gal (pail)
- 200 L / 53 gal (drum)
- 1000 L / 264 (tote)

## Technical Specs

**Color:** Dark Grey

**Dosage:**

|                    |               |
|--------------------|---------------|
| 1 x 250 ml bottle  | 6 - 12 liter  |
| 2 x 250 ml bottles | 16 - 30 liter |
| 1 x Quart bottle   | 30 - 60 liter |

**Carrier:** Fully synthetic oil

**Viscosity:** 600 - 750 cSt at 40 °C

**Density:** 0.9 - 0.97 g/cm<sup>3</sup>

**Health:** Non-toxic closed caged particles as per OECD protocols

**Safety:** Reach Compliant

**Industries:** Automotive

## Benefits

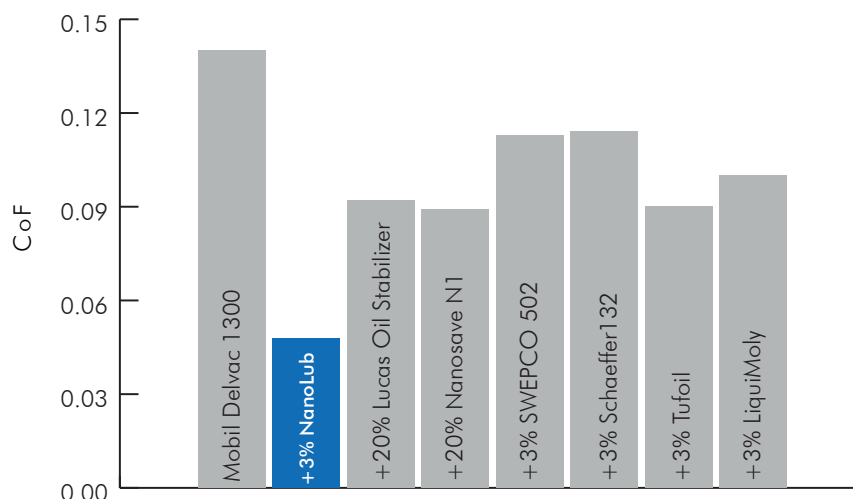
- Reduce Fuel Consumption
- Increase Horse Power
- Decrease Engine Noise
- Lower Harmful Emissions
- Extend Engine Life



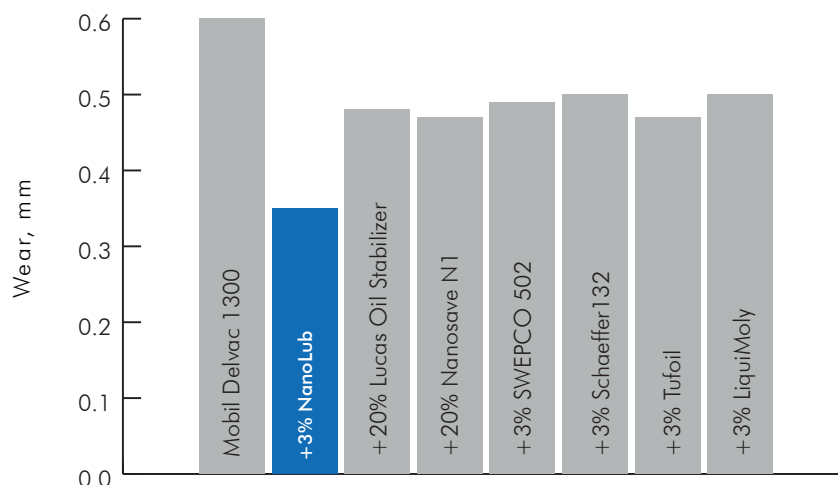


## NanoLub® Diesel Engine Additive w/ Nano Formulated Protection

### Coefficient of Friction NanoLub® DEM series VS other additives



### 4 ball wear ASTM D4172 NanoLub® DEM series VS other additives



### Competition

AF/AW additive it is suitable to any applications automotive/industrial as Anti-Wear or Anti-Friction additive. Afton, Lubrizol, and IPAC.

### After Market Competition

STP Ultra 5 in 1, STP High Mileage, Lucas HD Oil Stabilizer, Slick 50, LiquiMoly, 3000 Engine Oil Treatment, ZMAX, Prolong, Duralube, Motorkote, Lucas Oil Stabilizer

### How to use

The 250 ml bottle is specially formulated for larger engines. After your routine oil change, add one bottle to your diesel engine.

# NanoLub® Power Generation Additive w/ Nano Formulated Protection

Recommended for use when you need to enhance the Anti-Wear and Anti-Friction properties of your engine oil.

## Applications:

- Superior Extreme Pressure (EP), Anti-Friction (AF), and Anti- Wear (AW) properties.
- Compatible with both mineral and synthetic oils.
- Can be used as part of the additives package for fully-formulated ready to use engine oil or as a top up after market product.

## Format and Packaging

- Oil Concentrate
- **Containers:**  
20L (5.3 gal) pails, 200L (53 gal) drums, to 264 gal) IBCs.

## Technical Specs

**Color:** Dark Grey

**Treat Rate:** 2% - 5% by weight

**Carrier:** Conventional and Synthetic oil

**Viscosity:** 600 - 750 cSt at 40 °C

**Density:** 0.9 - 0.97 g/cm<sup>3</sup>

**Health:** Non-toxic closed caged particles as per OECD protocols

**Safety:** Reach Compliant

## Benefits

- Reduce Fuel Consumption
- Increase Horse Power
- Decrease Engine Noise
- Lower Harmful Emissions
- Extend Engine Life

## Industries:

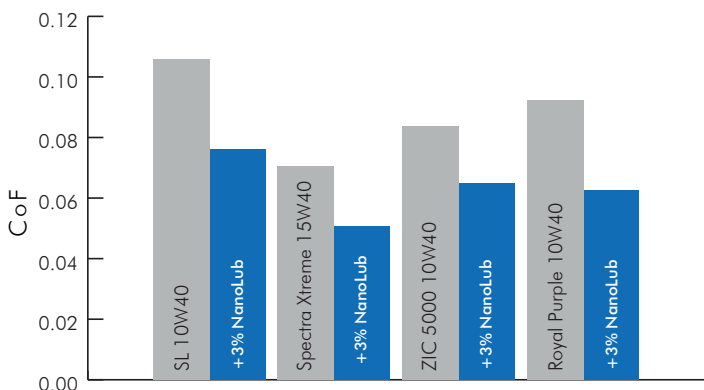
Diesel power generators, diesel engines, marine diesel engines



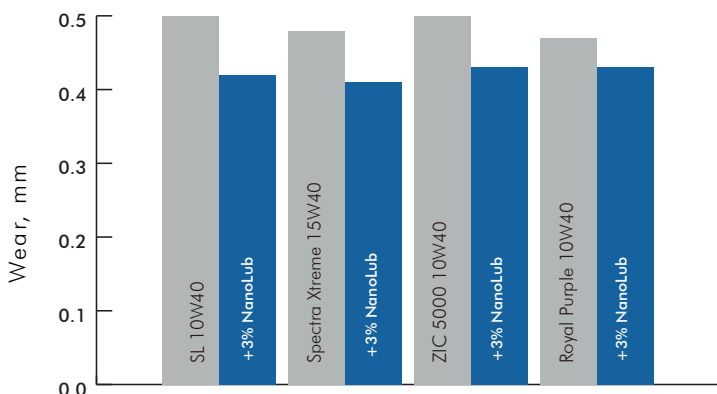


## NanoLub® Power Generation Additive with Nano Formulated Protection

### Coefficient of Friction NanoLub® GEM series VS other additives



### 4 ball wear ASTM D4172 NanoLub® GEM series VS other additives



#### How To Use

Add 3% by weight of NanoLub Power Generation additive with Nano formulated Protection to your engine oil. Only for proper mixing of the additive: bypass all filters and run your engine in idling mode (no load) for 40 min.

#### Competition

AF/AW additive it is suitable to any applications automotive/industrial as Anti-Wear or Anti-Friction additive. Afton, Lubrizol, and IPAC.

#### After Market Competition

STP Ultra 5 in 1, STP High Mileage, Lucas HD Oil Stabilizer, Slick 50, LiquiMoly, 3000 Engine Oil Treatment, ZMAX, Prolong, Duralube, Motorkote, Lucas Oil Stabilizer

# NanoLub® Synthetic Gasoline Engine Additive w/ Nano Formulated Protection

Recommended for use when you need to enhance the Anti-Wear and Anti-Friction properties of your **synthetic gasoline** engine oil.

## Applications:

- Superior Extreme Pressure (EP), Anti-Friction (AF), and Anti- Wear (AW) properties.
- Compatible with all types of oils: mineral synthetic, or semi synthetic
- Can be used as part of the additives package for fully-formulated ready to use engine oil or as a top up after market product.

## Format and Packaging

- Oil Concentrate form ready for mixing into a variety of host oils
- **Containers:**  
20L (5.3 gal) pails, 200L (53 gal) drums, to 264 gal) IBCs.

## Technical Specs

**Color:** Dark Gray

**Treat Rate:** 2% - 5% by weight

**Carrier:** Fully synthetic oil

**Viscosity:** 330 - 400 cSt at 40 °C

**Density:** 0.90 - 0.99 g/cm<sup>3</sup>

**Health:** Non-toxic closed caged particles as per OECD protocols

**Safety:** Reach Compliant

**Industries:** Automotive - Cars, Motorcycles, SUV & Light trucks

## Benefits

- Reduce Fuel Consumption
- Increase Horse Power
- Decrease Engine Noise
- Lower Harmful Emissions
- Extend Engine Life

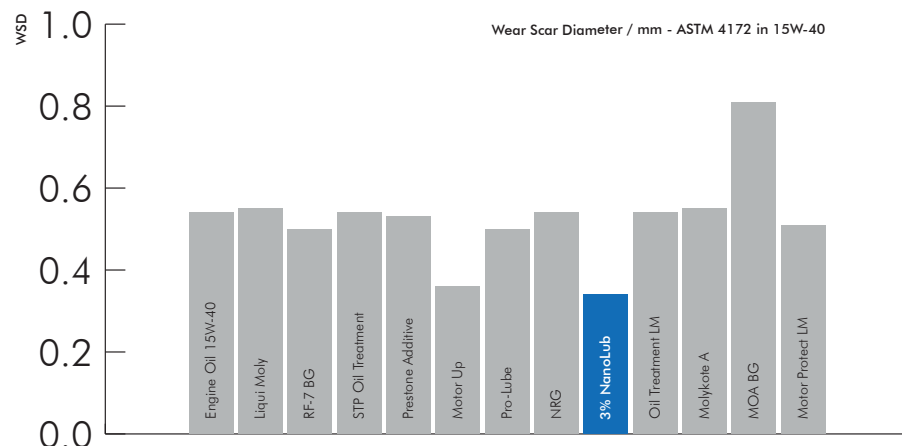




## NanoLub® Synthetic Gasoline Engine Additive with Nano Formulated Protection

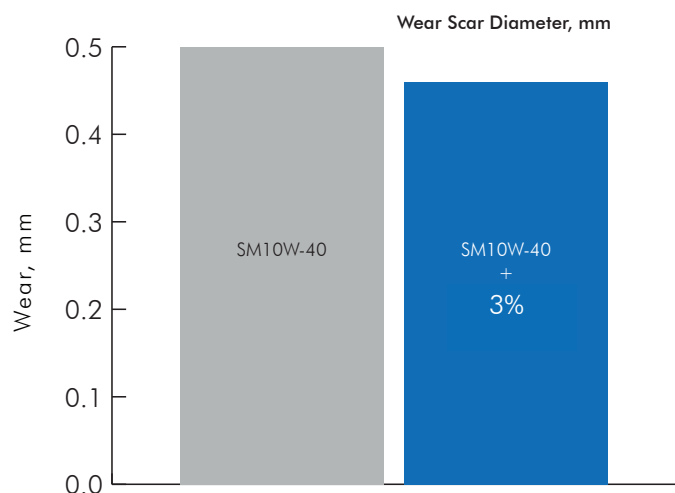
### 4-Ball Performance Tests: Engine Oil

NanoLub® additive applied to 15W-40 engine oil shows significant reduction in Scar Diameter as compared to other engine oil treatments.



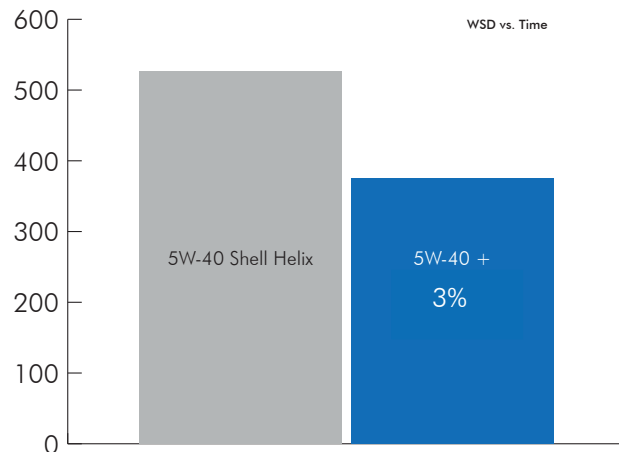
### Roller-on-Block ASTM G-77 Wear Test Results

SM10W-40 vs. SM10W-40 with NanoLub®



### SRV Performance Tests: Engine Oil

ASTM D5706 - ISO 12156-1



### How To Use

Turn off your engine. Add 1%-3% of the NanoLub® Synthetic Gasoline Engine additive to your motor oil.

### Competition

AF/AW additive it is suitable to any applications automotive/industrial as Anti-Wear or Anti-Friction additive. Afton, Lubrizol, IPAC, and Evonik

### After Market Competition

STP Ultra 5 in 1, STP High Mileage, Lucas HD Oil Stabilizer, Slick 50, LiquiMoly, 3000 Engine Oil Treatment, ZMAX, Prolong, Duralube, Motorkote, Lucas Oil Stabilizer

# NanoLub® Synthetic Diesel Engine Additive w/ Nano Formulated Protection

Recommended for use when you need to enhance the Anti-Wear and Anti-Friction properties of your **synthetic diesel** engine oil.

## Applications:

- Superior Extreme Pressure (EP), Anti-Friction (AF), and Anti- Wear (AW) properties.
- Compatible with all types of oils: mineral synthetic, or semi synthetic
- Can be used as part of the additives package for fully-formulated ready to use engine oil or as a top up after market product.

## Format and Packaging

- Oil Concentrate form ready for mixing into a variety of host oils
- **Containers:**  
20L (5.3 gal) pails, 200L (53 gal) drums, to 264 gal IBCs.

## Technical Specs

**Color:** Dark Grey

**Treat Rate:** 2% - 5% by weight

**Carrier:** Fully synthetic oil

**Viscosity:** 330 - 400 cSt at 40 °C

**Density:** 0.90 - 0.99 g/cm<sup>3</sup>

**Health:** Non-toxic closed caged particles as per OECD protocols

**Safety:** Reach Compliant

**Industries:** Automotive  
Diesel - Cars, SUV & Light trucks,  
Work Vehicles

## Benefits

- Reduce Fuel Consumption
- Increase Horse Power
- Decrease Engine Noise
- Lower Harmful Emissions
- Extend Engine Life

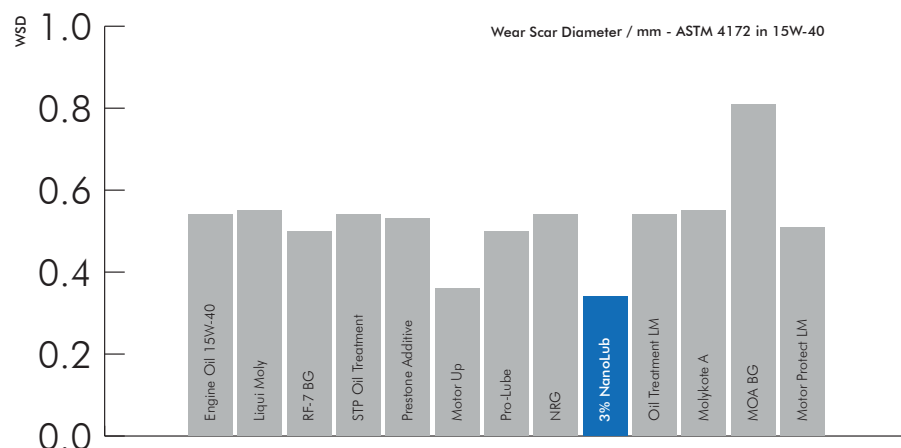




## NanoLub® Synthetic Diesel Engine Additive with Nano Formulated Protection

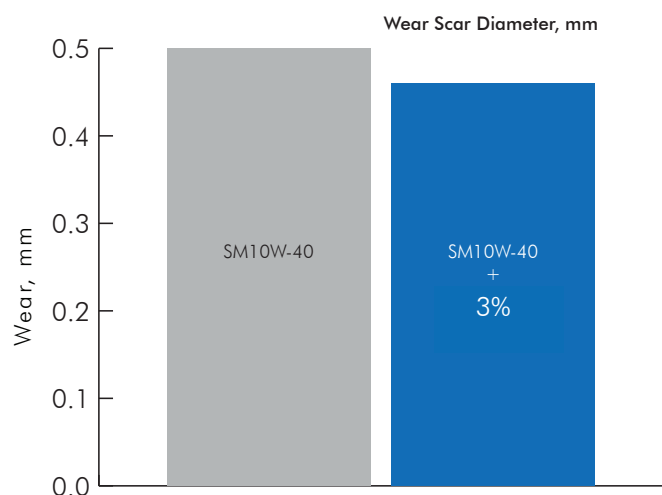
### 4-Ball Performance Tests: Engine Oil

NanoLub® additive applied to 15W-40 engine oil shows significant reduction in Scar Diameter as compared to other engine oil treatments.



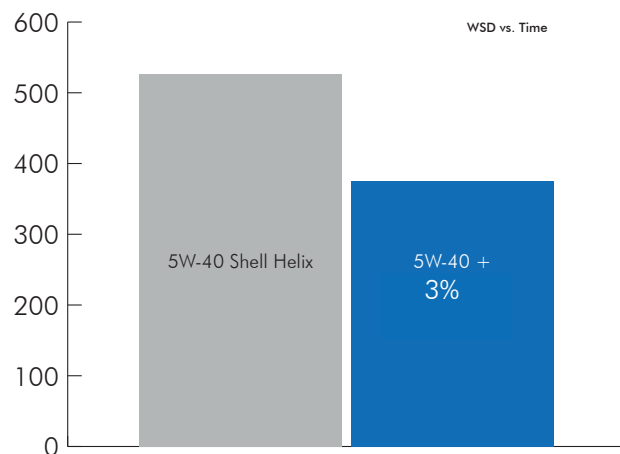
### Roller-on-Block ASTM G-77 Wear Test Results

SM10W-40 vs. SM10W-40 with NanoLub®



### SRV Performance Tests: Engine Oil

ASTM D5706 - ISO 12156-1



### How To Use

Turn off your engine. Add 1%-3% of the NanoLub® Synthetic Diesel Engine additive to your motor oil.

### Competition

AF/AW additive it is suitable to any applications automotive/industrial as Anti-Wear or Anti-Friction additive. Afton, Lubrizol, IPAC, and Evonik

### After Market Competition

STP Ultra 5 in 1, STP High Mileage, Lucas HD Oil Stabilizer, Slick 50, LiquiMoly, 3000 Engine Oil Treatment, ZMAX, Prolong, Duralube, Motorkote, Lucas Oil Stabilizer

# NanoLub® Oil Drain Extend

Recommended for use when you need to increase your oil's life and enhance the Anti-Wear and Anti-Friction properties while boosting your machines efficiency and reducing downtime and expenses.

## Applications:

- Specially formulated to improve performance in Light, Medium and Heavy Duty trucks.
- Anti-Friction (AF) and Anti-Wear (AW) Properties.
- Oil detergency

## Industries:

Mining, Trucks and Buses

## Format and Packaging

- 20 L / 5.3 gal (pail)
- 200 L / 53 gal (drum)
- 1000 L / 264 gal (tote)

## Technical Specs

**Color:** Grey

**Dosage:** (1) liter/quart for 20-30 liter engine

**Carrier:** Mineral Oil

**Viscosity:** 300 - 400 cSt at 40 °C

**Density:** 7.9391 lb/gal at 15.6 °C (60 °F)

**Health:** Non-toxic closed caged particles as per OECD protocols

**Safety:** Reach Compliant

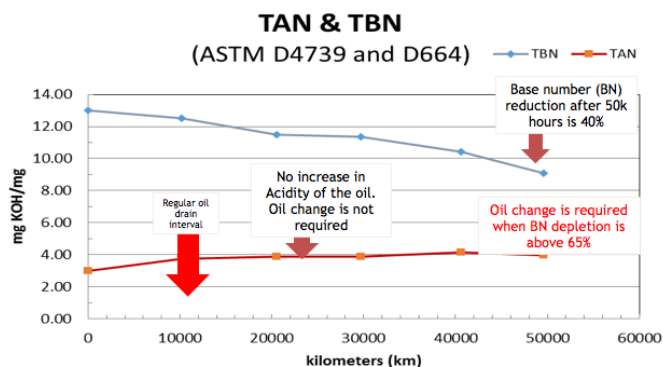
## Benefits

- Extended Machinery Life
- Improve Power & Torque Performance
- Reduce Downtime
- Less Internal Wear
- Extends Maintenance Intervals
- Reduce Energy Consumption

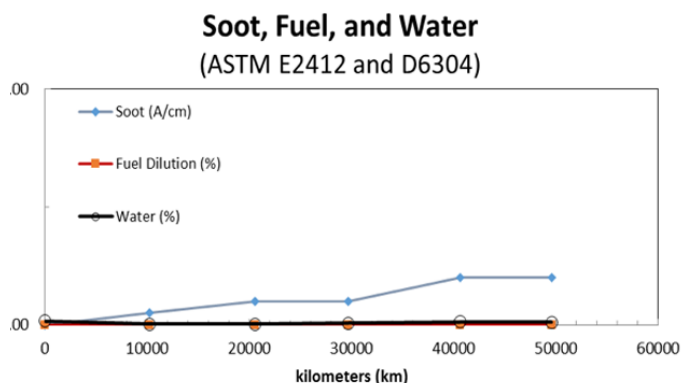




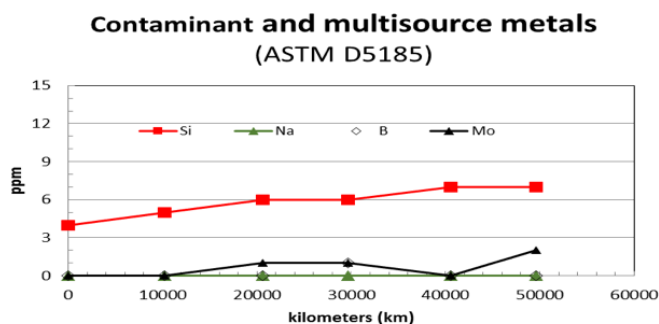
## Tests below are shown with a Cummings 12 L diesel engine truck



- Base number (BN) reduction after 50K is only 40%
- No increase in Acidity of the oil after 50K. Oil change is not required. When BN is above 65% that is when oil change is required.



- Great oil cleaning capabilities. Soot formation control.



- Oil contamination control

## How To Use

- Turn off your engine.
- Add 1%-3% of the NanoLub® Oil Drain additive to your motor oil.

## After Market Competition

- Lucas Oil Stabilizer
- Marvel Mystery Oil Additive
- STP Oil Treatment
- Hy-Per Oil Supplement



# **Grease Additives**



# NanoLub<sup>®</sup> EM-X 7200

## Grease Additive

Recommended For use as an AF/AW/EP additive in Li, LiX, and PFPE greases. Use as a replacement for MoS<sub>2</sub>, and sulfur, phosphorus based grease additives and packages.

### Applications:

- Excellent performance at very low treat rate (0.5 - 4.0%).
- Specially formulated to improve performance of greases used in various EP applications.
- Superior Extreme Pressure (EP) Anti-Friction (AF) and Anti-Wear (AW) properties.
- Superior corrosion inhibiting and Anti-Oxidation properties
- For grease formulations for industrial, mining & heavy equipment, bearings, gears (Open & closed gears) slide ways and various other applications.
- Can be used with Lithium, LiX, and Polyurea.

### Typical Characteristics

**Color:** Dark Grey

**Treat Rate:** 0.5% - 4% by weight

**Consistency:** Grey paste

**Density:** 0.95-1.1 g/cm<sup>3</sup>

**Health:** Non-toxic closed caged particles as per OECD protocols

### Format and Packaging

- Paste form
- Ready to use additive containers:  
55 gallon drum - Net 300kg  
5 gallon pail - Net 27kg

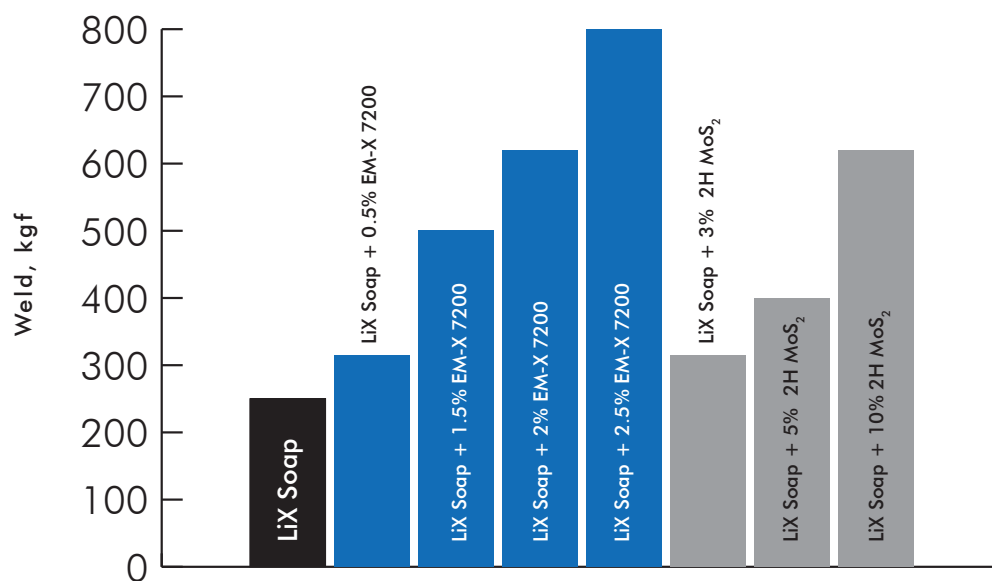




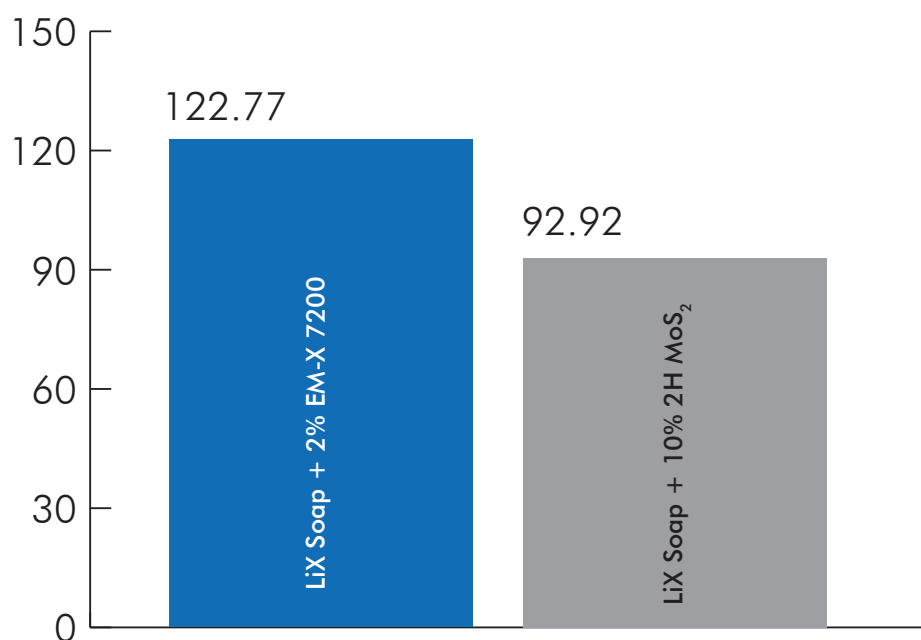
## NanoLub® EM-X 7200 Grease Additive

| Test Name  | Description                                  | LiX Soap | LiX Soap +<br>0.5%<br>EM-X 7200 | LiX Soap +<br>1.5%<br>EM-X 7200 | LiX Soap +<br>2%<br>EM-X 7200 | LiX Soap +<br>2.5%<br>EM-X 7200 | LiX Soap<br>+ 3% 2H<br>MoS <sub>2</sub> | LiX Soap<br>+ 5% 2H<br>MoS <sub>2</sub> | LiX Soap<br>+ 10% 2H<br>MoS <sub>2</sub> |
|------------|--|----------|---------------------------------|---------------------------------|-------------------------------|---------------------------------|---|---|--|
| ASTM D217  | Cone Penetration<br>of Lubricating<br>Grease | 263      | 267                             | 273                             | 273                           | 276                             | 271                                     | 275                                     | 277                                      |
| ASTM D2266 | Four Ball wear,<br>mm                        | 0.57     | 0.515                           | 0.465                           | 0.425                         | 0.4                             | 0.47                                    | 0.54                                    | 0.655                                    |
| ASTM D2266 | Coefficient of<br>Friction                   | 0.0704   | 0.0718                          | 0.0723                          | 0.0569                        | 0.0525                          | 0.063                                   | 0.0635                                  | 0.0671                                   |
| ASTM 2596  | Four Ball EP, kg<br>weld point               | 160      | 315                             | 500                             | 620                           | 800                             | 315                                     | 400                                     | 620                                      |
| ASTM 2596  | Four Ball EP, LWI                            | N/A      | N/A                             | N/A                             | 122.77                        | N/A                             | N/A                                     | N/A                                     | 92.94                                    |
| ASTM D2509 | Timken EP test,<br>lbs                       | N/A      | N/A                             | 55                              | 65                            | N/A                             | N/A                                     | N/A                                     | 65                                       |
| ASTM D2265 | Dropping Point, C                            | 245      | 242                             | 253                             | 255                           | 255                             | 253                                     | 251                                     | 248                                      |

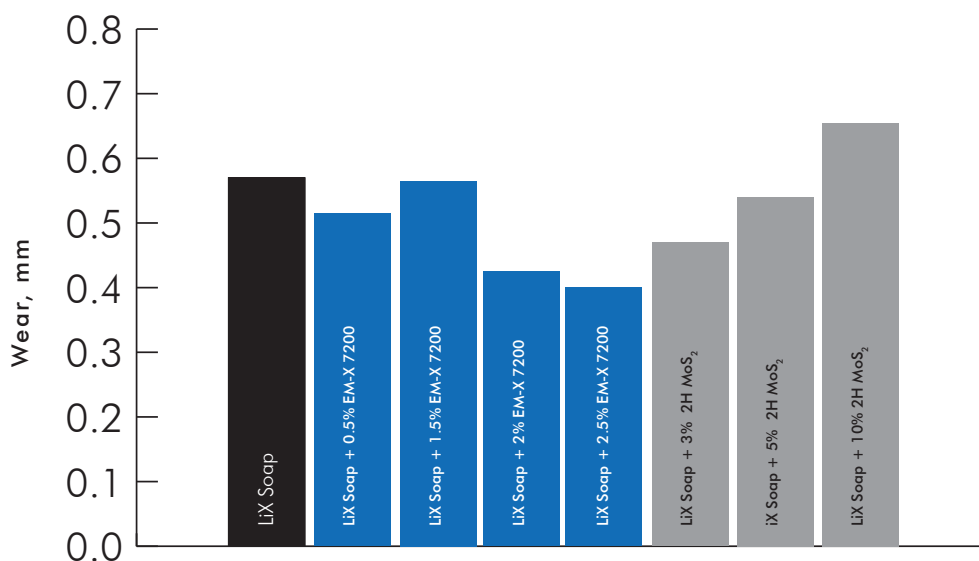
### EP Comparison 2H MoS<sub>2</sub> vs EM-X 7200 ASTM D2596



### LWI 1.5% EM-X 7200 (IF-WS<sub>2</sub> dispersion) vs 10% 2H MoS<sub>2</sub> in LiX grease



### Wear Comparison 2H MoS<sub>2</sub> vs EM-X 7200 ASTM D2266



#### How To Use

**Dosage:** 0.5%-4% by weight

Adding to grease at cooling stage: below 90°C (195°F)

**Mixing time:** 2 - 5 hours, depends on mixing equipment and volume of grease

**Mixing equipment:** Mixing + recirculation. Followed by homogenization/milling.

#### Competition

- MoS<sub>2</sub>
- Any sulfur and phosphoners AW/EP Additives



# NanoLub® EM-X 7310 Grease Additive

Recommended For use as an AF/AW/EP additive in Li, LiX, and CaS greases. Use as a replacement for regular grease additive packages and sulfur, phosphorus based additives.

## Applications:

- Excellent performance at very low treat rate (0.5 - 4.0%).
- Specially formulated to improve performance of greases used in various EP applications.
- Superior Extreme Pressure (EP) Anti-Friction (AF) and Anti-Wear (AW) properties.
- Superior corrosion inhibiting and Anti-Oxidation properties
- For grease formulations for industrial, mining & heavy equipment, bearings, gears (Open & closed gears) slide ways and various other applications.
- Can be used with Lithium, LiX, ca and CaS greases.

## Typical Characteristics

**Color:** Dark Grey

**Treat Rate:** 0.5% - 4% by weight

**Consistency:** Grey paste

**Density:** 1.44 to 1.56 g/cm<sup>3</sup>

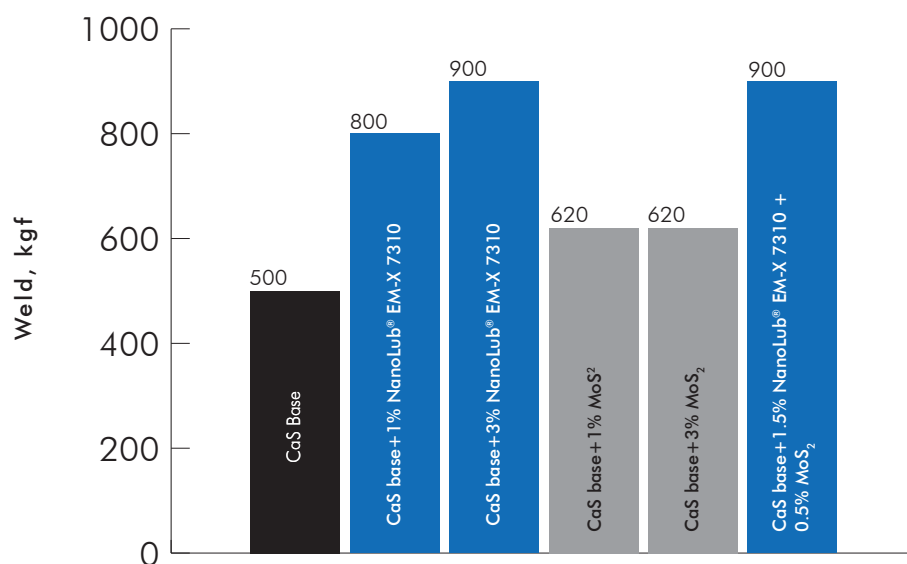
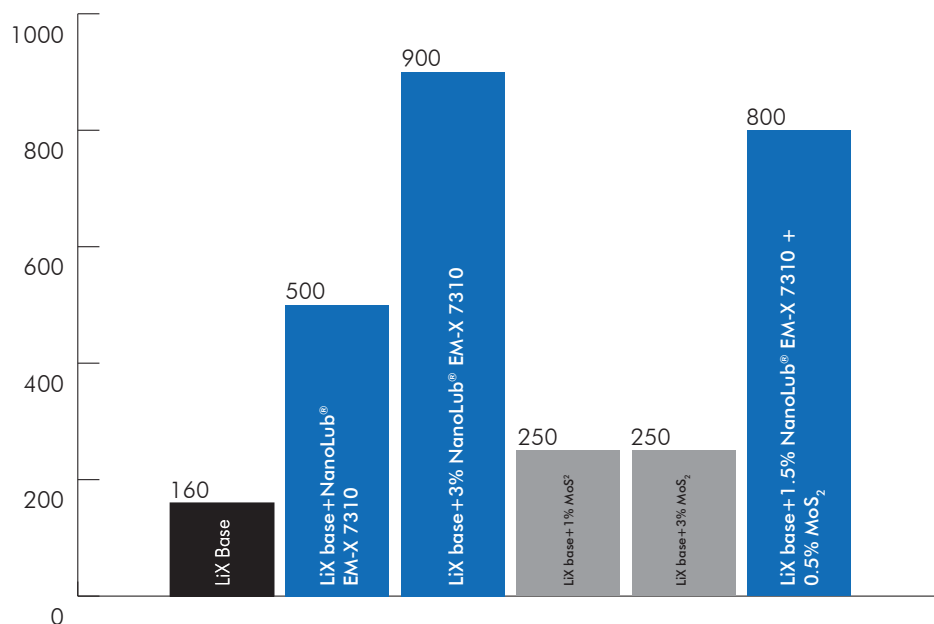
**Health:** Non-toxic closed caged particles as per OECD protocols

## Format and Packaging

- Paste form
- Ready to use additive containers:  
55 gallon drum - Net 300kg  
5 gallon pail - Net 27kg

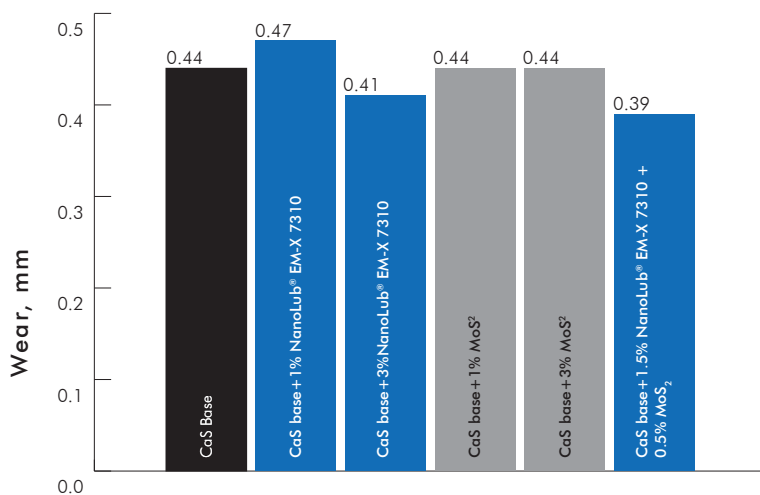


## NanoLub® EM-X 7310 Grease Additive

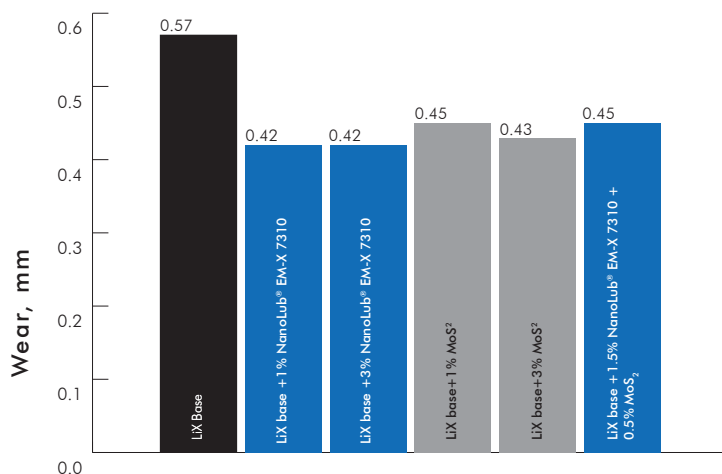
**EP comparison EM-X 7310, MoS<sub>2</sub> in CaS grease  
ASTM D2596****EP comparison EM-X 7310, MoS<sub>2</sub> in LiX grease  
ASTM D2596**

## NanoLub® EM-X 7310 Grease Additive

### Wear comparison EM-X 7310, MoS<sub>2</sub> In CaS grease ASTM D2266



### Wear comparison EM-X 7310, MoS<sub>2</sub> In LiX grease ASTM D2266



#### How To Use

**Dosage:** 0.5%-4% by weight

Adding to grease at cooling stage: below 90°C (195°F)

**Mixing time:** 2 - 5 hours, depends on mixing equipment and volume of grease

**Mixing equipment:** Mixing + recirculation. Followed by homogenization/milling.



## NanoLub® EM-X 7310 Grease Additive

**Cost analysis: Vendor A, Vendor B vs NanoLub® EM-X 7310**

|                                 | 2.5% Vendor A | 2.5% Vendor B | 0.5%<br>EM-X 7310 | 0.75%<br>EM-X 7310 |
|---------------------------------|---------------|---------------|-------------------|--------------------|
| Wear, mm                        | 0.46          | 0.49          | 0.41              | 0.38               |
| EP, kgf                         | 200           | 250           | 215               | 500                |
| Dropping point, °C              | 197           | 195           | 201               | 201                |
| Added cost per kg of grease, \$ |               |               |                   |                    |
| Price, \$/kg                    |               |               |                   |                    |



# **Industrial Oil and Metalworking Additives**

# NanoLub® IC-1000 AW/AF

A new generation surface-reconditioning additive to significantly improve the Anti-Wear and Anti-Friction properties of lubricants.

## Main features and Applications

- Specially formulated to significantly improve performance of lubricants
- Anti-Friction (AF) and Anti-Wear (AW) properties
- Can be used as part of the additive package of fully formulated ready to use oil or as a top off after market product.

## Format and Packaging

- Oil concentrate
- 20L pails (5.3 gal)
- 200L drums (53 gal)
- 1000L IBCs (264 gal)

**Industries:** Industrial, Automotive, Construction, Paper Mills, Mining

## Technical Specs

**Color:** Dark Gray

**Treat Rate:** 1% - 5% by weight

**Carrier:** Group V Oil

**Viscosity:** 600 - 750 cSt at 40°C

**Density:** 0.9 - 0.97g/cm<sup>3</sup>

**Health:** Non-toxic closed caged particles as per OECD protocols

## Benefits

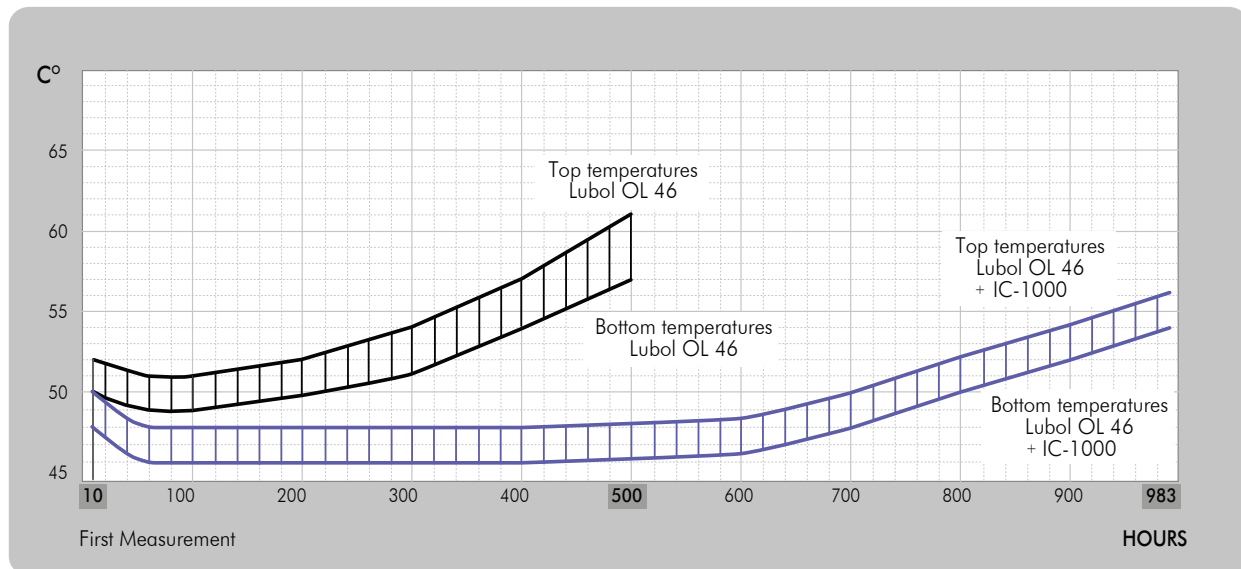
- Extends Machinery Life
- Reduce Downtime
- Less Internal Wear
- Extends Maintenance Intervals
- Reduce Energy Consumption



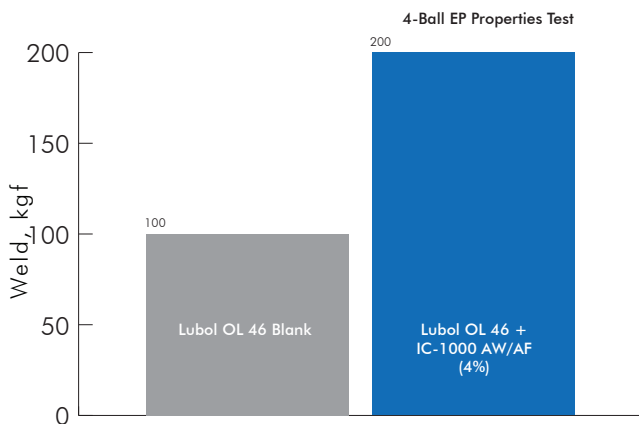
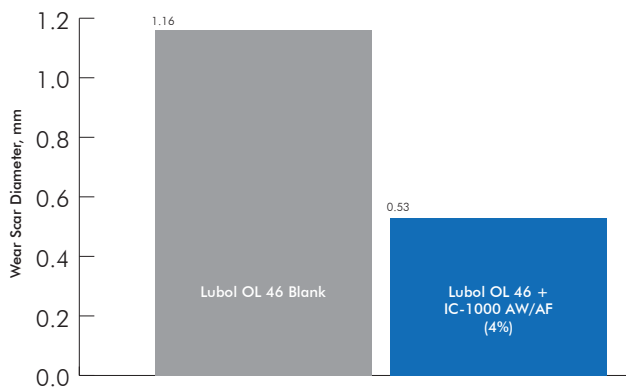


## NanoLub® IC-1000 AW/AF

The graph below demonstrates the temperatures of 6305 bearings during the test with the addition of NanoLub®IC-1000 AW/AF

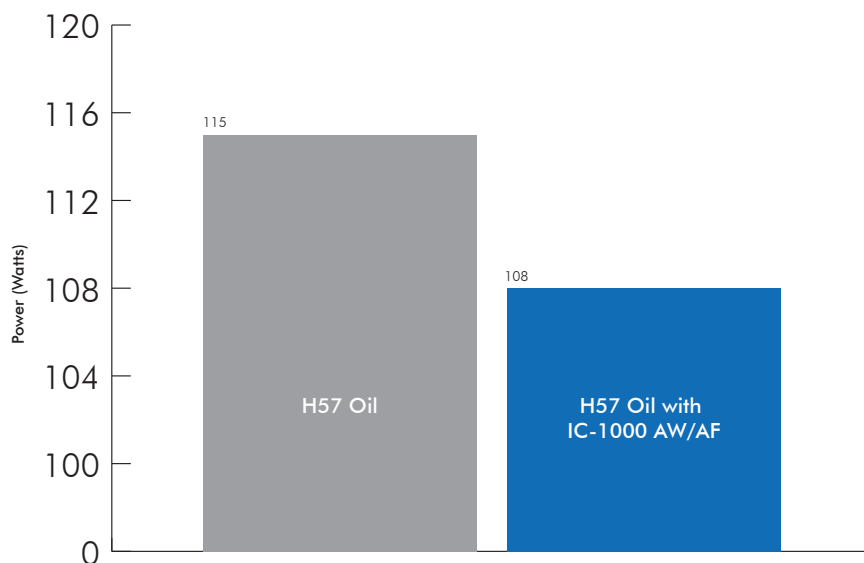


### Lubol 46 vs. Lubol + 4% NanoLub® IC-1000 AW/AF

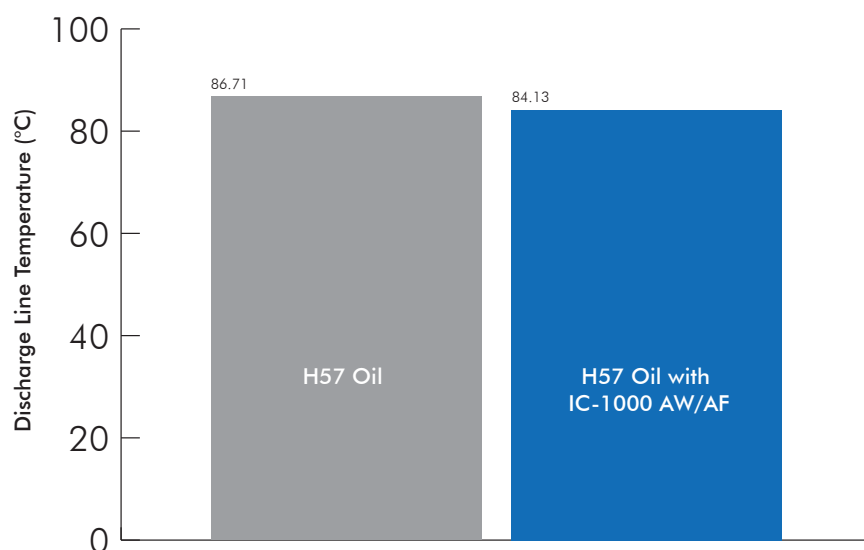




### Compressor Performance Power Reduction Test



### Compressor Performance Discharge Line Temp. Reduction Test



#### How to Use

- Dosage: 1% - 5% by weight
- Recommended mixing temperature 150°F (65°C)
- Mixing time: minimum of one hour
- Mixing by recirculation and/or low shear impeller

# NanoLub® IS-2000 AW/AF

A new generation surface-reconditioning additive to significantly improve the Anti-Wear and Anti-Friction properties of lubricants.

## Main features and Applications

- Specially formulated to significantly improve performance of standard lubricants
- Anti-Friction (AF) and Anti-Wear (AW) properties
- Can be used as part of the additive package of fully formulated ready to use oil or as a top off after market product.

## Technical Specs

**Color:** Dark Gray

**Treat Rate:** 1% - 5% by weight

**Carrier:** Group V Oil

**Viscosity:** 300 - 400 cSt at 40°C

**Density:** 0.9 - 0.97g/cm<sup>3</sup>

**Health:** Non-toxic closed cage particles as per OECD protocols

## Industries:

Industrial, Automotive, Construction, Paper Mills, Mining

## Format and Packaging

- Oil concentrate
- 20L pails (5.3 gal)
- 200L drums (53 gal)
- 1000L IBCs (264 gal)

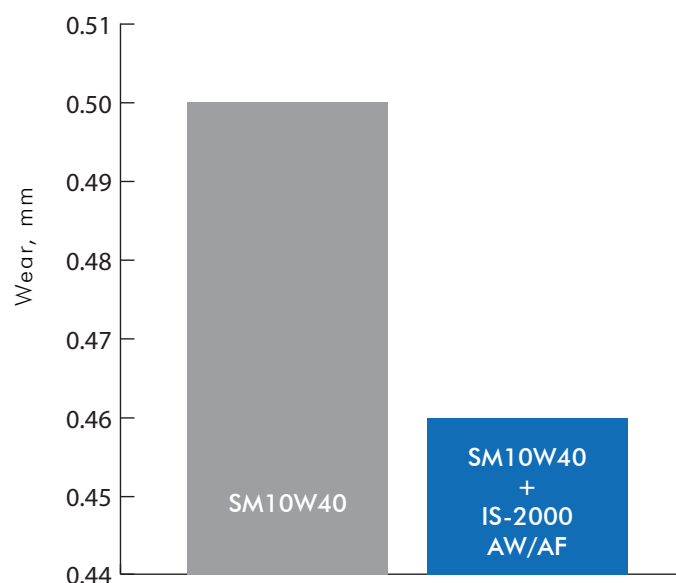
## Benefits

- Extends Machinery Life
- Reduce Downtime
- Less Internal Wear
- Extends Maintenance Intervals
- Reduce Energy Consumption



### Roller-on-Block ASTM G-77 Wear Test Results

SM10W40 vs SM10W40 + IS-2000 AW/AF

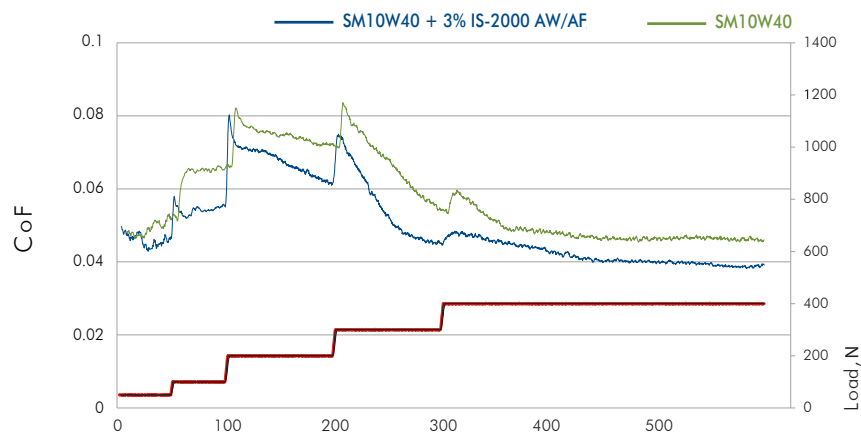


### How to Use

- Dosage: 1% - 3% by weight
- Recommended mixing temperature 150°F (65°C)
- Mixing time: minimum of one hour
- Mixing by recirculation and/or low shear impeller

### Roller-on-Block ASTM G-77 Friction Coefficient

SM10W40 vs SM10W40 + IS-2000 AW/AF



# NanoLub® IC-3000 AW/AF/EP

Recommended for industrial and metal processing oil based lubricant formulation. Provides outstanding AW/AF/EP properties. This additive package provides ultra-pressure properties, excellent Anti-Wear properties even at high load and superior surface finishing to metal working fluids.

## Main features and Applications

- Excellent ultra-pressure protection
- Very low wear even under high load
- Protection of tools, extended lifetime
- Reduces coefficient of friction
- Can be used at high or low temperature
- Superior surface finishing

## Industries:

Metalworking, Gear Oils, Chain Oils and Bearing Oils

## Technical Specs

**Color:** Dark Gray

**Treat Rate:** 2% - 12.5% by weight

**Viscosity:** 1600 cSt at 40°C

**Density:** 0.9 -0.97g/cm<sup>3</sup>

**Flash Point:** 152°C

**Active Sulfur:** None

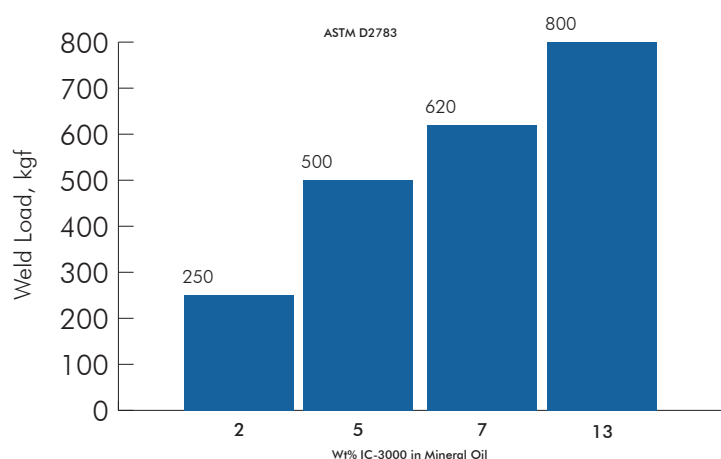
**Chlorine, Boron content:** None

## Format and Packaging

- Oil base concentrate
- 20L pails (5.3 gal)
- 200L drums (53 gal)
- 1000L IBCs (264 gal)



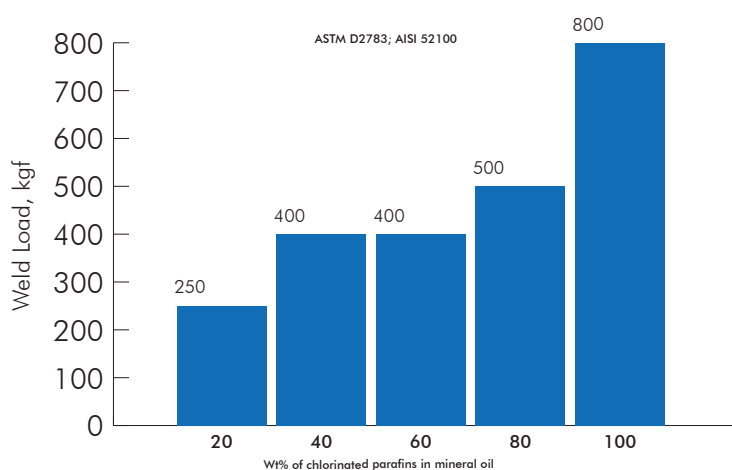
### 4-Ball Extreme Pressure Test (Weld load, kgf)



#### How to Use

- Dosage: 2% - 12.5% by weight
- Recommended mixing temperature 150°F (65°C)
- Mixing time: minimum of one hour
- Mixing by recirculation and/or low shear impeller

### 4-Ball Extreme Pressure Test on 52% Chlorinated Paraffins





# NanoLub® IC-3100 AW/AF/EP

A high performing Anti-Wear, Anti-Friction and Extreme Pressure industrial lubricant for gear oils, chain oils, bearing oils, metalworking fluids, etc. Excellent AW/AF/EP properties at low treat rate.

## Main features and Applications

- Excellent Extreme Pressure protection
- Very low wear even under high load
- Reduce coefficient of friction
- Prevents micro pitting and surface fatigue
- Shock absorbing properties

## Industries:

Mining, Heavy Duty, Automotive, High Temperature, Metal Forming operations, Gear oils, chain oils and other industrial applications

## Technical Specs

**Color:** Dark Gray

**Treat Rate:** 1% - 8% by weight

**Viscosity:** 89.8 cSt at 40°C

**Density:** 9.0 lb/gal

**Flash Point:** 152°C

**Active Sulfur:** None

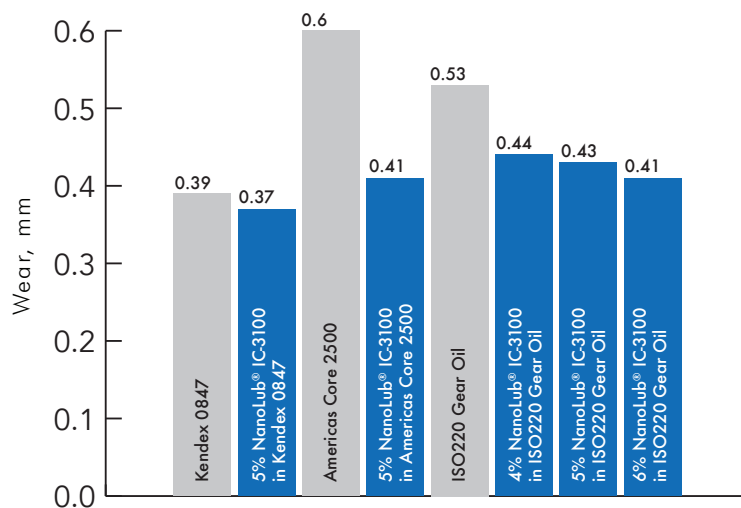
**Chlorine, Boron content:** None

## Format and Packaging

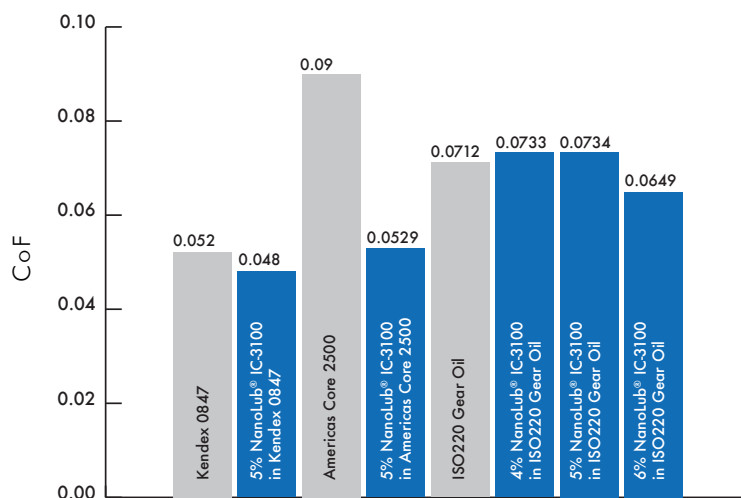
- Oil base concentrate
- 20L pails (5.3 gal)
- 200L drums (53 gal)
- 1000L IBCs (264 gal)



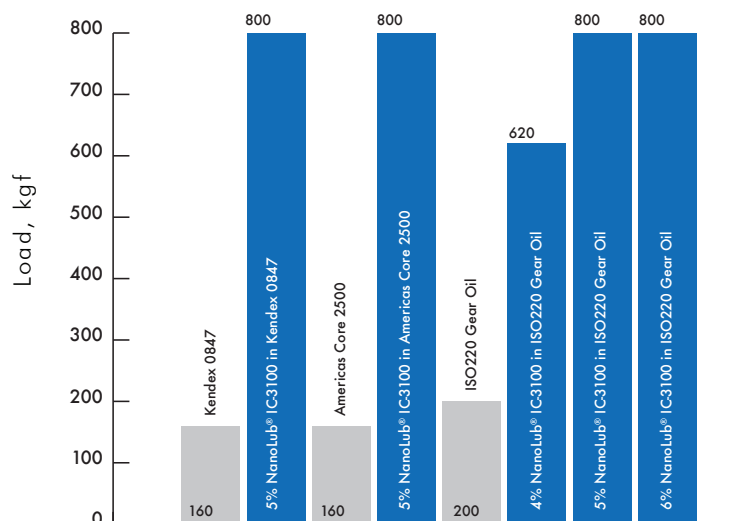
### 4-Ball Wear Test ASTM D4172



### 4-Ball CoF Test ASTM D4172



### 4-Ball EP Test ASTM D2783



| FZG test according to ASTM D5182 |                              |                     |             |  |                     |             |
|----------------------------------|------------------------------|---------------------|-------------|--|---------------------|-------------|
| Load                             |                              | 99-11000N (12)      |             |  |                     |             |
| Speed (RPM)                      |                              | 1450                |             |  |                     |             |
| Temperature (C)                  |                              | 90                  |             |  |                     |             |
| Oil / Formulation                | 75 W80 Transmission BV TOTAL |                     |             | 75W80 Transmission BV TOTAL + 3% of IC3100 |                     |             |
| Load stage N°                    | T <sub>i</sub> (°C)          | T <sub>f</sub> (°C) | Observation | T <sub>i</sub> (°C)                        | T <sub>f</sub> (°C) | Observation |
| 1                                | Run in                       |                     |             | Run in                                     |                     |             |
| 2                                |                              |                     |             |  |                     |             |
| 3                                |                              |                     |             |  |                     |             |
| 4                                | 90                           | 90                  | Scoring     | 90   | 90                  | No damage   |
| 5                                | 90                           | 90                  | Scoring +   | 90   | 90                  | No damage   |
| 6                                | 90                           | 94                  | Scoring ++  | 90   | 94                  | No damage   |
| 7                                | 90                           | 100                 | Scoring +++ | 90   | 102                 | No damage   |
| 8                                | 90                           | 101                 | Scoring +++ | 90   | 110                 | No damage   |
| 9                                | 90                           | 116                 | Scoring+    | 90   | 124                 | No damage   |
| 10                               | 90                           | 127                 | Scoring+    | 90   | 133                 | Scoring     |
| 11                               | 90                           | 140                 | Scoring+    | 90   | 139                 | Scoring+    |
| 12                               | 90                           | 143                 | Scoring+    | 90   | 143                 | Scoring++   |

### How To Use

- Dosage: 1% - 8% by weight
- Recommended mixing temperature 150°F (65°C)
- Mixing time: minimum of one hour
- Mixing by recirculation and/or low shear impeller

# NanoLub® IW-4000 AW/AF/EP

High performing Anti-Wear, Anti-Friction and Extreme Pressure water based additive.  
Use for metalworking and non flammable water soluble lubricants with superior cooling properties

## Main features and Applications

- Superior Extreme Pressure protection. Low wear even under high load
- Tool life increase up to 5 times
- Improves heat transfer properties of water up to 20%
- Can be added to all types of water dilutable metalworking fluids – soluble oils, semi synthetics, and synthetics.
- Dose not contain chlorinated paraffins
- Reduction in coefficient of friction
- Superior surface finishing

## Technical Specs

**Color:** Black

**Treat Rate:** 0.5% - 4% by weight

**Health:** Non-toxic close cage particles as per OECD protocols

**Safety:** REACH Compliant

## Industries:

Metalworking fluids, Synthetic and Semi-synthetic (emulsions), Water based lubricants and coolants, Surface protecting soft coating (when sprayed, dipped and dried)

## Format and Packaging

- 26 Kg/57.20Lb
- 290 Kg/638 Lb
- 1,400 Kg/3,080 Lb

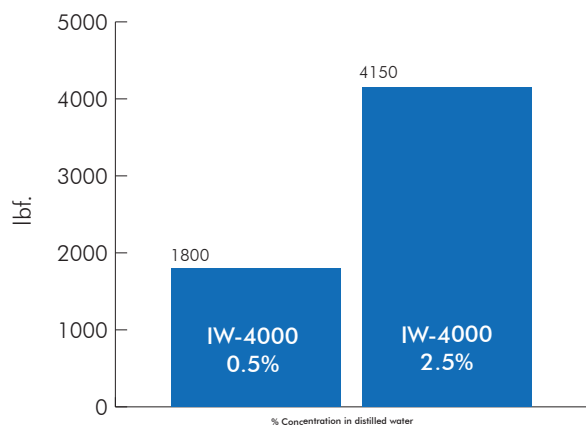
## Heat Transfer Properties

| Samples                            | Average Thermal Conductivity (W m-1 K-1) | Standard Deviation |
|------------------------------------|--|--------------------|
| Distilled Water                    | 0.610                                    | 0.010              |
| Distilled Water + 0.75% of IW-4000 | 0.727                                    | 0.030              |

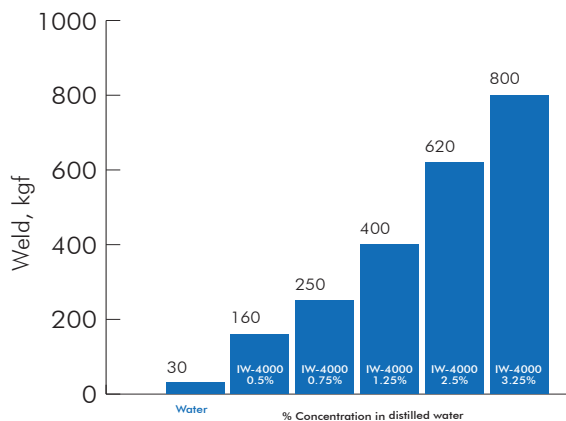




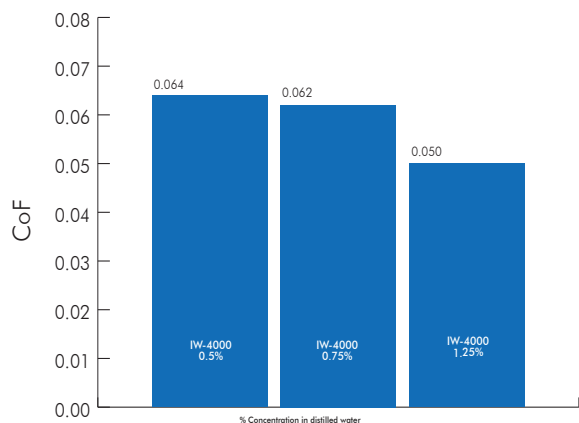
### Falex Test (ASTM D3233A)



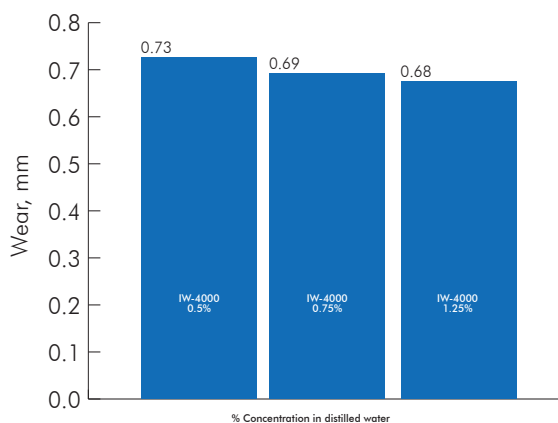
### 4-Ball Extreme Pressure (ASTM D2783)



### 4-Ball EP CoF



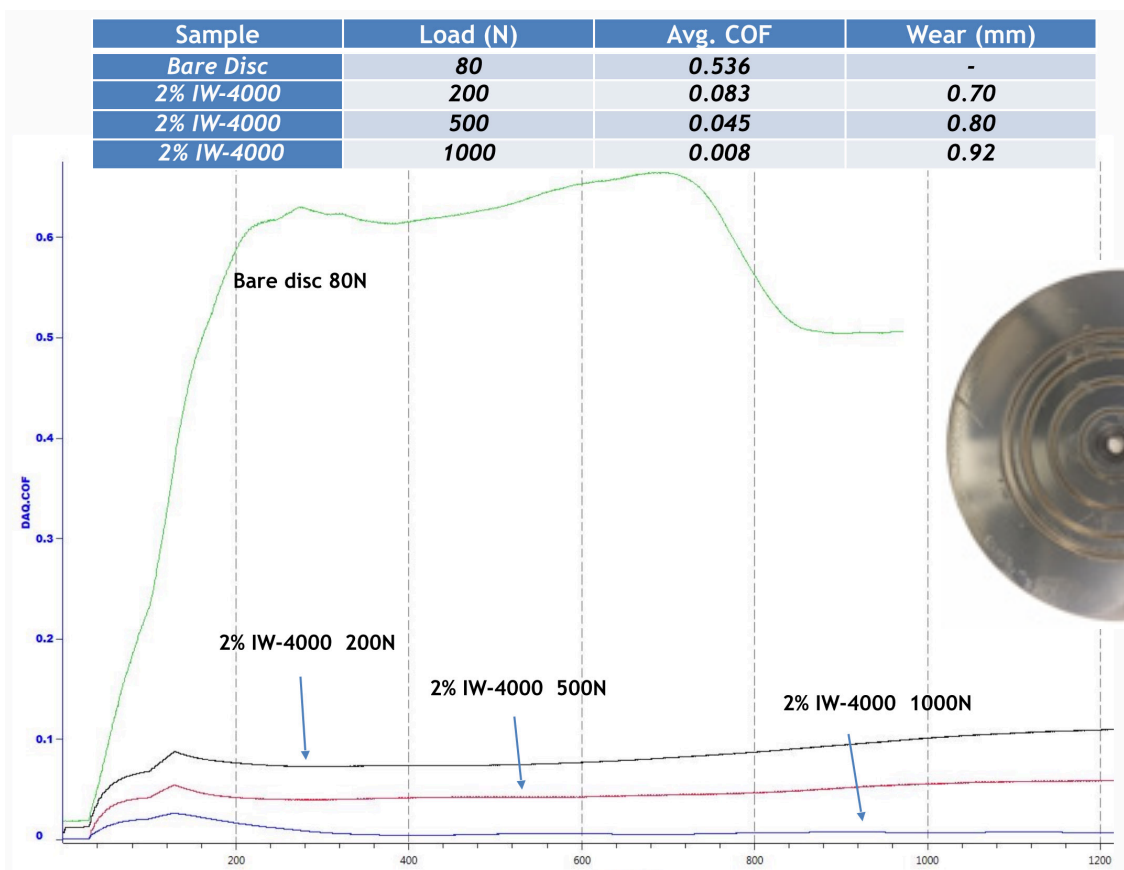
### 4-Ball Wear (ASTM D4172)



### Ball-on-disc test - Test method G99

20 min, O1 tool steel disc 60Rc 3/4" ball Angular velocity 0.033m/s

Discs were dipped and air dried



### How To Use

- Add to distilled water or water based product (PAG) at 0.25% - 5% by weight.
- May require stabilization. Depends on final formulation and other components/additives that are in the formulation
- Mixing time: minimum of one hour
- Can be used in liquid form for MWF or lubrication application
- Can be used in dry application: dipped or sprayed on a surface to be protected and dried at room temperature. The solid containing layer will give excellent lubricity and protective properties.
- Avoid using sodium o-phenylphenate base biocides with corrosion inhibitor Sebacic acid in same formulation with NanoLub® IW-4000. It may cause instability of particles.

# NanoLub® IW-4100 AW/AF/EP

High performing Anti-Wear, Anti-Friction and Extreme Pressure water based additive. Use for metalworking and non flammable water soluble lubricants with superior cooling properties.

This additive is based on IF-WS<sub>2</sub> dispersed solids with polymeric surfactants, that in addition to EP/AW/AF properties will provide surface binding and adhesion

## Main features and Applications

- Synthetic and semisynthetic metalworking fluids
- Coolants
- Nonflammable lubricants
- Water based lubricants

**Industries:** Metalworking fluids, Synthetic; Semi-synthetic (emulsions), Water based lubricants and coolants, Surface protecting soft coating (when sprayed, dipped and dried)

## Technical Specs

**Color:** Black

**Treat Rate:** 0.5% - 6% by weight

**Health:** Non-toxic close cage particles as per OECD protocols

**Safety:** REACH Compliant

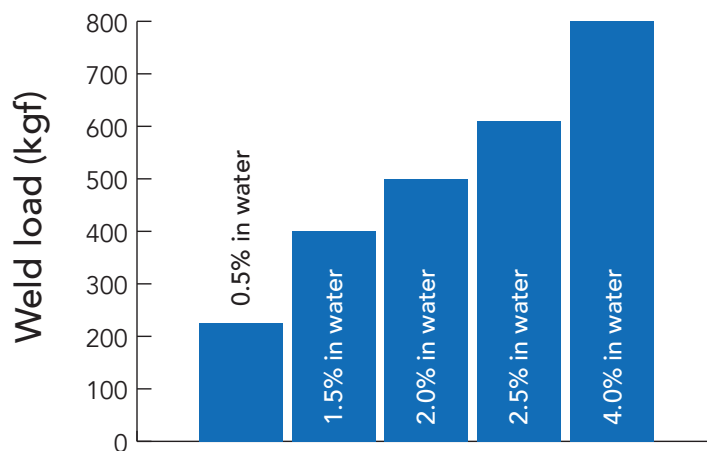
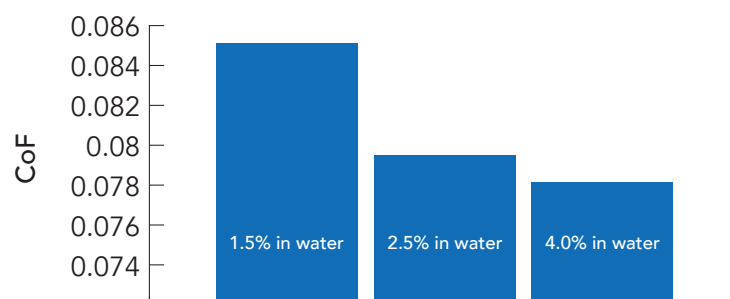
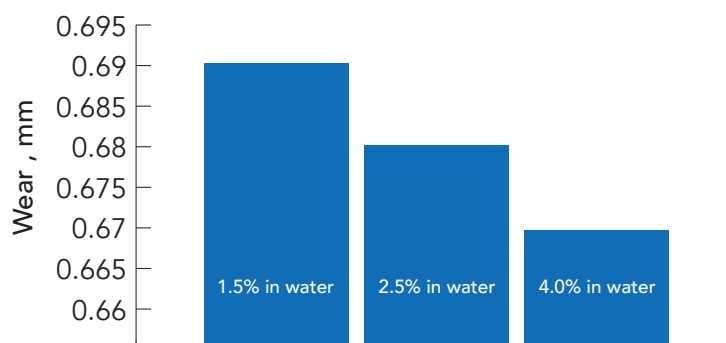
## Format and Packaging

- Water Concentrate
- Containers:  
26 Kg/57.20 lb Pail  
290 Kg/638 lb Drum  
1,400 Kg/3,080 lb Tote

## Benefits

- Superior extreme pressure protection
- Reduce coefficient of friction
- Reduce wear
- Superior surface finishing
- Non-flammable
- Chlorine free



**4 Ball EP (ASTM D 2783)****Coefficient of Friction NanoLub®****Four Ball Wear (ASTM D 4172)**

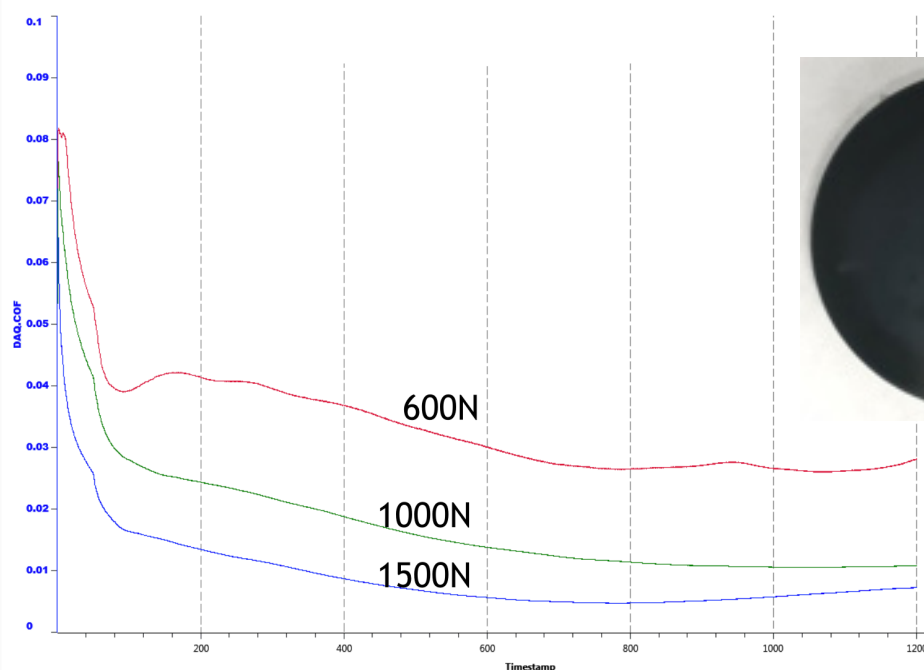


### Ball-on-disc test - Test method G99

20 min, O1 tool steel disc 60Rc  $\frac{3}{4}$ " ball Angular velocity 0.033m/s

Discs were dipped and air dried

| Sample     | Load (N) | Avg. COF | Wear (mm) |
|------------|----------|----------|-----------|
| 5% IW-4100 | 600      | 0.034    | 0.97      |
| 5% IW-4100 | 1000     | 0.018    | 1.03      |
| 5% IW-4100 | 1500     | 0.009    | 1.18      |



### How To Use

- Add to water or water based product at 0.5% - 6% by weight
- May require stabilization. Depends on final formulation and other components/additives that are in the formulation
- Mix for a minimum of 1 hour
- Can be used in dry application: dipped or sprayed on a surface and dried at room temperature. The solid containing layer will give excellent lubricity and protective properties.
- Avoid using sodium o-phenylphenate base biocides with corrosion inhibitor Sebacic acid in same formulation with NanoLub® IW-4000. It may cause instability of particles.

# NanoLub® IW-4200 AW/AF/EP

This formulation is based on IF-WS<sub>2</sub>/Polymer. Recommended for metal forming applications (drawing, forging, stamping etc.). Provides excellent surface finishing.

## Main features and Applications

- Synthetic and semi-synthetic metal forming fluids
- Nonflammable lubricants
- Water based lubricants
- Cold forging, drawing, stamping operations

**Industries:** Metalworking fluids, Synthetic; Semi-synthetic (emulsions), Water based lubricants and coolants, Surface protecting soft coating (when sprayed, dipped and dried)

## Technical Specs

**Color:** Dark Gray

**Treat Rate:** 10% - 45% by weight

**Health:** Non-toxic closed cage particles as per OECD protocols

## Format and Packaging

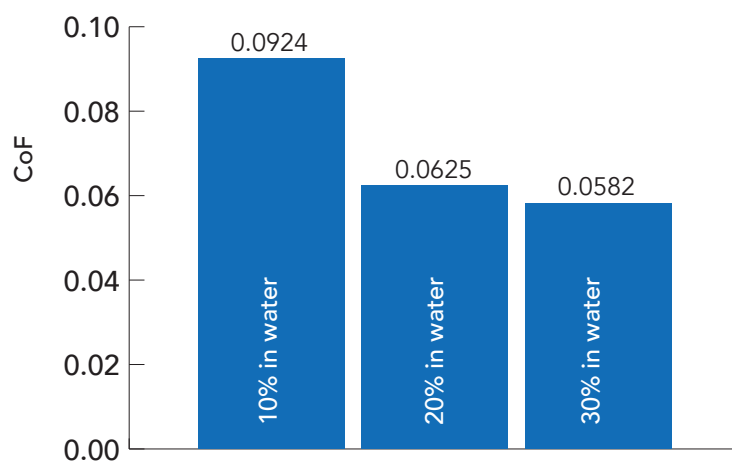
- Water Concentrate
- Containers:  
26 Kg/57.20 lb Pail  
290 Kg/638 lb Drum  
1,400 Kg/3,080 lb Tote

## Benefits

- Excellent AW/AF/EP properties
- Chlorine free
- Avoid few cleaning steps
- Eliminates zinc phosphate coating in drawing operations
- Excellent surface finishing
- Easy to clean after used
- Superior wetting properties



## NanoLub® IW-4200 AW/AF/EP

**Coefficient of Friction NanoLub®****How To Use (For tube drawing application)**

- Mix 10% - 45% by weight of IW-4200 in water
- Use metal coupling agent (such as BYK 4509 at 2-3%)
- Maintain pH at around 9 with ammonia
- Heat the mixture to 45-48 degree C.
- Dip tubes twice, drain the first time through point end for about 5 minutes. Then dip again and drain through open end.
- Make sure coating is fully dried before drawing.
- Please do not use a caustic wash. If pickled, do not use neutralizer





**Fully Formulated Products**



## NanoLub® Grease Reference Guide

| NanoLub® Series   | NanoLub® General Purpose EP Grease LiX #2 | NanoLub® Multipurpose EP Grease LiX #2 | NanoLub® High Speed Ultra Low Friction | NanoLub® EP Plus Grease LiX #2 | NanoLub® Synthetic Automotive Grease | NanoLub® Synthetic High Temp grease |
|---|---|--|--|--------------------------------|--------------------------------------|-------------------------------------|
| NLGI Grade  | 2   | 2                                      | 2                                      | 2                              | 2                                    | 2                                   |
| Thickener Type  | Lithium Complex                           | Lithium Complex                        | Lithium Complex                        | Lithium Complex                | Lithium Complex                      | Lithium Complex                     |
| Color, Visual   | Blue                                      | Red                                    | Green                                  | Green                          | Blue                                 | Green                               |
| Penetration, Worked, 25°C<br>ASTM D 217   | 283                                       | 273                                    | 273                                    | 273                            | 273                                  | 305                                 |
| Dropping Point, °F/°C,<br>ASTM D 2265   | 500°F / 260°C                             | 500°F / 260°C                          | 500°F / 260°C                          | 500°F / 260°C                  | 554°F / 290°C                        | 554°F / 290°C                       |
| Viscosity of Oil, ASTM D 445 cSt @ 40°C   | 220                                       | 460                                    | 100                                    | 460                            | 220                                  | 220                                 |
| Timken OK Load, ASTM D 2509, lb.  | 45  | 55                                     | 55                                     | 65                             | N/A                                  | N/A                                 |
| 4-Ball Weld, ASTM D 2596, Load, N/kgf   | 3089/315                                  | 4903/500                               | 3089/315                               | 7845/800                       | 4903/500                             | 6080/620                            |
| Water Washout, ASTM D 1264, 79°C % Wt. Loss                                     | 3.00%                                     | 3.00%                                  | 3.00%                                  | 3.00%                          | 3.00%                                | 3.00%                               |
| Rust Protection, ASTM D 6138, Distilled Water                                   | Pass                                      | Pass                                   | Pass                                   | Pass                           | Pass                                 | Pass                                |
| Corrosion Protection, ASTM D 1743, Rating                                       | 1b  | 1b                                     | 1a                                     | 1b                             | 1a                                   | 1a                                  |
| 4-Ball Wear, ASTM D 2266, Scar, mm  | 0.45                                      | 0.42                                   | 0.38                                   | 0.40                           | 0.33                                 | 0.33                                |
| Low Temperature Torque, ASTM D 1478, Torque @ Startup/1 Hour in gcm and Test T° | N/A                                       | 6.18 N.m                               | N/A                                    | 7.63 N.m                       | N/A                                  | N/A                                 |
| Available for Private Label   | Yes                                       | Yes                                    | Yes                                    | Yes                            | Yes                                  | Yes                                 |

# NanoLub® General Purpose EP Grease LiX #2



An affordable, super strong general purpose solution for a wide range of EP applications.

## Applications:

General purpose industrial and automotive grease. For enclosed gears, Anti-Friction bearings, couplings, subjected to high speed and moderate speed, high temperature, extreme pressure and shock loadings.

General purpose grease to use in all types automotive and industrial applications including the lubrication of heavy construction and mining equipment of heavy construction and mining equipment.

|   |                 |
|---|-----------------|
| NLGI Grade  | 2               |
| Thickener Type  | Lithium Complex |
| Color, Visual   | Blue            |
| Penetration, Worked, 25°C<br>ASTM D 217   | 283             |
| Dropping Point, °F/°C,<br>ASTM D 2265   | 500°F / 260°C   |
| Viscosity of Oil, ASTM D 445 cSt @ 40°C   | 220             |
| Timken OK Load, ASTM D 2509, lb.  | 45              |
| 4-Ball Weld, ASTM D 2596, Load, N/kgf   | 3089/315        |
| Water Washout, ASTM D 1264, 79°C % Wt. Loss                                     | 3.00%           |
| Rust Protection, ASTM D 6138, Distilled Water                                   | Pass            |
| Corrosion Protection, ASTM D 1743, Rating                                       | 1b              |
| 4-Ball Wear, ASTM D 2266, Scar, mm  | 0.45            |
| Low Temperature Torque, ASTM D 1478, Torque @ Startup/1 Hour in gcm and Test T° | N/A             |
| Available for Private Label   | Yes             |

**Industries:** Automotive, Industrial, Construction, Paper Mill, Mining

## Format and Packaging

- 14.1 ounce (400 Grams)  
Cartridges (10 cartridges per carton)
- 35 pound pails (15.80 kg)
- 120 pound kegs (54.36 kg)
- 400 pound drums (181.20 kg)

## Benefits

- Extended Machinery Life
- Improve Power & Torque Performance
- Reduce Downtime
- Less Internal Wear
- Extends Maintenance Intervals
- Reduce Energy Consumption



# NanoLub® Multipurpose EP Grease LiX #2



Recommended for use when you need a cost effective, durable multipurpose grease solution for a wide range of temperature and pressure applications.

## Applications:

Used in heavily loaded plain and Anti-Friction bearings, gears, and grease lubricated couplings subject to high temperatures and shock loading.

Multipurpose use in all types automotive and industrial applications including the lubrication of heavy construction and mining equipment.

|   |                 |
|---|-----------------|
| NLGI Grade  | 2               |
| Thickener Type  | Lithium Complex |
| Color, Visual   | Red             |
| Penetration, Worked, 25°C<br>ASTM D 217   | 273             |
| Dropping Point, °F/°C,<br>ASTM D 2265   | 500°F / 260°C   |
| Viscosity of Oil, ASTM D 445 cSt @ 40°C   | 460             |
| Timken OK Load, ASTM D 2509, lb.  | 55              |
| 4-Ball Weld, ASTM D 2596, Load, N/kgf   | 4903/500        |
| Water Washout, ASTM D 1264, 79°C % Wt. Loss                                     | 3.00%           |
| Rust Protection, ASTM D 6138, Distilled Water                                   | Pass            |
| Corrosion Protection, ASTM D 1743, Rating                                       | 1b              |
| 4-Ball Wear, ASTM D 2266, Scar, mm  | 0.42            |
| Low Temperature Torque, ASTM D 1478, Torque @ Startup/1 Hour in gcm and Test T° | 6.18 N.m        |
| Available for Private Label   | Yes             |

**Industries:** Automotive, Industrial, Construction, Paper Mill, Mining

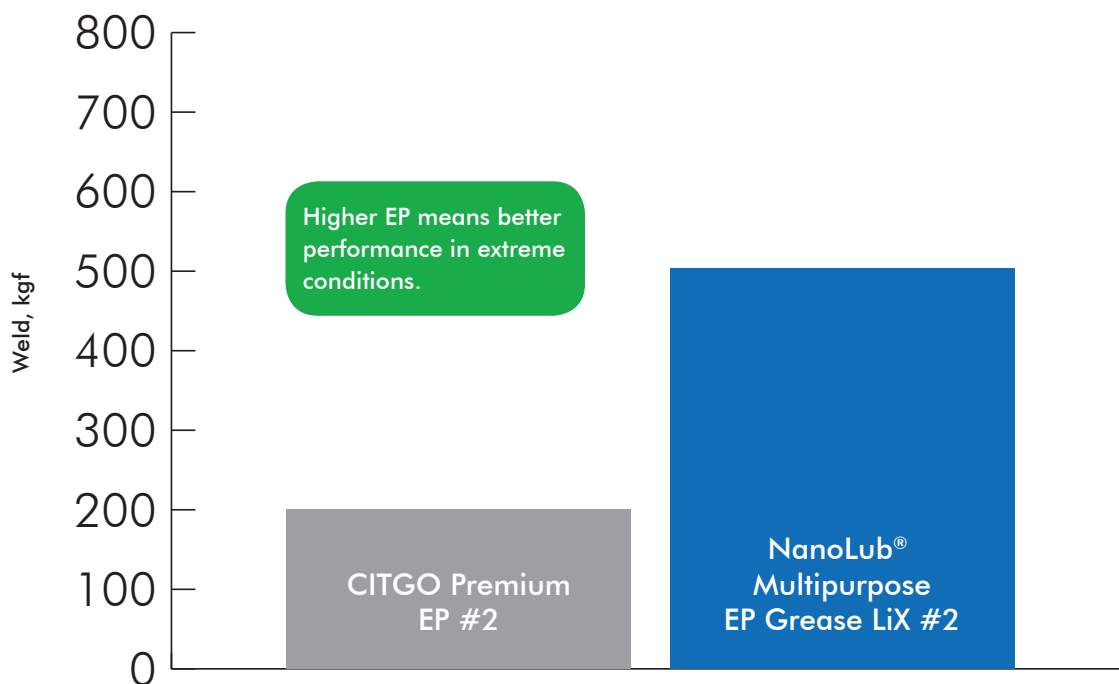
## Benefits

- Extended Machinery Life
- Improve Power & Torque Performance
- Reduce Downtime
- Less Internal Wear
- Extends Maintenance Intervals
- Reduce Energy Consumption
- GC-LB certified. Approved for use in automotive applications by NLGI (National Lubrication & Grease Institute)



## NanoLub® Multipurpose EP Grease LiX #2

### EP Properties, ASTM D596



### Format and Packaging

- 14.1 ounce (400 Grams) Cartridges (10 cartridges per carton)
- 35 pound pails (15.80 kg)
- 120 pound kegs (54.36 kg)
- 400 pound drums (181.20 kg)

### How To Use

Use the product with your equipment and apply as recommended by the machine or equipment manufacturer. Clean out previous grease thoroughly although this grease is compatible with other lithium complex greases.

### Competition

- Mobil Gray Lithium Complex Extreme Pressure Grease
- Citgo Lithoplex Gray Lithium Complex Multipurpose Grease
- Mobile Mobilgrease XTC Tan Lithium Multipurpose Grease
- Jet-lube Red Lithium Complex Multipurpose Grease
- Valvoline Mutlipurpose Grease
- Mobil Mobilith SHC 100 Red Lithium Complex Multipurpose Grease

# NanoLub® High Speed Ultra Low Friction



Is an affordable, super strong general purpose solution for a wide range of Extreme Pressure applications.

## Applications:

Used in heavily loaded plain and anti friction bearings, gears, and grease lubricated couplings subject to high temperatures and shock loading.

General purpose use in all types automotive and industrial applications including the lubrication of heavy construction and mining equipment.

|   |                 |
|---|-----------------|
| NLGI Grade  | 2               |
| Thickener Type  | Lithium Complex |
| Color, Visual   | Green           |
| Penetration, Worked, 25°C<br>ASTM D 217   | 273             |
| Dropping Point, °F/°C,<br>ASTM D 2265   | 500°F / 260°C   |
| Viscosity of Oil, ASTM D 445 cSt @ 40°C   | 100             |
| Timken OK Load, ASTM D 2509, lb.  | 55              |
| 4-Ball Weld, ASTM D 2596, Load, N/kgf   | 3089/315        |
| Water Washout, ASTM D 1264, 79°C % Wt. Loss                                     | 3.00%           |
| Rust Protection, ASTM D 6138, Distilled Water                                   | Pass            |
| Corrosion Protection, ASTM D 1743, Rating                                       | 1a              |
| 4-Ball Wear, ASTM D 2266, Scar, mm  | 0.38            |
| Low Temperature Torque, ASTM D 1478, Torque @ Startup/1 Hour in gcm and Test T° | N/A             |
| Available for Private Label   | Yes             |

**Industries:** High Speed Roller bearings, Non-automotive

## Benefits

- Extended Machinery Life
- Improve Power & Torque Performance
- Reduce Downtime
- Less Internal Wear
- Extends Maintenance Intervals
- Reduce Energy Consumption
- GC-LB certified. Approved for use in automotive applications by NLGI (National Lubrication & Grease Institute)

## Format and Packaging

- 35 pound pails (15.80 kg)
- 120 pound kegs (54.36 kg)
- 400 pound drums (181.20 kg)



## How To Use

Use the product with your equipment and apply as recommended by the machine or equipment manufacturer. Clean out previous grease thoroughly although this grease is compatible with other lithium complex greases.



# NanoLub® EP PLUS Grease LiX #2



Recommended for use when you need a premium and extremely durable grease for the most demanding extreme pressure applications.

## Applications:

- Formulated for the most demanding industrial, automotive and heavy-duty applications.
- Especially suited for mining, steel mills, paper, cement production and other industries with extremely demanding EP applications.
- Superior performance under EP conditions; high temperature, pressure shock loading and moderate to low speed applications
- Easily outperforms traditional LiX and Li greases due to its IF-WS<sub>2</sub> closed caged particles.

|   |                 |
|---|-----------------|
| NLGI Grade  | 2               |
| Thickener Type  | Lithium Complex |
| Color, Visual   | Green           |
| Penetration, Worked, 25°C<br>ASTM D 217   | 273             |
| Dropping Point, °F/°C,<br>ASTM D 2265   | 500°F / 260°C   |
| Viscosity of Oil, ASTM D 445 cSt @ 40°C   | 460             |
| Timken OK Load, ASTM D 2509, lb.  | 65              |
| 4-Ball Weld, ASTM D 2596, Load, N/kgf   | 7845/800        |
| Water Washout, ASTM D 1264, 79°C % Wt. Loss                                     | 3.00%           |
| Rust Protection, ASTM D 6138, Distilled Water                                   | Pass            |
| Corrosion Protection, ASTM D 1743, Rating                                       | 1b              |
| 4-Ball Wear, ASTM D 2266, Scar, mm  | 0.40            |
| Low Temperature Torque, ASTM D 1478, Torque @ Startup/1 Hour in gcm and Test T° | 7.63 N.m        |
| Available for Private Label   | Yes             |

**Industries:** Automotive, Industrial, Construction, Paper Mill, Mining

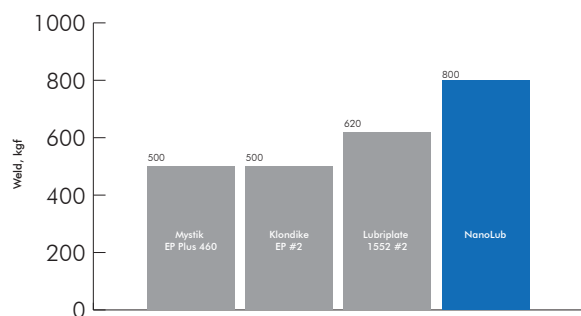
## Benefits

- Extended Machinery Life
- Improve Power & Torque Performance
- Reduce Downtime
- Less Internal Wear
- Extends Maintenance Intervals
- Reduce Energy Consumption
- GC-LB certified. Approved for use in automotive applications by NLGI (National Lubrication & Grease Institute)



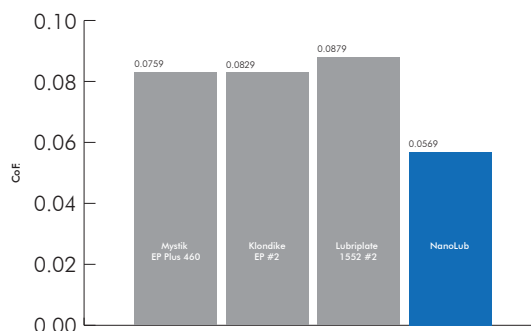
## NanoLub® EP PLUS Grease LiX #2

### EP Properties, ASTM D2596



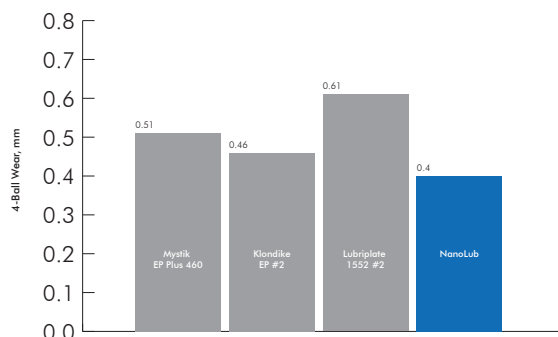
Higher EP means better performance in extreme conditions.

### Friction Properties, ASTM D2266



Significant friction reduction leads to less heat generation, longer maintenance cycles and lower cost of ownership

### Wear Properties, ASTM D2266



Lowers wear which leads to longer life of equipment, longer maintenance cycles and lower cost of ownership.

### Format and Packaging

- 14.1 ounce (400 Grams) Cartridges (10 cartridges per carton)
- 35 pound pails (15.80 kg)
- 120 pound kegs (54.36 kg)
- 400 pound drums (181.20 kg)

### How To Use

Use the product with your equipment and apply as recommended by the machine or equipment manufacturer. Clean out previous grease thoroughly although this grease is compatible with other lithium complex greases.

# NanoLub® Synthetic Automotive Grease



Is an affordable, super strong general purpose solution for a wide range of Extreme Pressure applications.

## Applications:

Used in heavily loaded plain and anti friction bearings, gears, and grease lubricated couplings subject to high temperatures and shock loading.

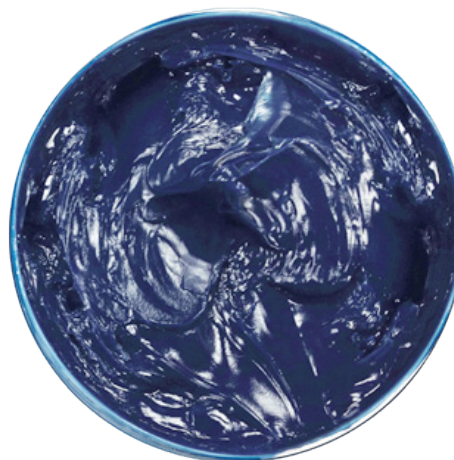
General purpose use in all types automotive and industrial applications including the lubrication of heavy construction and mining equipment.

|   |                 |
|---|-----------------|
| NLGI Grade  | 2               |
| Thickener Type  | Lithium Complex |
| Color, Visual   | Blue            |
| Penetration, Worked, 25°C<br>ASTM D 217   | 273             |
| Dropping Point, °F/°C,<br>ASTM D 2265   | 554°F / 290°C   |
| Viscosity of Oil, ASTM D 445 cSt @ 40°C   | 220             |
| Timken OK Load, ASTM D 2509, lb.  | N/A             |
| 4-Ball Weld, ASTM D 2596, Load, N/kgf   | 4903/500        |
| Water Washout, ASTM D 1264, 79°C % Wt. Loss                                     | 3.00%           |
| Rust Protection, ASTM D 6138, Distilled Water                                   | Pass            |
| Corrosion Protection, ASTM D 1743, Rating                                       | 1a              |
| 4-Ball Wear, ASTM D 2266, Scar, mm  | 0.33            |
| Low Temperature Torque, ASTM D 1478, Torque @ Startup/1 Hour in gcm and Test T° | N/A             |
| Available for Private Label   | Yes             |

**Industries:** Automotive, Light Duty Trucks, Motorcycles, Wheel bearing axles, Chassis Grease, Spindles

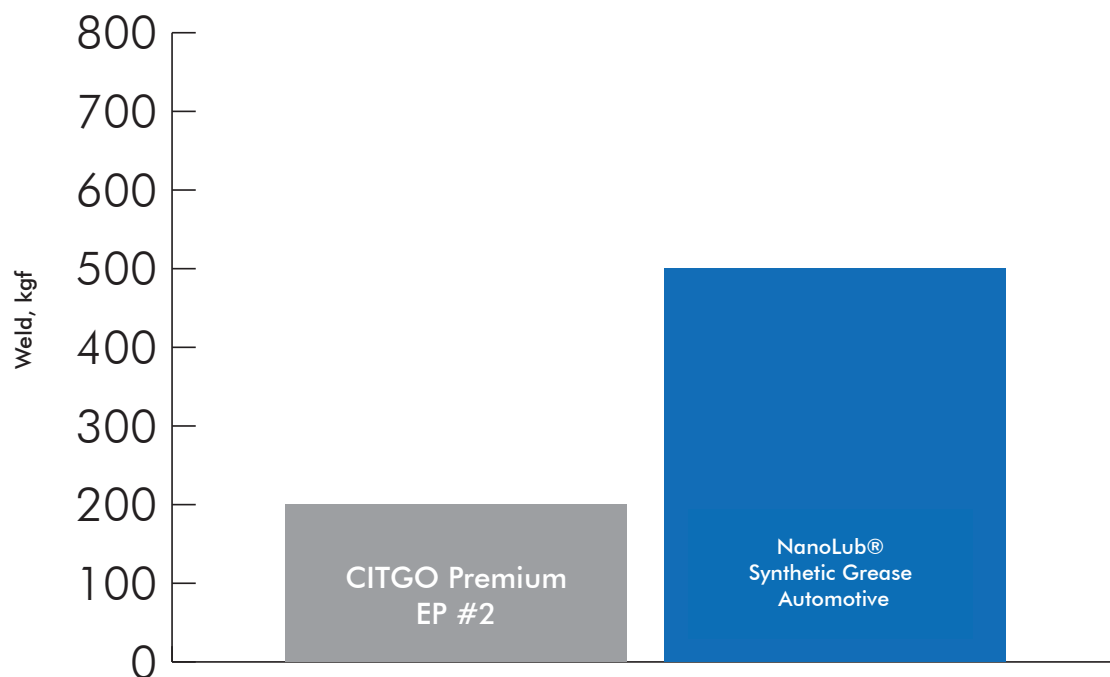
## Benefits

- Extended Machinery Life
- Improve Power & Torque Performance
- Reduce Downtime
- Less Internal Wear
- Extends Maintenance Intervals
- Reduce Energy Consumption
- GC-LB certified. Approved for us in automotive applications by NLGI (National Lubrication & Grease Institute)



## NanoLub® Synthetic Automotive Grease

### EP Properties, ASTM D596



### Format and Packaging

- 35 pound pails (15.80 kg)
- 120 pound kegs (54.36 kg)
- 400 pound drums (181.20 kg)

### How To Use

Use the product with your equipment and apply as recommended by the machine or equipment manufacturer. Clean out previous grease thoroughly although this grease is compatible with other lithium complex greases.

### Competition

- Mobil 14 Ounce Tube High Temperature Lithium Automotive Grease
- Mobil 12.5 Ounce Cartridge General Purpose Synthetic Automotive
- Mobil 1 Synthetic Grease
- Valvoline Automotive Multipurpose Grease

# NanoLub® Synthetic Grease High Temperature



Recommended for use in high temperature applications where thermal stability re-greasing cycles and life of the grease are a concern.

## Applications:

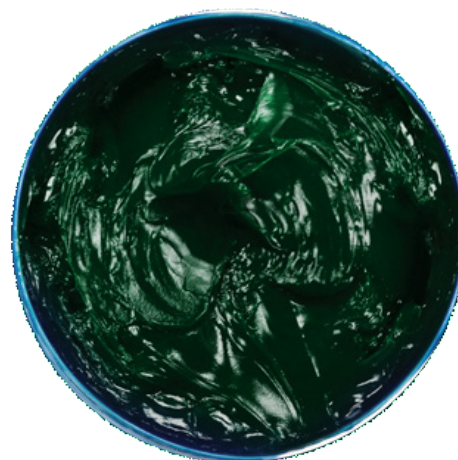
- Used in heavily loaded plain and Anti-Friction bearings, gears, and grease lubricated couplings subject to high temperatures and shock loading.
- General purpose use in all types automotive and industrial applications including the lubrication of heavy construction and mining equipment.

|   |                 |
|---|-----------------|
| NLGI Grade  | 2               |
| Thickener Type  | Lithium Complex |
| Color, Visual   | Green           |
| Penetration, Worked, 25°C<br>ASTM D 217   | 305             |
| Dropping Point, °F/°C,<br>ASTM D 2265   | 554°F / 290°C   |
| Viscosity of Oil, ASTM D 445 cSt @ 40°C   | 220             |
| Timken OK Load, ASTM D 2509, lb.  | N/A             |
| 4-Ball Weld, ASTM D 2596, Load, N/kgf   | 6080/620        |
| Water Washout, ASTM D 1264, 79°C % Wt. Loss                                     | 3.00%           |
| Rust Protection, ASTM D 6138, Distilled Water                                   | Pass            |
| Corrosion Protection, ASTM D 1743, Rating                                       | 1a              |
| 4-Ball Wear, ASTM D 2266, Scar, mm  | 0.33            |
| Low Temperature Torque, ASTM D 1478, Torque @ Startup/1 Hour in gcm and Test T° | N/A             |
| Available for Private Label   | Yes             |

**Industries:** Industrial, Mining  
Steel Mills, Construction, High Temp  
Heavily loaded bearings

## Benefits

- Extended Machinery Life
- Improve Power & Torque Performance
- Reduce Downtime
- Less Internal Wear
- Extends Maintenance Intervals
- Reduce Energy Consumption
- GC-LB certified. Approved for use in automotive applications by NLGI (National Lubrication & Grease Institute)





## NanoLub® Synthetic Grease High Temperature

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### **Format and Packaging**

- 35 pound pails (15.80 kg)
- 120 pound kegs (54.36 kg)
- 400 pound drums (181.20 kg)

### **How To Use**

Use the product with your equipment and apply as recommended by the machine or equipment manufacturer. Clean out previous grease thoroughly although this grease is compatible with other lithium complex greases.

### **Competition**

- Lps LPS ThermaPlex Tan Lithium Complex High-Temp Bearing Grease
- Mobil High Temperature Synthetic Bearing Grease
- Mobil High Temperature Lithium Automotive Grease
- Sta-Lube SL3580 Permatherm Synthetic Hi Temperature Grease
- Mobil1 Synthetic Grease
- Mobil Shc100 Hi/low Temp Grease
- Mag 1 Purple Lithium Synthetic Grease
- Mobilux EP1 Lithium Grease

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# Private Label Program

## Grow your brand with a premier technology.

Nanotech Industrial Solutions private label program can help you develop cutting edge products with out patented nanotechnology. From greases, fully formulated oils and oil additives we can work with you to develop products that you and your customer will love.



### Services Include

- Product and time line management
- Graphic Design Services
- Creative package design support
- Collaboration with our lab
- Stock colored lids and caps
- Use of our IF-WS2 logo
- Technical support
- Marketing support

### Additional Items

- Custom Cap Colors
- Custom Lids
- 4- Color Packaging
- Video production

Contact an NIS sales representative in your area to find out how to get started today!



Exclusive Distributors

Nanoteko Pty Limited Suite 207, 2 Grosvenor Street,  
Bondi Junction, NSW, 2022, T: +61 2 9387 6188  
F: +61 2 9387 6133 E: [admin@nanoteko.com.au](mailto:admin@nanoteko.com.au)  
W: [www.nanoteko.com.au](http://www.nanoteko.com.au)