



February 17, 2024

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19 Emery Ct, St Albert, Alberta  
T8N 5T3

From: Roman Wajda  
Sent: Wednesday, February 7, 2024 8:14 AM  
To: nickagius2014@gmail.com  
Cc: 'russ dejesus'  
Subject: RE: Poly-Oil for ACHE bearings

*It makes maintenance unnecessary*  
Relubrication is not required as Solid Oil contains such a large reservoir of oil that it will outlast the life of the bearing.

*It does not need seals*  
Seals are not needed to retain the lubricant in the bearing, for example on vertical shafts. However, if the arrangement already incorporates seals, they should be retained as extra protection against contamination.

Nick, the Poly-oil lubrication does not impact the bearing L10 life which is based on a fatigue limit. I agree that using Poly-Oil for vertical shaft air coolers is a great idea as they are not high speeds (typically < 400rpm's). All manufactures offer this option but call it something else like Solid-Oil or Solid-Grease. We call it Poly-Oil. That one TCE site with heavy fans and lack of re-lubrication abilities would be an ideal test especially in your norther climate. Keep me posted Nick.

Hope that helps, talk soon.



Roman Wajda

Bearing Application Engineering Manager

## BEARINGS with SOLID GREASE

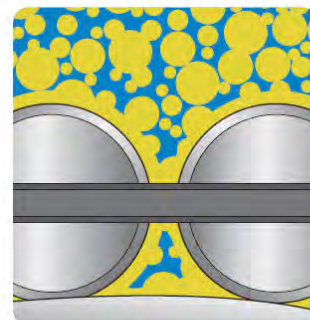
Bearings with general-purpose solid grease



Bearings with high-temperature solid grease

### About solid oil

Solid oil is an oil-saturated, polymer matrix that completely fills the free space in the bearing, encapsulating both the rolling elements and cage. The polymer material has a porous structure, with millions of micro-pores, to hold the lubricating oil. The pores are so small that the oil is retained in the material by surface tension.



As the oil-filled polymer material is pressed into the bearing, a very narrow gap forms around the rolling elements and raceways,

*Solid oil forms a narrow gap around the rolling elements and raceways. The oil in the micro pores will seep into the gap.*

## FILL THE VOID IN YOUR LUBRICANT PROGRAM WITH MICROPOLY® FILLED BEARINGS

### ➤ PROPRIETARY TECHNOLOGY

MicroPoly is a solid lubricant with an oil-filled porous structure. It fills the space between the rolling elements and races in a bearing, providing constant, consistent lubrication. A result of our proprietary processing, MicroPoly lubricants are a mixture of polymers, oils and selected additives that can be customized for your specific lubrication requirements.

MicroPoly is over 50% oil by weight. The oil migrates by capillary action to the MicroPoly surface and provides lubrication by transferring the oil to any metal surface that touches the MicroPoly.

### ➤ LONG-LASTING

No additional lubrication is needed during the life of a MicroPoly-filled bearing.

### ➤ CONTAMINANT-FREE

Because it is a solid, MicroPoly can help block debris and reduce foreign contamination of the bearing, significantly extending the bearing's life.



### ➤ ENVIRONMENTALLY FRIENDLY

The oil is released from the microporous structure to the bearing surfaces only as it is needed to keep the bearing properly lubricated. That means little, if any, oil drips into the surrounding environment. MicroPoly eliminates the dripping and leakage of oil that can contaminate the environment.

### ➤ MICROPOLY LUBRICANTS

MicroPoly Lubricants are the industry leader in microporous polymeric lubricants (MPL) for sliding friction and bearing applications. These include products for high speeds, high temperatures, low temperatures, and heavily loaded applications, as well as food grade formulations. See the complete line on the next two pages.







## MICROPOLY GENERAL PURPOSE

### MPI-0800

*For use in most general-purpose applications*

- Can be used to lubricate bearings in an operating temperature range of 10 to 200°F (-12 to 93°C).
- Available for standard and customized profiles.

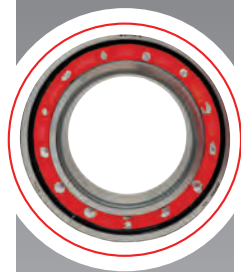


## MICROPOLY GENERAL PURPOSE

### MPI-0779

*For use in applications where bearings see heavy loads and low speeds, and for low-temperature applications*

- Can be used to lubricate bearings in an expanded operating temperature range of -49°F (-45°C) to 225°F (107°C).
- Formulated with a high viscosity synthetic oil.
- Available for standard and customized profiles.

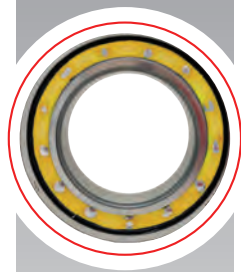


## MICROPOLY HIGH TEMPERATURE

### MPI-2000 & MPI-2400

*Good for higher temperature applications with oil that resists oxidation*

- Extends operating temperature range up to 350°F (177°C).
- **MPI-2000** and **MPI-2400** filled bearings can be used in washdown conditions, although one of MPI-2000's oils is slightly soluble in water.

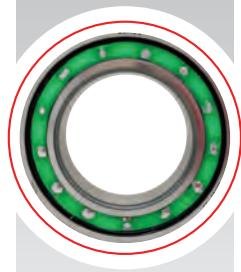


## MICROPOLY HEAVY LOAD

### MPI-2500 & MPI-4500

*Designed specifically for higher load applications*

- **MPI-2500** contains a high viscosity synthetic oil and can be used in heavily loaded bearings, especially at low speeds.
- **MPI-4500** contains a higher viscosity synthetic oil and can be used in very heavily loaded bearings.



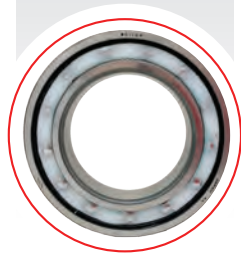
## MICROPOLY HIGH SPEED

### MPI-S700

*Can operate at speeds higher than any other microporous polymeric lubricant (MPL) on the market*

- Can be used in a variety of applications that previously were outside the speed limitations of this technology.
- For example, the max RPM for MPI-S700 for a 45mm bore radial ball (single row) bearing is 7,170, as compared to 4,615 max RPM for MPI-0800.

← For ACHE bearings



## MICROPOLY H1 FOOD GRADE

### MPF-0696 & MPF-1150

*For food & beverage manufacturing applications*

- Registered NSF H1 for incidental food contact; can also be used for any H2 applications
- MPF-0696 can be used to lubricate bearings and can be provided in solid profiles.
- MPF-1150 has a higher viscosity oil and can be used to lubricate large, heavily loaded bearings.

## CROSS REFERENCE GUIDE

There are several critical parameters that determine which MicroPoly grade is best for your specific bearing application. Our sales and technical staff can help you select the proper MicroPoly product for your needs.

### TECHNICAL DATA

PRODUCT #	MPI-0800	MPI-0779	MPI-2000	MPI-2400	MPI-2500	MPI-4500	MPI-S700	MPF-0696	MPF-1150
COLOR	BLACK	BLACK	RED	OFF WHITE	YELLOW	LIGHT BLUE	GREEN	WHITE	WHITE
BASE OIL	PARAFFINIC	SYNTHETIC	BLEND	SYNTHETIC	SYNTHETIC	SYNTHETIC	SYNTHETIC	SYNTHETIC	SYNTHETIC
LOWER TEMP. LIMIT	10°F (-12°C)	<-49°F (-45°C)	10°F (-12°C)	-22°F (-30°C)	5°F (-15°C)	-35°F (-37°C)	-49°F (-45°C)	<-49°F (-45°C)	-39°F (-38°C)
UPPER TEMP. LIMIT	200°F (93°C)	225°F (107°C)	350°F (177°C)	350°F (177°C)	210°F (99°C)	210°F (99°C)	250°F (121°C)	210°F (99°C)	210°F (99°C)
OIL VISCOSITY AT 40°C/100°C CST	139.7/14.2	150/19.3	305/27.95	550/48.2	483/42.7	950/77.0	149/19.0	150/19.1	232.3/25.6
VISCOSITY INDEX	96	146	164	150	139	91	144	145	126
OIL SPECIFIC GRAVITY	0.88	0.86	0.97	0.97	0.97	0.86	0.86	0.86	0.86
COPPER CORROSION	PASS	1A (3 hrs @ 100°C)	PASS	PASS	1B	1A	1B (24 hrs @ 121°C)	1A (3 hrs @ 100°C)	1B (24 hrs @ 250°C)

### PRODUCT FEATURES

PRODUCT #	MPI-0800	MPI-0779	MPI-2000	MPI-2400	MPI-2500	MPI-4500	MPI-S700	MPF-0696	MPF-1150
EP*		✓	✓	✓	✓	✓	✓	✓	✓
ANTI-WEAR			✓	✓					
ANTI-RUST / ANTI-CORROSION**	✓	✓	✓	✓	✓	✓	✓	✓	✓
ANTIOXIDANT	✓	✓	✓	✓	✓	✓	✓	✓	✓
H1 FOOD GRADE								✓	✓
WASHDOWN FRIENDLY***	✓	✓	✓	✓	✓	✓	✓	✓	✓
WATER RESISTANCE	GOOD	GOOD	GOOD	VERY GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
AVAILABLE AS SOLID PROFILES		✓						✓	

\*EP = Extreme Pressure (reduces friction between heavily loaded rolling elements)

\*\*Anti-rust/anti-corrosion additives in MicroPoly will inhibit, but not prevent, rust and corrosion.

\*\*\*Washdown Friendly = Will not be washed out by standard water cleaning methods. Please note that MPI-2000 meets this standard; however, one of its oils is slightly soluble in water.

### ► HOW DOES IT WORK?

- Microporous polymeric lubricants (MPLs) can provide continuous source of lubrication.
- Polymer is inserted into space between the rolling elements and race of bearings, sealing bearings from contamination.
- Two major components of MPLs are the polymer containing continuous microporous network and the oil within the pores.
- Corrosion inhibitors, friction modifiers and solids are added to oil to meet specific application requirements.
- Polymer acts like a sponge releasing and absorbing oil. Oil is released from polymer through capillary action and is transferred to metal surface.
- As film of oil on the surface decreases, polymer releases more oil. If excess oil is present, it is reabsorbed by polymer.
- As temperatures increase, more oil is released, then reabsorbed as temperature decreases.
- If MPL's upper temperature limit is exceeded, polymer softens and can be ejected from bearings.
- MPLs do not dissipate heat rapidly; as a result, there are rotational speed limitations based on bearing type and size.

## ➤ ABOUT US

Named for the physicist and metallurgist who founded the firm in 1986, PhyMet, Inc., provides the highest quality solid lubricants. Driven by customer demand for higher efficiencies and longer performance life, our innovative Research & Development team has developed several high-performing bearing lubrication products.

PhyMet has consistently provided superior product quality and technical service and is recognized as the leader in the solid lubrication system industry. As part of our commitment to total customer satisfaction and outstanding quality, we are certified to the ISO 9001:2015 standard.

## ➤ PRODUCT SOLUTIONS

We have the technology and proprietary products to solve your difficult applications, including MicroPoly lubricants in a variety of formulations. MicroPoly lubricants make bearings last longer by reducing the infiltration of dirt and other contamination. The advanced technology contributes to lower maintenance and associated costs, thus channeling saved dollars to your bottom line.

We have developed additional products beyond our filled bearings. MicroPoly can also be used to lubricate chains, gears, bushings, wear plates, wheel flanges, ball screws, and can be processed into a variety of solid profile shapes with various polymer processing techniques. Other offerings include chain lubrication systems and sprockets, and lube arcs for wheel flange lubrication.

## INDUSTRIES SERVED

MicroPoly lubricants are recommended for a wide array of industries and applications, including:

- |                   |            |
|-------------------|------------|
| ➤ INDUSTRIAL      | ➤ OEM      |
| ➤ AUTOMOTIVE      | ➤ PRINTING |
| ➤ FOOD PROCESSING | ➤ STEEL    |
| ➤ MINING          | ➤ AND MORE |
| ➤ FOUNDRY         |            |

## SATISFIED CUSTOMERS

- A steel processor saves downtime costs of \$250,000 by replacing traditionally lubricated spherical roller bearings with MicroPoly-filled bearings. The spherical roller bearings are in a steel coil straightener and are not accessible to lubricate. MicroPoly lubricants have extended the bearing life from six months to three+ years.
- A utility company is saving several hundred thousand dollars a year by replacing traditionally lubricated tapered roller bearings with MicroPoly filled ones. The MicroPoly bearings are lasting over five times longer.
- An automotive manufacturer saves over \$100,000 annually by replacing traditionally lubricated tapered roller bearings with MicroPoly-filled bearings. The bearings are on assembly line pallets traveling through a transmission washer. Instead of being replaced every three months, the bearings are lasting two+ years.
- A potato chip manufacturer saved almost \$4 million over 6 years using MicroPoly in its conveyor bearings. Traditionally lubricated bearings on the potato chip sizer lasted 6-8 weeks due to seasonings penetrating the bearings. Prior to using MicroPoly, bearing failure led to an average of two hours of downtime per month, costing approximately \$25,000 per hour. Customer has experienced no downtime due to bearing failure since installing MicroPoly and says it is "One of the best things we've done in a long time."
- A chicken processor saves over \$170,000 annually by replacing traditionally lubricated single row ball bearings in its feather picker with MicroPoly-filled bearings. MicroPoly lubrication has more than tripled the life of the bearings.