

# METATRON™ 692A

## DESCRIPTION :

**Metatron™ 692A** is a multipurpose thermally stable and thermally durable synthetic blend gear lubricant that is recommended for use in all types of enclosed industrial gear drives, especially those gear industrial gear drives that contain filtration systems, where extreme pressures characteristics are needed.

## COMPOSITION AND PERFORMANCE PROPERTIES :

**Metatron™ 692A** is blended from the finest high quality severely solvent refined, severely hydrofinished high viscosity index 100% pure paraffin base oils and severely hydrotreated polyalphaolefin (PAO) synthetic base fluids available. This unique combination provides the **Metatron™ 692A** with the following advantages:

1. Excellent Low Temperature Properties. This results in the bearings and gears being instantly lubricated at sub-zero temperatures the moment they start turning.
2. Superior Oxidation Stability.
3. Excellent Resistance to Thermal Degradation.
4. Excellent Hydrolytic and Demulsibility Characteristics.
5. A High Viscosity Index.
6. Increased Wear Protection and Longer Gear Life.
7. Compatibility with All Types of Seals.

Blended into these 100% pure paraffin base oils and PAO synthetic base fluids is a highly specialized non-corrosive thermally stable and thermally durable multifunctional extreme pressure additive package the provides the **Metatron™ 692A** with the following performance advantages:

1. Enhanced thermal and oxidative stability and durability to handle operating temperatures of 149°C to 177°C (300°F to 350°F).
2. Excellent extreme pressure properties to protect the gears and bearings from excessive wear and fatigue.
3. Prevention of the formation of sludge and carbon deposits that erode the seals.
4. Excellent seal compatibility.
5. Enhanced protection of copper, brass and bronze components from corrosion.
6. Non-corrosivity to brass, bronze and other non-ferrous metal parts.
7. Excellent protection of components from rust and corrosion in dry conditions and in the presence of moisture.

8. Excellent resistance to water and moisture.
9. Excellent water separability characteristics
10. Enhanced gear, bearing and seal cleanliness.
11. Excellent resistance to foaming.

### **THERMAL STABILITY AND DURABILITY :**

The trend among industrial gear drive manufacturers is to operate the equipment at higher speeds, loads, power densities and increased torque. This trend has resulted in industrial gear drives being subjected to higher operating temperatures. These higher operating temperatures have resulted in today's gear lubricants being subjected to extreme thermal stress.

Therefore it is important that a gear lubricant possess thermal stability and durability characteristics. Gear lubricants that do not possess these prosperities rapidly oxidize and decompose when subjected to high temperatures, resulting in the formation of sludge, varnish, and carbon deposits on the gears, bearings and seals, abraded seals, premature seal hardening and brittleness, and a loss of the gear lubricant's extreme pressure additive chemistries ability to protect against excessive wear, spalling and overall distress to the gears and bearings.

**Metatron™ 692A** severely solvent refined, severely hydrofinished high viscosity index 100% pure paraffin base oils and PAO synthetic base fluids in conjunction with the thermally stable and thermally durable multifunctional extreme pressure additive package enables the **Metatron™ 692A** to resist oxidation and thermal stress at operating temperatures 38° (100°F) to 65° (150°F) higher than conventional gear lubricants. This results in :

1. A vast reduction in the formation of deposits.
2. Better heat transfer.
3. Excellent protection the gears and bearings even under the most extreme thermally stressed operating conditions.
4. Less wear to gears, bearings and seals
5. Increased oil seal life
6. Lower operating temperatures
7. Less energy consumption
8. Longer lubricant life
9. Less equipment downtime
10. Longer equipment life
11. Reduced maintenance costs

### **MICRO MOLY PROTECTION:**

Most types of gearing are designed to operate under hydrodynamic lubrication conditions. That is a full fluid oil film must separate the metal surfaces of the gears and bearing during operation. However, during periods of cold start up, extremely high operating temperatures or high shock loading conditions this full fluid film can be destroyed. Unless a boundary lubricant is present in the gear lubricant when this full fluid film is destroyed, excessive wear can take place.

**Metatron™ 692A** contains a proven friction reducer and boundary called **Micro Moly™**. **Micro Moly™** is a liquid soluble type of moly that plates itself to the metal surfaces of the gears and bearings. Once plated, **Micro Moly™** forms an indestructible long lasting solid lubricant film that is capable of withstanding pressures up to of 500,000 psi. This solid lubricant film once plated to the gears and bearings will reduce friction, vibration and wear, thus extending equipment life.

**Micro Moly™** also provides a smooth finish surface on all of the moving surfaces of the gear drives. This smooth finish minimizes the action of cold welding and vibration, which can occur during start up after the gears have been standing idle and during periods of high shock loading. This in turn lessens starting loads and peak power demand, thus resulting in a realistic power cost savings.

### **MANUFACTURERS REQUIREMENTS AND SPECIFICATIONS:**

**Metatron™ 692A** meets and exceeds the following specifications and manufacturer's requirements: US Steel 224, David Brown S1.53101 Type E, AGMA 9005, AGMA 250.04, AGMA 251.02, DIN 51517 Part 3 (CLP), Cincinnati Millicron P-74 and P&H Harnisfeger 497 Specification.

**TYPICAL PROPERTIES:**

<b>ISO Grade</b>	<b>150</b>	<b>220</b>
<b>AGMA Grade</b>	<b>4EP</b>	<b>5EP</b>
Specific Gravity @ 15°C (60°F)	.89	.8867
Viscosity cSt @ @ 40°C ASTM D-445	140-160	201-225
Viscosity @ 100°C ASTM D-445	13.50-18,50	18.50-22.50
Viscosity Index ASTM D-2270	109	112
Flash Point °C (°F) ASTM D-92	237° (460°)	243° (470°)
Fire Point °C (°F) ASTM D-92	254° (490°)	266° (510°)
Pour Point °C (°F) ASTM D-97	-26° (-15°) to -29° (-20°)	-26° (-15°) to -29° (-20°)
Rust Test (ASTM D-665)		
Procedure A (Distilled Water)	Pass	Pass
Procedure B (Salt Water)	Pass	Pass
Copper Strip Corrosion Test ASTM D-130	1a	1a
Four Ball E.P. Test ASTM D-2783		
Weld Point, kgs.	400	400
Load Wear Index	64.8	65.20
Four Ball Wear Test ASTM D-4172		
Scar diameter, mm.	0.3	0.3
Timken E.P. Test ASTM D-2782		
Ok Load, lbs.	70	70
Failure Load, lbs.	75	75
Falex E.P. Continuous Load ASTM D-3233		
Failure Load, lbs.	2500	2500

<b>ISO GRADE</b>	<b>150</b>	<b>220</b>
FZG A/8.3/90 ASTM D-5182 Failure Load	13 <sup>TH</sup>	13 <sup>TH</sup>
Oxidation Test ASTM D-2893 % Viscosity increase after 312 hours @95°C	3%	3%
L-60-1 Thermal Oxidation Test ASTM D-5704 % Viscosity Increase	24.5%	24.5%
Demulsibility Test ASTM D-2711 Free Water, ml % Water in oil Emulsion, ml	83 0.65 Trace	83 0.65 Trace
Foam Tendency Test ASTM D-892 Sequence I Sequence II Sequence III	0/0 0/0 0/0	0/0 0/0 0/0