SINCE 1839 Schaeffer MANUFACTURING COMPANY

ISO 9002 CERTIFIED

TECHNICAL DATA

102 Barton Street, St. Louis, Missouri 63104
In-State (314) 865-4100/Out of State 800-325-9962/Fax (314) 865-4107 http://www.schaefferoil.com

#214 MOLY ONE FOR ALL GEAR LUBRICANT SAE 80W-140

Moly One For All Gear Lubricant is a shear stable, thermally stable and durable, multi-grade gear lubricant that is recommended for use in all types of automotive gear drive applications that require a gear oil to operate under severe wide ambient temperature ranges.

Moly One For All Gear Lubricant is blended from the finest high quality severely solvent refined severely hydro-finished high viscosity index 100% pure paraffin base oils available. Blended into these 100% pure paraffin base oils is a highly specialized non-corrosive thermally stable and thermally durable multifunctional extreme pressure additive package that provides the Moly One For All with the following advantages:

1. Enhanced thermal and oxidative stability and durability to handle operating temperatures of 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.

Moly One For All contains an extremely shear stable polymer type viscosity index improver. This extremely shear stable polymer-type viscosity index improver provides the Moly One For All with a high viscosity index. These polymers expand as temperature rises and contract as the temperature is lowered allowing the Moly One For All to exhibit low temperature properties that allow the gears and bearings to be safely started at low ambient temperatures and to have the proper viscosity needed at operating temperature and high ambient temperatures in order to minimize wear. This temperature selectiveness also enhances the Moly One For All's high temperature oxidation stability.

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

Continued on Next Page

Therefore, it is important that a gear lubricant possess thermal stability and durability characteristics. Gear lubricants that do not possess these properties 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.

Moly One For All's severely solvent refined, severely hydrofinished high viscosity index 100% pure paraffin base oils and thermally stable and thermally durable multifunctional extreme pressure additive package enables Moly One For All to resist oxidation and thermal stress at operating temperatures 100°F to 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 to 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

Most gearing is designed to perform under hydro-dynamic lubrication conditions. That is, a full fluid film must separate the metal surfaces of the gears and bearings 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, wear can take place.

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

The Micron Moly® also provides a smooth finished surface on all moving parts 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.

Moly One For All contains adhesive-cohesive additives that allows the product to tenaciously stick and cling to the gears and bearings. This ensures that the Moly One For All retains a fine film that "stays put" on the metal surface of the gears and bearings regardless of how thoroughly it is wiped away.

Moly One For All contains the proper additive system that allows the product to properly function and lubricate limited slip, positraction and high offset hypoid gear rear ends and differentials.

Moly One For All Gear Lubricant meets and exceeds the following specification and manufacturers requirements: API Service Classification GL-5, MT-1, PG-2, Military Specification MIL-PRF-2105E, SAE 2360, Mack GO-H, Clark MS8 Rev-1, Ford M2C119A, M2C108C, M2C158A; General Motors Specification 9985476, 9985049; Damiler-Chrysler; John Deere J11D, Rockwell Standard O-76A & O-76B; Eaton-Fuller's Lubricant Specifications, White Motor's M50016, Volvo, Volkswagen.

TYPICAL PROPERTIES

SAE Grade	80W-140
Specific Gravity 60°F/15°C	.8816
Viscosity at 40°C Cst (ASTM D-445)	255-270
Viscosity at 100°C Cst (ASTM D-445)	27.00-32.00
Brookfield Viscosity (ASTM D-2983) @ -15°F/-26°C, cP	140,000
Viscosity Index (ASTM D-2270)	120
Flash Point °F/°C (ASTM D-92)*	445°/229°
Fire Point °F/°C (ASTM D-92)*	480°/249°
Pour Point °F/°C (ASTM D-97)	-25°/-32°
Copper Strip Test, 3hrs. (ASTM D-130)	1a
Rust Test (ASTM D-665)	
Procedure A (Distilled Water)	Pass
Procedure B (Salt Water)	Pass
Four Ball EP Test (ASTM D-2783)	
Weld Point, kg.	315
Load Wear Index, kg.	55
Four Ball Wear Test (ASTM D-4172)	
Scar Diameter, mm	.25
Timken EP Test (ASTM D-2782)	
OK load, lbs.	65
Failure Load, lbs.	70
F Z G (Four Sequence Gear Test (ASTM D-5182, A/8.3/90)	13th Stage
Falex Continuous Load (ASTM D-3233) Procedure A Failure Load, lbs.	2500
Oxidation Test (ASTM D-2893)	
% Viscosity Increase after 312 hrs. at 95°C	3%
Demulsibility Test (ASTM D-2711)	
Total Free Water, ml	81
% Water in Oil	1
Emulsion, ml	Trace
Foam Tendency (ASTM D-892)	
Sequence I 75°F, ml	0/0
Sequence II 200°F, ml	10/0
Sequence III 75°F, ml	0/0
L-60-1 Thermal Oxidation Test (ASTM D-5704) % Viscosity Increase	30

Packaging: #214 Moly One For All is available in 420 lb. Drums, 225 lb. drums, 120 lb. Kegs and 40 lb. Pails.