SINCE 1839
Schaeffer's
SPECIALIZED LUBRICANTS

TECHNICAL DATA

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ISO 9001 CERTIFIED

209AM Marine Universal Gear Lube ISO 150 & 220

Marine Universal Gear Lube is a multipurpose, thermally stable, thermally durable gear lubricant recommended for use in all types of enclosed marine gear drives where extreme pressure characteristics are needed.

Marine Universal Gear Lube is blended from 100% pure paraffin base oils and a highly specialized, additive package that provides the following performance advantages:

- WEAR PROTECTION
  - Excellent extreme pressure properties to protect from excessive wear and fatigue.
  - Enhanced protection of copper, brass and bronze components from corrosion.
  - Excellent protection of components from rust and corrosion.

- EXCELLENT STABILITY
  - Enhanced thermal and oxidative stability to handle operating temperatures of > 300°F
  - Longer lubricant and equipment life
  - Reduced equipment downtime and maintenance costs.
  - Excellent water resistance and water separatibility characteristics.
  - Excellent resistance to foaming.

- DEPOSIT CONTROL
  - Prevention of the formation of sludge and carbon deposits that erode seals.
  - Excellent seal compatibility.
  - Enhanced gear, bearing and seal cleanliness.

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. Boundary lubrication is needed to prevent excessive wear when this full fluid film is destroyed.

Micron Moly®, a proven friction reducer, is added to Marine Universal Gear Lube to provide boundary lubrication; Micron Moly®, a liquid soluble type moly, plates itself to the metal surfaces of the gears and bearings. Once plated, Micron Moly® forms an indestructible, long-lasting, solid lubricant film 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.

Micron Moly® also provides a smooth finished surface on all moving parts of the gear drive. This smooth finish minimizes the action of cold welding and vibration, which can occur during start up after 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.

Marine Universal Gear Lube contains an adhesive-cohesive additive that allows the product to tenaciously stick and cling to the gears and bearings. This ensures that Marine Universal Gear Lube will retain a fine film that “stays put” on the metal surface of the gears and bearings, regardless of how thoroughly it is wiped away.

Moly Universal Gear Lube meets and exceeds the following specifications and manufacturer's requirements: API Service Classifications GL-5, MT-1 and PG-2; United States Military Specifications: MIL-PRF-2105-E, SAE J2360; Meritor/Rockwell Standard O-76D, Eaton-Roadranger; Terex EEMS19003, VME Americas Specifications: EEMS19003F, EEMS19107;US Steel 224: David Brown S1.53.101 Type E; AGMA 9005-D94,AGMA 9005-E02, AGMA 250.04, AGMA 251.02; DIN 51517 Part 3 (CLP); and Cincinnati Machine P-34, P-35, P-59, P-74, and P-77.

TYPICAL PROPERTIES

ISO Grade	**150**	**220**
Color	Red	Red
AGMA Rating	4EP	5EP
Specific Gravity 60°F	.8816	.898
Viscosity 100°F SUS (ASTM D445)	785-838.8	1050-1261
Viscosity 40°C cSt (ASTM D445)	149-160	198-240
Viscosity 100°C cSt (ASTM D445)	14.00-16.00	16.5-22.5
Viscosity Index (ASTM D2270)	95	100
Flash Point °F/°C (ASTM D92)*	435°/224°	440°/227°
Fire Point °F/°C (ASTM D92)*	470°/243°	480°/249°
Pour Point °F/°C (ASTM D97)	-10°/-23°	5°/-15°
Rust Test (ASTM D665)		
Procedure A (Distilled Water)	Pass	Pass
Procedure B (Salt Water)	Pass	Pass
Copper Strip Corrosion (ASTM D130)		
Test, 3 hrs.	1a	1a
Four Ball EP Test (ASTM D2783)		
Weld Point, kg.	400	400
Load Wear Index, kg	60	65.20
Four Ball Wear Test (ASTM D2266)		
Scar Diameter, mm	.3	.28
Timken EP Test (ASTM D2782)		
OK Load, lbs.	70	70
Fail Load, lbs.	75	75
Falex EP Continuous Load (ASTM D3233) Procedure A		
Failure Load, Lbs.	2500	2500
FZG (Four Square Gear Test)(ASTM D5182;A/8.3/90)	13th Stage	13th Stage
Oxidation Test (ASTM D2893)		
Viscosity Increase after 312 hrs @ 203°F/95°C	3%	3%
L-60-1 Thermal Oxidation Test (ASTM D5704)		
% Viscosity Increase	24.5	24.5
Demulsibility Test (ASTM D2711)		
Free Water, ml	84.9	85
% Water in Oil	.5	.5
Emulsion, ml	Trace	Trace
Foam Tendency (ASTM D892)		
Sequence I 75°F, ml	0/0	0/0
Sequence II 200°F, ml	0/0	0/0
Sequence III 75°F, ml	0/0	0/0