



Synthetic Polyol Ester Lubricant

1 Scope

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Material Description. This specification defines the minimum acceptable requirements for the specific synthetic Polyol Ester (POE) lubricant approved for use in GM mobile Air Conditioning (AC) systems with an electric AC compressor. This lubricant is approved for use with HFC-134a or HFO-1234yf refrigerant.

1.2 Symbols. Not applicable.

1.3 Applicability. This POE lubricant is intended for service use only in the air conditioning systems of GM vehicles with an electric AC compressor.

1.4 Remarks. Not applicable.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

ASHRAE STD 97	ASTM D445	ASTM D1744	ASTM D3233
ASTM D93	ASTM D974	ASTM D2270	
ASTM D97	ASTM D1298	ASTM D2670	

2.2 GM Standards/Specifications.

GMW3059	GMW14270
---------	----------

2.3 Additional References.

Safety and Industrial Hygiene (S&IH) Technical Standard (TS), S&IH TS 3.4-160-02 (available at www.gmsupplypower.covisint.com)

3 Requirements

3.1 Chemical Requirements. This specification does not restrict the chemical structure of the polymer. Any proportion of ethylene/propylene oxide units may be used in the base polymer. Starting or terminating groups or functionalities may vary as necessary to meet the requirements listed in this specification.

3.2 Physical Requirements. The lubricant shall meet the requirements shown in Table 1.

Table 1: Physical Requirements

Properties	Requirement	Test Method
Viscosity at 100 °C	7.9 mm ² /s to 8.4 mm ² /s	ASTM D445
Viscosity at 40 °C	64.8 mm ² /s to 68.8 mm ² /s	ASTM D445
Viscosity Index	90 (minimum)	ASTM D2270
Specific Gravity at 20 °C	0.93 s.g. to 0.97 s.g.	ASTM D1298
Flash Point	> 200 °C	ASTM D93

Properties	Requirement	Test Method
Total Acid Number	< 0.5% maximum mg KOH/g	ASTM D974
Pour Point	Not above -35 °C	ASTM D97
As-received Water Content	< 100 ppm	ASTM D1744
Solubility in HFC-134a: At 3% (by weight) lubricant At 10% (by weight) lubricant	> 80 °C > 80 °C	Not applicable
Sealed Tube Stability	Fe: 3, Cu: 2, Al: 2 0.5% maximum HFC-134a decomposition	ASHRAE STD 97
Water Adsorption (21 days)	1400 ppm	Not applicable
Falex Test Wear	< 0.5 mm	ASTM D2670
Falex Seized Load	> 2200 N	ASTM D3233
Volume Resistivity at 25 °C	> 1.0 TΩm	Not applicable

3.2.1 Purity. The lubricant shall be a clear, transparent liquid. There shall be no particulates or turbidity present. Ash content of the base stock (exclusive of additives) shall be less than 0.01% by mass.

3.2.2 Water Content. The as-received water content in bulk shall not exceed 100 ppm. The rate of water adsorption (21 days) for the fluid at 21 °C, 80% Relative Humidity (RH) shall not exceed 1400 ppm when exposed in an open service container at a surface to volume ratio of 3:1.

3.3 Wear Performance. Wear testing shall be performed under an HFC-134a or HFO-1234yf atmosphere, depending on the refrigerant to be used.

3.3.1 Falex Test. The Falex Test shall be run per ASTM D2670, modified per 3.3.1 a and 3.3.1 b.

- Break in 60 s at 91 kg.
- Test for 60 minutes at 136 kg.

3.3.2 Falex Wear Test: Wear Scar. The Wear Scar Test; millimeters (mm) shall be run according to ASTM D3233. The seizure loads with the following materials (see 3.3.2.a and 3.3.2.b) shall be a minimum of 3000 N.

- AISI 1137 Steel block/AISI 3135 Steel pin: 0.5 (maximum).
- B390 Aluminum block/AISI 3135 Steel pin: 0.5 (maximum).

3.4 Storage Stability. The supplier shall test the lubricant for stability and storage life in GM approved service containers, e.g., 60 days at 35 °C and 95% RH shall result in no significant change in the properties listed in Table 1.

3.5 Performance Requirements. The material shall perform satisfactorily in application and service. Failure to do so shall constitute reason for rejection regardless of compliance with the requirements of this specification.

3.6 Materials Compatibility. In addition to the preceding, the lubricant shall not cause degradation of the materials or components in the AC system, e.g., hoses and the lubricant shall not cause degradation of the O-rings, which could impair performance in the system.

4 Manufacturing Process

Not applicable.

5 Rules and Regulations

5.1 Legal Regulations. All materials must satisfy applicable laws, rules, regulations and recommendations valid in the country of usage.