



SURFACE VEHICLE STANDARD

J2360™

MAY2022

Issued 1998-11
Revised 2022-05

Superseding J2360 JUL2021

Automotive Gear Lubricants for Commercial and Military Use

RATIONALE

This SAE J2360 standard has been revised to incorporate three additional requirements for gear lubricants intended for military procurement and use. These requirements have been placed in Appendix A.1 and are not compulsory for commercial gear lubricants covered by this standard. This revision also includes an update to the review criteria for ASTM D7038 (L-33-1 Test) which the LRI Review Committee has been using for Qualified Products List (QPL) approvals since 2018.

1. SCOPE

The gear lubricants covered by this standard exceed American Petroleum Institute (API) Service Classification API GL-5 and are intended for hypoid-type, automotive gear units, operating under conditions of high-speed/shock load and low-speed/high-torque. These lubricants may be appropriate for other gear applications where the position of the shafts relative to each other and the type of gear flank contact involve a large percentage of sliding contact. Such applications typically require extreme pressure (EP) additives to prevent the adhesion and subsequent tearing away of material from the loaded gear flanks. These lubricants are not appropriate for the lubrication of worm gears.

Appendix A is a mandatory part of this standard. The information contained in Appendix A is intended for the demonstration of compliance with the requirements of this standard and for listing on the Qualified Products List (QPL) administered by the Lubricant Review Institute (LRI). Appendix A contains a summary of key qualification requirements. A complete listing of qualification requirements and procedures can be found in the Program Document (PD4000), Gear Lubricant Review Program, available on the Performance Review Institute (PRI) website, www.p-r-i.org.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J306

Automotive Gear Lubricant Viscosity Classification

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Documents

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2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM D92	Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester
ASTM D130	Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test
ASTM D892	Standard Test Method for Foaming Characteristics of Lubricating Oils
ASTM D893	Standard Test Method for Insolubles in Used Lubricating Oils
ASTM D5662	Standard Test Method for Determining Automotive Gear Oil Compatibility with Typical Oil Seal Elastomers
ASTM D5704 (L-60-1)	Standard Test Method for Evaluation of the Thermal and Oxidative Stability of Lubricating Oils Used for Manual Transmissions and Final Drive Axles
ASTM D6121 (L-37 Test)	Standard Test Method for Evaluation of Load-Carrying Capacity of Lubricants Under Conditions of Low Speed and High Torque Used for Final Hypoid Drive Axles
ASTM D6304	Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration
ASTM D6443	Standard Test Method for Determination of Calcium, Chlorine, Copper, Magnesium, Phosphorus, Sulfur, and Zinc in Unused Lubricating Oils and Additives by Wavelength Dispersive X-ray Fluorescence Spectrometry (Mathematical Correction Procedure)
ASTM D7038 (L-33-1 Test)	Standard Test Method for Evaluation of Moisture Corrosion Resistance of Automotive Gear Lubricants
ASTM D7452 (L-42 Test)	Standard Test Method for Evaluation of the Load Carrying Properties of Lubricants Used for Final Drive Axles, Under Conditions of High Speed and Shock Loading
ASTM D7603	Standard Test Method for Determination of Storage Stability and Compatibility in Automotive Gear Oils
ASTM D8165 (L-37-1 Test)	Standard Test Method for Evaluation of Load-Carrying Capacity of Lubricants Used in Hypoid Final-Drive Axles Operated under Low-Speed and High-Torque Conditions

2.1.3 Coordinating European Council Publications

Available from Coordinating European Council, Madou Plaza, 25th Floor, Place Madou 1, B-1030, Brussels, Belgium.

Test Method CEC L-45-A-99 Viscosity Shear Stability of Transmission Lubricants (KRL - Tapered Roller Bearing Test Rig), Shear Stability Test, 1999

2.1.4 Federal Government Publications

Available from U.S. Department of Labor/OSHA, 200 Constitution Avenue, Washington, DC 20210, Tel: 800-321-6742, www.osha.gov/pls/publications/pubindex.list.

OSHA 29 CFR 1910.1200 Hazard Communication Interpretation Regarding Lubricating Oils

Available from Defense Standardization Program, ASSIST Quick Search, <https://quicksearch.dla.mil/qsSearch.aspx>.

FED-STD-791 Testing Methods of Lubricants, Liquid Fuels, and Related Products



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3. REQUIREMENTS

3.1 Materials

The gear lubricants covered by this standard shall be derived from petroleum fractions, synthetically prepared compounds, or a combination of the two types of products. They may include rerefined stocks. The stocks shall be compounded with such functional additives (e.g., extreme pressure agents, corrosion inhibitors, friction modifiers, etc.) as necessary to meet the performance requirements specified in this standard. The stocks used shall not be considered carcinogenic or potentially carcinogenic as defined under OSHA 29 CFR 1910.1200.

3.2 Physical and Chemical Property Requirements

The gear lubricant shall conform to the physical property and chemical requirements specified in 3.2.1 through 3.2.6.

3.2.1 Viscosity

The gear lubricant shall meet the limits for the classification of automotive gear lubricants in rheological terms, as described in SAE J306, for the appropriate viscosity grade.

3.2.2 Shear Stability

The gear lubricant shall maintain its starting viscosity grade, per SAE J306, when tested in accordance with CEC L-45-A-99 for 20 hours.

3.2.3 Flash Point

The gear lubricant shall have a flash point greater than the minimum temperature indicated by Table 1 when tested in accordance with ASTM D92.

Table 1 - Flash point requirements

Property	SAE 70W-XX*	SAE 75W-XX*	SAE 80W-XX*	SAE 85W-XX*
Flash Point, °C, min	145	150	165	180

* XX signifies the high temperature viscosity grade of the lubricant, and may be left blank or equal to 80, 85, 90, 110, 140, 190, or 250, as indicated in SAE J306.

3.2.4 Pour Point Depressants

The gear lubricant shall contain no more than 2.0% (by volume) of any type of pour point depressant or combination in the final formulation.

3.2.5 Elemental Limitations

3.2.5.1 Chlorine

The gear lubricant chemistry shall limit the amount of chlorine to not more than 0.025 wt% (250 ppm) when tested using ASTM D6443.

3.2.6 Contamination

3.2.6.1 Water

New gear lubricant shall contain no more than 0.1 wt% (1000 ppm) of water using test method ASTM D6304.

3.3 Performance Requirements

The gear lubricant shall conform to the performance requirements specified in 3.3.1 through 3.3.8. Appendix B summarizes the performance requirements.