GM	WORLDWIDE ENGINEERING STANDARDS	Material Specification	GMW16433

DEXRON® Gear Oil 75W - 90

1 Scope

1.1 Material Description. This specification covers DEXRON® Gear Oil primarily for use in axles, in cars or trucks with open or locking differentials. This specification describes, in terms of laboratory and simulated service test results, the requirements for a minimum-performance fluid.

1.2 Symbols. Not applicable.

1.3Applicability. Lubricant for axles and power transfer units.

1.4 Remarks.

1.4.1 Safety. This specification may involve hazardous materials, operations, and equipment. This specification does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this specification to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.

1.4.2 This specification uses the International System of Units (SI) as standard per IEEE/ASTM SI10, except for certain components which are commercially available only in American conventional units.

1.4.3 This specification uses the Rounding-Off Method per ASTM E29 for significant figures to determine conformance to specification requirements.

1.4.4 Unless otherwise noted, part numbers of this specification refer to those of General Motors Powertrain.

2 References

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

2.1 External Standards/Specifications.

ASTM D92	ASTM D1418	ASTM D5185	ASTM E29
ASTM D97	ASTM D1552	ASTM D5704	CEC L-45-99
ASTM D130	ASTM D2240	ASTM D5800	CEC L-48-A-00
ASTM D412	ASTM D2270	ASTM D6121	CEC L-84-02
ASTM D445	ASTM D2983	ASTM D6304	FED-STD-791
ASTM D471	ASTM D4052	ASTM D6594	IEEE/ASTM SI10
ASTM D664	ASTM D4289	ASTM D6922	ISO 37
ASTM D892	ASTM D4629	ASTM D7038	SAE J306
ASTM D1193	ASTM D4739	ASTM D7450	SAE J2643

2.2 GM Standards/Specifications.

9986285	GMW3059

2.3 Additional References.

- All GM DEXRON® testing forms including Form A are available from the Team Leader for Service Parts Engineering and DEXRON® Licensing or the General Motors Automatic Transmission Fluid (GM ATF) and Gear Oil Committee Chairman, via GM Supply Power. Folders/ENGINEERING/Powertrain Product Engineering/Transmission. (gmsupplypower.covisint.com/c/document_library/get_file?p_l_id=4211828&folderId=4501165&name=DLFE-188908.docx).
- EHDPROC11 (test procedure run at Imperial College, London, England).
- FTM 791, 3430/3440.

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- FVA-2/IV Pitting Test Procedure.
- General Motors Part 9986285 (also reference GM standard in 2.2).
- Metered Fuel Economy – Federal Fuel Economy (FFE) (Highway).
- Metered Fuel Economy – Federal Test Procedure (FTP) (City).
- TMC003 Material Safety Data Sheet guidance documents (available at www.gmsupplypower.com).
- VW PV 1454 (Volkswagen test procedure).

3 Requirements

3.1 Test Requirements. Form A (refer to 2.3) is required for testing to be started on gear lubricants pursuing DEXRON® Gear Oil approval.

3.2 Mechanical Requirements. Test procedures shall be conducted as specified, with no deviation, unless express written authorization is obtained from the General Motors Automatic Transmission Fluid (ATF) and Gear Oil Committee. Test parts are to be used as received. Replacement or modification of any part shall be made only if directed in this specification or to replace damaged parts. The laboratory must target to the mean of the specified test conditions.

3.3 Physical Requirements. Fluids qualified under this specification shall conform to SAE J306 and to the test methods and requirements as listed in Appendix A, Table A1.

3.4 Approved Additive Chemistries.

3.4.1 Fluids meeting this specification shall be manufactured using additive chemistries listed in Table A2, approved DEXRON® Gear Oil Additive Chemistry Combinations.

3.5 Requirements for New Additive Chemistry Combinations.

3.5.1 Successful completion of a complete DEXRON® Gear Oil Qualification Program (Appendix A, Table A1).

3.5.2 Successful completion of a complete DEXRON® Gear Oil Qualification Program (Appendix A, Table A1) using the following fluid blends:

3.5.2.1 Seventy-five percent (75%) Candidate, 25% Reference Fluid.

3.5.2.2 Fifty percent (50%) Candidate, 50% Reference Fluid.

3.5.2.3 Twenty-five percent (25%) Candidate, 75% Reference Fluid.

3.5.2.4 If applicable, 50% Candidate, 50% any previously approved chemistry other than the Reference Fluid.

3.5.3 Successful completion of tests listed in Table A3.

3.5.4 Successful completion of a 241 000 km (150 000 mi) fleet test using the new candidate chemistry and blends of fluids from 3.5.2. A proposal for the fleet test shall be submitted to and approved by the GM ATF and Gear Oil Committee before commencing the fleet test.

3.5.5 Any additional testing as directed by the GM ATF and Gear Oil Committee.

3.6 Additional Requirements.

3.6.1 The test requirements given in this specification are minimum or maximum acceptance limits for valid tests. No adjustments for test precision are to be applied as test variability was taken into account in the determination of the requirements.

3.6.2 The GM ATF and Gear Oil Committee reserves the right to require any additional tests that may be deemed necessary to ensure satisfactory performance of fluids submitted for qualification as DEXRON® Gear Oil.

3.6.3 Validation Requirements. Testing necessary for validating the use of this lubricant shall be prescribed by Materials Engineering. Testing will include, but not be limited to, tests included in Section 3 of this specification, vehicle fleet testing, and Proving Ground Durability Tests.

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.

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5.2 Language. In the event of conflict between the English and domestic language, the English language shall take precedence.

5.3 Inspection and Rejection. All shipments of material or parts under contract or purchase order manufactured to this specification shall be equivalent in every respect to the initial samples approved by Engineering. There shall be no changes in either formulation or manufacturing processes permitted without prior notification and approval by Engineering. Lack of notification by the supplier constitutes grounds for rejection of any shipment. While samples may be taken from incoming shipments and checked for conformance to this specification, the supplier shall accept the responsibility for incoming shipments meeting this specification without dependence upon purchaser's inspection.

The series of tests used to approve each batch of product along with acceptance limits will be agreed upon by the purchaser and seller. The laboratory providing the certificate of analysis must also participate in a proficiency testing program (round robin) that is approved by the Fuels, Fluids, and Lubricants Global Subsystem Leadership Team (GSSLT) or designate. The Fuels, Fluids, and Lubricants GSSLT or designate must receive copies of the proficiency testing reports directly from the test program administrator.

5.4 Initial Source Approval. No shipment shall be made by any supplier until representative initial production samples have been approved by the Fuels, Fluids, and Lubricants Global Subsystem Leadership Team or designees meeting the requirements of this specification.

5.5 Material Safety Data Sheets/Safety Data Sheets (MSDS/SDS). For new product submissions, or when a change in chemical composition of an existing product has occurred, a complete copy of the Material Safety Data Sheet/Safety Data Sheet must be submitted in compliance with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) requirements or other country-specific MSDS/SDS requirements. In addition, product MSDS/SDS submissions must be in compliance with specific country General Motors TMC003 Material Safety Data Sheet/Safety Data Sheet guidance documents where available.

5.6 All materials supplied to this standard must comply with the requirements of GMW3059, **Restricted and Reportable Substances for Parts.**

5.7 Trademark Licensing. Licenses to use the trademark DEXRON® and related "GO" identification numbers are issued for fluids which have been tested by an independent laboratory and/or by General Motors and subsequently approved by the General Motors Automatic Transmission Fluid and Gear Oil Committee.

Note: For information on qualification of service replacement fluids for use in General Motors axles, contact, the Team Leader for Service Parts Engineering and DEXRON® Licensing or the GM ATF and Gear Oil Committee Chairman, via GM Supply Power. Folders/ENGINEERING/Powertrain Product Engineering/Transmission. (gmsupplypower.covisint.com/c/document_library/get_file?p_l_id=4211828&folderId=4501165&name=DLFE-188908.docx).

6 Approved Sources

Materials supplied to this specification must be approved by General Motors.

The appropriate GM Materials Engineering department(s) must confirm material as meeting the requirements of this specification. Any test data sheets of material submitted to General Motors for such confirmation (e.g., during Production Part Approval Process (PPAP)) under this material specification must list all properties and must apply corresponding test methods of this material specification.

7 Notes

7.1 Glossary.

Reference: Something of known performance characteristics, designated by the GM ATF and Gear Oil Committee.

7.2 Acronyms, Abbreviations, and Symbols.

Al	Aluminum
ARDL	Akron Rubber Development Laboratory, Inc.
ARKL	Axialrillen-Kugellager
B	Boron
Ca	Calcium
cP	Centipoise

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cS	CentiStoke
DKA	Deutscher Koordinierungsausschuss im CEC
Fe	Iron
FFE	Federal Fuel Economy (Highway Fuel Economy)
FTP	Federal Test Procedure (City Fuel Economy)
FVA	Forschungsvereinigung Antriebstechnik
FZG	Forschungsstelle fur Zahnrader und Getriebebau
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
GM ATF	General Motors Automatic Transmission Fluid (and Gear Oil Committee)
GSSLT	Global Subsystem Leadership Team
IR	Infrared
K	Potassium
KRL	Kugel Rillen Lager
KV	Kinematic Viscosity
Mg	Magnesium
Mn	Manganese
MSDS	Material Safety Data Sheet
N	Nitrogen
Na	Sodium
Ni	Nickel
P	Phosphorous
ppm	parts per million
S	Sulfur
Sb	Antimony
SDS	Safety Data Sheet
SI	International System of Units
Si	Silicon
SRE	Standard Reference Elastomers
TAN	Total Acid Number
UHP	Ultra-High Purity
VI	Viscosity Index
wt.	Weight
Zn	Zinc

8 Coding System

This standard shall be referenced in other documents, drawings, etc., as follows:

Material per GMW16433

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