



Grease, Polyalkylene Glycol Oil and Lithium Soap Thickener

1 Scope

1.1 Material Description. This specification defines grease formulated with polyalkylene glycol (PAG) oil and lithium soap thickener and having consistency from 0 to 2.

1.2 Symbols. Not applicable.

1.3 Typical Applications. Due to its compatibility with Ethylene Propylene Diene Monomer (EPDM) elastomers; compatibility with brake fluids DOT 3, 4 and 5.1; efficient wear protection; good adhesion; and water resistance, this grease can be used in vehicle brake and clutch systems.

1.4 Remarks. Many formulations of the same type of elastomer and plastic can be found. Therefore, compatibility of the specific elastomer or plastic with grease must be verified. ASTM D4289, Standard Test Method for Elastomer Compatibility of Lubricating Greases and Fluids, can be used to evaluate compatibility of grease with elastomers. The limit for volume change and Durometer A hardness should meet the materials and subsystem's requirements. The compatibility requirements of other non-metallic materials should be established in consultation with material engineers. This specification does not include extreme pressure performance requirements. A wear test should be conducted before using this grease on aluminum or aluminum alloys under dynamically high load conditions. Aluminum typically has a natural or artificially increased (anodized) aluminum-oxide surface layer that is resistant to PAG. High loads can remove this layer allowing PAG to attack the exposed aluminum metal and cause fretting corrosion.

2 References

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

2.1 External Standards/Specifications.

ASTM B117	ASTM D1748	ASTM D6184	DIN 51817
ASTM D217	ASTM D2265	DIN 51802	DIN ISO 2137
ASTM D566	ASTM D4289	DIN 51805	DIN ISO 2176
ASTM D1264	ASTM D6138	DIN 51807	

2.2 GM Standards/Specifications.

GMW3059

2.3 Additional References.

TMC003 Material Safety Data Sheet guidance documents (available at www.gmsupplypower.com).

3 Requirements

3.1 Performance Requirements.

3.1.1 Base Oil. Polyalkylene glycol oil shall be used as the base oil.

3.1.2 Thickener. Lithium-based soap shall be used as the thickener. The type of soap shall be characterized as being lithium, lithium 12-hydroxystearate, or lithium complex.

3.1.3 Specific Requirements. The grease shall meet the requirements listed in Appendix A, Tables A1, A2, and A3.

3.2 Performance Levels.

3.2.1 Designations. Performance level designations for the grease are AA and BB.

3.2.2 Nomenclature. Grease type, performance levels and consistency are defined using the following nomenclature:

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Page 1 of 5

5XY# Where:

- **5** is PAG oil-based with lithium soap thickener.
- **XY** are letters designating performance levels shown in 3.2.1.
- **#** is a number indicating National Lubricating Grease Institute (NLGI) consistency. "1/2" indicates an intermediate consistency. (Example: 5AA0 is polyalkylene glycol oil with lithium thickener, AA performance level, National Lubricating Grease Institute (NLGI) consistency 0, while 5AA1/2 is the same type of grease but with NLGI consistency between 1 and 2.)

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.

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**.

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. Not applicable.