



Anaerobic, Thread Locking and Sealing, High Strength, High Temperature

1 Scope

1.1 Material Description. A red-orange anaerobic, dimethyl acrylate polyester resin base liquid compound that solidifies by polymerization (not by solvent evaporation) into a tough plastic when confined between closely fitted metal surfaces, producing an effective seal against leakage and high shear strength resistance to loosening. This material may be used on slightly oiled zinc plated, black oxide, and phosphate and oil coated parts and still obtain satisfactory properties. This material does not fluoresce under Ultraviolet (UV) light.

1.2 Symbols. Not applicable.

1.3 Applicability. This material is intended for **thread locking and sealing** medium diameter fasteners (up to 38 mm) and studs for fluid pressure resistance, or to prevent loosening under shock and vibration or a combination of both. Typical uses include engine cover bolts.

1.3.1 A high viscosity material obtaining full thread locking strength with bond line thicknesses to 0.08 mm and seal with gap thicknesses to 0.25 mm using the Table 1 Pin and Collar test. The material curing time may be substantially reduced with accelerators or heat.

1.3.2 Temperature Use Range of -55 °C to +200 °C. Low temperature performance is based on maintaining 50% or more of the original minimum prevailing and breakaway torque after 2 h exposure (measure in 30 s or less). The low temperature test is not required for this standard. The upper temperature limit is based on Table 3 aging requirement.

1.4 Remarks. The words must, shall or will (as used in this document) equate to a mandatory requirement.

1.4.1 Application of the product outside its use category as defined by GMW16800, (Retaining and Sealing) is strictly prohibited.

1.4.2 Pre-applied thread form coatings have better uniform coverage and are ready to assemble for automotive production build (see GMW14657). Liquid products are mostly used for service repair.

1.4.3 Use of automated application dispensing system equipment designed for this product provides a measured uniform liquid coating. Contact the product manufacturer for equipment recommendations.

1.4.4 Finish Influence. Data in Table 1, Table 2 and Table 3 are based on standard test finishes listed in GMW16800. Production coatings and finishes are likely to provide different results.

2 References

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

2.1 External Standards/Specifications.

ASTM D287	ASTM D3278	ASTM D5657	ISO 10123
ASTM D1084	ASTM D4562	ISO 3675	ISO 10964
ASTM D1298	ASTM D5649	ISO 3679	

2.2 GM Standards/Specifications.

GMW3059	GMW14657	GMW16800	GMW17332
GMW14270	GMW15735	GMW17205	

2.3 Additional References.

- Brookfield Dial Reading Viscosity equipment available at www.brookfieldengineering.com/products/viscometers/laboratory-viscometers/dial-reading-viscometer
- Leadership, Performance, Sustainability (LPS); LPS Precision Clean available at www.lpslabs.com/product-details/595

3 Requirements

3.1 This product is to be tested per the methods outlined in GMW16800, Appendix A, Table A1.

3.1.1 Minimum Table Data Requirements. Table 1 and Table 2 are based on the minimum number of batches described in GMW16800, Initial Approval. Conformance to Table 3 is based on one batch.

Table 1: Initial Qualification Requirements

Properties	Test Method	Target Values
Unpolymerized		
Prevailing Torque	ASTM D5649, ISO 10964	12 N m to 35 N m
Breakaway Torque	ASTM D5649, ISO 10964	18 N m to 24 N m
Flash Point	ASTM D3278, ISO 3679	164 °C minimum
Specific Gravity	ASTM D287, ASTM D1298, ISO 3675	1.10 ± 0.04
Storage/Stability Viscosity Increase	GMW15735, GMW16800	50% maximum
Toxicity/Health and Safety	GMW3059	
Polymerized		
(Pin and Collar)	ASTM D4562, ISO 10123	23 MPa minimum, Aluminum 15 MPa minimum, Steel
Fluid Compatibility, 168 h at 150 °C, GMW17332, 0W20 Oil	See GMW16800	
Prevailing Torque	ASTM D5649, ISO 10964	-50% or less of original minimum
Breakaway Torque	ASTM D5649, ISO 10964	-50% or less of original minimum
Corrosion to Metal (Aluminum and Steel)	GMW16800	No corrosion