



GREASE, LITHIUM COMPLEX, NLGI 2

WSD-M1C228-A

1. SCOPE

The material defined by this specification is mineral oil based grease with a lithium complex thickener. Included are corrosion inhibitors and additives for oxidation resistance and extreme pressure properties.

2. APPLICATION

This specification was released originally for grease used for the lubrication of wheel bearings and where good performance at higher temperature is required.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2	COLOR (Visual)	Amber
3.3	WORKED PENETRATION, tenths of a millimeter (ASTM D 217, DIN ISO 2137, 60 stroke)	265 – 295
3.4	DROPPING POINT (ASTM D556, ASTM D 2265, DIN ISO 2176)	220 °C min

4. GENERAL INFORMATION

This information given below is provided for clarification and assistance in meeting the requirements of this specification. Grease approved to this specification should have the following typical properties.

4.1	LITHIUM SOAP CONTENT (According to Formulation)	10 - 20%
4.2	BASE OIL VISCOSITY (DIN 51562 T01, ASTM D 445)	
	4.2.1 Kinematic Viscosity at 100 °C	15 - 20 mm ² /s
	4.2.2 Kinematic Viscosity at 40°C	158 - 280 mm ² /s
4.3	PENETRATION, tenths of a millimeter (ASTM D 217, DIN ISO 2137)	
	4.3.1 Worked Penetration, 60 strokes	274
	4.3.2 Prolonged Worked Penetration, 100,000 strokes	+25

Date	Action	Revisions	Rev. 4
2011 08 09	Revised	See summary of Revisions	S. Rzyzi, FNA
2004 04 27	Revised	Para 3.0 inserted; para 3.1, 3.2, 3.3, 3.6 & 4 deleted	
1990 02 04	Released		





4.4 OXIDATION STABILITY (ASTM D 942 or DIN 51808, 100hr at 99°C)	30 kPa
4.5 CORROSION PROTECTION (ASTM D 1743)	Pass
4.6 EMCOR CORROSION PROTECTION (DIN 51802)	0
4.7 WATER SPRAY-OFF (ASTM D 4049, 5 min at 38 °C)	1.6%
4.8 WATER WASHOUT (DIN 51807 T1, 3h at 90 °C)	1%
4.9 OIL SEPARATION DURING STORAGE (ASTM D 1742, DIN 51817 or FTMS 791 C 321.3)	3%
4.10 INTERFACE COMPATIBILITY	
4.10.1 Chemical Attack to Painted Surfaces (FLTM BJ 126-01).	
Note: Not tested for initial application of this grease. Grease must be tested for chemical attack to painted surfaces for applications that come in contact with paint surfaces, ex. E-coat and powder coat.	
4.10.2 Resistance to Stress Cracking No cracking or crazing (FLTM BO 127-03)	
Note: Not tested for initial application of this grease. Grease must be tested for resistance to stress cracking when used for additional applications that come in contact with polymers such as PC, ABS, PC+ABS, ASA or acrylic	
4.10.3 Elastomer Compatibility, SBR, EPDM (ASTM D 4289, DIN 53505, DIN 53504, SAE AMS 3217/2A, NBR-L, 70 hrs, 150 °C)	
4.10.3.1 Volume Swell	+10
4.10.3.2 Hardness Change, Durometer A Points	- 6

5. SUMMARY OF REVISIONS

2011 08 09

- Lot certification tests moved to requirements, all other requirements moved to general information.
- Removed Initial Qualifications and Ongoing Verification Plan
- Removed Supplement C
- Added Oil Separation, Elastomer Compatibility, Corrosion Resistance, Prolonged Worked Penetration, and Water Washout to General Information per WSS-M13P13-A