



GREASE, FLUORINATED LUBRICANT

ESF-M1C229-A

1. SCOPE

The material defined by this specification is a NLGI Grade 2 synthetic lubricating grease consisting of a base fluid and fluorinated polymer.

2. APPLICATION

This specification was released originally for grease used on bearings for windshield wiper motors. The lubricant is suitable for operating temperatures between - 15 and + 200 °C.

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 WORKED PENETRATION, tenths of a millimeter 265 – 295
(ASTM D 217, DIN ISO 2137, 60 stroke)

3.3 BASE OIL VISCOSITY
(ASTM D 445)

3.3.1 Kinematic Viscosity at 40 °C 145 – 175 mm²/s

3.3.2 Kinematic Viscosity at 100 °C 16 – 20 mm²/s

4. GENERAL INFORMATION

The 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 COLOR White
(Visual)

4.2 BASE FLUORINATED POLYMER 15 – 20%
(According to formulation, ASTM D 128)

4.3 OIL VISCOSITY INDEX 124
(ASTM D 2270)

4.4 DROPPING POINT Not Available
(ASTM D556, ASTM D 2265, DIN ISO 2176)

The test gives inaccurate results on solid thickened greases and would show a drop of oil from the tester at temperatures under 200 °C even for greases that work at higher temperatures.

Date	Action	Revisions	Rev. 3
2010 11 18	Revised	See Summary of Revisions	A. Wedepohl, NA
2004 04 26	Revised	Para 3.0 inserted; para 3.1, 3.2, 3.9 & 4 deleted.	
1990 07 11	Released	DE00E00107002060	



- 4.5 OXIDATION STABILITY** Not Available
(ASTM D 942 or DIN 51808, 100hr at 99 °C)

This test not run since the chemical properties of PFPE / PTFE lubricants make them inert and non oxidizing.

- 4.6 WATER WASHOUT** <2%
(ASTM D 1264, DIN 51807 T02, 79 °C)

- 4.7 OIL SEPARATION DURING STORAGE** Not Available
(ASTM D 1742, DIN 51817 or FTMS 791 C 321.3)

No data available. This test is not usually run for this grease.

- 4.8 OIL SEPARATION FROM GREASE** 5%
(ASTM D 6184, 99 °C for 30 hours)

- 4.9 EVAPORATION**
(ASTM D 2595, 22 hours)

At 121 °C 1%

At 204 °C 7%

- 4.10 LOW TEMPERATURE TORQUE** Not Available
(ASTM D 1478 or IP 186)

No data available. This test is not usually run for this grease.

4.11 INTERFACE COMPATIBILITY

- 4.11.1 Chemical Attack to Painted Surfaces
(FLTM BJ 126-01).

Note: Not tested for initial application of this grease. PFPE / PTFE lubricants are generally inert to painted surfaces. 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.

- 4.11.2 Resistance to Stress Cracking
(FLTM BO 127-03)

Note: Not tested for initial application of this grease. PFPE / PTFE lubricants are generally inert to plastics. 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

- 4.11.3 Elastomer Compatibility, NBR
(ASTM D 4289, DIN 53505, DIN 53504, 70 hrs, 100 °C)

Note: Not tested for initial application of this grease. PFPE / PTFE lubricants are generally inert to rubber. Grease must be tested for elastomer compatibility when used for additional applications that come in contact with elastomers. Application specific elastomer should be used for testing instead of a reference elastomer.

