

B. SPECIFICATION FOR LUBRICATING GREASE

1. SCOPE

This document covers the technical specifications of grease with Perfluorinated polyether as base oil for spacecraft application.

2. APPLICABLE STANDARDS

The following standards form a part of this specification to the extent specified herein.

Test	Method
Specific gravity	CN-TM-084
Viscosity	D 445
Viscosity Index	D 2270
Pour point, °C	D 5950
Neutralization Number	PF 29/48 CA
Appearance Workmanship Material	Visual
Penetration	D 1403
Dropping Point	D 2265
Oil Separation, Evaporation	FTM 321
Rust Prevention	D 1743
Four Ball Wear Test	D2266
Four Ball Extreme Pressure Weld Point,	D 2596
Vacuum stability	ASTM E 595/ SP-R-0022A (NASA)

3. CHEMICAL COMPOSITION

A smooth, buttery, translucent, off-white, NLGI #2 grease with base oil as Perfluorinated polyether and PTFE as thickener with added corrosion inhibitor.

4. APPLICATIONS

A smooth, buttery, translucent, off-white, NLGI #2 grease with base oil as Perfluorinated polyether and PTFE as thickener with added corrosion inhibitor used extensively for Bearings, Harmonic drives, Spur Gear Reduction units in space application. Fortified for reduced friction and ultra-filtered for precision applications.

5. LUBRICANT SPECIFICATION

DESCRIPTION	METHOD	UNITS	SPECIFICATIONS
Type	-	-	Grease with Perflourinated polyether as a base oil and Polytetrafluoroethylene (PTFE) as thickener
Additive	-	-	Corrosion inhibitor
Thickener	-	-	PTFE
Temperature Range	-	°C	-80°C to 204°C
Base oil- Perflourinated Polyether			
Specific Gravity @ 68 °F	CN-TM-084	-	1.8-1.9
Viscosity @ -65°F Viscosity @ 100°F Viscosity @ 210°F	D445	cSt	13,000 Max 110-170 40-50
Viscosity Index	D2270	-	340 Min
Pour Point	D 5950	°C	-73 Max
Neutralization Number	PF29/48 CA	-	0.2 Max
Vacuum Stability Total Mass Loss, Volatile condensable material	ASTM E 595/ SP-R-0022A (NASA)	(% Wt)	1.0 Max 0.1 Max
Grease Properties			
Appearance	Visual	-	Off-White/Smooth/Buttery
Penetration (77 °F), Unworked Penetration (77 °F), Worked	D 1403	mm ⁻¹	270-295 270-295
Dropping Point	D 2265	°C	182 Min
Oil Separation, 30hrs @400°F, Evaporation	FTM 321	%	15 Max 2 Max
Rust Prevention	D 1743	-	Pass
Cu Strip Corrosion, 212°F, 24 hrs	FTM 5309	-	2e Max
Four Ball Wear Test, Average Wear Scar Diameter (AWS D)	D 2266	mm	1mm Max
Four Ball Extreme Pressure Weld Point, AWS D	D 2596	Kgf mm	800 Min 3 Max
Vacuum Stability Total Mass Loss, Volatile Condensable Material	ASTM E 595 SP-R-0022A (NASA)	(%Wt)	1.0 Max 0.1 Max

6. SUPPLY CONDITIONS

The products shall be supplied in 1 number of 1-pound pack in sealed condition.

7. ACCEPTANCE CRITERIA

- Certificate of Conformance
- Certificate of analysis for the parameters mentioned in section-6
- Batch Reference Number

8. IDENTIFICATION

The material shall be given proper identification to ensure traceability to the test certificates.

9. REPORTS AND CERTIFICATES

Supplier/manufacturer shall furnish the following certificates and test reports:

- The supplier should furnish appropriate Certificate of Compliance (CoC) indicating the purchase order number.
- Certificate of analysis with the Batch number reference as per parameters mentioned in section-5.
- Batch number reference.