



Braycote Micronic 1613

Perfluoroether, Sub-Micronic Grease

Description

Castrol Braycote™ Micronic 1613 is a smooth, off-white colored NLGI 2 grease. It uses Castrol Brayco 815Z as the base fluid and is thickened with a special tetrafluoroethylene gelling agent with an average particle size of <0.8 microns. This grease is nonflammable and is chemically inert. It offers excellent lubricity, thermal stability, low volatility, good shear stability and low acute toxicity. Castrol Fluoroclean™ X100 and Castrol Fluoroclean™ HE can be used to remove this lubricant. Refer to the data sheets for information regarding these products.

Application

Castrol Braycote Micronic 1613 is designed to lubricate gyros, gears, ball and roller bearings, in the presence of fuels, oxidizers and deep space vacuums and for use as an assembly lubricant for O-rings and elastomers. This product is recommended for use in applications where temperature extremes and high vacuums are routine. Perfluorinated greases, in general, exhibit excellent shelf lives due to their intrinsic inertness.

Temperature Range: -72°C to 204°C (-100°F to 400°F)

Conditions of Use

Limitations

Castrol Braycote® Micronic 1613 is compatible with all commonly utilized metals, plastics and elastomers. Castrol Braycote® Micronic 1613 may be adversely affected by Lewis Acids, such as aluminum chloride, at elevated temperatures. Newly exposed rubbing surfaces of aluminum, titanium or magnesium under certain conditions may react with Castrol Braycote® Micronic 1613. Such systems should be thoroughly evaluated. Surfaces must be well cleaned of organic rust inhibitors prior to grease application to insure proper lubrication. This product is not recommended for use in applications under high vacuum with loads exceeding 100,000 psi for extended periods of time.

Typical Characteristics

Name	Method	Units	Braycote Micronic 1613
Unworked Penetration	ISO 2137 / IP 50	0.1 mm	281
Worked Penetration (60 strokes @ 25°C / 77°F)	ISO 2137 / ASTM D217	0.1 mm	282
Oil Separation (30 hrs @ 204°C / 400°F)	ASTM D6184 / FTM 321.2	% wt	8.2
Four Ball Wear test - Wear Scar Diameter (40 kgf / 75°C / 1200 rpm / 1 hr)	ISO 51350 / ASTM D2266	mm	1.1
Four Ball Weld Load test - Weld Point	ISO 11008 / ASTM D2596	kgf	800
Low temperature Torque - starting torque	ASTM D1478	N/m	0.289
Low temperature Torque - torque after 60 mins	ASTM D1478	N/m	0.181
Low temperature Torque - torque after 10 mins	ASTM D1478	N/m	0.036
Evaporation Loss (22hrs @ 204°C / 400°F)	ASTM D2595	% wt	0.18
Density of finished grease @ 16°C / 60.8°F	In-house test	lb/ml	1.93
Density of finished grease @ 16°C / 60.8°F	In-house test	lb/gallon	16.09
Outgassing Performance - Total Mass Loss under vacuum (48 hrs @ 150°C / 302°F)	ASTM E597-07	% wt	0.3
Outgassing Performance - Vapour Pressure @ 60°C / 140°F	ASTM E1559	Torr	7x10 ⁻¹²
Outgassing Performance - Vapour Pressure @ 100°C / 212°F	ASTM E1559	Torr	2.5x10 ⁻¹⁰
Outgassing Performance - Vapour Pressure @ 150°C / 302°F	ASTM E1559	Torr	7x10 ⁻⁹
Vacuum Stability	ASTM E595 / NASA SP-R-0022A	Total WeightLoss (% wt) / Volatiles (%wt)	0.2/0.03
Specific Gravity @ 15°C / 59°F	ASTM D287	-	1.8531
Base Oil Viscosity @ 99°C / 210°F	ISO 3104 / ASTM D445	mm ² /s	45
Base Oil Viscosity @ 38°C / 100°F	ISO 3104 / ASTM D445	mm ² /s	148
Base Oil Viscosity @ -54°C / -65°F	ISO 3104 / ASTM D445	mm ² /s	10,855
Viscosity Index	ISO 2909 / ASTM D2270	-	350
Pour Point	ISO 3016 / ASTM D97	°C/°F	-72 / -100
Knudsen Vapour Pressure	-	Pa	0.0000000000532
Knudsen Vapour Pressure	-	Pa	0.000000266
Knudsen Vapour Pressure	-	Pa	0.000266
Base Oil Density @ 15°C / 59°F	ASTM D4052 / DIN 51757D	kg/m ³	1848.9

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