



Microcote Range

Sub-Micronic, Extreme Low Volatility

Description

Castrol Microcote™ 096, 196, and 296 are smooth, off-white colored perfluoropolyether greases, in NLGI grades 0, 1, and 2. Each Castrol Microcote® product uses a proprietary base fluid thickened with a special tetrafluoroethylene gelling agent. These products are specially formulated to provide wear protection in most load and speed conditions under high or extreme vacuum conditions. These products offer excellent lubricity, thermal stability, low volatility, good shear stability, low acute toxicity and contain no sodium or other alkali metal containing ingredients. These greases are nonflammable and chemically inert. Castrol Fluoroclean™ X100 or Castrol Fluoroclean™ HE can be used to remove these lubricants. Refer to the data sheets for information regarding these products.

Application

Castrol Microcote Range is designed for use in extreme high vacuum critical particle count conditions which require anti-wear lubrication. Typical applications include robotics used for semi-conductor production and other electronic applications. Castrol Microcote greases can be used to lubricate bearings, gyros, gears, and also as an assembly lubricant for O-rings and elastomers. Castrol Microcote® 096 and 196 are recommended for use in similar applications, which also require torque minimization and/or resistance to drag forces.

Temperature Range: -50°C to 204°C (-58°F to 400°F)

Typical Characteristics

Name	Method	Units	96	196	296
Unworked Penetration	ASTM D217 / IP 50	0.1 mm	376	328	272
Worked Penetration (60 strokes @ 25°C / 77°F)	ISO 2137 / ASTM D217	0.1 mm	376	328	272
Oil Separation (30 hrs @ 100°C / 212°F)	ASTM D6184 / FTM 321.2	% wt	18.9	11.7	6.4
Four Ball Wear test - Wear Scar Diameter (40 kgf / 75°C / 1200 rpm / 1 hr)	ISO 51350 / ASTM D2266	mm	0.68	0.56	0.49
Four Ball Wear test - Wear Scar Diameter (60 kgf / 75°C / 600 rpm / 1 hr) Nitrogen	ISO 51350 / ASTM D2266	mm	-	-	0.67
Four Ball Weld Load test - Weld Point	ISO 11008 / ASTM D2596	kgf	620	620	800
Four Ball Weld Load test - Load Wear Index (27°C / 1770 rpm)	ISO 11008 / ASTM D2596	-	160	146	166
Evaporation Loss (22hrs @ 204°C / 399.2°F)	ASTM D2595	% wt	0.02	0.06	0.14
Copper Corrosion (24 hrs, 100°C / 212°F)	ASTM D4048	Rating	1b	1b	1b
Dropping point	ASTM D2265	°C/°F	210 / 410	224 / 436	256 / 429
Outgassing Performance - Total Mass Loss under vacuum (48 hrs @ 150°C / 302°F)	ASTM E597-07	% wt	-	-	0.073
Outgassing Performance (150°C / 48hrs) - Vapour Pressure @ 60°C / 140°F	ASTM E1559	Torr	6×10^{-12}	6×10^{-12}	6×10^{-12}
Outgassing Performance (150°C / 48hrs) - Vapour Pressure @ 100°C / 212°F	ASTM E1559	Torr	3.5×10^{-10}	3.5×10^{-10}	3.5×10^{-10}
Outgassing Performance (150°C / 48hrs) - Vapour Pressure @ 150°C / 302°F	ASTM E1559	Torr	9.4×10^{-7}	9.4×10^{-7}	9.4×10^{-7}
Specific Gravity @ 15°C / 59°F	ISO 3675 / ASTM D1298	-	1.94	1.96	2
Low temperature Torque @ -73°C / -100°F - starting torque	ASTM D1478	N/m	0.04	0.06	0.14
Low temperature Torque @ -73°C / -100°F - torque after 60 mins	ASTM D1478	N/m	0.02	0.04	0.05
Density of finished grease @ 16°C / 60°F	-	lb/gallon	-	-	16/76
Density of finished grease @ 16°C / 60°F	-	g/ml	-	-	2.01

Additional Information

Castrol Microcote 096, 196, and 296 exhibit excellent shelf life.

Limitations

Castrol Microcote 096, 196, and 296 are compatible with most commonly utilized metals, plastics and elastomers. These products may be adversely affected by Lewis Acids such as aluminum chloride, at elevated temperatures. Newly exposed rubbing surfaces of aluminum, titanium or magnesium alloys under certain conditions may react with Castrol Microcote®096, 196, and 296. Such systems should be thoroughly evaluated. Surfaces must be well cleaned of organic rust inhibitors prior to grease application to insure proper lubrication.

Packaging

All are available in 2 ounce (AVDP) syringes or in 1 pound jars. Castrol Microcote 196 is also available in 1.75 pound jars and Castrol Microcote 296 is also available in 1.75 pound jars and 10 gram syringes.

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