



Product Data

Castrol Microcote® 096, 196, 296

Sub-Micronic, Extreme Low Volatility
Non-Sodium, Anti-Wear Grease

Description

Microcote 096, 196, and 296 are smooth, off-white colored perfluoropolyether greases, in NLGI grades 0, 1, and 2. Each 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

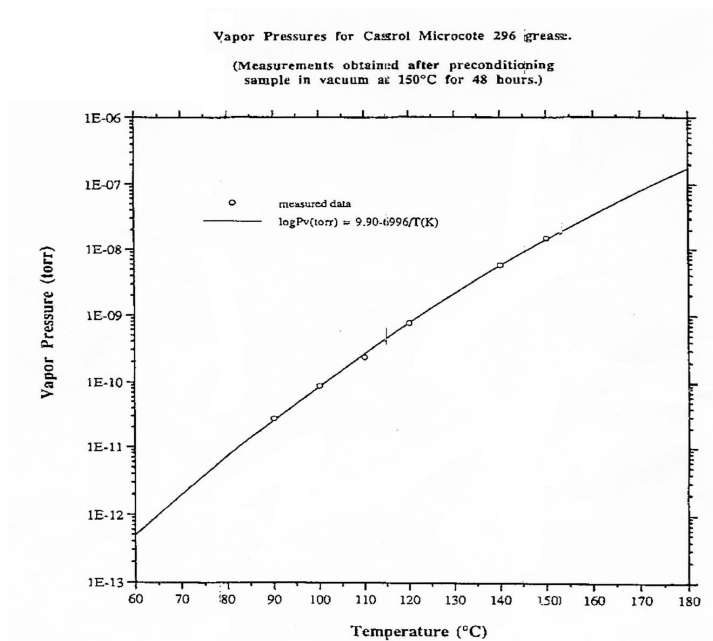
Microcote 296 is designed for use in extreme high vacuum critical particle count conditions which require anti-wear lubrication. Typical applications include robotics used for semi-conductor production and other electronic applications. Microcote 296 can be used to lubricate bearings, gyros, gears, and also as an assembly lubricant for O-rings and elastomers. Microcote 096 and 196 are recommended for use in similar applications, which also require torque minimization and/or resistance to drag forces. Microcote 096, 196, and 296 exhibit excellent shelf life.

Characteristics

TEST METHODS	DESCRIPTION	RESULT		
		096	196	296
D 1403	Penetration, 25°C (77°F), mm ⁻¹			
	Unworked	376	328	272
	Worked, 60 strokes	376	328	272
FTM 321	Oil Separation 22 hours, 204°C (400°F), % wt	18.9	11.7	6.4
D 2266	4-Ball Wear, AWSD 40 Kg, 1 hour, 1200 rpm 75°C (167°F), mm	0.68	0.56	0.49
	60 Kg, 1 hour, 600 rpm, 75°C (167°F), Nitrogen, mm			0.67
D 2596	4-Ball EP Weld Point, KgF	620	620	800
	Load Wear Index, KgF	160	146	166
D 2595	Evaporative Weight Loss 22 hours at 204°C, % wt	0.02	0.06	0.14
D 4048	Copper Strip Corrosion 24 hours at 100°C	1b	1b	1b
D 2265	Dropping Point, °C (°F)	210 (410)	224 (436)	256(492)
Outgassing Test	Total Mass Loss, 48 hours @ 150°C, ~10 ⁻⁹ torr, % wt			0.073
ASTM E-1559	Extrapolated Vapor Pressure, torr Derived from ASTM vapor pressure versus temperature plot. This result for the whole grease not the base oil. Refer to the attached plot. Samples preconditioned at 150°C for 48 hours. @60°C (140°F) @100°C (212°F) @150°C (302°F)		6 x 10 ⁻¹² 3.5 x 10 ⁻¹⁰ 9.4 x 10 ⁻⁷	
D 287	Specific Gravity, 16/16°C (60/60°F)	2-2.2	1.96	2.00
D 1478	Low Temperature Torque, Nm @ -73°C, (-100°F)			
	Starting	0.04	0.06	0.14
	Running	0.02	0.04	0.05
	Pounds per gallon @ 16°C (60°F)			16.76
	Grams per milliliter			2.01

Health, safety and environmental information are provided for this product in the Materials Safety Data Sheet. This gives details of potential hazards, precautions and First Aid measures, together with environmental effects and disposal of used products. Castrol will not accept liability if the product is used other than in the manner or with the precautions or for the purpose(s) specified. Before using the product other than directed, please contact Castrol for consultation.

Additional Information



Temperature Range

-50°C to 204°C (-58°F to 400°F)

Limitations

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 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. Microcote 196 is also available in 1.75 pound jars and Microcote 296 is also available in 1.75 pound jars and 10 gram syringes.

Castrol Microcote 096, 196, 296
09.06.2005, Version Number 2.0
Microcote 096, 196, 296 and the Castrol logo are trademarks of Castrol Limited.

All reasonable care has been taken to ensure that the information contained in this publication is accurate as of the date of printing. However, such information may, nevertheless, be affected by changes in the blend formulation occurring subsequent to the date of printing. Material Safety Data Sheets are available for all Castrol Ltd products. The MSDS must be consulted for appropriate information regarding storage, safe handling and disposal of a product.

Castrol Industrial North America Inc. 150 West Warrenville Road, 605 3E Naperville, IL 60563
Tel: (877) 641 1600 Fax: (877) 648 9801

www.castrol.com/industrial