DuPont™ Krytox® XHT-BD, XHT-BDX, and XHT-BDZ

PERFORMANCE LUBRICANTS

PRODUCT INFORMATION

DuPont™ Krytox® XHT-BD series oils are special extreme high temperature greases with low oil evaporation and are thickened with a non-melting thickener to allow use at temperatures above the melting point of common greases. They have excellent lubrication over a broad temperature range. Krytox® XHT-BD series greases are nonflammable and chemically inert. Krytox® allows extended lubrication intervals and longer equipment life.

Krytox® XHT-BD greases are designed for use where the temperatures are in the 288 °C (500 °F) range and higher, where there is a danger of melting the standard PTFE thickener. This grease uses a special non-melting high temperature thickener. The base oil is an extremely viscous oil that provides good viscosity and lower evaporation at high temperatures. Krytox® XHT-BD greases are for use in low speed bearings or in pillow housings and will shear at high speeds, causing loss of oil in sealed bearings. The oil in the grease can begin to slowly degrade at temperatures above 330 °C (626 °F) and this will occur at an increasing rate as temperatures increase. Relubrication could be required at these temperatures to achieve optimum life.

Compatibility with Metals

Due to their low surface tensions, Krytox® oils easily wet metallic surfaces and because of their inertness, Krytox® oils have little or no adverse effect on metals when the oil temperature is lower than 288 °C (550 °F). The behavior of Krytox® oils in the presence of many alloys has been studied using the Micro Oxidation-Corrosion Test developed by the Air Force Materials Laboratory.

Typical Properties of XHT-BD Series PFPE Grease*

	XHT-BD	XHT-BDX	XHT-BDZ
Standard NLGI Penetration Grade	1.5	1.5	1.5
Estimated Useful Range °C (°F)	–20/300 (–4/572) with spikes to 330 °C (626 °F)	–15/350 (5/662) with intermittent spikes to 400 °C (752 °F)	–5/360 (23/680) with intermittent spikes to ≥400 °C (≥752 °F)
Pour Point	–25 °C (–13 °F)	–20 °C (–4 °F)	–15 °C (5 °F)
Base Oil Viscosity, cSt			
20 °C (68 °F)	1,712	2,610	3,500
40 °C (104 °F)	500	738	1,023
100 °C (212 °F)	47	65	88
Oil Separation in 30 hr at 99 °C (210 °F), %	6	5	5
Oil Volatility in 22 hr at 260 °C (500 °F), %, D2595	2.1	1.5	1.1
Vapor Pressure			
20 °C (68 °F) (Knudsen)	$\leq 1 \times 10^{-9}$	$\leq 3 \times 10^{-14}$	$\leq 4 \times 10^{-15}$
100 °C (212 °F) (Knudsen)	$\leq 8 \times 10^{-7}$	$\leq 1 \times 10^{-9}$	$\leq 2 \times 10^{-10}$
200 °C (392 °F) (Knudsen)	$\leq 1 \times 10^{-4}$	$\leq 2 \times 10^{-6}$	$\leq 3 \times 10^{-7}$
Appearance	White, creamy consistency	White, creamy consistency	White, creamy consistency
Specific Gravity at 0 °C (32 °F)	2.00	2.00	2.00

* This table gives typical properties (not specifications) based on historical production performance. DuPont does not make any express or implied warranty that these products will continue to have these typical properties.

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In general, nickel and cobalt alloys are the most resistant to corrosion and are suitable for use with Krytox® up to 371 °C (700 °F). Carbon steel alloy suitability should be studied for uses above 288 °C (550 °F). Some types of stainless steel are satisfactory at 316 °C (600 °F). A summary of metals compatible with Krytox® oils at various temperatures is given below.

Certain alloys have been found to cause catalytic depolymerization of Krytox® at high temperatures. At 316 °C (600 °F), for example, titanium alloys that contain aluminum function in this way. Aluminum alloy 2024 also catalytically depolymerizes Krytox® at 371 °C (700 °F). This depolymerization is considerably reduced in the absence of oxygen when an inert gas is substituted for the dry air flow. This suggests that the reactions involved are between the Krytox® and the oxide coating on the metal surface.

Metals and Alloys Suitable for Use with DuPont™ Krytox® at Elevated Temperatures

Based on results of Micro Oxidation-Corrosion Tests, 72 hr at indicated temperature, 5 L dry air flow/hr, qualifying corrosion rate 0.4 mg/cm day

371 °C (700 °F)	Nickel alloys Cobalt alloys AMS 5547 steel
343 °C (650 °F)	AMS 5525 steel Titanium alloy Ti(6Ai-6V-2Sn) Mg, Ag, Cr, V
316 °C (600 °F)	Types 301, 304, 316, 321, and 446 stainless steels N-155 Titanium alloy (13V-11Cr-3Al) Titanium alloy (6Al-4V) Aluminum alloy QQ-A-355 Bearing bronze
288 °C (550°F)	Types 405, 410, and 440 stainless steels QQ-S-636, M-1, M-50, WB-49, and 52100 steels Titanium alloy Ti(8Mn) Copper

Below 288 °C (550 °F), most metal and alloys show little or no evidence of corrosion in the presence of Krytox®.

DuPont Performance Lubricants

Extreme conditions. Extreme performance.

For more information or for technical assistance, please call 1-800-424-7502 or contact us at krytox@usa.dupont.com
For international sales and support contacts, visit us at www.lubricants.dupont.com

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