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MOLYKOTE® 3451 Chemical Resistant Bearing Grease and MOLYKOTE® 3452 Chemical Resistant Valve Lubricant

Fluorosilicone greases

Features

- Chemical resistance
- Good load-carrying ability
- Effective in high temperatures

Description

MOLYKOTE® 3451 Chemical Resistant Bearing Grease and MOLYKOTE® 3452 Chemical Resistant Valve Lubricant are fluorosilicone oils thickened with fluorinated polymers. These lubricants:

- Provide superior resistance to most chemicals
- Are compatible with most gaskets, seals and packings
- Resist washout by water, fuels, oils and solvents

These greases lubricate over a wide temperature range. MOLYKOTE® 3451 Chemical Resistant Bearing Grease has good life at temperatures from -40 to 450°F (-40 to 232°C); MOLYKOTE® 3452 Chemical Resistant Valve Lubricant has a serviceable temperature range from -20 to 450°F (-29 to 232°C). Both MOLYKOTE® 3451 Chemical Resistant Bearing Grease and MOLYKOTE® 3452 Chemical Resistant Valve Lubricant resist deterioration by solvents, acids, chlorides and other severe chemicals as well as low-pressure steam and condensate. (See Table I.)

Bearing tests show MOLYKOTE® 3451 Chemical Resistant Bearing Grease has good life at varying high loads and speeds.

Typical properties

Specification writers: These values are not intended for use in preparing specifications. Please contact your local MOLYKOTE® sales representative prior to writing specifications on this product.

MOLYKOTE® 3451 Chemical Resistant Bearing Grease

Standard[1]	Test	Unit	Result
	NLGI Consistency		#2
	Color		White
	Thickener		Fluorinated polymers
ASTM D217	Penetration, worked, 60 strokes		279
	Viscosity of fluorosilicone oil at 100°F (38°C)	SUS	2295
	Service Temperature Range[2]	°F (°C)	-40 to 450 (-40 to 232)
	Max. Dn Value[3]		200,000
	Specific Gravity at 77°F (25°C)		1.44
CTM0033A	Bleed, 24 hrs at 392°F (200°C)	%	4.5
ASTM D2265	Evaporation, 24 hrs at 392°F (200°C)	%	3.8
	Dropping Point	°F (°C)	>536 (>280)
ASTM D1264	Water Washout, 1 hr at 175°F (80°C)	%	<0.3
ASTM D2596	4-Ball Weld Load	Kg	340
ASTM D1478	Low-Temperature Torque		
	starting, at -40°F (-40°C)	g-cm	6625
	running, after 1 hr at -40°F (-40°C)	g-cm	1723

[1]ASTM: American Society for Testing and Materials. CTM = Corporate Test Method.
[2]Estimated service temperature range based on product formulation and laboratory testing. Actual service temperature range is dependent on other factors including the specific application environment.
[3]Dn value = shaft size of bearing in mm x rpm; based on estimate.

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Applications

MOLYKOTE® 3451 Chemical Resistant Bearing Grease
MOLYKOTE® 3451 Chemical Resistant Bearing Grease is an exceptional anti-friction bearing lubricant especially designed for applications that experience a wide range of temperatures, loads and speeds. It is particularly useful in bearings exposed to harsh chemicals or solvents, bearings used at high speeds and bearings subjected to heavy loads. MOLYKOTE® 3451 Bearing Grease can be used on:

- Chemical mixers
- Needle bearings in circuit breakers
- Pumps
- Processing equipment
- Fuel- and solvent-handling equipment
- Sealed-for-life bearings that must operate at high speeds, heavy loads, and high and low temperatures

MOLYKOTE® 3452 Chemical Resistant Valve Lubricant
MOLYKOTE® 3452 Chemical Resistant Valve Lubricant is an exceptional valve lubricant and sealant product particularly suited for applications where corrosive or aggressive chemicals are used. MOLYKOTE® 3452 Valve Lubricant can be used on:

- Plug valves
- Mechanical seals and packings
- Slow-speed roller and journal bearings
- Moderate-speed ball bearings
- Instruments in high vacuum, at high temperatures and in corrosive atmospheres
- Rotary and reciprocating shaft seals
- Flexible ball joints

How to use

MOLYKOTE® 3451 Chemical Resistant Bearing Grease and MOLYKOTE® 3452 Chemical Resistant Valve Lubricant can be applied using conventional methods of grease application - brushing, grease gun or automatic applicators.

Handling precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION.

Usable life and storage

When stored at or below 90°F (32°C), MOLYKOTE® 3451 Chemical Resistant Bearing Grease and MOLYKOTE® 3452 Chemical Resistant Valve Lubricant have a shelf life of 60 months from date of manufacture.

Typical properties

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MOLYKOTE® 3452 Chemical Resistant Valve Lubricant

Standard[1]	Test	Unit	Result
	NLGI Consistency		#2-3
	Color		White
	Thickener		Fluorinated polymers
ASTM D217	Penetration, worked, 60 strokes		263
	Viscosity of fluorosilicone oil at 100°F (38°C)	SUS	46,000
	Service Temperature Range[2]	°F (°C)	-20 to 450 (-31 to 232)
	Max. Dn Value[3]		75,000
	Specific Gravity at 77°F (25°C)		1.50
CTM0033A	Bleed, 24 hrs at 392°F (200°C)	%	1.0
ASTM D2265	Evaporation, 24 hrs at 392°F (200°C)	%	3.0
	Dropping Point	°F (°C)	>570 (>300)
ASTM D1264	Water Washout, 1 hr at 175°F (80°C)	%	0.1
ASTM D2596	4-Ball Weld Load	Kg	400

[1]ASTM: American Society for Testing and Materials. CTM = Corporate Test Method.
[2]Estimated service temperature range based on product formulation and laboratory testing. Actual service temperature range is dependent on other factors including the specific application environment.
[3]Dn value = shaft size of bearing in mm x rpm; based on estimate.

Note: In storage, a small amount of oil may separate from MOLYKOTE® 3451 Chemical Resistant Bearing Grease. This separation does not materially affect the lubricating qualities of the grease. Simply stir fluid back into the grease.

Packaging

MOLYKOTE® 3451 Chemical Resistant Bearing Grease and MOLYKOTE® 3452 Chemical Resistant Valve Lubricant are available in different standard container sizes. Detailed container size information should be obtained from your nearest MOLYKOTE® sales office or MOLYKOTE® distributor.

Limitations

MOLYKOTE® 3451 Chemical Resistant Bearing Grease should not be applied to surfaces to be painted.

MOLYKOTE® 3451 Chemical Resistant Bearing Grease and MOLYKOTE® 3452 Chemical Resistant Valve Lubricant are not recommended for use with highly oxidative chemicals (liquid Cl_2 or liquid O_2, for example).

These greases are soluble in ketones such as acetone, methyl ethyl ketone and methyl isobutyl ketone.

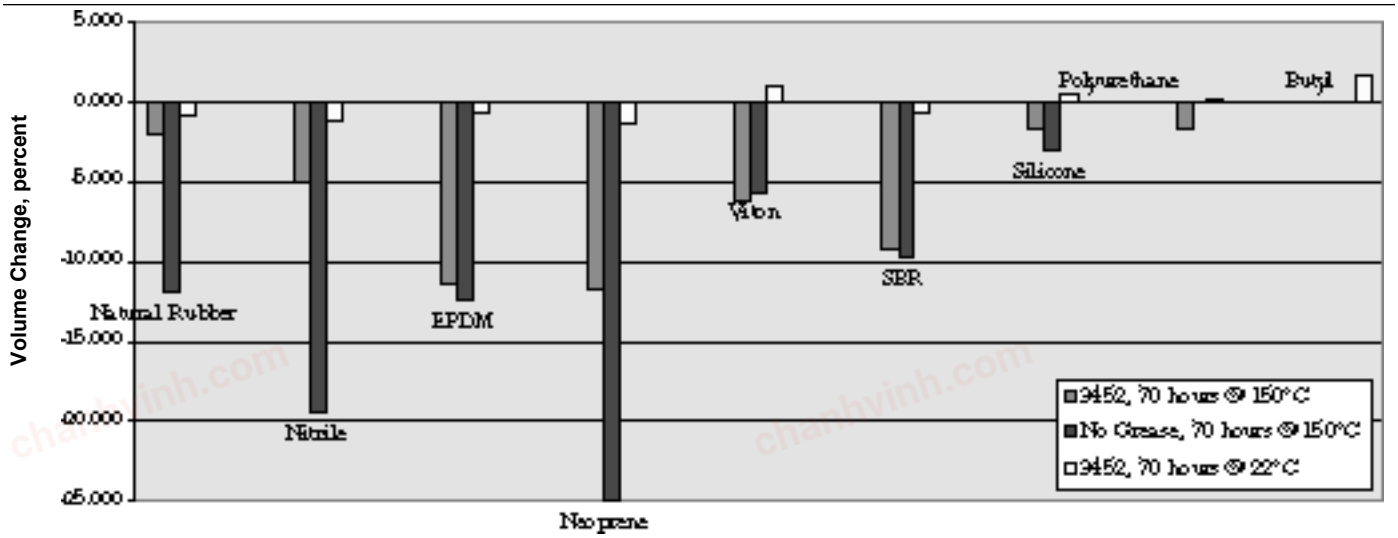
Table I: Chemical Resistance of MOLYKOTE® 3451 Chemical Resistant Bearing Grease and MOLYKOTE® 3452 Chemical Resistant Valve Lubricant

Condition ratings of aluminum panel with 1/16” grease thickness after 8 hours exposure, followed by 24-hour dry time at standard room temperature.

	MOLYKOTE® 3451 Chemical Resistant Bearing Grease[1]	MOLYKOTE® 3452 Chemical Resistant Valve Lubricant[1]	Multi-Purpose Lithium Grease
Diesel Fuel	Excellent	Excellent	Fair
Kerosene	Excellent	Excellent	Fair
Silicone Fluid	Excellent	Excellent	Excellent
Toluene	Good	Good	Poor
Hexane	Good	Good	Poor
Isopropanol	Excellent	Excellent	Poor
Methanol	Excellent	Excellent	Good
VM&P Naphtha	Excellent	Good	Poor
Xylene	Good	Fair	Poor

[1]Excellent = no observable effect; Good = grease slightly soft, poor adhesion but no effect on grease; Fair = grease very soft, cracked and poor adhesion; Poor = Grease hardened or dissolved, no adhesion.

Figure 1: Percent Volume Change of Various Rubbers in MOLYKOTE® 3452 Chemical Resistant Valve Lubricant



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