

# Information About *Dow Corning*<sup>®</sup> 3451 Chemical Resistant Bearing Grease and *Dow Corning*<sup>®</sup> 3452 Chemical Resistant Valve Lubricant

## Type

Fluorosilicone greases

## Special Properties

Chemical resistance; good load-carrying ability, effective in high temperatures

## Primary Uses

– *Dow Corning*<sup>®</sup> 3451 Chemical Resistant Bearing Grease – NLGI #2

Exceptional antifriction lubricant for bearings exposed to harsh chemicals, solvents, high temperatures, high speeds or heavy loads

– *Dow Corning*<sup>®</sup> 3452 Chemical Resistant Valve Lubricant – NLGI #3

Lubricant and sealant for valves, shafts and packings exposed to corrosive or aggressive chemicals or high temperatures

## DESCRIPTION

*Dow Corning*<sup>®</sup> 3451 Chemical Resistant Bearing Grease and *Dow Corning*<sup>®</sup> 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. *Dow Corning* 3451 Chemical Resistant Bearing Grease has good life at temperatures from -40 to 450°F (-40 to 232°C); *Dow Corning* 3452 Chemical Resistant Valve Lubricant has a serviceable temperature range from -20 to 450°F (-29 to 232°C). Both *Dow Corning* 3451 Chemical Resistant Bearing Grease and *Dow Corning* 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 *Dow Corning* 3451 Chemical Resistant Bearing Grease has good life at varying high loads and speeds.

## USES

### *Dow Corning* 3451 Chemical Resistant Bearing Grease

*Dow Corning* 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. *Dow Corning* 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



Valves protected by *Dow Corning* 3452 Chemical Resistant Valve Lubricant show no evidence of corrosion or degradation of lubricant.

**TYPICAL PROPERTIES**

**These values are not intended for use in preparing specifications.**

	<i>Dow Corning</i> 3451 Chemical Resistant Bearing Grease	<i>Dow Corning</i> 3452 Chemical Resistant Valve Lubricant
NLGI Consistency .....	#2	#3
Color .....	White	White
Thickener .....	Fluorinated polymers	Fluorinated polymers
ASTM D 217 Penetration, worked, 60 strokes .....	275	270
Viscosity of fluorosilicone oil at 100°F (38°C), SUS .....	2295	46,000
Service Temperature Range <sup>1</sup> , °F (°C) .....	-40 to 450 (-40 to 232)	-20 to 450 (-31 to 232)
Max. Dn Value <sup>2</sup> .....	200,000	75,000
Specific Gravity at 77°F (25°C) .....	1.44	1.50
Fed Std 791 Bleed, at 400°F (204°C), percent .....	2.7	1.2
ASTM 2265 Evaporation, at 400°F (204°C), percent .....	3.7	1.1
Dropping Point, °F (°C) .....	>536 (>280)	>572 (>300)
ASTM D 1264 Water Washout, at 175°F (80°C), percent .....	0.3	0.1
Fed Std 791a <sup>3</sup> 4-Ball Weld Load, N .....	4,000	4,000
ASTM D 1478 Low-Temperature Torque		
starting, g-cm at -40°F (-40°C) .....	2315	—
running, g-cm after 1 hr at -40°F (-40°C) .....	1960	—

<sup>1</sup>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.

<sup>2</sup>Dn value = shaft size of bearing in mm x rpm; based on estimate.

<sup>3</sup>Method 6503.

**Specification Writers: Please obtain a copy of the Dow Corning Sales Specification for this product and use it as a basis for your specifications. It may be obtained from any Dow Corning Sales Office, or from Dow Corning Customer Service in Midland, MI. Call (517) 496-6000.**

**Table I: Chemical Resistance of *Dow Corning* 3451 Chemical Resistant Bearing Grease and *Dow Corning* 3452 Chemical Resistant Valve Lubricant**

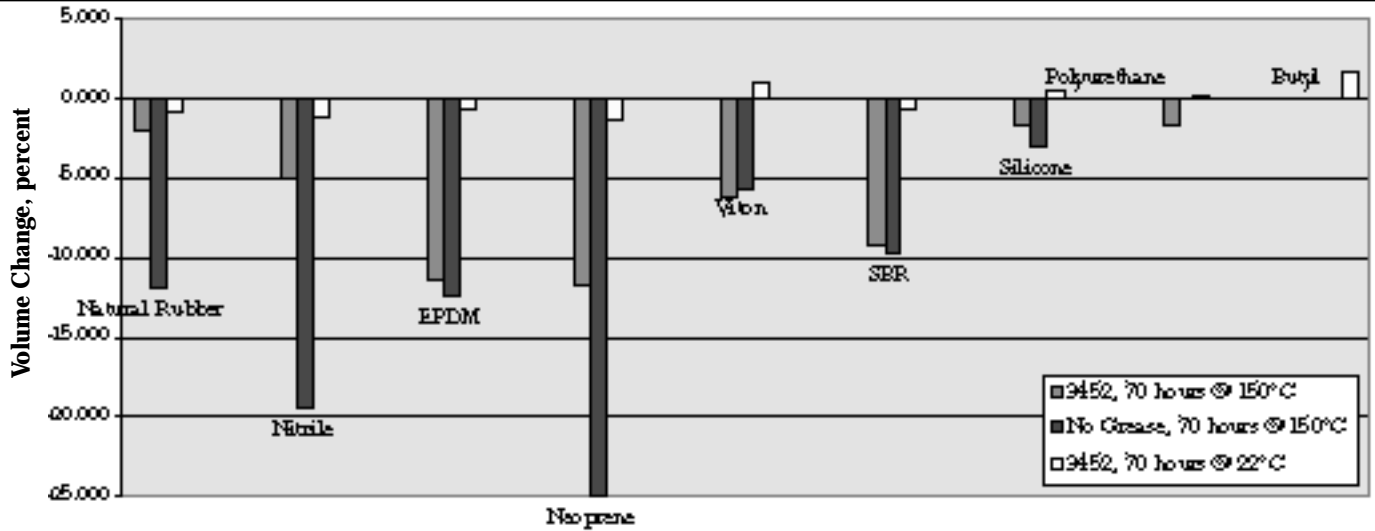
	<i>Dow Corning</i> 3451 Chemical Resistant Bearing Grease	<i>Dow Corning</i> 3452 Chemical Resistant Valve Lubricant	Hydrocarbon Grease <sup>2</sup>
<u>After 24 hours at 77°F (25°C)<sup>1</sup></u>			
Diesel .....	Good <sup>3</sup>	Good	Poor
Kerosene .....	Good	Good	Fair
Silicone Fluid .....	Fair	Good	Poor
Toluene .....	Good	Good	Poor
Hexane .....	Fair	Fair	Poor
Xylene .....	Good	Good	Poor
Isopropanol .....	Good	Good	Fair
Methanol .....	Good	Good	Fair
VM&P Naphtha .....	Good	Good	Poor

<sup>1</sup>Test method – Federal Standard 791C-6.2.

<sup>2</sup>A lithium-thickened petroleum grease.

<sup>3</sup>Good – no observable effect on grease [grease slightly soft; poor adhesion]; Fair – grease very soft; cracked and poor adhesion; Poor – grease hardened or dissolved; no adhesion.

**Figure 1: Percent Volume Change of Various Rubbers in *Dow Corning 3452* Chemical Resistant Valve Lubricant**



### ***Dow Corning 3452* Chemical Resistant Valve Lubricant**

*Dow Corning 3452* Chemical Resistant Valve Lubricant is an exceptional valve lubricant and sealant product particularly suited for applications where corrosive or aggressive chemicals are used. *Dow Corning 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

### **LIMITATIONS**

*Dow Corning 3451* Chemical Resistant Bearing Grease should not be applied to surfaces to be painted.

*Dow Corning 3451* Chemical Resistant Bearing Grease and *Dow Corning 3452* Chemical Resistant Valve Lubricant are not recommended for use with highly oxidative chemicals (liquid Cl<sub>2</sub> or liquid O<sub>2</sub>, for example).

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

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

### **HOW TO USE**

#### **Application**

*Dow Corning 3451* Chemical Resistant Bearing Grease and *Dow Corning 3452* Chemical Resistant Valve Lubricant can be applied using conventional methods of grease application – brushing, grease gun or automatic applicators.

#### **SHIPPING LIMITATIONS**

None.

#### **STORAGE AND SHELF LIFE**

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

Note: In storage, a small amount of oil may separate from *Dow Corning 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**

*Dow Corning 3451* Chemical Resistant Bearing Grease is available in 3-oz (85.1-g) tubes, 19.4-oz (550-g) cartridges and 10- and 40-lb (4.5- and 18.1-kg) pails, net weight.

*Dow Corning 3452* Chemical Resistant Valve Lubricant is available in 2-oz (56-g) tubes, 19.4-oz (550-g) cartridges, 10-lb (4.5-kg) cans and 40-lb (18-kg) pails, net weight.

### **SAFE HANDLING INFORMATION**

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED. BEFORE HANDLING, READ PRODUCT AND MATERIAL SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE FROM YOUR DOW CORNING REPRESENTATIVE, OR DISTRIBUTOR, OR BY WRITING TO DOW CORNING CUSTOMER SERVICE, OR BY CALLING (517) 496-6000.

### **LIMITED WARRANTY – PLEASE READ CAREFULLY**

Dow Corning believes that the information in this publication is an accurate description of the typical characteristics and/or uses of the product or products, but it is your responsibility to thoroughly test the product in your specific application to determine its performance, efficacy and safety. Suggestions of uses should not be taken as inducements to infringe any particular patent.

---

Unless Dow Corning provides you with a specific written warranty of fitness for a particular use, Dow Corning's sole warranty is that the product or products, as supplied, will meet Dow Corning's then current sales specifications. **DOW CORNING SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR USE.** Your exclusive remedy and Dow Corning's sole liability for breach of warranty is limited to refund of the purchase price or replacement of any product shown to be other than as warranted, and Dow Corning expressly disclaims any liability for incidental or consequential damages.

*Dow Corning* is a registered trademark of Dow Corning Corporation.

©1994, 1998 Dow Corning Corporation.  
All rights reserved.

Printed in USA      AGP3853A      Form No. 10-813-98

**Dow Corning Corporation**  
**Midland, Michigan 48686-0994**

**DOW CORNING**