

# Information About Specialty Chemicals

**DOW CORNING**

## DESCRIPTION

MOLYKOTE® 7409 Bonded Lubricant is a dispersion of solid lubricants in an organic resin-solvent system. When applied to metal surfaces it forms an extremely adherent, dry film with excellent corrosion-preventing properties and an operating temperature range of -70 to 380°C (-94 to 716°F). The solid lubricants provide a low coefficient of friction and high load-carrying capacity under conditions where conventional lubricants are ineffective or undesirable.

MOLYKOTE 7409 Bonded Lubricant is one of a range of bonded lubricants available from Dow Corning, each of which has been designed to meet particular handling, processing and operating conditions.

## SPECIAL FEATURES

Special features of MOLYKOTE 7409 Bonded Lubricant include:

- High load-carrying capacity
- Long wear life
- Excellent corrosion-preventing properties
- Outstanding resistance to hydraulic fluids, oils and solvents
- Dry, nontacky film that does not attract dust
- Good adhesion, even when surface is not pretreated
- Use in very thin films (down to 3 microns)

## USES

MOLYKOTE 7409 Bonded Lubricant is recommended to meet the following conditions:

- Very high loads, low speeds

## MOLYKOTE® 7409 Bonded Lubricant

Type ..... Dispersion of solid lubricants in an organic resin-solvent system  
 Physical Form,  
 as supplied ..... Pourable liquid  
 as cured ..... Dry, lubricating film  
 Color ..... Dark gray  
 Method of Application ..... Spray, dip or brush  
 Cure ..... Heat cured  
 Special Properties ..... Exceptional resistance to aggressive hydraulic fluids and oils; excellent corrosion-preventing properties  
 Primary Use ..... Provides dry film lubrication and corrosion protection for metal parts

- Extreme temperatures
- When fretting is likely
- Corrosion of substrate must be prevented
- Dust is a problem
- Oil and grease are not acceptable
- Relubrication is not possible
- Very low friction is needed

Typical mechanisms or components on which MOLYKOTE 7409 Bonded Lubricant may be used are brake components; threaded fasteners; hydraulic parts as a replacement for

hard-chrome plating; miscellaneous components and mechanisms as a replacement for cadmium and zinc plating; hubs for aluminum wheels to prevent seizing; ball joints, piston skirts, etc.

## HOW TO USE

MOLYKOTE 7409 Bonded Lubricant should be well mixed before use. Components to be coated should be cleaned and degreased thoroughly. To obtain optimum wear life and corrosion protection, use one of the surface pretreatments shown in Table I.

**TABLE I: RECOMMENDED PRETREATMENTS FOR METAL SURFACES**

| Pretreatment      | Stainless Steel |       | Plated Metals |          | Al Alloys | Cu Alloys | Mg Alloys | Ti Alloys |
|-------------------|-----------------|-------|---------------|----------|-----------|-----------|-----------|-----------|
|                   | Steel           | Steel | Cr or Ni      | Cd or Zn |           |           |           |           |
| Degrease .....    | X               | X     | X             | X        | X         | X         | X         | X         |
| To remove oxides: |                 |       |               |          |           |           |           |           |
| Bright dip .....  |                 |       |               |          |           | X         |           |           |
| Sandblast .....   | X               | X     | X             |          |           |           |           | X         |
| Anodize .....     |                 |       |               |          | X         |           |           |           |
| Dichromate .....  |                 |       |               |          |           |           | X         |           |
| Phosphate .....   |                 | X     |               | X        |           |           |           |           |
| Oxalic acid ..... | X               |       |               |          |           |           |           |           |

## TYPICAL PROPERTIES

These values are not intended for use in preparing specifications.

### As Supplied

|           |   |         |
|-----------|---|---------|
| CTM 0020  | Viscosity, DIN53211, 4-mm orifice, sec .....  | 85      |
|           | Specific Gravity .....                        | 1.10    |
| CTM 0090A | Flash Point, °C (°F) .....                    | 28 (82) |
|           | Cure Time,                                    |         |
|           | at 150°C (302°F), hours .....                 | 2       |
|           | at 220°C (428°F), hours .....                 | 1       |
|           | Coverage, at 10 microns cured film thickness, |         |
|           | ft <sup>2</sup> /lb .....                     | 60      |

### As Cured

|          |   |   |
|----------|---|---|
|          | Recommended Dry Film Thickness, microns .....       | 5-15  |
|          | Coefficient of Friction (LFW-1),                    |   |
|          | after running-in .....                              | 0.03  |
|          | Temperature Range, °C (°F) .....                    | -70 to 380 (-95 to 715)                       |
|          | Load-Carrying Capacity (LFW-1),                     |   |
|          | N/cm <sup>2</sup> .....                             | >80,000                                       |
| CTM 0181 | Adhesion .....                                      | Good, even when applied<br>to smooth surfaces |
|          | Oil Resistance .....                                | Good after heat curing                        |
|          | Resistance to Brake Fluid (DOT 3 and 4),            |   |
|          | at 200°C (392°F) .....                              | Good after heat curing                        |
| CTM 0265 | Corrosion Protection, salt spray test,              |   |
|          | 12 micron coating thickness applied over            |   |
|          | zinc phosphate, hours .....                         | >300  |
|          | Wear Life (LFW-1), rotating, load 2860 N,           |   |
|          | speed 72 rpm, 7.9 m/min, number of turns            |   |
|          | until $\mu = 0.1$ (with phosphated substrate) ..... | 400,000                                       |

**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 Services in Midland, MI. Call (517) 496-6000.**

The coating may be applied by spraying, dipping or brushing, but spraying usually produces the most uniform and precisely controlled film thickness. Dipping is also excellent for cylindrical parts or for irregularly shaped parts if a high degree of uniformity in film thickness is not essential.

Whichever method is used, regular or constant agitation is required to prevent settling of the solids.

### Spraying

Use a commercial spray gun. A spray booth is desirable. Make sure the

working area is adequately ventilated and observe the usual precautions for spray painting. Spray from a distance of about 8 inches using a pressure of 4 to 5 atmospheres (60 to 75 psi). To obtain the best adhesion and wear life, apply a coating of 8 to 15 microns (0.3 to 0.6 mils).

A single wet pass of spray usually deposits a film of about this thickness. Useful performance can be obtained with coating down to 3 microns film thickness. Where uniformity is especially important, place the parts on a screen during spraying to minimize

excessive coating build-up due to “flashback.” Fitting the parts on a jig and rotating while spraying also helps.

### **Dipping**

For cylindrical parts requiring a uniform, closely controlled film thickness, parts must be jigged vertically and withdrawn at a controlled rate determined by experiment to minimize “run-down.” When the coating thickness and uniformity are not critical, parts may be placed in a basket and dipped briefly.

### **Brushing**

This method is recommended only where the other two methods are impractical. Use any ordinary paint brush.

### **CAUTION**

MOLYKOTE 7409 Bonded Lubricant is a flammable product. The following precautions should be observed:

- The solvent may attack certain plastics
- Keep from heat and open flame
- Use only with adequate ventilation
- Avoid prolonged breathing of vapor
- Avoid prolonged or repeated skin contact
- Avoid eye contact

In case of eye contact, flush with plenty of water for 15 minutes. Obtain medical attention.

### **SHIPPING LIMITATIONS**

D.O.T. Classification: flammable liquid.

### **STORAGE AND SHELF LIFE**

Keep container closed. Shelf life for MOLYKOTE 7409 Bonded Lubricant is 60 months from date of manufacture.

### **PACKAGING**

MOLYKOTE 7409 Bonded Lubricant is supplied in 11-lb (5-kg) containers, 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 SERVICES, OR BY CALLING (517) 496-6000.

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

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**DOW CORNING CORPORATION  
MIDLAND, MICHIGAN 48686-0994**

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