

# Product Information

## High Performance Lubricants

DOW CORNING

# *Molykote*® Z Moly-Powder

### **FEATURES**

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- Reduces torque and friction
- Withstands pressures approaching 3,500,000 kPa (500,000 psi)
- Resists liquid or gaseous oxygen, radiation, chemical and vacuum environments
- Meets AMS 7866 (MIL-M-7866) specification
- Serviceable temperature range from -226 to 399°C (-375 to 750°F)
- Helps prevent fretting corrosion, galling and seizing
- Low coefficient of friction
- Adheres to many surfaces
- Lubricates in the presence of (and resists) most chemicals and solvents
- Has an average particle size of 4 to 10 microns

### **COMPOSITION**

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- Molybdenum disulfide powder

### **Dry powder lubricant designed for use in metal working and as an additive in other lubricants**

### **APPLICATIONS**

*Molykote*® Z Moly-Powder effectively lubricates metal surfaces of most kinds in many difficult and extreme environments such as:

- Run-in – *Molykote* Z Moly-Powder helps to prevent galling and seizing of newly assembled metal surfaces during the critical run-in period
- Press Fitting and Fretting – A lubricating film of molybdenum disulfide works to reduce the pressures required to press fit, especially on negative clearances, thus reducing the chance of seizure, misalignment and distortion; this lubricant also helps control the tendency for fretting and cold welding of metal surfaces under static pressure in ball and roller bearings, bushings, splines, etc.; disassembly is usually nondestructive.
- Heavy Loads and Slow Speeds – *Molykote* Z Moly-Powder is effective in lubricating metal surfaces under boundary conditions where an oil film cannot be maintained, i.e., where surface speeds are slow, loads are extremely heavy or involve vibration and shock
- Metal Working – This lubricant helps prevent galling, welding and metal pickup on tools and dies in machining, stamping and drawing, bending, thread rolling, cold heading and swagging
- Extreme Environments – Difficult conditions such as in dusty atmospheres, extremes of temperatures, radiation, vacuum, liquid or gaseous oxygen, where ordinary lubricants typically fail
- Metal Machine Parts – The excellent adherence and wear resistance of this powder helps aid in extending the life of metal cams, bearings, ways, gears and other parts
- Reduction of Friction for Plastics, Sintered Metals and Rubber – To give low frictional properties, *Molykote* Z Moly-Powder may be burnished on, or incorporated into, metal and plastic bearings and gears, O-rings, packings and seals where conventional oil lubrication cannot be used

### **DESCRIPTION**

*Molykote* Z Moly-Powder is a very pure form of molybdenum disulfide. It is a gray-black, extreme-pressure lubricant.

### **LISTINGS/SPECIFICATIONS**

- AMS 7866 (formerly MIL-M-7866)

### **HOW TO USE**

#### **Application Methods**

- Burnishing; rub in with cloth
- Tumbling; excellent for instrument parts, camera shutters, other small components
- Incorporation as an ingredient in plastics, elastomers, sintered metals
- Dusting; products available in squeeze bottles with a nozzle for penetrating keyholes and other small orifices

## TYPICAL PROPERTIES

Specification Writers: Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Test	Unit	Result
Color		Black
Specific Gravity <sup>1</sup> at 25°C (77°F)		4.8
Particle Size, average/maximum	microns	4.3/62
Molybdenum Disulfide Content	percent	98.7
Coefficient of Friction <sup>2</sup>		0.04
Chemical Stability		Inert in most common solvents; can be dissolved only by strong oxidizing acids
Temperature Range		Lubrication characteristics relatively unchanged from -226 to 399°C (-375 to 750°F)
Radiation Exposure		Undamaged by 5 X 10 <sup>9</sup> roentgens gamma radiation
Oxygen Exposure		Successfully used on bearing surfaces exposed to either liquid or gaseous oxygen under extreme impact conditions
Vacuum Exposure		Effective in a vacuum to 10 <sup>-9</sup> torr

<sup>1</sup>Solid material; not bulk density.

<sup>2</sup>Test Conditions – Faville LeValley, LFW-4 Press Fit Machine; steel vs. steel, velocity 0.6 inch/minute, 10,000 psi, room temperature.

Molybdenum disulfide is also supplied in oils, greases, pastes and dry film lubricants. For more information call Dow Corning Customer Service at (989) 496-6000.

### Removal

The following stripper will generally remove molybdenum disulfide:

- *Oakite*® Stripper R-8; Oakite Products, Inc., New York, New York

This stripper is primarily for use with ferrous metals. If there is any question about its effect on specific metals, the supplier should be consulted and/or test panels should be processed before stripping finished parts.

**HANDLING PRECAUTIONS**  
PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. 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 CALLING YOUR GLOBAL DOW CORNING CONNECTION.

**USABLE LIFE AND STORAGE**

When stored under normal warehouse conditions, *Molykote Z Moly-Powder* has a shelf life of 60 months from date of manufacture.

**PACKAGING**

*Molykote Z Moly-Powder* is supplied in 283-g (10-oz) squeeze bottles; pails and drums.

**LIMITATIONS**

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

**SHIPPING LIMITATIONS**

None.

**WARRANTY INFORMATION**

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in

**Table I. Comparison of AMS 7866 (MIL-M-7866) Requirements and Typical Values for *Molykote Z Moly-Powder* (Not to be used as specifications)**

	AMS 7866 (MIL-M-7866)	<i>Molykote Z Moly-Powder</i>
Molybdenum Disulfide Content, percent .....	98.5 minimum	98.7
Moisture Content, determined by weight loss, percent .....	0.7 maximum	0.08
Water Soluble Matter, percent .....	0.5 maximum	0.06
Oil Content, acetone extractable, percent .....	0.5 maximum	0.02
Total Insoluble Matter, percent .....	1.0 maximum	0.66
Particle Size, Fisher Method, micron, average .....		4-10

substitution for customer’s tests to ensure that Dow Corning’s products are safe, effective, and fully satisfactory for the intended end use.

Dow Corning’s sole warranty is that the product will meet the Dow Corning sales specifications in effect at the time of shipment. Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other

than as warranted. Dow Corning specifically disclaims any other express or implied warranty of fitness for a particular purpose or merchantability. Unless Dow Corning provides you with a specific, duly signed endorsement of fitness for use, Dow Corning disclaims liability for any incidental or consequential damages. Suggestions of use shall not be taken as inducements to infringe any patent.

