

Specialty Lubricants

MOLYKOTE® P-40 Metal-free adhesive lubricating paste

FEATURES

- Excellent adhesion
- Good corrosion protection
- Good water resistance
- Good antifretting
- Assembly and continuous lubrication
- Metal-free
- Low water pollution class

Metal-free adhesive lubrication paste which can be used for all assembly and continuous lubricating jobs, particularly those exposed to corrosive environments such as splash water or humidity

APPLICATIONS

- Assembly and threaded connections, spline shafts, mounting of bearings.
- Continuous lubrication: for various parts in brake systems, in brake rods, guide bolts. Axles of commercial vehicles, cams and plain bearings.
Open Gears.
Marine applications.

TYPICAL PROPERTIES

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

Test Method*	Parameter	Unit	Value
	Color		Yellowish Brown
	Consistency, viscosity		
ISO 2137	Unworked penetration	mm/10	310-350
DIN 51 562	Base oil viscosity at 40°C (104°F)	mm ² /s	360
	Temperature		
	Service temperature		
	- as paste:	°C	-40 to +230
		°F	-40 to +446
	- solid lubricants:	°C	-40 to +1200
		°F	-40 to +2192
	Deutsche Bahn AG test		
	- stirrability at -35°C (-31°F)		4
DIN 51 805	Kesternich method - flow pressure at -30°C (-22°F)	mbar	960
DIN 2176	Drop point	°C	None
		°F	None
	Load-carrying capacity, wear protection, service life		
	Four-ball tester (VKA)		
DIN 51 350 pt.4	Weld load	N	3000
DIN 51 350 pt.5	Wear scar under 800N load	mm	0.94
	Fretting corrosion - Deyber tester		25x10 ⁶
	Coefficient of friction		
	Press-Fit test, $\mu =$		0.12
	Screw test - μ thread ¹		0.16
	Screw test - μ head ¹		0.08
SRV Optimol	Oscillating endurance test, $\mu =^2$		0.13

TYPICAL PROPERTIES (continued)

Test Method*	Parameter	Unit	Value
Corrosion protection			
DIN 51 802	SKF-Emcor method - degree of corrosion		0
	Salt spray test	h	500

1. Coefficient of friction in bolted connection, M12 x 1.75, material 8.8, blackened.

2. Load: 300N, frequency: 50Hz, amplitude: 0.5mm, 2h

* ISO: International Standardisation Organisation.

DIN: Deutsche Industrie Norm.

HOW TO USE

How to apply

The sliding surfaces should be cleaned. The paste should then be applied with a suitable brush, rag or grease gun. It should not be mixed with greases or oils.

HANDLING PRECAUTIONS

Product safety information required for safe use is not included. Before handling, read product and safety data sheets and container labels for safe use, physical and health hazard information. The material safety data sheet is available on the Dow Corning website at www.dowcorning.com. You can also obtain a copy from your local Dow Corning sales representative or Distributor or by calling your local Dow Corning Global Connection.

USABLE LIFE AND STORAGE

When stored at or below 20°C (68°F) in the original unopened containers, this product has a usable life of 60 months from the date of production.

PACKAGING

This product is available in different standard container sizes. Detailed container size information should be obtained from your nearest Dow Corning sales office or Dow Corning distributor.

LIMITATIONS

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

HEALTH AND ENVIRONMENTAL INFORMATION

To support Customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our website, www.dowcorning.com or consult your local Dow Corning representative.

LIMITED WARRANTY INFORMATION - PLEASE READ CAREFULLY

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 substitution for customer's tests to ensure that Dow Corning's products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

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.

DOW CORNING DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

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DOW CORNING CORPORATION
Material Safety Data SheetPage: 1 of 8
Version: 1.5
Revision Date: 2006/03/10

MOLYKOTE(R) P-40 PASTE

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Dow Corning Corporation
South Saginaw Road
Midland, Michigan 4868624 Hour Emergency Telephone: (989) 496-5900
Customer Service: (989) 496-6000
Product Disposal Information: (989) 496-6315
CHEMTREC: (800) 424-9300

MSDS No.: 02333562

Revision Date: 2006/03/10

Generic Description: Inorganic and organic compounds in mineral oil
Physical Form: Paste
Color: Light brown.
Odor: Slight odor

NFPA Profile: Health 1 Flammability 1 Instability/Reactivity 0

Note: NFPA = National Fire Protection Association

2. OSHA HAZARDOUS COMPONENTS

None present. This is not a hazardous material as defined in the OSHA Hazard Communication Standard.

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTSAcute EffectsEye: Direct contact may cause mild irritation.
Skin: No significant irritation expected from a single short-term exposure.
Inhalation: No significant effects expected from a single short-term exposure.
Oral: Low ingestion hazard in normal use.Prolonged/Repeated Exposure EffectsSkin: Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis.
Inhalation: No known applicable information.
Oral: No known applicable information.Signs and Symptoms of Overexposure

No known applicable information.

Medical Conditions Aggravated by Exposure

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No known applicable information.

The above listed potential effects of overexposure are based on actual data, results of studies performed upon similar compositions, component data and/or expert review of the product. Please refer to Section 11 for the detailed toxicology information.

4. FIRST AID MEASURES

Eye:	Immediately flush with water for 15 minutes.
Skin:	Remove from skin and wash thoroughly with soap and water or waterless cleanser. Get medical attention if irritation or other ill effects develop or persist.
Inhalation:	No first aid should be needed.
Oral:	No first aid should be needed.
Comments:	Treat according to person's condition and specifics of exposure.

5. FIRE FIGHTING MEASURES

Flash Point:	Not applicable.
Autoignition Temperature:	Not determined.
Flammability Limits in Air:	Not determined.
Extinguishing Media:	On large fires use dry chemical, foam or water spray. On small fires use carbon dioxide (CO ₂), dry chemical or water spray. Water can be used to cool fire exposed containers.
Fire Fighting Measures:	Self-contained breathing apparatus and protective clothing should be worn in fighting large fires involving chemicals. Determine the need to evacuate or isolate the area according to your local emergency plan. Use water spray to keep fire exposed containers cool.
Unusual Fire Hazards:	None.

Hazardous Decomposition Products

Thermal breakdown of this product during fire or very high heat conditions may evolve the following hazardous decomposition products: Carbon oxides and traces of incompletely burned carbon compounds. Silicon dioxide. Nitrogen oxides. Metal oxides. Fluorine compounds. Formaldehyde. Phosphorous oxides.

6. ACCIDENTAL RELEASE MEASURES

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Containment/Clean up: Observe all personal protection equipment recommendations described in Sections 5 and 8. Wipe up or scrape up and contain for salvage or disposal. Clean area as appropriate since spilled materials, even in small quantities, may present a slip hazard. Final cleaning may require use of steam, solvents or detergents. Dispose of saturated absorbant or cleaning materials appropriately, since spontaneous heating may occur. Local, state and federal laws and regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which federal, state and local laws and regulations are applicable. Sections 13 and 15 of this MSDS provide information regarding certain federal and state requirements.

Note: See section 8 for Personal Protective Equipment for Spills. Call (989) 496-5900, if additional information is required.

7. HANDLING AND STORAGE

Use with adequate ventilation. At temperatures above 482F/250C this material may produce highly toxic gaseous compounds such as hydrogen fluoride and perfluorohydrocarbons. Provide adequate ventilation or use the appropriate respiratory protection if the possibility of exceeding 482F/250C exists. Avoid contamination of tobacco products. Fluoropolymers on tobacco goods may cause adverse health effects by inhalation of the decomposition products. Employees should wash their hands and face before eating, drinking or using tobacco products. Avoid eye contact. Avoid skin contact.

Use reasonable care and store away from oxidizing materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION**Component Exposure Limits**

There are no components with workplace exposure limits.

Engineering Controls

Local Ventilation: None should be needed.
General Ventilation: Recommended.

Personal Protective Equipment for Routine Handling

Eyes: Use proper protection - safety glasses as a minimum.

Skin: Wash at mealtime and end of shift. Contaminated clothing and shoes should be removed as soon as practical and thoroughly cleaned before reuse. Chemical protective gloves are recommended.

Suitable Gloves: Nitrile Rubber. Butyl Rubber. Neoprene Rubber(R). Polyvinylchloride.

Inhalation: No respiratory protection should be needed.

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Suitable Respirator: None should be needed.

Personal Protective Equipment for Spills

Eyes: Use proper protection - safety glasses as a minimum.

Skin: Wash at mealtime and end of shift. Contaminated clothing and shoes should be removed as soon as practical and thoroughly cleaned before reuse. Chemical protective gloves are recommended.

Inhalation/Suitable Respirator: No respiratory protection should be needed.

Precautionary Measures: Avoid eye contact. Avoid skin contact. Use reasonable care.

Comments: At temperatures above 482F/250C this material may produce highly toxic gaseous compounds such as hydrogen fluoride and perfluorohydrocarbons. Provide adequate ventilation or use the appropriate respiratory protection if the possibility of exceeding 482F/250C exists. Avoid contamination of tobacco products. Fluoropolymers on tobacco goods may cause adverse health effects by inhalation of the decomposition products. Employees should wash their hands and face before eating, drinking or using tobacco products.

When heated to temperatures above 150 degrees C in the presence of air, product can form formaldehyde vapors. Formaldehyde is a potential cancer hazard, a known skin and respiratory sensitizer, and an irritant to the eyes, nose, throat, skin, and digestive system. Safe handling conditions may be maintained by keeping vapor concentrations within the OSHA Permissible Exposure Limit for formaldehyde.

Note: These precautions are for room temperature handling. Use at elevated temperature or aerosol/spray applications may require added precautions.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form: Paste
 Color: Light brown.
 Odor: Slight odor
 Specific Gravity @ 25°C: 1.0
 Viscosity: Not determined.
 Freezing/Melting Point: Not determined.
 Boiling Point: Not determined.
 Vapor Pressure @ 25°C: Not determined.
 Vapor Density: Not determined.
 Solubility in Water: 0 g/l
 pH: Not determined.
 Volatile Content: Not determined.

Note: The above information is not intended for use in preparing product specifications. Contact Dow Corning before writing specifications.

MOLYKOTE(R) P-40 PASTE**10. STABILITY AND REACTIVITY**

Chemical Stability:	Stable.
Hazardous Polymerization:	Hazardous polymerization will not occur.
Conditions to Avoid:	None.
Materials to Avoid:	Oxidizing material can cause a reaction.

11. TOXICOLOGICAL INFORMATION**Component Toxicology Information**

This material contains zinc oxide. Zinc oxide produced adverse developmental effects when fed to rats at 200 mg/kg/day for 21 days prior to mating and throughout pregnancy. However, no adverse effects were observed at a dose of 100 mg/kg/day for the same duration.

Special Hazard Information on Components

No known applicable information.

12. ECOLOGICAL INFORMATION**Environmental Fate and Distribution**

Complete information is not yet available.

Environmental Effects

Complete information is not yet available.

Fate and Effects in Waste Water Treatment Plants

Complete information is not yet available.

Ecotoxicity Classification Criteria

Hazard Parameters (LC50 or EC50)	High	Medium	Low
Acute Aquatic Toxicity (mg/L)	<=1	>1 and <=100	>100
Acute Terrestrial Toxicity	<=100	>100 and <= 2000	>2000

This table is adapted from "Environmental Toxicology and Risk Assessment", ASTM STP 1179, p.34, 1993.

This table can be used to classify the ecotoxicity of this product when ecotoxicity data is listed above. Please read the other information presented in the section concerning the overall ecological safety of this material.

13. DISPOSAL CONSIDERATIONS**RCRA Hazard Class (40 CFR 261)**

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When a decision is made to discard this material, as received, is it classified as a hazardous waste? No

State or local laws may impose additional regulatory requirements regarding disposal.

Call (989) 496-6315, if additional information is required.

14. TRANSPORT INFORMATION**DOT Road Shipment Information (49 CFR 172.101)**

Not subject to DOT.

Ocean Shipment (IMDG)

Not subject to IMDG code.

Air Shipment (IATA)

Not subject to IATA regulations.

Call Dow Corning Transportation, (989) 496-8577, if additional information is required.

15. REGULATORY INFORMATION

Contents of this MSDS comply with the OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA Status: All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.

EPA SARA Title III Chemical Listings**Section 302 Extremely Hazardous Substances (40 CFR 355):**

None.

Section 304 CERCLA Hazardous Substances (40 CFR 302):

None.

Section 311/312 Hazard Class (40 CFR 370):

Acute: No
Chronic: No
Fire: No
Pressure: No
Reactive: No

Section 313 Toxic Chemicals (40 CFR 372):

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
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MOLYKOTE(R) P-40 PASTE

1314-13-2 1.4 Zinc oxide

Supplemental State Compliance Information**California**

Warning: This product contains the following chemical(s) listed by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) as being known to cause cancer, birth defects or other reproductive harm.

None known.

Massachusetts

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
1314-13-2	1.0 - 5.0	Zinc oxide

New Jersey

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
64742-62-7	40.0 - 70.0	Solvent-dewaxed petroleum residual oil
1306-06-5	15.0 - 40.0	Tricalcium phosphate, hydrated
68037-01-4	15.0 - 40.0	Hydrogenated decene homopolymer
94891-31-3	3.0 - 7.0	Quaternary ammonium compounds, Di-C16-18-alkyldimethyl, hectorite salts
9003-29-6	3.0 - 7.0	Polybutene
1314-13-2	1.0 - 5.0	Zinc oxide

Pennsylvania

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
64742-62-7	40.0 - 70.0	Solvent-dewaxed petroleum residual oil
1306-06-5	15.0 - 40.0	Tricalcium phosphate, hydrated
68037-01-4	15.0 - 40.0	Hydrogenated decene homopolymer
94891-31-3	3.0 - 7.0	Quaternary ammonium compounds, Di-C16-18-alkyldimethyl, hectorite salts

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9003-29-6	3.0 - 7.0	Polybutene
9002-84-0	1.0 - 5.0	Polytetrafluoroethylene
1314-13-2	1.0 - 5.0	Zinc oxide

16. OTHER INFORMATION

Prepared by: Dow Corning Corporation

These data are offered in good faith as typical values and not as product specifications. No warranty, either expressed or implied, is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate.

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