

DOW CORNING CORPORATION
Material Safety Data Sheet

MOLYKOTE(R) 321 DRY FILM LUBRICANT

1. PRODUCT AND COMPANY IDENTIFICATION

Dow Corning Corporation
South Saginaw Road
Midland, Michigan 48686

24 Hour Emergency Telephone: (989) 496-5900

Customer Service: (989) 496-6000

Product Disposal Information: (989) 496-6315

CHEMTREC: (800) 424-9300

MSDS No.: 02412241

Revision Date: 2012/02/13

Generic Description: inorganic compound in solvent

Physical Form: Liquid

Color: Charcoal gray

Odor: Solvent odor.

NFPA Profile: Health 2 Flammability 2 Instability/Reactivity 0

Note: NFPA = National Fire Protection Association

2. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS**Acute Effects**

Eye: Direct contact may cause severe irritation. Vapor may cause eye irritation.

Skin: May cause mild irritation.

Inhalation: Vapor and/or mist may irritate nose and throat. Overexposure by inhalation may cause drowsiness, dizziness, confusion or loss of coordination.

Oral: May cause vomiting.

Prolonged/Repeated Exposure Effects

Skin: 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: Repeated ingestion or swallowing large amounts may injure internally.

Signs and Symptoms of Overexposure

No known applicable information.

Medical Conditions Aggravated by Exposure

MOLYKOTE(R) 321 DRY FILM LUBRICANT

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.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
8052-41-3	55.0 - 75.0	Stoddard solvent; low boiling point naphtha
1317-33-5	15.0 - 35.0	Molybdenum disulfide
9022-96-2	7.0 - 13.0	Polybutyl titanate
7782-42-5	3.0 - 7.0	Graphite
60580-61-2	<1.0	5-Nitro-1,3- benzenedicarboxylic acid, zinc salt

The above components are hazardous as defined in 29 CFR 1910.1200.

4. FIRST AID MEASURES

Eye:	Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 15 - 20 minutes while holding the eyelid(s) open. If contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately obtain medical attention.
Skin:	Remove contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Quickly and gently blot or brush away excess chemical. Flush with lukewarm gently flowing water for 15 minutes. If irritation persists, repeat flushing. If irritation persists, obtain medical advice.
Inhalation:	Remove from the source of contamination or move to fresh air. If irritation persists, obtain medical advice.
Oral:	Never give anything by mouth if victim is rapidly losing consciousness or convulsing. DO NOT INDUCE VOMITING. Have victim drink 2 to 8 oz. (60 to 240 mL) of water. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Have victim rinse mouth with water again. If irritation persists, obtain medical advice.
Notes to Physician:	Treat according to person's condition and specifics of exposure.

5. FIRE FIGHTING MEASURES

Flash Point:	107.6 °F / 42 °C (Closed Cup)
--------------	-------------------------------

MOLYKOTE(R) 321 DRY FILM LUBRICANT

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:	Static electricity will accumulate and may ignite vapors. Prevent a possible fire hazard by bonding and grounding or inert gas purge.

6. ACCIDENTAL RELEASE MEASURES

Containment/Clean up:	Remove possible ignition sources. Determine whether to evacuate or isolate the area according to your local emergency plan. Observe all personal protection equipment recommendations described in Sections 5 and 8. For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. 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 absorbent 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. Product evolves n-butyl alcohol when exposed to water or humid air. Provide ventilation during use to control n-butyl alcohol within exposure guidelines or use respiratory protection. Avoid eye exposure. Avoid skin contact. Avoid breathing vapor, mist, dust, or fumes. Keep container closed. Do not take internally.

Static electricity will accumulate and may ignite vapors. Prevent a possible fire hazard by bonding and grounding or inert gas purge. Keep container closed and away from heat, sparks, and flame.

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

MOLYKOTE(R) 321 DRY FILM LUBRICANT

<u>CAS Number</u>	<u>Component Name</u>	<u>Exposure Limits</u>
8052-41-3	Stoddard solvent; low boiling point naphtha	OSHA PEL (final rule): TWA 500 ppm and ACGIH TLV: TWA 100 ppm.
1317-33-5	Molybdenum disulfide	Observe molybdenum (insoluble compounds) limits. OSHA PEL (final rule): TWA 10 mg/m ³ total dust. ACGIH TLV: TWA 10 mg/m ³ inhalable fraction, 3 mg/m ³ respirable fraction.
9022-96-2	Polybutyl titanate	See n-butyl alcohol comments.
7782-42-5	Graphite	OSHA PEL (final rule): TWA 15 mg/m ³ total dust, 5 mg/m ³ respirable fraction. ACGIH TLV: TWA 2 mg/m ³ respirable fraction.

n-Butyl alcohol is formed on contact with water or humid air. Provide adequate ventilation to control exposures within guidelines of OSHA PEL (final rule): TWA 100 ppm and ACGIH TLV: 20 ppm.

Engineering Controls

Local Ventilation: Recommended.
General Ventilation: Recommended.

Personal Protective Equipment for Routine Handling

Eyes: Use chemical worker's goggles.

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: Avoid skin contact by implementing good industrial hygiene practices and procedures. Select and use gloves and/or protective clothing to further minimize the potential for skin contact. Consult with your glove and/or personnel protective equipment manufacturer for selection of appropriate compatible materials.

Inhalation: Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. IH personnel can assist in judging the adequacy of existing engineering controls.

Suitable Respirator: General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators.

Personal Protective Equipment for Spills

MOLYKOTE(R) 321 DRY FILM LUBRICANT

Eyes:	Use full face respirator.
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:	Respiratory protection recommended. Follow OSHA Respirator Regulations (29 CFR 1910.134) and use NIOSH/MHSA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.
Precautionary Measures:	Avoid eye exposure. Avoid skin contact. Avoid breathing vapor, mist, dust, or fumes. Keep container closed. Do not take internally. Use reasonable care.
Comments:	Product evolves n-butyl alcohol when exposed to water or humid air. Provide ventilation during use to control n-butyl alcohol within exposure guidelines or use respiratory protection.

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:	Liquid
Color:	Charcoal gray
Odor:	Solvent odor.
Specific Gravity @ 25°C:	0.97
Viscosity:	> 50 cSt
Freezing/Melting Point:	Not determined.
Boiling Point:	> 35C/95F
Vapor Pressure @ 25°C:	Not determined.
Vapor Density:	Not determined.
Solubility in Water:	Not determined.
pH:	Not determined.
Volatile Content:	Not determined.
Flash Point:	107.6 °F / 42 °C (Closed Cup)
Autoignition Temperature:	Not determined.
Flammability Limits in Air:	Not determined.

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

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable.
---------------------	---------

MOLYKOTE(R) 321 DRY FILM LUBRICANT

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

Hazardous Decomposition Products

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

11. TOXICOLOGICAL INFORMATION

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)

When a decision is made to discard this material, as received, is it classified as a hazardous waste? Yes

MOLYKOTE(R) 321 DRY FILM LUBRICANT**Characteristic Waste:**

Ignitable: D001

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)**

Proper Shipping Name: Combustible liquid, n.o.s.

Hazard Technical Name: Petroleum Distillates / Organotitanate

Hazard Class: C

UN/NA Number: NA 1993

Packing Group: III

Hazard Label(s): None

Remarks: Above applies only to containers over 119 gallons or 450 liters.

Ocean Shipment (IMDG)

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

Hazard Technical Name: Petroleum Distillates / Organotitanate

Hazard Class: 3

UN/NA Number: UN 1993

Packing Group: III

Hazard Label(s): flammable liquid

Air Shipment (IATA)

Proper Shipping Name: Flammable liquid, n.o.s.

Hazard Technical Name: Petroleum Distillates / Organotitanate

Hazard Class: 3

UN/NA Number: UN 1993

MOLYKOTE(R) 321 DRY FILM LUBRICANT

Packing Group: III

Hazard Label(s): Flammable Liquid

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: Yes
Chronic: No
Fire: Yes
Pressure: No
Reactive: No**Section 313 Toxic Chemicals (40 CFR 372):**

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
60580-61-2	1.0	5-Nitro-1,3- benzenedicarboxylic acid, zinc salt

Note: Chemicals are listed under the 313 Toxic Chemicals section only if they meet or exceed a reporting threshold.

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

MOLYKOTE(R) 321 DRY FILM LUBRICANT

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
8052-41-3	55.0 - 75.0	Stoddard solvent; low boiling point naphtha
1317-33-5	15.0 - 35.0	Molybdenum disulfide
7782-42-5	3.0 - 7.0	Graphite

New Jersey

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
8052-41-3	55.0 - 75.0	Stoddard solvent; low boiling point naphtha
1317-33-5	15.0 - 35.0	Molybdenum disulfide
9022-96-2	7.0 - 13.0	Polybutyl titanate
7782-42-5	3.0 - 7.0	Graphite
60580-61-2	<1.0	5-Nitro-1,3- benzenedicarboxylic acid, zinc salt

Pennsylvania

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
8052-41-3	55.0 - 75.0	Stoddard solvent; low boiling point naphtha
1317-33-5	15.0 - 35.0	Molybdenum disulfide
9022-96-2	7.0 - 13.0	Polybutyl titanate
7782-42-5	3.0 - 7.0	Graphite

MOLYKOTE(R) 321 DRY FILM LUBRICANT**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.

(R) indicates Registered Trademark