

**SAFETY DATA SHEET**

According to article 31 and Annex II of the EU REACH Regulation

Version: 3.3

Revision Date: 25.02.2013

Superseded date: 25.04.2012

**MOLYKOTE(R) D-321 R ANTI-FRICTION COATING****1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY**

- 1.1 Product name** : MOLYKOTE(R) D-321 R ANTI-FRICTION COATING
- 1.2 Identified uses** : Lubricants and additives
- Uses advised against** : None known.
- 1.3 Company** : Dow Corning Europe S.A.  
rue Jules Bordet - Parc Industriel - Zone C  
B-7180 Seneffe  
Belgium
- E-mail address (Safety Data Sheet)** : sdseu@dowcorning.com
- Customer Service** : English Tel: +49 611237507  
Deutsch Tel: +49 611237500  
Français Tel: +32 64511149  
Italiano Tel: +32 64511170  
Español Tel: +32 64511163
- Fax: +32 64888683
- 1.4 Emergency Phone Number** : Dow Corning (Barry U.K. 24h) Tel: +44 1446732350  
Dow Corning (Wiesbaden 24h) Tel: +49 61122158  
Dow Corning (Seneffe 24h) Tel: +32 64 888240

**2. HAZARDS IDENTIFICATION****2.1 Classification of the substance or mixture**

According to EU Directives 67/548/EEC or 1999/45/EC:

- R10 Flammable.  
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
R65 Harmful: May cause lung damage if swallowed.  
R66 Repeated exposure may cause skin dryness or cracking.  
R67 Vapours may cause drowsiness and dizziness.

**2.2 Label elements****Labelling according to EEC Directive**

- Contains** : Naphtha (petroleum), hydrodesulfurized heavy
- Symbols** : Xn Harmful.  
N Dangerous for the environment.
- R-phrases** : R10 Flammable.  
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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R65 Harmful: May cause lung damage if swallowed.

R66 Repeated exposure may cause skin dryness or cracking.

R67 Vapours may cause drowsiness and dizziness.

**S-phrases**

- : S23(V) Do not breathe vapour.  
S24/25 Avoid contact with skin and eyes.  
S51 Use only in well-ventilated areas.  
S60 This material and its container must be disposed of as hazardous waste.  
S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.  
S62 If swallowed, do not induce vomiting; seek medical advice immediately and show this container or label.

**2.3 Other hazards**

Vapours may form explosive mixtures with air.

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## 3. COMPOSITION / INFORMATION ON INGREDIENTS

**Chemical characterization:** Inorganic and organic compounds in mineral oil**According to EU Directives 67/548/EEC or 1999/45/EC:**

Name	CAS-No.	EINECS/ ELINCS No.	REACH Registration Number	Conc. (% w/w)	Classification
n-Butyl acetate	123-86-4	204-658-1	-	33,0	R10 R66 R67
Naphtha (petroleum), hydrodesulfurized heavy	64742-82-1	265-185-4	01-21194848 09-19	28,0	Xn R10 R65 R66 R67 N R51/53
Molybdenum sulfide	1317-33-5	215-263-9	-	19,0	Substance with a Community workplace exposure limit
Polybutyl titanate	9022-96-2	Exempt or not available	-	11,0	Xi R36
Graphite	7782-42-5	231-955-3	-	4,9	Substance with a Community workplace exposure limit
Xylene	1330-20-7	215-535-7	01-21194861 36-34	1,8	Xn Xi R20/21 R38 R10
Butan-1-ol	71-36-3	200-751-6	01-21194846 30-38	1,1	Xn Xi R10 R22 R37/38 R41 R67
Zinc oxide	1314-13-2	215-222-5	01-21194638 81-32	0,6	N R50/53

**According to Regulation (EC) No. 1272/2008:**

Name	CAS-No.	EINECS/ ELINCS No.	REACH Registration Number	Conc. (% w/w)	Classification
n-Butyl acetate	123-86-4	204-658-1	-	33,0	Flammable liquid: Category 2 - H225 Specific target organ toxicity - single exposure (Inhalation - vapour): Category 3 (narcotic effects) - H336 EUH066
Naphtha (petroleum), hydrodesulfurized heavy	64742-82-1	265-185-4	01-21194848 09-19	28,0	Flammable liquid: Category 3 - H226 Specific target organ toxicity - single exposure (Inhalation - vapour): Category 3 (narcotic effects) - H336 Aspiration hazard: Category 1 - H304 Chronic aquatic hazard: Category 2 - H411

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EUH066

Molybdenum sulfide	1317-33-5	215-263-9	-	19,0	Substance with a Community workplace exposure limit
Polybutyl titanate	9022-96-2	Exempt or not available	-	11,0	Flammable liquid: Category 3 - H226 Serious eye damage/eye irritation: Category 2 - H319
Graphite	7782-42-5	231-955-3	-	4,9	Substance with a Community workplace exposure limit
Xylene	1330-20-7	215-535-7	01-21194861 36-34	1,8	Flammable liquid: Category 3 - H226 Acute toxicity (Dermal): Category 4 - H312 Acute toxicity (Inhalation - vapour): Category 4 - H332 Skin corrosion/irritation: Category 2 - H315
Butan-1-ol	71-36-3	200-751-6	01-21194846 30-38	1,1	Flammable liquid: Category 3 - H226 Acute toxicity (Oral): Category 4 - H302 Skin corrosion/irritation: Category 2 - H315 Serious eye damage/eye irritation: Category 1 - H318 Specific target organ toxicity - single exposure (Inhalation - vapour): Category 3 (respiratory tract irritation) - H335 Specific target organ toxicity - single exposure (Inhalation - vapour): Category 3 (narcotic effects) - H336
Zinc oxide	1314-13-2	215-222-5	01-21194638 81-32	0,6	Acute aquatic hazard: Category 1 - H400 Chronic aquatic hazard: Category 1 - H410

For the full text of the R-phrases mentioned in this Section, see Section 16.

For the full text of the H-Statements mentioned in this Section, see Section 16.

CLP classifications are based on all current available data including from known international organizations. These classifications are subject to revision as more information becomes available.

**4. FIRST AID MEASURES**

**4.1 Description of First Aid Measures:**

**On contact with eyes** : Flush with water.

**On skin contact** : Flush with water.

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**MOLYKOTE(R) D-321 R ANTI-FRICTION COATING****If inhaled** : Remove to fresh air. Obtain medical attention immediately.**On ingestion** : Do not induce vomiting. Obtain medical attention.**4.2 Most important symptoms/effects, acute and delayed** : Harmful: May cause lung damage if swallowed.  
Repeated exposure may cause skin dryness or cracking.  
Vapours may cause drowsiness and dizziness.**5. FIRE-FIGHTING MEASURES****5.1 Suitable extinguishing media** : On large fires use dry chemical, foam or water spray (fog). On small fires use carbon dioxide (CO<sub>2</sub>), dry chemical or water spray. Water can be used to cool fire exposed containers.**Unsuitable extinguishing media** : None known.**5.2 Hazards during fire fighting** : Electrostatic charges may be generated during transfer of product from its container. Ensure that all equipment is electrically earthed.  
Vapours may form explosive mixtures with air.**Hazardous Combustion 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. Formaldehyde. Sulphur products. Nitrogen products.**5.3 Special protective equipment/procedures** : A self-contained respirator and protective clothing should be worn. Determine the need to evacuate or isolate the area according to your local emergency plan. Use water spray to keep fire exposed containers cool.**6. ACCIDENTAL RELEASE MEASURES****6.1 Personal precautions, protective equipment and emergency procedures** : A self-contained respirator and protective clothing should be worn. Determine the need to evacuate or isolate the area according to your local emergency plan. Eliminate all possible sources of ignition.**6.2 Environmental precautions** : Do not empty into drains. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth or other appropriate barriers. Inform local authorities if this cannot be prevented.**6.3 Methods and materials for containment and cleaning up** : Determine the need to evacuate or isolate the area according to your local emergency plan. Eliminate all possible sources of ignition. Very large spills should be contained by bunding, etc... procedures. Mop, wipe or soak up with absorbent material and place in a container with a lid. The spilled product produces an extremely slippery surface.

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**7. HANDLING AND STORAGE**

- 7.1 Advice on safe handling** : General ventilation is required. Local ventilation is recommended. Do not breathe vapour. Do not breathe spray or mist. Avoid skin and eye contact. Do not ingest. Do not empty into drains.
- 7.2 Advice on storage** : Store in a flameproof, well ventilated area. Electrostatic charges may be generated during transfer of product from its container. Ensure that all equipment is electrically earthed. Keep container tightly closed. Vapours may form explosive mixtures with air. Storage temperature: maximum 40 °C
- 7.3 Specific uses** : Refer to technical data sheet available on request.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**8.1 Control parameters**

Name	CAS-No.	Exposure Limits
n-Butyl acetate	123-86-4	150 ppm TWA 200 ppm STEL
Naphtha (petroleum), hydrodesulfurized heavy	64742-82-1	100 ppm TWA (supplier recommendation).
Molybdenum sulfide	1317-33-5	3 mg/m3 TWA as Mo, insoluble compounds Respirable fraction 10 mg/m3 TWA as Mo, insoluble compounds Inhalable fraction
Polybutyl titanate	9022-96-2	20 ppm TWA as n-Butanol
Graphite	7782-42-5	2 mg/m3 TWA Respirable fraction
Xylene	1330-20-7	100 ppm TWA 150 ppm STEL
Butan-1-ol	71-36-3	20 ppm TWA

**8.2 Exposure controls**

**Engineering Controls** : Ventilation : Refer to Section 7.1

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**MOLYKOTE(R) D-321 R ANTI-FRICTION COATING****Personal protection equipment**

- Respiratory protection** : Suitable respiratory protection should be worn if the product is used in large quantities, confined spaces or in other circumstances where the OEL may be approached or exceeded.  
A suitable respirator must be worn if the product is used in any circumstances where an aerosol or mist may be generated, such as during spraying or similar activities.  
Depending on the working conditions, wear a respiratory mask with filter(s) ABP or use a self-contained respirator.  
The choice of a filter type depends on the amount and type of chemical being handled in the workplace. Regarding filter characteristics, contact your respiratory protection supplier.
- Hand protection** : Chemical protective gloves should be worn: Polyvinyl alcohol(PVA). Nitrile rubber. Silver shield(TM). 4H(TM). Viton(TM). Regarding glove's breakthrough time, contact your chemical protective glove supplier.
- Eye/face protection** : Safety goggles should be worn.
- Skin protection** : Wear impervious overalls in circumstances where significant skin contact can occur.
- Hygiene measures** : Exercise good industrial hygiene practice. Wash after handling, especially before eating, drinking or smoking.
- Additional information** : These precautions are for room temperature handling. Use at elevated temperature or aerosol/spray applications may require added precautions. For further information regarding the use of silicones / organic oils in consumer aerosol applications, please refer to the guidance document regarding the use of these types of materials in consumer aerosol applications that has been developed by the silicone industry ([www.SEHSC.com](http://www.SEHSC.com)) or contact the Dow Corning customer service group.
- Environmental exposure controls** : Refer to section 6 and 12.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

- Form** : Liquid
- Colour** : Charcoal gray
- Odour** : Solvent
- Boiling point/range** : > 100 °C
- Flash point** : 23 °C (Closed Cup)
- Explosive properties** : No  
Vapours may form explosive mixtures with air.
- Specific Gravity** : 1,07

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**MOLYKOTE(R) D-321 R ANTI-FRICTION COATING****Viscosity** : < 20,5 mm<sup>2</sup>/s at 25°C.**Oxidizing properties** : No

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

**10. STABILITY AND REACTIVITY****10.1 Reactivity** : None known.**10.2 Stability** : Stable under normal usage conditions.**10.3 Possibility of hazardous reactions** : None known.**10.4 Conditions to avoid** : Eliminate all possible sources of ignition.**10.5 Materials to avoid** : Can react with strong oxidising agents.**10.6 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. Formaldehyde. Sulphur products. Nitrogen products.**11. TOXICOLOGICAL INFORMATION****Acute toxicity:****On contact with eyes** : Slightly irritating.**On skin contact** : Large amount in contact with significant skin surface areas may cause systemic adverse effects.**If inhaled** : Single exposure may cause transient drowsiness and dizziness.**On ingestion** : May be fatal if swallowed and enters airways.**Chronic toxicity:****On skin contact** : Repeated or prolonged contact may cause defatting of the skin, leading to dermatitis.**If inhaled** : May cause dizziness, drowsiness, confusion, headaches, nausea, and at high concentrations, unconsciousness.**On ingestion** : Smallest quantities reaching the lungs through swallowing or subsequent vomiting may result in lung oedema or pneumonia.**Toxicokinetics, metabolism and distribution** : No specific information is available.



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**Other Health Hazard Information** : This product contains (a) powder(s) hazardous by inhalation. This is not relevant to the current physical form of the product, which is not in a respirable form. Product may emit formaldehyde vapour at temperatures above 150°C in the presence of air. Formaldehyde vapour is a suspected carcinogen, toxic by inhalation and irritating to eyes and the respiratory system. Exposure limits should be strictly respected.

<sup>1</sup> Based on product test data.

<sup>2</sup> Based on test data from similar products.

**12. ECOLOGICAL INFORMATION****12.1 Ecotoxicity effects**

Toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

**12.2 Persistence and degradability**

Organic solvents may evaporate into the atmosphere, where they degrade. The mineral oils in the product are biodegradable.

**12.3 Bioaccumulation**

Low potential to bioaccumulate.

**12.4 Release to waters / Mobility in soil****Fate and effects in waste water treatment plants:**

May cause adverse effects on bacteria. If used as intended this product is not expected to reach waste water treatment plants.

**13. DISPOSAL CONSIDERATIONS**

**Product and packaging disposal** : This material must be disposed of as hazardous waste. Dispose of in accordance with local regulations. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

**14. TRANSPORT INFORMATION****Road / Rail (ADR/RID)**

**UN No.** : UN 1993

**Proper Shipping Name** : FLAMMABLE LIQUID, N.O.S.(Butyl Acetate / Hydrocarbons)

**Class** : 3

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<b>Packing group</b>	: III
<b>Labels</b>	: 3
<b><u>Sea transport (IMDG)</u></b>	
<b>UN No.</b>	: UN 1993
<b>Proper Shipping Name</b>	: FLAMMABLE LIQUID, N.O.S.(Butyl Acetate / Hydrocarbons)
<b>Class</b>	: 3
<b>Packing group</b>	: III
<b>Emergency Schedule (EmS)</b>	: F-E S-E
<b>Marine pollutant</b>	: Hydrocarbons Zinc Oxide
<b>Labels</b>	: flammable liquid
<b><u>Air transport (IATA)</u></b>	
<b>UN No.</b>	: UN 1993
<b>Proper Shipping Name</b>	: Flammable liquid, n.o.s.(Butyl Acetate / Hydrocarbons)
<b>Class</b>	: 3
<b>Packing group</b>	: III
<b>Labels</b>	: Flammable Liquid

**15. REGULATORY INFORMATION****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****Status**

<b>EINECS</b>	: All ingredients listed, exempt or notified (ELINCS).
<b>TSCA</b>	: All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.
<b>AICS</b>	: All ingredients listed, exempt or notified.
<b>IECSC</b>	: All ingredients listed or exempt.
<b>ENCs/ISHL</b>	: Consult your local Dow Corning office.

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<b>KECL</b>	:	All ingredients listed, exempt or notified.
<b>PICCS</b>	:	All ingredients listed, exempt or notified.
<b>DSL</b>	:	All ingredients listed or exempt.

**16. OTHER INFORMATION**

This product safety data sheet was prepared in compliance with article 31 and Annex II of the EU REACH Regulation as well as its relevant amendments, on the approximation of laws, regulations and administrative provisions relative to the classification, packaging and labelling of dangerous substances and preparations.

It is the responsibility of persons in receipt of this Product Safety Data Sheet to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produces a formulation containing the Dow Corning product, it is the recipient's sole responsibility to ensure the transfer of all relevant information from the Dow Corning Product Safety Data Sheet to their own Product Safety Data Sheet in compliance with article 31 and Annex II of the EU REACH Regulation.

All information and instructions provided in this Safety Data Sheet (SDS) are based on the current state of scientific and technical knowledge at the date indicated on the present SDS. Dow Corning shall not be held responsible for any defect in the product covered by this SDS, should the existence of such defect not be detectable considering the current state of scientific and technical knowledge.

As stated above, this Safety Data Sheet has been prepared in compliance with applicable European law. If you purchase this material outside Europe, where compliance laws may differ, you should receive from your local Dow Corning supplier a SDS applicable to the country in which the product is sold and intended to be used. Please note that the appearance and content of the SDS may vary - even for the same product - between different countries, reflecting the different compliance requirements. Should you have any question, please refer to your local Dow Corning supplier.

Source of information: Internal data and publically available information

**R10** Flammable., **R20/21** Harmful by inhalation and in contact with skin., **R22** Harmful if swallowed., **R36** Irritating to eyes., **R37/38** Irritating to respiratory system and skin., **R38** Irritating to skin., **R41** Risk of serious damage to eyes., **R50/53** Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment., **R51/53** Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment., **R65** Harmful: May cause lung damage if swallowed., **R66** Repeated exposure may cause skin dryness or cracking., **R67** Vapours may cause drowsiness and dizziness.

**H225** Highly flammable liquid and vapour., **H226** Flammable liquid and vapour., **H302** Harmful if swallowed., **H304** May be fatal if swallowed and enters airways., **H312** Harmful in contact with skin., **H315** Causes skin irritation., **H318** Causes serious eye damage., **H319** Causes serious eye irritation., **H332** Harmful if inhaled., **H335** May cause respiratory irritation., **H336** May cause drowsiness or dizziness., **H400** Very toxic to aquatic life., **H410** Very toxic to aquatic life with long lasting effects., **H411** Toxic to aquatic life with long lasting effects.