

075-057

SAFETY DATA SHEET



MOLYKOTE(R) D-321 R SPRAY

Version	Revision Date:	SDS Number:	Date of last issue:
3.1	12/10/2015	1334744-00004	09/23/2015
			Date of first issue: 02/17/2015

SECTION 1. IDENTIFICATION

Product name : MOLYKOTE(R) D-321 R SPRAY  
 Product code : 000000000001659766

P/N: 321A

Manufacturer or supplier's details

Company name of supplier : Dow Corning Corporation  
 Address : South Saginaw Road  
 Midland Michigan 48686  
 PO box : 65091  
 Telephone : (989) 496-6000  
 Emergency telephone : 24 Hour Emergency Telephone : (989) 496-5900  
 CHEMTREC : (800) 424-9300

Recommended use of the chemical and restrictions on use

Recommended use : Lubricants and lubricant additives

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable aerosols : Category 1  
 Gases under pressure : Dissolved gas  
 Specific target organ systemic toxicity - repeated exposure : Category 1 (Central nervous system)

GHS label elements

Hazard pictograms



Signal Word : Danger

Hazard Statements : H222 Extremely flammable aerosol.  
 H280 Contains gas under pressure; may explode if heated.  
 H372 Causes damage to organs (Central nervous system) through prolonged or repeated exposure.

Precautionary Statements : **Prevention:**  
 P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
 P211 Do not spray on an open flame or other ignition source.

## SAFETY DATA SHEET

**DOW CORNING****MOLYKOTE(R) D-321 R SPRAY**

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
 Date of first issue: 02/17/2015

P251 Pressurized container: Do not pierce or burn, even after use.

P260 Do not breathe spray.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

**Response:**

P314 Get medical advice/ attention if you feel unwell.

**Storage:**

P410 + P412 Protect from sunlight. Do not expose to temperatures exceeding 50 °C/ 122 °F.

**Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

**Other hazards**

None known.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture  
 Chemical nature : Molybdenum disulfide aerosol

**Hazardous ingredients**

Chemical name	CAS-No.	Concentration (% w/w)
Butane	106-97-8	>= 50 - < 70
n-Butyl acetate	123-86-4	>= 10 - < 20
Propane	74-98-6	>= 10 - < 20
Naphtha (petroleum), hydrodesulfurized heavy	64742-82-1	>= 5 - < 10
Molybdenum sulfide	1317-33-5	>= 5 - < 10
Polybutyl titanate	9022-96-2	>= 1 - < 5
Graphite	7782-42-5	>= 1 - < 5
Ethylbenzene	100-41-4	>= 0.1 - < 1

**SECTION 4. FIRST AID MEASURES**

General advice : In the case of accident or if you feel unwell, seek medical advice immediately.  
 When symptoms persist or in all cases of doubt seek medical advice.

If inhaled : If inhaled, remove to fresh air.  
 Get medical attention if symptoms occur.

In case of skin contact : In case of contact, immediately flush skin with soap and plenty of water.  
 Get medical attention if symptoms occur.

In case of eye contact : Flush eyes with water as a precaution.  
 Get medical attention if irritation develops and persists.

# SAFETY DATA SHEET

**DOW CORNING**

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

- If swallowed : If swallowed, DO NOT induce vomiting.  
Get medical attention if symptoms occur.  
Rinse mouth thoroughly with water.
- Most important symptoms and effects, both acute and delayed : Causes damage to organs through prolonged or repeated exposure.
- Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists.
- Notes to physician : Treat symptomatically and supportively.

### SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical
- Unsuitable extinguishing media : None known.
- Specific hazards during fire fighting : Flash back possible over considerable distance.  
Vapors may form explosive mixtures with air.  
Exposure to combustion products may be a hazard to health.  
If the temperature rises there is danger of the vessels bursting due to the high vapor pressure.
- Hazardous combustion products : Carbon oxides  
Metal oxides  
Sulfur oxides
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Use water spray to cool unopened containers.  
Remove undamaged containers from fire area if it is safe to do so.  
Evacuate area.
- Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.  
Use personal protective equipment.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Remove all sources of ignition.  
Use personal protective equipment.  
Follow safe handling advice and personal protective equipment recommendations.
- Environmental precautions : Discharge into the environment must be avoided.

# SAFETY DATA SHEET

**DOW CORNING**

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

- Prevent further leakage or spillage if safe to do so.  
Prevent spreading over a wide area (e.g. by containment or oil barriers).  
Retain and dispose of contaminated wash water.  
Local authorities should be advised if significant spillages cannot be contained.
- Methods and materials for containment and cleaning up : Non-sparking tools should be used.  
Soak up with inert absorbent material.  
Suppress (knock down) gases/vapors/mists with a water spray jet.  
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.  
Local or national 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 regulations are applicable.  
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

### SECTION 7. HANDLING AND STORAGE

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
- Local/Total ventilation : Use only with adequate ventilation.  
Use only in an area equipped with explosion proof exhaust ventilation.
- Advice on safe handling : Do not breathe vapors or spray mist.  
Do not swallow.  
Avoid contact with eyes.  
Avoid prolonged or repeated contact with skin.  
Handle in accordance with good industrial hygiene and safety practice.  
Keep away from water.  
Protect from moisture.  
Keep away from heat and sources of ignition.  
Take precautionary measures against static discharges.  
Take care to prevent spills, waste and minimize release to the environment.
- Conditions for safe storage : Keep in properly labeled containers.  
Keep in a cool, well-ventilated place.  
Store in accordance with the particular national regulations.  
Do not pierce or burn, even after use.  
Keep cool. Protect from sunlight.
- Materials to avoid : Do not store with the following product types:  
Self-reactive substances and mixtures  
Organic peroxides

## SAFETY DATA SHEET

DOW CORNING

## MOLYKOTE(R) D-321 R SPRAY

Version  
3.1Revision Date:  
12/10/2015SDS Number:  
1334744-00004Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

Oxidizing agents  
 Flammable solids  
 Pyrophoric liquids  
 Pyrophoric solids  
 Self-heating substances and mixtures  
 Substances and mixtures which in contact with water emit flammable gases  
 Explosives  
 Gases

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

## Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Butane	106-97-8	TWA	800 ppm 1,900 mg/m3	NIOSH REL
		STEL	1,000 ppm	ACGIH
n-Butyl acetate	123-86-4	TWA	150 ppm	ACGIH
		STEL	200 ppm	ACGIH
		TWA	150 ppm 710 mg/m3	OSHA Z-1
		TWA	150 ppm 710 mg/m3	NIOSH REL
		ST	200 ppm 950 mg/m3	NIOSH REL
Propane	74-98-6	TWA	1,000 ppm 1,800 mg/m3	NIOSH REL
		TWA	1,000 ppm 1,800 mg/m3	OSHA Z-1
Naphtha (petroleum), hydrodesulfurized heavy	64742-82-1	TWA	500 ppm 2,000 mg/m3	OSHA Z-1
Molybdenum sulfide	1317-33-5	TWA (total dust)	15 mg/m3 (Molybdenum)	OSHA Z-1
		TWA (Inhalable fraction)	10 mg/m3 (Molybdenum)	ACGIH
		TWA (Respirable fraction)	3 mg/m3 (Molybdenum)	ACGIH
Graphite	7782-42-5	TWA (Respirable)	2.5 mg/m3	NIOSH REL
		TWA (Respirable fraction)	2 mg/m3	ACGIH
		TWA (Dust)	15 Million particles per cubic foot	OSHA Z-3
Ethylbenzene	100-41-4	TWA	20 ppm	ACGIH
		TWA	100 ppm 435 mg/m3	OSHA Z-1
		TWA	100 ppm 435 mg/m3	NIOSH REL

## SAFETY DATA SHEET

DOW CORNING

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
 Date of first issue: 02/17/2015

		ST	125 ppm 545 mg/m3	NIOSH REL
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**Hazardous components without workplace control parameters**

Ingredients	CAS-No.
Polybutyl titanate	9022-96-2

**Occupational exposure limits of decomposition products**

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Butan-1-ol	71-36-3	TWA	20 ppm	ACGIH
		C	50 ppm 150 mg/m3	NIOSH REL
		TWA	100 ppm 300 mg/m3	OSHA Z-1

**Biological occupational exposure limits**

Ingredients	CAS-No.	Control parameters	Biological specimen	Sam-pling time	Permissible concentra-tion	Basis
Ethylbenzene	100-41-4	Sum of mandelic acid and phenyl gly-oxalic acid	Urine	End of shift (As soon as possible after exposure ceases)	0.15 g/g creatinine	ACGIH BEI

**Engineering measures** : Processing may form hazardous compounds (see section 10).  
 Ensure adequate ventilation, especially in confined areas.  
 Minimize workplace exposure concentrations.  
 Use only in an area equipped with explosion proof exhaust ventilation.

**Personal protective equipment**

**Respiratory protection** : 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. 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.

**Hand protection**

**Material** : Impervious gloves

**Material** : Flame retardant gloves

# SAFETY DATA SHEET

**DOW CORNING**

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

- Remarks : Choose gloves to protect hands against chemicals depending on the concentration specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.
- Eye protection : Wear the following personal protective equipment:  
Safety goggles
- Skin and body protection : Wear the following personal protective equipment:  
Flame retardant antistatic protective clothing.
- Hygiene measures : Ensure that eye flushing systems and safety showers are located close to the working place.  
When using do not eat, drink or smoke.  
Wash contaminated clothing before re-use.  
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 type 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.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : Aerosol containing a dissolved gas
- Color : black
- Odor : solvent
- Odor Threshold : No data available
- pH : Not applicable
- Melting point/freezing point : No data available
- Initial boiling point and boiling range : Not applicable
- Flash point : Not applicable
- Evaporation rate : Not applicable
- Flammability (solid, gas) : Extremely flammable aerosol.
- Upper explosion limit : No data available
- Lower explosion limit : No data available
- Vapor pressure : No data available

# SAFETY DATA SHEET

**DOW CORNING**

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1	Revision Date: 12/10/2015	SDS Number: 1334744-00004	Date of last issue: 09/23/2015 Date of first issue: 02/17/2015
----------------	------------------------------	------------------------------	---

Relative vapor density	: No data available
Relative density	: 1.05
Solubility(ies) Water solubility	: No data available
Partition coefficient: n-octanol/water	: No data available
Autoignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity Viscosity, dynamic	: Not applicable
Explosive properties	: Not explosive
Oxidizing properties	: The substance or mixture is not classified as oxidizing.
Molecular weight	: No data available

### SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Not classified as a reactivity hazard.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Extremely flammable aerosol. Vapors may form explosive mixture with air. If the temperature rises there is danger of the vessels bursting due to the high vapor pressure. Can react with strong oxidizing agents. Hazardous decomposition products will be formed upon contact with water or humid air.
Conditions to avoid	: Exposure to moisture. Heat, flames and sparks.
Incompatible materials	: Oxidizing agents Water
Hazardous decomposition products Contact with water or humid air	: Butan-1-ol

### SECTION 11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure**  
Inhalation  
Skin contact



## SAFETY DATA SHEET

DOW CORNING

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
 Date of first issue: 02/17/2015

Ingestion  
 Eye contact

**Acute toxicity**

Not classified based on available information.

**Ingredients:****Butane:**

Acute inhalation toxicity : LC50 (Rat): 658 mg/l  
 Exposure time: 4 h  
 Test atmosphere: vapor

**n-Butyl acetate:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg  
 Acute inhalation toxicity : LC50 (Rat): > 21.1 mg/l  
 Exposure time: 4 h  
 Test atmosphere: vapor  
 Method: OECD Test Guideline 403  
 Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg  
 Method: OECD Test Guideline 402

**Propane:**

Acute inhalation toxicity : LC50 (Rat): 241.8 mg/l  
 Exposure time: 4 h  
 Test atmosphere: vapor

**Naphtha (petroleum), hydrodesulfurized heavy:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg  
 Remarks: Based on data from similar materials  
 Acute inhalation toxicity : LC50 (Rat): > 13.1 mg/l  
 Exposure time: 4 h  
 Test atmosphere: vapor  
 Assessment: The substance or mixture has no acute inhalation toxicity  
 Remarks: Based on data from similar materials  
 Acute dermal toxicity : LD50 (Rat): > 4,000 mg/kg  
 Assessment: The substance or mixture has no acute dermal toxicity  
 Remarks: Based on data from similar materials

**Molybdenum sulfide:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
 Method: OECD Test Guideline 401  
 Assessment: The substance or mixture has no acute oral toxicity  
 Acute inhalation toxicity : LC50 (Rat): > 2.82 mg/l  
 Exposure time: 4 h  
 Test atmosphere: dust/mist  
 Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg  
 Method: OECD Test Guideline 402

# SAFETY DATA SHEET

**DOW CORNING**

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

Assessment: The substance or mixture has no acute dermal toxicity

### Graphite:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Method: OECD Test Guideline 401  
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): > 2 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403  
Assessment: The substance or mixture has no acute inhalation toxicity

### Ethylbenzene:

Acute oral toxicity : LD50 (Rat): 3,500 mg/kg

Acute inhalation toxicity : LC50 (Rat): 17.2 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

### Skin corrosion/irritation

Not classified based on available information.

### Ingredients:

#### n-Butyl acetate:

Assessment: Repeated exposure may cause skin dryness or cracking.

#### Naphtha (petroleum), hydrodesulfurized heavy:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Remarks: Based on data from similar materials

Assessment: Repeated exposure may cause skin dryness or cracking.

#### Molybdenum sulfide:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

#### Graphite:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

### Serious eye damage/eye irritation

Not classified based on available information.

### Ingredients:

SAFETY DATA SHEET

**DOW CORNING**

**MOLYKOTE(R) D-321 R SPRAY**

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

**n-Butyl acetate:**

Species: Rabbit  
Result: No eye irritation  
Method: OECD Test Guideline 405

**Naphtha (petroleum), hydrodesulfurized heavy:**

Species: Rabbit  
Result: No eye irritation  
Method: OECD Test Guideline 405  
Remarks: Based on data from similar materials

**Molybdenum sulfide:**

Species: Rabbit  
Result: No eye irritation  
Method: OECD Test Guideline 405

**Polybutyl titanate:**

Result: Irritation to eyes, reversing within 21 days

**Graphite:**

Species: Rabbit  
Result: No eye irritation

**Ethylbenzene:**

Species: Rabbit  
Result: No eye irritation

**Respiratory or skin sensitization**

Skin sensitization: Not classified based on available information.  
Respiratory sensitization: Not classified based on available information.

**Ingredients:**

**n-Butyl acetate:**

Test Type: Buehler Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: negative

**Naphtha (petroleum), hydrodesulfurized heavy:**

Test Type: Maximization Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: negative  
Remarks: Based on data from similar materials

**Molybdenum sulfide:**

Test Type: Maximization Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Result: negative

**Graphite:**

Test Type: Local lymph node assay (LLNA)

# SAFETY DATA SHEET

**DOW CORNING**

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

Routes of exposure: Skin contact  
Species: Mouse  
Result: negative

**Ethylbenzene:**  
Test Type: Human repeat insult patch test (HRIPT)  
Routes of exposure: Skin contact  
Result: negative

**Germ cell mutagenicity**  
Not classified based on available information.

### Ingredients:

#### **Butane:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo  
cytogenetic assay)  
Species: Rat  
Application Route: inhalation (gas)  
Method: OECD Test Guideline 474  
Result: negative  
Remarks: Based on data from similar materials

#### **n-Butyl acetate:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative

: Test Type: Chromosome aberration test in vitro  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo  
cytogenetic assay)  
Species: Mouse  
Application Route: Ingestion  
Method: OECD Test Guideline 474  
Result: negative

#### **Propane:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative

: Test Type: Chromosome aberration test in vitro  
Method: OECD Test Guideline 473  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo  
cytogenetic assay)  
Species: Rat  
Application Route: inhalation (gas)  
Method: OECD Test Guideline 474  
Result: negative

**Naphtha (petroleum), hydrodesulfurized heavy:**

# SAFETY DATA SHEET

**DOW CORNING**

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

- Genotoxicity in vitro** : Test Type: Chromosome aberration test in vitro  
Result: negative  
Remarks: Based on data from similar materials
- Genotoxicity in vivo** : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse  
Application Route: Inhalation  
Result: negative  
Remarks: Based on data from similar materials
- Molybdenum sulfide:**  
**Genotoxicity in vitro** : Test Type: Bacterial reverse mutation assay (AMES)  
Method: OECD Test Guideline 471  
Result: negative
- Graphite:**  
**Genotoxicity in vitro** : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative
- Ethylbenzene:**  
**Genotoxicity in vitro** : Test Type: Chromosome aberration test in vitro  
Result: negative
- : Test Type: In vitro mammalian cell gene mutation test  
Method: OECD Test Guideline 476  
Result: negative
- Genotoxicity in vivo** : Test Type: Unscheduled DNA synthesis (UDS) test with mammalian liver cells in vivo  
Species: Mouse  
Application Route: Inhalation  
Method: OECD Test Guideline 486  
Result: negative

### **Carcinogenicity**

Not classified based on available information.

### **Ingredients:**

#### **Naphtha (petroleum), hydrodesulfurized heavy:**

Species: Rat  
Application Route: inhalation (vapor)  
Exposure time: 13 weeks  
Result: negative  
Remarks: Based on data from similar materials

#### **Molybdenum sulfide:**

Species: Rat  
Application Route: Ingestion  
Exposure time: 232 days  
Result: negative

#### **Ethylbenzene:**

Species: Rat  
Application Route: Inhalation

## SAFETY DATA SHEET

**DOW CORNING****MOLYKOTE(R) D-321 R SPRAY**

Version 3.1	Revision Date: 12/10/2015	SDS Number: 1334744-00004	Date of last issue: 09/23/2015 Date of first issue: 02/17/2015
----------------	------------------------------	------------------------------	---

Exposure time: 104 weeks

Result: positive

Remarks: The mechanism or mode of action may not be relevant in humans.

**IARC**

Group 2B: Possibly carcinogenic to humans

Ethylbenzene

100-41-4

**OSHA**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**NTP**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**Reproductive toxicity**

Not classified based on available information.

**Ingredients:****Butane:**

Effects on fertility

: Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: inhalation (gas)  
Method: OECD Test Guideline 422  
Result: negative

Effects on fetal development

: Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Application Route: inhalation (gas)  
Method: OECD Test Guideline 422  
Result: negative

**n-Butyl acetate:**

Effects on fertility

: Test Type: Two-generation reproduction toxicity study  
Species: Rat  
Application Route: inhalation (vapor)  
Method: OECD Test Guideline 416  
Result: negative

**Propane:**

Effects on fertility

: Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: inhalation (gas)  
Method: OECD Test Guideline 422  
Result: negative

Effects on fetal development

: Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: inhalation (gas)  
Method: OECD Test Guideline 422  
Result: negative

# SAFETY DATA SHEET

**DOW CORNING**

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

### **Naphtha (petroleum), hydrodesulfurized heavy:**

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test

Species: Rat

Application Route: inhalation (vapor)

Result: negative

Remarks: Based on data from similar materials

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: inhalation (vapor)

Result: negative

Remarks: Based on data from similar materials

### **Graphite:**

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test

Species: Rat

Application Route: Ingestion

Method: OECD Test Guideline 422

Result: negative

Effects on fetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test

Species: Rat

Application Route: Ingestion

Method: OECD Test Guideline 422

Result: negative

### **Ethylbenzene:**

Effects on fertility : Test Type: Two-generation reproduction toxicity study

Species: Rat

Application Route: inhalation (vapor)

Method: OECD Test Guideline 415

Result: negative

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Inhalation

Method: OECD Test Guideline 414

Result: negative

### **STOT-single exposure**

Not classified based on available information.

### **Ingredients:**

#### **n-Butyl acetate:**

Assessment: May cause drowsiness or dizziness.

#### **Naphtha (petroleum), hydrodesulfurized heavy:**

Assessment: May cause drowsiness or dizziness.

SAFETY DATA SHEET

**DOW CORNING**

**MOLYKOTE(R) D-321 R SPRAY**

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

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**STOT-repeated exposure**

Causes damage to organs (Central nervous system) through prolonged or repeated exposure.

**Ingredients:**

**Naphtha (petroleum), hydrodesulfurized heavy:**

Target Organs: Central nervous system

Assessment: Causes damage to organs through prolonged or repeated exposure.

**Ethylbenzene:**

Routes of exposure: inhalation (vapor)

Target Organs: Auditory system

Assessment: Shown to produce significant health effects in animals at concentrations of >0.2 to 1 mg//6h/d.

**Repeated dose toxicity**

**Ingredients:**

**Butane:**

Species: Rat

NOAEL: 9000 ppm

Application Route: inhalation (gas)

Exposure time: 6 Weeks

Method: OECD Test Guideline 422

**n-Butyl acetate:**

Species: Rat

NOAEL: 2.4 mg/l

Application Route: inhalation (vapor)

Exposure time: 90 Days

**Propane:**

Species: Rat

NOAEL: 9000 ppm

Application Route: inhalation (gas)

Exposure time: 6 Weeks

Method: OECD Test Guideline 422

**Naphtha (petroleum), hydrodesulfurized heavy:**

Species: Rat

NOAEL: 2.34 mg/l

LOAEL: 4.67 mg/l

Application Route: inhalation (vapor)

Exposure time: 6 Months

Method: OECD Test Guideline 413

Remarks: Based on data from similar materials

**Graphite:**

Species: Rat

NOAEL: 12 mg/m3

Application Route: inhalation (dust/mist/fume)

Exposure time: 28 Days

Method: OECD Test Guideline 412

**Ethylbenzene:**

Species: Rat, female



SAFETY DATA SHEET

**DOW CORNING**

**MOLYKOTE(R) D-321 R SPRAY**

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

LOAEL: 75 ppm  
Application Route: inhalation (vapor)  
Exposure time: 104 Weeks

**Aspiration toxicity**

Not classified based on available information.

**Ingredients:**

**Naphtha (petroleum), hydrodesulfurized heavy:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

**Ethylbenzene:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

**Experience with human exposure**

**Ingredients:**

**Naphtha (petroleum), hydrodesulfurized heavy:**

Inhalation : Target Organs: Central nervous system  
Symptoms: Dizziness, Headache, Neurological disorders

**SECTION 12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

**Ingredients:**

**n-Butyl acetate:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 18 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 44 mg/l  
Exposure time: 48 h

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 674.7 mg/l  
Exposure time: 72 h

NOEC (Desmodesmus subspicatus (green algae)): 200 mg/l  
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 23 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

Toxicity to bacteria : IC50 (Protozoa): 356 mg/l  
Exposure time: 40 h

**Naphtha (petroleum), hydrodesulfurized heavy:**  
Toxicity to fish : LL50 (Oncorhynchus mykiss (rainbow trout)): 10 - 30 mg/l  
Exposure time: 96 h  
Test substance: Water Accommodated Fraction

## SAFETY DATA SHEET

DOW CORNING

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
 Date of first issue: 02/17/2015

- Method: OECD Test Guideline 203  
 Remarks: Based on data from similar materials
- Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): 10 - 22 mg/l  
 Exposure time: 48 h  
 Test substance: Water Accommodated Fraction  
 Method: OECD Test Guideline 202  
 Remarks: Based on data from similar materials
- Toxicity to algae : EL50 (Pseudokirchneriella subcapitata (green algae)): 4.6 - 10 mg/l  
 Exposure time: 72 h  
 Test substance: Water Accommodated Fraction  
 Method: OECD Test Guideline 201  
 Remarks: Based on data from similar materials
- NOELR (Pseudokirchneriella subcapitata (green algae)): 0.22 mg/l  
 Exposure time: 72 h  
 Test substance: Water Accommodated Fraction  
 Method: OECD Test Guideline 201  
 Remarks: Based on data from similar materials
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOELR (Daphnia magna (Water flea)): 0.097 mg/l  
 Exposure time: 21 d  
 Remarks: Based on data from similar materials
- Molybdenum sulfide:**  
 Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 644.2 mg/l  
 Exposure time: 96 h  
 Remarks: Based on data from similar materials
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 130.9 mg/l  
 Exposure time: 48 h  
 Method: OECD Test Guideline 202  
 Remarks: Based on data from similar materials
- Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 289.2 mg/l  
 Exposure time: 72 h  
 Method: OECD Test Guideline 201  
 Remarks: Based on data from similar materials
- Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): > 17 mg/l  
 Exposure time: 12 Months  
 Remarks: Based on data from similar materials
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Ceriodaphnia dubia (water flea)): 156.5 mg/l  
 Exposure time: 21 d  
 Remarks: Based on data from similar materials
- Toxicity to bacteria : NOEC: > 950 mg/l  
 Exposure time: 17 d  
 Remarks: Based on data from similar materials

## SAFETY DATA SHEET

DOW CORNING

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
 Date of first issue: 02/17/2015

**Graphite:**

- Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 100 mg/l  
 Exposure time: 96 h  
 Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l  
 Exposure time: 48 h  
 Method: OECD Test Guideline 202
- Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l  
 Exposure time: 72 h  
 Method: OECD Test Guideline 201
- Toxicity to bacteria : EC50: > 1,012.5 mg/l  
 Exposure time: 3 h  
 Method: OECD Test Guideline 209

**Ethylbenzene:**

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 4.2 mg/l  
 Exposure time: 96 h  
 Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.8 - 2.4 mg/l  
 Exposure time: 48 h
- Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 5.4 mg/l  
 Exposure time: 72 h
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Ceriodaphnia dubia (water flea)): 0.96 mg/l  
 Exposure time: 7 d
- Toxicity to bacteria : EC50 (Nitrosomonas sp.): 96 mg/l  
 Exposure time: 24 h  
 Method: OECD Test Guideline 209

**Persistence and degradability****Ingredients:****Butane:**

- Biodegradability : Result: Readily biodegradable.  
 Biodegradation: 100 %  
 Exposure time: 385.5 h  
 Remarks: Based on data from similar materials

**n-Butyl acetate:**

- Biodegradability : Result: Readily biodegradable.  
 Biodegradation: 96 %  
 Exposure time: 28 d  
 Method: OECD Test Guideline 301D

**Propane:**

- Biodegradability : Result: Readily biodegradable.

SAFETY DATA SHEET

**DOW CORNING**

**MOLYKOTE(R) D-321 R SPRAY**

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

Biodegradation: 100 %  
Exposure time: 385.5 h  
Remarks: Based on data from similar materials

**Naphtha (petroleum), hydrodesulfurized heavy:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 74.7 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F  
Remarks: Based on data from similar materials

**Polybutyl titanate:**

Biodegradability : Result: Not readily biodegradable.

**Ethylbenzene:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 70 - 80 %  
Exposure time: 28 d

**Bioaccumulative potential**

**Ingredients:**

**Butane:**

Partition coefficient: n-octanol/water : log Pow: 2.31

**n-Butyl acetate:**

Partition coefficient: n-octanol/water : log Pow: 2.3

**Propane:**

Partition coefficient: n-octanol/water : log Pow: 2.31

**Naphtha (petroleum), hydrodesulfurized heavy:**

Partition coefficient: n-octanol/water : log Pow: > 4  
Remarks: Based on data from similar materials

**Ethylbenzene:**

Bioaccumulation : Species: Fish  
Bioconcentration factor (BCF): < 100  
Remarks: Based on data from similar materials

Partition coefficient: n-octanol/water : log Pow: 3.6

**Mobility in soil**

No data available

**Other adverse effects**

No data available

# SAFETY DATA SHEET

**DOW CORNING**

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

### SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

- Resource Conservation and Recovery Act (RCRA) : When a decision is made to discard this material as supplied, it is classified as a RCRA hazardous waste.
- Waste Code : D001: Ignitability  
D018
- Waste from residues : Dispose of in accordance with local regulations.
- Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.  
Do not burn.  
If not otherwise specified: Dispose of as unused product.  
Please ensure aerosol cans are sprayed completely empty (including propellant)

### SECTION 14. TRANSPORT INFORMATION

#### International Regulation

##### UNRTDG

- UN number : UN 1950  
Proper shipping name : AEROSOLS  
Class : 2.1  
Packing group : Not assigned by regulation  
Labels : 2.1

##### IATA-DGR

- UN/ID No. : UN 1950  
Proper shipping name : Aerosols, flammable  
Class : 2.1  
Packing group : Not assigned by regulation  
Labels : Flammable Gas  
Packing instruction (cargo aircraft) : 203  
Packing instruction (passenger aircraft) : 203

##### IMDG-Code

- UN number : UN 1950  
Proper shipping name : AEROSOLS  
Class : 2.1  
Packing group : Not assigned by regulation  
Labels : 2.1  
EmS Code : F-D, S-U  
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

## SAFETY DATA SHEET

DOW CORNING

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
 Date of first issue: 02/17/2015

## Domestic regulation

## 49 CFR

UN/ID/NA number : UN 1950  
 Proper shipping name : AEROSOLS

Class : 2.1  
 Packing group : Not assigned by regulation  
 Labels : FLAMMABLE GAS  
 ERG Code : 126  
 Marine pollutant : no

## SECTION 15. REGULATORY INFORMATION

## EPCRA - Emergency Planning and Community Right-to-Know

## CERCLA Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Xylene	1330-20-7	100	17544
n-Butyl acetate	123-86-4	5000	50000
Ethylbenzene	100-41-4	1000	*

\*: Calculated RQ exceeds reasonably attainable upper limit.

## SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Fire Hazard  
 Sudden Release of Pressure Hazard  
 Chronic Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Ethylbenzene      100-41-4      0.14 %

## US State Regulations

## Pennsylvania Right To Know

Butane	106-97-8	50 - 70 %
Propane	74-98-6	10 - 20 %
n-Butyl acetate	123-86-4	10 - 20 %
Naphtha (petroleum), hydrodesulfurized heavy	64742-82-1	5 - 10 %
Molybdenum sulfide	1317-33-5	5 - 10 %
Polybutyl titanate	9022-96-2	1 - 5 %
Graphite	7782-42-5	1 - 5 %

## SAFETY DATA SHEET

**DOW CORNING****MOLYKOTE(R) D-321 R SPRAY**

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
 Date of first issue: 02/17/2015

Xylene	1330-20-7	0.1 - 1 %
Butan-1-ol	71-36-3	0.1 - 1 %
Zinc oxide	1314-13-2	0.1 - 1 %
Ethylbenzene	100-41-4	0.1 - 1 %

**New Jersey Right To Know**

Butane	106-97-8	50 - 70 %
Propane	74-98-6	10 - 20 %
n-Butyl acetate	123-86-4	10 - 20 %
Naphtha (petroleum), hydrodesulfurized heavy	64742-82-1	5 - 10 %
Molybdenum sulfide	1317-33-5	5 - 10 %
Graphite	7782-42-5	1 - 5 %
Ethylbenzene	100-41-4	0.1 - 1 %

**California Prop. 65**

**WARNING:** This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Benzene	71-43-2
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**WARNING!** This product contains a chemical known in the State of California to cause cancer.

Ethylbenzene	100-41-4
Benzene	71-43-2
Quartz	14808-60-7

**The ingredients of this product are reported in the following inventories:**

NZIoC : All ingredients listed or exempt.

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

PICCS : All ingredients listed or exempt.

KECI : All ingredients listed, exempt or notified.

IECSC : All ingredients listed or exempt.

AICS : All ingredients listed or exempt.

REACH : All ingredients (pre-)registered or exempt.

ENCS/ISHL : Some components are not listed or not identified on ENCS/ISHL.

DSL : All chemical substances in this product comply with the CEPA 1999 and NSNR and are on or exempt from listing on the Canadian Domestic Substances List (DSL).

TCSI : All ingredients listed or exempt.

## SAFETY DATA SHEET

DOW CORNING

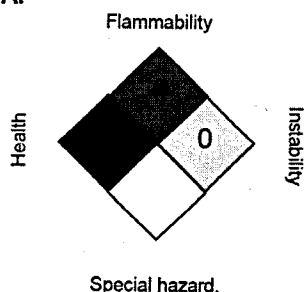
## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
 Date of first issue: 02/17/2015

## SECTION 16. OTHER INFORMATION

## Further information

## NFPA:



## HMIS III:

HEALTH	0*
	4
PHYSICAL HAZARD	2

0 = not significant, 1 = Slight,  
 2 = Moderate, 3 = High  
 4 = Extreme, \* = Chronic

## Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)  
 ACGIH BEI : ACGIH - Biological Exposure Indices (BEI)  
 NIOSH REL : USA. NIOSH Recommended Exposure Limits  
 OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants  
 OSHA Z-3 : USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts  
 ACGIH / TWA : 8-hour, time-weighted average  
 ACGIH / STEL : Short-term exposure limit  
 NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek  
 NIOSH REL / ST : STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday  
 NIOSH REL / C : Ceiling value not be exceeded at any time.  
 OSHA Z-1 / TWA : 8-hour time weighted average  
 OSHA Z-3 / TWA : 8-hour time weighted average

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Ko-



# SAFETY DATA SHEET

**DOW CORNING**

## MOLYKOTE(R) D-321 R SPRAY

Version 3.1      Revision Date: 12/10/2015      SDS Number: 1334744-00004      Date of last issue: 09/23/2015  
Date of first issue: 02/17/2015

rea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Revision Date : 12/10/2015

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

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