SECTION 1. IDENTIFICATION

Product name: MOLYKOTE™ 106 Anti-Friction Coating
Product code: 04103718

Manufacturer or supplier’s details
Company Identification: DOW SILICONES CORPORATION
2200 WEST SALZBURG ROAD
MIDLAND MI  48686-0994
UNITED STATES
Telephone: 800-258-2436
24-Hour Emergency Contact: 1 800 424 9300
Local Emergency Number: 800-424-9300
E-mail address: SDSQuestion@dow.com

Recommended use of the chemical and restrictions on use
Recommended use: Lubricants and lubricant additives

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200
Flammable liquids: Category 3
Skin irritation: Category 2
Serious eye damage: Category 1
Skin sensitization: Category 1
Specific target organ systemic toxicity - single exposure: Category 3
Specific target organ systemic toxicity - repeated exposure: Category 2 (Central nervous system, Liver, Kidney, Auditory system)

GHS label elements
Hazard pictograms: 
Signal Word: Danger
Hazard Statements:
- H226 Flammable liquid and vapor.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H335 May cause respiratory irritation.
- H336 May cause drowsiness or dizziness.
- H373 May cause damage to organs (Central nervous system, Liver, Kidney, Auditory system) through prolonged or repeated exposure.

Precautionary Statements:

**Prevention:**
- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P233 Keep container tightly closed.
- P240 Ground/bond container and receiving equipment.
- P241 Use explosion-proof electrical/ventilating/lighting/equipment.
- P242 Use only non-sparking tools.
- P243 Take precautionary measures against static discharge.
- P260 Do not breathe spray.
- P264 Wash skin thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/eye protection/face protection.

**Response:**
- P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
- P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
- P314 Get medical advice/attention if you feel unwell.
- P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
- P362 + P364 Take off contaminated clothing and wash it before reuse.

**Storage:**
- P403 + P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.

**Disposal:**
- P501 Dispose of contents/container to an approved waste disposal plant.

**Other hazards**
- Static-accumulating flammable liquid.
- Vapors may form explosive mixture with air.
SAFETY DATA SHEET
MOLYKOTE™ 106 Anti-Friction Coating

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture
Chemical nature : Inorganic and organic compounds dispersion

Hazardous ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butan-1-ol</td>
<td>71-36-3</td>
<td>&gt;= 17 - &lt;= 23</td>
</tr>
<tr>
<td>Molybdenum sulfide</td>
<td>1317-33-5</td>
<td>&gt;= 17 - &lt;= 21</td>
</tr>
<tr>
<td>2-Ethoxy-1-methylethyl acetate</td>
<td>54839-24-6</td>
<td>&gt;= 15 - &lt;= 21</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>&gt;= 14 - &lt;= 19</td>
</tr>
<tr>
<td>Reaction product: bisphenol-A- (epichlorhydrin); epoxy resin (number average molecular weight &gt; 700 - 1200)</td>
<td>25068-38-6</td>
<td>&gt;= 8 - &lt;= 10</td>
</tr>
<tr>
<td>Graphite</td>
<td>7782-42-5</td>
<td>&gt;= 5 - &lt;= 7</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>&gt;= 4 - &lt;= 6</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>&gt;= 0.08 - &lt;= 0.18</td>
</tr>
</tbody>
</table>

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.

In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

If swallowed : If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water.

Most important symptoms and effects, both acute and delayed : Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. May cause respiratory irritation. May cause drowsiness or dizziness. May cause 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 (CO2)
- Dry chemical

Unsuitable extinguishing media:
- High volume water jet

Specific hazards during fire fighting:
- Do not use a solid water stream as it may scatter and spread fire.
- Flash back possible over considerable distance.
- Vapors may form explosive mixtures with air.
- Exposure to combustion products may be a hazard to health.

Hazardous combustion products:
- Carbon oxides
- Metal oxides
- Sulfur oxides
- Chlorine compounds
- Nitrogen oxides (NOx)
- Formaldehyde

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.
- 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...
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**: Ensure all equipment is electrically grounded before beginning transfer operations. This material can accumulate static charge due to its inherent physical properties and can therefore cause an electrical ignition source to vapors. In order to prevent a fire hazard, as bonding and grounding may be insufficient to remove static electricity, it is necessary to provide an inert gas purge before beginning transfer operations. Restrict flow velocity in order to reduce the accumulation of static electricity.

**Local/Total ventilation**: Use with local exhaust ventilation. Use only in an area equipped with explosion-proof exhaust ventilation if advised by assessment of the local exposure potential.

**Advice on safe handling**: Do not get on skin or clothing. Do not breathe vapors or spray mist. Do not swallow. Do not get in eyes. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. Non-sparking tools should be used. Keep container tightly closed. 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. Store locked up. Keep tightly closed.
Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition.

Materials to avoid: Do not store with the following product types:
- Strong oxidizing agents
- Organic peroxides
- 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

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butan-1-ol</td>
<td>71-36-3</td>
<td>TWA</td>
<td>20 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>50 ppm 150 mg/m³</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>100 ppm 300 mg/m³</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td>Molybdenum sulfide</td>
<td>1317-33-5</td>
<td>TWA (total dust)</td>
<td>15 mg/m³ (Molybdenum)</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Inhalable fraction)</td>
<td>10 mg/m³ (Molybdenum)</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Respirable fraction)</td>
<td>3 mg/m³ (Molybdenum)</td>
<td>ACGIH</td>
</tr>
<tr>
<td>Xylene</td>
<td>1300-20-7</td>
<td>TWA</td>
<td>100 ppm 435 mg/m³</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>150 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td>Graphite</td>
<td>7782-42-5</td>
<td>TWA (Respirable)</td>
<td>2.5 mg/m³</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Respirable fraction)</td>
<td>2 mg/m³</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Dust)</td>
<td>15 Million particles per cubic foot</td>
<td>OSHA Z-3</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>TWA</td>
<td>20 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>100 ppm 435 mg/m³</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>100 ppm 435 mg/m³</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ST</td>
<td>125 ppm</td>
<td>NIOSH REL</td>
</tr>
</tbody>
</table>
Hazardous components without workplace control parameters

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Ethoxy-1-methylethyl acetate</td>
<td>54839-24-6</td>
</tr>
<tr>
<td>Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight &gt; 700 - 1200)</td>
<td>25068-38-6</td>
</tr>
</tbody>
</table>

Biological occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Biological specimen</th>
<th>Sampling time</th>
<th>Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>Methylhippuric acids</td>
<td>Urine</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>1.5 g/g creatinine</td>
<td>ACGIH BEI</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>Sum of mandelic acid and phenyl glyoxylic acid</td>
<td>Urine</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>0.15 g/g creatinine</td>
<td>ACGIH BEI</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>Methanol</td>
<td>Urine</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>15 mg/l</td>
<td>ACGIH BEI</td>
</tr>
</tbody>
</table>

Engineering measures

Processing may form hazardous compounds (see section 10).
Minimize workplace exposure concentrations.
Use only in an area equipped with explosion-proof exhaust ventilation if advised by assessment of the local exposure potential.
Use with local 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: Chemical-resistant gloves

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. Take note that the product is flammable, which may impact the selection of hand protection. Wash hands before breaks and at the end of workday.

Eye protection: Wear the following personal protective equipment:
Chemical resistant goggles must be worn.
If splashes are likely to occur, wear:
Face-shield

Skin and body protection

Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.
Wear the following personal protective equipment:
Flame retardant antistatic protective clothing, unless assessment demonstrates that the risk of explosive atmospheres or flash fires is low
Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).

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.
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 type of materials in consumer aerosol applications that has been
SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid
Color : gray
Odor : solvent
Odor Threshold : No data available
pH : No data available
Melting point/freezing point : No data available
Initial boiling point and boiling range : 64 °C
Flash point : 29.5 °C
Method: Pensky-Martens closed cup
Evaporation rate : No data available
Flammability (solid, gas) : Not applicable
Self-ignition : The substance or mixture is not classified as pyrophoric. The substance or mixture is not classified as self heating.
Upper explosion limit / Upper flammability limit : No data available
Lower explosion limit / Lower flammability limit : No data available
Vapor pressure : No data available
Relative vapor density : No data available
Relative density : 1.165
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, kinematic : > 20.5 mm²/s (25 °C)
Explosive properties: Not explosive
Oxidizing properties: The substance or mixture is not classified as oxidizing.
Molecular weight: No data available
Particle size: Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.
Chemical stability: Stable under normal conditions.
Possibility of hazardous reactions:
- Flammable liquid and vapor.
- Vapors may form explosive mixture with air.
- Can react with strong oxidizing agents.
- When heated to temperatures above 150 °C (300 °F) in the presence of air, product can form formaldehyde vapors.
- Safe handling conditions may be maintained by keeping vapor concentrations within the occupational exposure limit for formaldehyde.
- See OSHA formaldehyde standard, 29 CFR 1910.1048
- Formaldehyde may cause cancer. It is also toxic by inhalation, skin absorption and ingestion, corrosive to skin and eyes, and may cause skin sensitization and respiratory irritation.
- Hazardous decomposition products will be formed at elevated temperatures.

Conditions to avoid:
- Handling operations that can promote accumulation of static charges.
- Heat, flames and sparks.

Incompatible materials: Oxidizing agents

Hazardous decomposition products:
- Thermal decomposition: Formaldehyde

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:
Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity:
Not classified based on available information.

Product:
### Acute oral toxicity
- **Butan-1-ol**: LD50 (Rat): 790 mg/kg
- **Molybdenum sulfide**: LD50 (Rat): > 2,000 mg/kg
- **2-Ethoxy-1-methylethyl acetate**: LD50 (Rat): > 5,000 mg/kg
- **Xylene**: LD50 (Rat): 4,300 mg/kg

### Acute dermal toxicity
- **Butan-1-ol**: LD50 (Rabbit): 3,430 mg/kg
- **Molybdenum sulfide**: LD50 (Rat): > 2,000 mg/kg
- **2-Ethoxy-1-methylethyl acetate**: LD50 (Rabbit): 20,000 mg/kg
- **Xylene**: LD50 (Rabbit): 4,300 mg/kg

### Acute inhalation toxicity
- **Butan-1-ol**: LC0 (Rat): > 17.76 mg/l
- **Molybdenum sulfide**: LC50 (Rat): > 2.82 mg/l
- **2-Ethoxy-1-methylethyl acetate**: LC50 (Rat): > 6.99 mg/l
- **Xylene**: LD50 (Rat): 4,300 mg/kg

### Method for calculation
- Butan-1-ol: Calculation method
- Molybdenum sulfide: OECD Test Guideline 401
- 2-Ethoxy-1-methylethyl acetate: OECD Test Guideline 401

### Remarks
- Based on data from similar materials
Acute inhalation toxicity: LC50 (Rat): 27.5 mg/l
   Exposure time: 4 h
   Test atmosphere: vapor

Acute toxicity estimate: 11 mg/l
   Exposure time: 4 h
   Test atmosphere: vapor
   Method: Expert judgment
   Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Acute dermal toxicity: Acute toxicity estimate: 1,100 mg/kg
   Method: Expert judgment
   Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight > 700 - 1200):

Acute oral toxicity: LD50 (Rat): > 2,000 mg/kg
   Method: OECD Test Guideline 420
   Assessment: The substance or mixture has no acute oral toxicity
   Remarks: Based on data from similar materials

Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg
   Method: OECD Test Guideline 402
   Assessment: The substance or mixture has no acute dermal toxicity
   Remarks: Based on data from similar materials

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
Methanol:

Acute oral toxicity: Acute toxicity estimate (Humans): 300 mg/kg
Method: Expert judgment

Acute inhalation toxicity: Acute toxicity estimate: 3 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: Expert judgment
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Acute dermal toxicity: Acute toxicity estimate (Humans): 300 mg/kg
Method: Expert judgment

Skin corrosion/irritation
Causes skin irritation.

Ingredients:

Butan-1-ol:
Species: Rabbit
Result: Skin irritation

Molybdenum sulfide:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

2-Ethoxy-1-methylethyl acetate:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

Xylene:
Species: Rabbit
Result: Skin irritation

Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight > 700 - 1200):
Result: Skin irritation

Graphite:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

Methanol:
Species: Rabbit
Result: No skin irritation
Serious eye damage/eye irritation
Causes serious eye damage.

Ingredients:

Butan-1-ol:
Species: Rabbit
Result: Irreversible effects on the eye
Method: OECD Test Guideline 405

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

2-Ethoxy-1-methylethyl acetate:
Species: Rabbit
Result: No eye irritation
Method: OECD Test Guideline 405

Xylene:
Species: Rabbit
Result: Irritation to eyes, reversing within 7 days

Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight > 700 - 1200):
Result: Irritation to eyes, reversing within 21 days

Graphite:
Species: Rabbit
Result: No eye irritation

Ethylbenzene:
Species: Rabbit
Result: No eye irritation

Methanol:
Species: Rabbit
Result: No eye irritation

Respiratory or skin sensitization

Skin sensitization
May cause an allergic skin reaction.

Respiratory sensitization
Not classified based on available information.
Ingredients:

**Butan-1-ol:**
- Test Type: Maximization Test
- Routes of exposure: Skin contact
- Species: Guinea pig
- 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

**2-Ethoxy-1-methylethyl acetate:**
- Test Type: Maximization Test
- Routes of exposure: Skin contact
- Species: Guinea pig
- Method: OECD Test Guideline 406
- Result: negative

**Xylene:**
- Test Type: Local lymph node assay (LLNA)
- Routes of exposure: Skin contact
- Species: Mouse
- Method: OECD Test Guideline 429
- Result: negative

**Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight > 700 - 1200):**
- Test Type: Local lymph node assay (LLNA)
- Routes of exposure: Skin contact
- Species: Mouse
- Method: OECD Test Guideline 429
- Result: positive
- Remarks: Based on data from similar materials
- Assessment: Probability or evidence of skin sensitization in humans

**Graphite:**
- Test Type: Local lymph node assay (LLNA)
- 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
Methanol:
Test Type: Maximization Test
Routes of exposure: Skin contact
Species: Guinea pig
Result: negative

Germ cell mutagenicity
Not classified based on available information.

Ingredients:

Butan-1-ol:
Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
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

Molybdenum sulfide:
Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative

Genotoxicity in vivo:
Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Intraperitoneal injection
Result: negative
Remarks: Based on data from similar materials

2-Ethoxy-1-methylethyl acetate:
Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Genotoxicity in vivo:
Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Intraperitoneal injection
Result: negative
Remarks: Based on data from similar materials

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

Test Type: In vitro sister chromatid exchange assay in mammalian cells
Result: negative

Genotoxicity in vivo:
Test Type: Rodent dominant lethal test (germ cell) (in vivo)
Species: Mouse
Application Route: Skin contact
Result: negative
Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight > 700 - 1200):

Genotoxicity in vitro:
  Test Type: Bacterial reverse mutation assay (AMES)
  Result: negative
  Remarks: Based on data from similar materials

Genotoxicity in vivo:
  Test Type: Rodent dominant lethal test (germ cell) (in vivo)
  Species: Mouse
  Application Route: Ingestion
  Result: negative
  Remarks: Based on data from similar materials

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

Methanol:
Genotoxicity in vitro:
  Test Type: Bacterial reverse mutation assay (AMES)
  Method: OECD Test Guideline 471
  Result: negative
  Test Type: In vitro mammalian cell gene mutation test
  Result: negative

Genotoxicity in vivo:
  Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
  Species: Mouse
  Application Route: Intraperitoneal injection
  Result: negative

Carcinogenicity
Not classified based on available information.
Ingredients:

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

Xylene:
Species: Rat
Application Route: Ingestion
Exposure time: 103 weeks
Result: negative

Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight > 700 - 1200):
Species: Rat
Application Route: Ingestion
Exposure time: 24 month(s)
Method: OECD Test Guideline 453
Result: negative
Remarks: Based on data from similar materials

Ethylbenzene:
Species: Rat
Application Route: Inhalation
Exposure time: 104 weeks
Result: positive
Remarks: The mechanism or mode of action may not be relevant in humans.

Methanol:
Species: Mouse
Application Route: inhalation (vapor)
Exposure time: 18 Months
Result: negative

IARC
Group 2B: Possibly carcinogenic to humans
Ethylbenzene 100-41-4

OSHA
No component of this product present at levels greater than or equal to 0.1% is on OSHA’s list of regulated carcinogens.

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:

Butan-1-ol:

Effects on fertility: Test Type: Two-generation reproduction toxicity study
     Species: Rat
     Application Route: inhalation (vapor)
     Method: OECD Test Guideline 416
     Result: negative
     Remarks: Based on data from similar materials

Effects on fetal development: Test Type: Embryo-fetal development
     Species: Rat
     Application Route: Ingestion
     Result: negative

2-Ethoxy-1-methylethyl acetate:

Effects on fertility: Test Type: Two-generation reproduction toxicity study
     Species: Rat
     Application Route: inhalation (vapor)
     Method: OECD Test Guideline 416
     Result: negative
     Remarks: Based on data from similar materials

Effects on fetal development: Test Type: Embryo-fetal development
     Species: Rat
     Application Route: inhalation (vapor)
     Method: OECD Test Guideline 414
     Result: negative
     Remarks: Based on data from similar materials

Xylene:

Effects on fertility: Test Type: One-generation reproduction toxicity study
     Species: Rat
     Application Route: inhalation (vapor)
     Result: negative

Effects on fetal development: Test Type: Embryo-fetal development
     Species: Rat
     Application Route: inhalation (vapor)
     Result: negative

Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight > 700 - 1200):

Effects on fertility: Test Type: Two-generation reproduction toxicity study
     Species: Rat
     Application Route: Ingestion
     Method: OECD Test Guideline 416
     Result: negative
     Remarks: Based on data from similar materials

Effects on fetal development: Test Type: Embryo-fetal development
     Species: Rat
     Application Route: Ingestion
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

Remarks: Based on data from similar materials

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

Methanol:

Effects on fertility: Test Type: Fertility/early embryonic development
Species: Mouse
Application Route: Ingestion
Result: negative

Effects on fetal development: Test Type: Embryo-fetal development
Species: Mouse
Application Route: Ingestion
Result: positive
Remarks: The effects were seen only at maternally toxic doses.

STOT-single exposure
May cause respiratory irritation.
May cause drowsiness or dizziness.
Ingredients:

Butan-1-ol:
Assessment: May cause respiratory irritation, May cause drowsiness or dizziness.

2-Ethoxy-1-methylethyl acetate:
Assessment: May cause drowsiness or dizziness.

Xylene:
Assessment: May cause respiratory irritation.

Methanol:
Target Organs: Eyes, Central nervous system
Assessment: Causes damage to organs.

STOT-repeated exposure
May cause damage to organs (Central nervous system, Liver, Kidney, Auditory system) through prolonged or repeated exposure.

Ingredients:

Xylene:
Routes of exposure: inhalation (vapor)
Target Organs: Central nervous system, Liver, Kidney
Assessment: Shown to produce significant health effects in animals at concentrations of >0.2 to 1 mg/l/6h/d.

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/l/6h/d.

Repeated dose toxicity

Ingredients:

Butan-1-ol:
Species: Rat
NOAEL: 125 mg/kg
Application Route: Ingestion
Exposure time: 13 Weeks

2-Ethoxy-1-methylethyl acetate:
Species: Rat
NOAEL: >= 1176 ppm
Application Route: inhalation (vapor)
Exposure time: 28 Days

Species: Rabbit
NOAEL: 2,920 mg/kg
Application Route: Skin contact
Exposure time: 90 Days
Method: OECD Test Guideline 411
Remarks: Based on data from similar materials

Xylene:
Species: Rat
NOAEL: 4.35 mg/l
Application Route: inhalation (vapor)
Exposure time: 90 Days

Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight > 700 - 1200):
Species: Rat
NOAEL: 50 mg/kg
LOAEL: 250 mg/kg
Application Route: Ingestion
Exposure time: 14 Weeks
Method: OECD Test Guideline 408
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
LOAEL: 75 ppm
Application Route: inhalation (vapor)
Exposure time: 104 Weeks

Methanol:
Species: Rat
NOAEL: 1.06 mg/l
Application Route: inhalation (vapor)
Exposure time: 90 Days

Aspiration toxicity
Not classified based on available information.

Ingredients:

Xylene:
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.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Ingredients:

**Butan-1-ol:**
- Toxicity to fish: LC50 (Pimephales promelas (fathead minnow)): 1,376 mg/l
  Exposure time: 96 h
  Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 1,328 mg/l
  Exposure time: 48 h
  Method: OECD Test Guideline 202
- Toxicity to algae: ErC50 (Pseudokirchneriella subcapitata (green algae)): 225 mg/l
  Exposure time: 96 h
  Method: OECD Test Guideline 201
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC (Daphnia magna (Water flea)): 4.1 mg/l
  Exposure time: 21 d
  Method: OECD Test Guideline 211
- Toxicity to microorganisms: EC50 (Pseudomonas putida): 4,390 mg/l
  Exposure time: 17 h

**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: NOEC (Ceriodaphnia dubia (water flea)): 156.5 mg/l
  Exposure time: 21 d
## SAFETY DATA SHEET
### MOLYKOTE™ 106 Anti-Friction Coating

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date</th>
<th>SDS Number</th>
<th>Date of last issue: 04/04/2017</th>
<th>Date of first issue: 01/05/2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td>10/20/2017</td>
<td>999902-00010</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**24/32 (Chronic toxicity)**  
Remarks: Based on data from similar materials

**Toxicity to microorganisms**  
NOEC: > 950 mg/l  
Exposure time: 17 d  
Remarks: Based on data from similar materials

**2-Ethoxy-1-methylethyl acetate:**

**Toxicity to fish**  
LC50 (Oncorhynchus mykiss (rainbow trout)): 140 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

**Toxicity to daphnia and other aquatic invertebrates**  
EC50 (Daphnia magna (Water flea)): 110 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

**Toxicity to algae**  
EC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l  
Exposure time: 72 h

**Toxicity to daphnia and other aquatic invertebrates**  
NOEC (Daphnia magna (Water flea)): >= 100 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211  
Remarks: Based on data from similar materials

**Toxicity to microorganisms**  
EC50 (Pseudomonas putida): 560 mg/l  
Exposure time: 16 h

**Xylene:**

**Toxicity to fish**  
LC50 (Oncorhynchus mykiss (rainbow trout)): 2.6 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203  
Remarks: Based on data from similar materials

**Toxicity to daphnia and other aquatic invertebrates**  
IC50 (Daphnia magna (Water flea)): 1 mg/l  
Exposure time: 24 h  
Method: OECD Test Guideline 202  
Remarks: Based on data from similar materials

**Toxicity to algae**  
EC10 (Pseudokirchneriella subcapitata (green algae)): 1.9 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Remarks: Based on data from similar materials

ErC50 (Pseudokirchneriella subcapitata (green algae)): 4.36 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)): > 1.3 mg/l  
Exposure time: 56 d

**Toxicity to daphnia and other aquatic invertebrates**  
EC10 (Daphnia magna (Water flea)): 1.91 mg/l  
Exposure time: 21 d
SAFETY DATA SHEET
MOLYKOTE™ 106 Anti-Friction Coating

Version | Revision Date:  | SDS Number:  | Date of last issue:  | Date of first issue:
--- | --- | --- | --- | ---
6.0 | 10/20/2017 | 999902-00010 | 04/04/2017 | 01/05/2015

<table>
<thead>
<tr>
<th>(Chronic toxicity) Method: OECD Test Guideline 211 Remarks: Based on data from similar materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to microorganisms</td>
</tr>
</tbody>
</table>

**Graphite:**

<table>
<thead>
<tr>
<th>Toxicity to fish</th>
<th>LC50 (Danio rerio (zebra fish)): &gt; 100 mg/l Exposure time: 96 h Method: OECD Test Guideline 203</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates</td>
<td>EC50 (Daphnia magna (Water flea)): &gt; 100 mg/l Exposure time: 48 h Method: OECD Test Guideline 202</td>
</tr>
<tr>
<td>Toxicity to algae</td>
<td>EC50 (Pseudokirchneriella subcapitata (green algae)): &gt; 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201</td>
</tr>
<tr>
<td>Toxicity to microorganisms</td>
<td>EC50: &gt; 1,012.5 mg/l Exposure time: 3 h Method: OECD Test Guideline 209</td>
</tr>
</tbody>
</table>

**Ethylbenzene:**

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

**Methanol:**

<table>
<thead>
<tr>
<th>Toxicity to fish</th>
<th>LC50 (Lepomis macrochirus (Bluegill sunfish)): 15,400 mg/l Exposure time: 96 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates</td>
<td>EC50 (Daphnia magna (Water flea)): &gt; 10,000 mg/l Exposure time: 48 h</td>
</tr>
</tbody>
</table>
Toxicity to algae: EC50 (Pseudokirchneriella subcapitata (green algae)): 22,000 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity): NOEC (Oryzias latipes (Orange-red killifish)): 15,800 mg/l
Exposure time: 200 h

Toxicity to microorganisms: IC50: > 1,000 mg/l
Exposure time: 3 h

### Persistence and degradability

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Biodegradability</th>
<th>Exposure time</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butan-1-ol</td>
<td>Biodegradability</td>
<td>20 d</td>
<td>OECD Test Guideline 301D</td>
</tr>
<tr>
<td></td>
<td>Result</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Readily biodegradable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biodegradation</td>
<td>92 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exposure time</td>
<td>20 d</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2-Ethoxy-1-methylethyl acetate:</th>
<th>Biodegradability</th>
<th>Exposure time</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Result</td>
<td>28 d</td>
<td>OECD Test Guideline 301D</td>
</tr>
<tr>
<td></td>
<td>Readily biodegradable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biodegradation</td>
<td>100 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exposure time</td>
<td>28 d</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Xylene:</th>
<th>Biodegradability</th>
<th>Exposure time</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Result</td>
<td>28 d</td>
<td>OECD Test Guideline 301F</td>
</tr>
<tr>
<td></td>
<td>Readily biodegradable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biodegradation</td>
<td>87.8 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exposure time</td>
<td>28 d</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: Based on data from similar materials

<table>
<thead>
<tr>
<th>Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight &gt; 700 - 1200):</th>
<th>Biodegradability</th>
<th>Exposure time</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Result</td>
<td>28 d</td>
<td>OECD Test Guideline 301F</td>
</tr>
<tr>
<td></td>
<td>Not readily biodegradable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biodegradation</td>
<td>5 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exposure time</td>
<td>28 d</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethylbenzene:</th>
<th>Biodegradability</th>
<th>Exposure time</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Result</td>
<td>28 d</td>
<td>OECD Test Guideline 301F</td>
</tr>
<tr>
<td></td>
<td>Readily biodegradable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biodegradation</td>
<td>70 - 80 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exposure time</td>
<td>28 d</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Methanol:</th>
<th>Biodegradability</th>
<th>Exposure time</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Result</td>
<td>20 d</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Readily biodegradable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biodegradation</td>
<td>95 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exposure time</td>
<td>20 d</td>
<td></td>
</tr>
</tbody>
</table>
Bioaccumulative potential

**Ingredients:**

**Butan-1-ol:**
Partition coefficient: n-octanol/water : log Pow: 1

**2-Ethoxy-1-methylethyl acetate:**
Partition coefficient: n-octanol/water : log Pow: 0.76

**Xylene:**
Bioaccumulation : Species: Oncorhynchus mykiss (rainbow trout)
Bioconcentration factor (BCF): 5.4 - 25.9
Partition coefficient: n-octanol/water : log Pow: 3.12 - 3.2

**Ethylbenzene:**
Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): < 100
Remarks: Based on data from similar materials
Partition coefficient: n-octanol/water : log Pow: 3.6

**Methanol:**
Bioaccumulation : Species: Leuciscus idus (Golden orfe)
Bioconcentration factor (BCF): < 10
Partition coefficient: n-octanol/water : log Pow: -0.77

**Mobility in soil**
No data available

**Other adverse effects**
No data available

**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. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. If not otherwise specified: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG
UN number: UN 1993
Proper shipping name: FLAMMABLE LIQUID, N.O.S. (Ethylbenzene, Butan-1-ol)
Class: 3
Packing group: III
Labels: 3

IATA-DGR
UN/ID No.: UN 1993
Proper shipping name: Flammable liquid, n.o.s. (Ethylbenzene, Butan-1-ol)
Class: 3
Packing group: III
Labels: Flammable Liquids
Packing instruction (cargo aircraft): 366
Packing instruction (passenger aircraft): 355

IMDG-Code
UN number: UN 1993
Proper shipping name: FLAMMABLE LIQUID, N.O.S. (Ethylbenzene, Butan-1-ol)
Class: 3
Packing group: III
Labels: 3
EmS Code: F-E, S-E
Marine pollutant: no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

Domestic regulation

49 CFR
UN/ID/NA number: UN 1993
Proper shipping name: Flammable liquids, n.o.s. (Ethylbenzene, Butan-1-ol)
Class: 3
Packing group: III
Labels: FLAMMABLE LIQUID
ERG Code: 128
SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Component RQ (lbs)</th>
<th>Calculated product RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>100</td>
<td>625</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>1000</td>
<td>18846</td>
</tr>
<tr>
<td>Butan-1-ol</td>
<td>71-36-3</td>
<td>5000</td>
<td>24683</td>
</tr>
</tbody>
</table>

SARA 304 Extremely Hazardous Substances Reportable Quantity

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Component RQ (lbs)</th>
<th>Calculated product RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>100</td>
<td>*</td>
</tr>
</tbody>
</table>

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards
- Flammable (gases, aerosols, liquids, or solids)
- Hazard not otherwise classified (physical hazards)
- Skin corrosion or irritation
- Serious eye damage or eye irritation
- Respiratory or skin sensitization
- Specific target organ toxicity (single or repeated exposure)

SARA 313
- The following components are subject to reporting levels established by SARA Title III, Section 313:
  - Butan-1-ol: 71-36-3 > = 17 - <= 23 %
  - Xylene: 1330-20-7 > = 14 - <= 19 %
  - Ethylbenzene: 100-41-4 > = 4 - <= 6 %

US State Regulations

Pennsylvania Right To Know
- Butan-1-ol: 71-36-3
- Molybdenum sulfide: 1317-33-5
- 2-Ethoxy-1-methylethyl acetate: 54839-24-6
- Xylene: 1330-20-7
- Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight > 700 - 1200): 25068-38-6
- Graphite: 7782-42-5
- Ethylbenzene: 100-41-4
- Urea-Formaldehyde Resin Butyl Ether: Not Assigned
- Methanol: 67-56-1
- Formaldehyde: 50-00-0
California Prop. 65
WARNING: This product can expose you to chemicals including Ethylbenzene, Formaldehyde, which is/are known to the State of California to cause cancer, and Methanol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California List of Hazardous Substances

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butan-1-ol</td>
<td>71-36-3</td>
</tr>
<tr>
<td>Molybdenum sulfide</td>
<td>1317-33-5</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
</tr>
<tr>
<td>Graphite</td>
<td>7782-42-5</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
</tr>
</tbody>
</table>

California Permissible Exposure Limits for Chemical Contaminants

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butan-1-ol</td>
<td>71-36-3</td>
</tr>
<tr>
<td>Molybdenum sulfide</td>
<td>1317-33-5</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
</tr>
<tr>
<td>Graphite</td>
<td>7782-42-5</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZIoC</td>
<td>All ingredients listed or exempt.</td>
</tr>
<tr>
<td>REACH</td>
<td>For purchases from Dow Chemical EU legal entities, all ingredients are currently pre/registered or exempt under REACH. Please refer to section 1 for recommended uses. For purchases from non-EU Dow Chemical legal entities with the intention to export into EEA please contact your DC representative/local office.</td>
</tr>
<tr>
<td>AICS</td>
<td>All ingredients listed or exempt.</td>
</tr>
<tr>
<td>IECSC</td>
<td>All ingredients listed or exempt.</td>
</tr>
<tr>
<td>KECI</td>
<td>All ingredients listed, exempt or notified.</td>
</tr>
<tr>
<td>TSCA</td>
<td>All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.</td>
</tr>
<tr>
<td>ENCS/ISHL</td>
<td>Some components are not listed or not identified on ENCS/ISHL.</td>
</tr>
<tr>
<td>PICCS</td>
<td>Consult your local Dow Chemical office.</td>
</tr>
<tr>
<td>DSL</td>
<td>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).</td>
</tr>
<tr>
<td>TCSI</td>
<td>All ingredients listed or exempt.</td>
</tr>
</tbody>
</table>
SECTION 16. OTHER INFORMATION

Further information

NFPA:

Flammability

Health

Vapor pressure

Special hazard.

HEALTH

* 3

FLAMMABILITY

3

PHYSICAL HAZARD

0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/'" represents the absence of a chronic hazard.

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 - Carcinogenic, 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-
Sources of key data used to compile the Material Safety Data Sheet:

Revision Date: 10/20/2017

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.

US / Z8