

12-7-2020: File reviewed, more current MSDS/SDS not available. JMC

**Cobalt Oxide OR**

Version 1.4

SDS Number: 300000001184

Revision Date: 05/15/2017

**SECTION 1. IDENTIFICATION**

Product name : Cobalt Oxide OR  
Trade name : Cobalt Black Oxide 71.5%  
Product code : 300000001184

**Manufacturer or supplier's details**

Company name of supplier : Umicore Cobalt &amp; Specialty Materials

Address : Umicore Cobalt & Specialty Materials  
Rue du Marais 31  
1000 Brussels  
Belgium

E-mail address of person responsible for the SDS : info.ipds@umicore.com

**Poison Center**

Telephone : 1 800 222 1222

Hours of operation : 24HRS

**Supplier**

Emergency telephone number : For transport in Europe, Central- and South America, Israel and Africa (Non-Arabic speaking countries):+32 3 213 15 70  
For transport in the Middle East (Israel excluded) & Arabic speaking Africa:+32 3 213 33 79  
For transport in the USA and Canada:1-877 986 4267  
For transport in Asian and the Pacific (China excluded):+65 62 64 78 36  
For transport in China:400 88 71 190  
Hours of operation : This telephone number is available 24 hours per day, 7 days per week.

**Recommended use of the chemical and restrictions on use**

Recommended use : Colouring agents, pigments  
Manufacturing of frit.

**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with 29 CFR 1910.1200**

Respiratory sensitisation : Category 1

Acute aquatic toxicity : Category 2

Chronic aquatic toxicity : Category 3


**GHS label elements**

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- Hazard pictograms : 
- Signal word : Danger
- Hazard statements : H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H401 Toxic to aquatic life.  
H412 Harmful to aquatic life with long lasting effects.
- Precautionary statements : **Prevention:**  
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
P273 Avoid release to the environment.  
P285 In case of inadequate ventilation wear respiratory protection.  
**Response:**  
P304 + P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor.  
**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

**Hazardous components**

| Chemical name        | CAS-No.   | Concentration (% w/w) |
|----------------------|-----------|-----------------------|
| cobalt(ii,iii) oxide | 1308-06-1 | <=100                 |
| Sodium carbonate     | 497-19-8  | <=3                   |

**SECTION 4. FIRST AID MEASURES**

- General advice : Move out of dangerous area.  
Show this safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.
- If inhaled : Call a physician or poison control centre immediately.  
Move to fresh air.  
If unconscious, place in recovery position and get medical attention immediately.

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- |   |   |   |
|---|---|---|
| In case of eye contact                                      | : | Remove contact lenses.<br>Flush eyes with water as a precaution.<br>Protect unharmed eye.<br>Keep eye wide open while rinsing.<br>If eye irritation persists, consult a specialist.                                   |
| If swallowed  | : | Keep respiratory tract clear.<br>Do not give milk or alcoholic beverages.<br>Never give anything by mouth to an unconscious person.<br>If symptoms persist, call a physician.<br>Take victim immediately to hospital. |
| Most important symptoms and effects, both acute and delayed | : | Allergic reactions<br>Inhalation may provoke the following symptoms:<br>Shortness of breath<br>Asthma   |

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**SECTION 5. FIREFIGHTING MEASURES**

- |   |   |   |
|---|---|---|
| Suitable extinguishing media                  | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.   |
| Unsuitable extinguishing media                | : | High volume water jet   |
| Specific hazards during fire-fighting         | : | Do not allow run-off from fire fighting to enter drains or water courses.   |
| Hazardous combustion products                 | : | Metal oxides<br>Hazardous decomposition products due to incomplete combustion   |
| Further information                           | : | Collect contaminated fire extinguishing water separately. This must not be discharged into drains.<br>Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |
| Special protective equipment for firefighters | : | Wear self-contained breathing apparatus for firefighting if necessary.  |

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**SECTION 6. ACCIDENTAL RELEASE MEASURES**

- |   |   |   |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Use personal protective equipment.<br>Avoid dust formation.<br>Avoid breathing dust.<br>Ensure adequate ventilation.  |
| Environmental precautions   | : | Prevent product from entering drains.<br>Prevent further leakage or spillage if safe to do so.<br>If the product contaminates rivers and lakes or drains inform respective authorities. |
| Methods and materials for containment and cleaning up               | : | Keep in suitable, closed containers for disposal.   |

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**SECTION 7. HANDLING AND STORAGE**

- Advice on protection against fire and explosion : Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed.
- Advice on safe handling : Avoid formation of respirable particles.  
Do not breathe vapours/dust.  
Avoid exposure - obtain special instructions before use.  
For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
Provide sufficient air exchange and/or exhaust in work rooms.  
Dispose of rinse water in accordance with local and national regulations.  
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Electrical installations / working materials must comply with the technological safety standards.  
To maintain product quality, do not store in heat or direct sunlight.

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

| Components           | CAS-No.   | Value type<br>(Form of exposure) | Control parameters / Permissible concentration | Basis |
|----------------------|-----------|----------------------------------|--|-------|
| cobalt(ii,iii) oxide | 1308-06-1 | TWA                              | 0.02 mg/m3<br>(Cobalt)                         | ACGIH |

**Hazardous components without workplace control parameters**

| Components       | CAS-No.  |
|------------------|----------|
| Sodium carbonate | 497-19-8 |

- Engineering measures** : Handle only in a place equipped with local exhaust (or other appropriate exhaust).

**Personal protective equipment**

- Respiratory protection : Suitable mask with particle filter P3 (European Norm 143)

In the case of dust or aerosol formation use respirator with an approved filter.  
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

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|                          |  |
|--------------------------|--|
| Hand protection          |  |
| Material                 | : Nitrile rubber                                       |
| Break through time       | : > 480 min  |
| Glove thickness          | : 0.12 mm  |
| Material                 | : PVC  |
| Break through time       | : > 480 min  |
| Glove thickness          | : 1.1 mm   |
| Material                 | : Neoprene gloves                                      |
| Break through time       | : > 480 min  |
| Glove thickness          | : 0.35 mm  |
| Glove length             | : Long sleeve gloves                                   |
| Eye protection           | : Safety glasses with side-shields conforming to EN166 |
| Skin and body protection | : Dust impervious protective suit                      |
| Hygiene measures         | : Wash hands before breaks and at the end of workday.  |

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

|                           |                          |
|---------------------------|--------------------------|
| Appearance                | : powder                 |
| Colour                    | : black                  |
| Odour                     | : odourless              |
| Flammability (solid, gas) | : Will not burn          |
| Relative density          | : 6.07                   |
| Density                   | : 6.07 g/cm <sup>3</sup> |
| Solubility(ies)           |                          |
| Water solubility          | : practically insoluble  |
| Decomposition temperature | : 900 °C                 |
| Molecular weight          | : 240.79 g/mol           |

**SECTION 10. STABILITY AND REACTIVITY**

|                                    |   |
|------------------------------------|---|
| Reactivity                         | : Stable at normal ambient temperature and pressure.  |
| Chemical stability                 | : No decomposition if stored and applied as directed. |
| Possibility of hazardous reactions | : No decomposition if stored and applied as directed. |
| Conditions to avoid                | : None known.   |

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Incompatible materials : None.

Hazardous decomposition products : No decomposition if stored normally.

**SECTION 11. TOXICOLOGICAL INFORMATION****Acute toxicity****Product:**

Acute oral toxicity : Acute toxicity estimate: > 5,000 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

**Components:****cobalt(ii,iii) oxide:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg  
Method: OECD Test Guideline 401  
GLP: yes

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.06 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 436  
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
GLP: yes  
Assessment: The substance or mixture has no acute dermal toxicity

**Sodium carbonate:**

Acute oral toxicity : LD50 (Rat): 4,090 mg/kg

Acute inhalation toxicity : LC50 (Rat): 2.3 g/l  
Exposure time: 2 h  
Test atmosphere: dust/mist

Acute dermal toxicity : Assessment: The substance or mixture has no acute dermal toxicity

**Skin corrosion/irritation****Product:**

Remarks: No data available

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**Components:****cobalt(ii,iii) oxide:**

Assessment: No skin irritation

GLP: yes

**Serious eye damage/eye irritation****Product:**

Remarks: No data available

**Components:****cobalt(ii,iii) oxide:**

Result: No eye irritation

GLP: yes

**Sodium carbonate:**

Species: Rabbit

Result: Eye irritation

**Respiratory or skin sensitisation****Product:**

Remarks: No data available

**Components:****cobalt(ii,iii) oxide:**

Exposure routes: Dermal

Species: Mouse

Method: OECD Test Guideline 429

Result: Did not cause sensitisation on laboratory animals.

GLP: yes

**Germ cell mutagenicity****Product:**

Genotoxicity in vitro : Remarks: No data available

**Components:****cobalt(ii,iii) oxide:**

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test  
Species: mouse lymphoma cells  
Method: OECD Test Guideline 476  
Result: negative  
Remarks: Based on read across from structural related substance  
cobalt sulphide

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**Carcinogenicity****Product:**

Remarks: No data available

**IARC**

Group 2B: Possibly carcinogenic to humans

cobalt(ii,iii) oxide

tricobalt tetroxide

**OSHA**

No component 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 component 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****Product:**

Effects on fertility : Remarks: No data available

**Components:****cobalt(ii,iii) oxide:**

Effects on fertility : Species: Rat, male and female  
Application Route: Oral  
General Toxicity - Parent: NOAEL: 1,000 mg/kg body weight  
General Toxicity F1: NOAEL: 1,000 mg/kg body weight  
Method: OECD Test Guideline 422  
Result: Not classified  
GLP: yes  
Remarks: Based on read across from structural related substance  
cobalt sulphide

**STOT - single exposure****Product:**

Remarks: No data available

**STOT - repeated exposure****Product:**

Remarks: No data available

**Repeated dose toxicity****Components:****cobalt(ii,iii) oxide:**

Species: Rat, male and female  
NOAEL: 1,000 mg/kg



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Application Route: Oral  
Method: OECD Test Guideline 422  
GLP: yes

**Further information****Product:**

Remarks: No data available

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:****cobalt(ii,iii) oxide:**

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 1.51 mg/l  
Exposure time: 96 h  
Remarks: Fresh water  
Based on read across from structural related substance  
cobalt dichloride hexahydrate
- Toxicity to daphnia and other aquatic invertebrates : LC50 (Cladocera (water flea)): 0.61 mg/l  
Remarks: Fresh water  
unit expressed as mg metal/l  
Based on read across from structural related substance  
cobalt dichloride hexahydrate
- Toxicity to algae : EC50 (Lemna minor (duckweed)): 0.1985 mg/l  
Exposure time: 7 DAYS  
Remarks: Fresh water  
Based on read across from structural related substance  
cobalt dichloride hexahydrate
- EC50 (Lemna minor (duckweed)): 0.0108 mg/l  
Exposure time: 7 DAYS  
Remarks: Fresh water  
Based on read across from structural related substance  
cobalt dichloride hexahydrate
- Toxicity to fish (Chronic toxicity) : EC10 (Pimephales promelas (fathead minnow)): 0.351 mg/l  
Remarks: unit expressed as mg metal/l  
Fresh water  
Based on read across from structural related substance  
cobalt dichloride hexahydrate
- EC10 (Cyprinodon sp. (minnow)): 31.8 mg/l  
Remarks: Marine water  
unit expressed as mg metal/l  
Based on read across from structural related substance  
cobalt dichloride hexahydrate
- Toxicity to daphnia and other aquatic invertebrates (Chronic) : EC10 (Hyalomma azteca): 0.00547 mg/l  
Remarks: Fresh water

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ic toxicity) unit expressed as mg metal/l  
Based on read across from structural related substance  
cobalt dichloride hexahydrate

EC10: 0.206 mg/l  
Remarks: Marine water  
unit expressed as mg metal/l  
Based on read across from structural related substance  
cobalt dichloride hexahydrate

M-Factor (Chronic aquatic toxicity) : 10

**Ecotoxicology Assessment**

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

**Sodium carbonate:**

Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 300 mg/l  
Exposure time: 96 h  
Remarks: Fresh water

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 265 mg/l  
Exposure time: 48 h  
Remarks: Fresh water

Toxicity to algae : EC50 (Algae, Navicula sp.): 242 mg/l  
Exposure time: 96 h  
Remarks: Fresh water

**Persistence and degradability**

No data available

**Bioaccumulative potential****Components:****cobalt(ii,iii) oxide:**

Bioaccumulation : Bioconcentration factor (BCF): 180 - 4,000

**Mobility in soil**

No data available

**Other adverse effects****Product:**

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : An environmental hazard cannot be excluded in the event of

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mation

unprofessional handling or disposal.  
Toxic to aquatic life.  
Harmful to aquatic life with long lasting effects.

**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

- Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Dispose of in accordance with the European Directives on waste and hazardous waste.  
In accordance with local and national regulations.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.  
Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.  
Send to a licensed waste management company.
- Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.

**SECTION 14. TRANSPORT INFORMATION****International Regulations****UNRTDG**

Not regulated as a dangerous good

**IATA-DGR**

Not regulated as a dangerous good

**IMDG-Code**

Not regulated as a dangerous good

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

Not applicable for product as supplied.

**National Regulations****49 CFR - DOT**

Not regulated as a dangerous good

**Special precautions for user**

Not applicable

**SECTION 15. REGULATORY INFORMATION****EPCRA - Emergency Planning and Community Right-to-Know Act****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

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**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 311/312 Hazards** : Acute 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:

|                      |           |       |
|----------------------|-----------|-------|
| cobalt(ii,iii) oxide | 1308-06-1 | 100 % |
|----------------------|-----------|-------|

**Clean Air Act**

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

|                      |           |       |
|----------------------|-----------|-------|
| cobalt(ii,iii) oxide | 1308-06-1 | 100 % |
|----------------------|-----------|-------|

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

**US State Regulations****Massachusetts Right To Know**

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know**

|                      |           |
|----------------------|-----------|
| cobalt(ii,iii) oxide | 1308-06-1 |
| Sodium carbonate     | 497-19-8  |

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

|        |  |
|--------|--|
| CH INV | : On the inventory, or in compliance with the inventory  |
| DSL    | : All components of this product are on the Canadian DSL |
| AICS   | : On the inventory, or in compliance with the inventory  |
| NZIoC  | : On the inventory, or in compliance with the inventory  |
| ENCS   | : On the inventory, or in compliance with the inventory  |
| ISHL   | : On the inventory, or in compliance with the inventory  |
| KECI   | : On the inventory, or in compliance with the inventory  |
| PICCS  | : Not in compliance with the inventory                   |

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IECSC : On the inventory, or in compliance with the inventory

TCSI : On the inventory, or in compliance with the inventory

TSCA : On TSCA Inventory

**TSCA list**

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

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**SECTION 16. OTHER INFORMATION****Full text of other abbreviations**

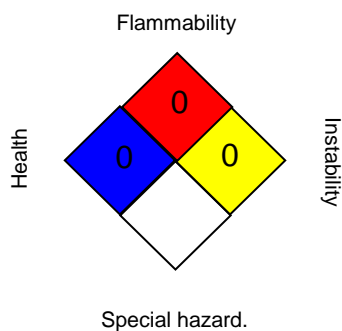
AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; 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 - Korea 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

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**Further information****NFPA:****HMIS® IV:**

|                 |   |   |
|-----------------|---|---|
| HEALTH          | * | 0 |
| FLAMMABILITY    |   | 0 |
| 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.

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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 given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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