## SECTION 1. IDENTIFICATION

Product name : ZN-50

SDS-Identcode : 032G

**Manufacturer or supplier's details**

Company name of supplier : Bestolife Corporation

Address : 2777 N. Stemmons Frwy Ste 1800
Dallas TX 75207,

Telephone : 855-243-9164/972-865-8961

Telefax : 214-631-3047

Emergency telephone : CHEMTREC U.S.: 800-424-9300, International 703-527-3887 (24-hours/7 days)

E-mail address : www.bestolife.com

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

Recommended use : Industrial use
Thread Compound (Pipe Dope) and Jacking grease for use in Offshore industries
Mining, (without offshore industries)

Restrictions on use : Do not use on oxygen lines or in oxygen enriched atmospheres.

## SECTION 2. HAZARDS IDENTIFICATION

**GHS Classification**

Eye irritation : Category 2A

Reproductive toxicity : Category 1A

Effects on or via lactation

**GHS label elements**

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H319 Causes serious eye irritation.

H360 May damage fertility or the unborn child.
H362 May cause harm to breast-fed children.

Precautionary Statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P263 Avoid contact during pregnancy/ while nursing.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
**Response:**
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
**Storage:**
P405 Store locked up.
**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 ingredients**

| Chemical name | CAS-No. | Concentration (% w/w) |
|---|---|---|
| Distillates (petroleum), hydrotreated heavy naphthenic | 64742-52-5 | >= 30 - < 50 |
| Talc | 14807-96-6 | >= 5 - < 10 |
| Zinc oxide | 1314-13-2 | >= 1 - < 5 |
| Calcium oxide | 1305-78-8 | >= 1 - < 5 |
| 12-Hydroxy lithium stearate | 7620-77-1 | >= 1 - < 5 |
| Dolomite | 16389-88-1 | >= 1 - < 5 |
| Calcium bis(dinonylnaphthalenesulphonate) | 57855-77-3 | >= 1 - < 5 |
| Quartz | 14808-60-7 | >= 0.1 - < 1 |
| Lead | 7439-92-1 | >= 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.<br>Get medical attention. |
| In case of skin contact | : | In case of contact, immediately flush skin with plenty of water.<br>Remove contaminated clothing and shoes.<br>Get medical attention.<br>Wash clothing before reuse.<br>Thoroughly clean shoes before reuse. |
| In case of eye contact | : | In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.<br>If easy to do, remove contact lens, if worn.<br>Get medical attention. |
| If swallowed | : | If swallowed, DO NOT induce vomiting.<br>Get medical attention.<br>Rinse mouth thoroughly with water. |
| Most important symptoms and effects, both acute and delayed | : | Causes serious eye irritation.<br>May damage fertility or the unborn child.<br>May cause harm to breast-fed children. |
| 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<br>Alcohol-resistant foam<br>Carbon dioxide (CO2)<br>Dry chemical |
| Unsuitable extinguishing media | : | None known. |
| Specific hazards during fire fighting | : | Exposure to combustion products may be a hazard to health. |
| Hazardous combustion products | : | Carbon oxides<br>Metal oxides<br>Sulfur oxides |
| Specific extinguishing methods | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.<br>Use water spray to cool unopened containers.<br>Remove undamaged containers from fire area if it is safe to do so.<br>Evacuate area. |
| Special protective equipment | : | In the event of fire, wear self-contained breathing apparatus. |

| | |
|---|---|
| for fire-fighters | Use personal protective equipment. |

## SECTION 6. ACCIDENTAL RELEASE MEASURES

| | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Use personal protective equipment.<br>Follow safe handling advice and personal protective equipment recommendations. |
| Environmental precautions | : | Discharge into the environment must be avoided.<br>Prevent further leakage or spillage if safe to do so.<br>Retain and dispose of contaminated wash water.<br>Local authorities should be advised if significant spillages cannot be contained. |
| Methods and materials for containment and cleaning up | : | Sweep up or vacuum up spillage and collect in suitable container for disposal.<br>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.<br>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. |
| Advice on safe handling | : | Do not get on skin or clothing.<br>Do not swallow.<br>Do not get in eyes.<br>Handle in accordance with good industrial hygiene and safety practice.<br>Keep container tightly closed.<br>Keep away from water.<br>Protect from moisture.<br>Take care to prevent spills, waste and minimize release to the environment. |
| Conditions for safe storage | : | Keep in properly labeled containers.<br>Store locked up.<br>Keep tightly closed.<br>Store in accordance with the particular national regulations. |
| Materials to avoid | : | Do not store with the following product types:<br>Strong oxidizing agents<br>Organic peroxides<br>Explosives<br>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 |
|---|---|---|---|---|
| Distillates (petroleum), hydrotreated heavy naphthenic | 64742-52-5 | TWA (Mist) | 5 mg/m3 | OSHA Z-1 |
| | | TWA (Inhalable fraction) | 5 mg/m3 | ACGIH |
| | | TWA (Mist) | 5 mg/m3 | NIOSH REL |
| | | ST (Mist) | 10 mg/m3 | NIOSH REL |
| Talc | 14807-96-6 | TWA (Dust) | 20 Million particles per cubic foot | OSHA Z-3 |
| | | TWA (Respirable) | 2 mg/m3 | NIOSH REL |
| | | TWA (Respirable fraction) | 2 mg/m3 | ACGIH |
| Zinc oxide | 1314-13-2 | TWA (Respirable fraction) | 2 mg/m3 | ACGIH |
| | | STEL (Respirable fraction) | 10 mg/m3 | ACGIH |
| | | TWA (Dust) | 5 mg/m3 | NIOSH REL |
| | | TWA (Fumes) | 5 mg/m3 | NIOSH REL |
| | | ST (Fumes) | 10 mg/m3 | NIOSH REL |
| | | C (Dust) | 15 mg/m3 | NIOSH REL |
| | | TWA (total dust) | 15 mg/m3 | OSHA Z-1 |
| | | TWA (respirable fraction) | 5 mg/m3 | OSHA Z-1 |
| | | TWA (Fumes) | 5 mg/m3 | OSHA Z-1 |
| Calcium oxide | 1305-78-8 | TWA | 2 mg/m3 | ACGIH |
| | | TWA | 2 mg/m3 | NIOSH REL |
| | | TWA | 5 mg/m3 | OSHA Z-1 |
| 12-Hydroxy lithium stearate | 7620-77-1 | TWA | 10 mg/m3 | ACGIH |
| Dolomite | 16389-88-1 | TWA (Respirable) | 5 mg/m3 | NIOSH REL |
| | | TWA (total) | 10 mg/m3 | NIOSH REL |
| Quartz | 14808-60-7 | TWA (total dust) | 30 mg/m3 / %SiO2+2 | OSHA Z-3 |
| | | TWA (respirable) | 10 mg/m3 / %SiO2+2 | OSHA Z-3 |
| | | TWA (respirable) | 250 mppcf / %SiO2+5 | OSHA Z-3 |
| | | TWA (Respirable frac- | 0.025 mg/m3 (Silica) | ACGIH |

| | | | | |
|---|---|---|---|---|
| | | tion) | | |
| | | TWA (Respirable dust) | 0.05 mg/m3 (Silica) | NIOSH REL |
| Lead | 7439-92-1 | TWA | 0.05 mg/m3 (Lead) | NIOSH REL |
| | | TWA | 0.05 mg/m3 (Lead) | ACGIH |
| | | PEL | 0.05 mg/m3 (Lead) | OSHA CARC |

**Hazardous components without workplace control parameters**

| Ingredients | CAS-No. |
|---|---|
| Calcium bis(dinonylnaphthalenesulphonate) | 57855-77-3 |

**Occupational exposure limits of decomposition products**

| Ingredients | CAS-No. | Value type (Form of exposure) | Control parameters / Permissible concentration | Basis |
|---|---|---|---|---|
| Calcium hydroxide | 1305-62-0 | TWA | 5 mg/m3 | ACGIH |
| | | TWA (total dust) | 15 mg/m3 | OSHA Z-1 |
| | | TWA (respirable fraction) | 5 mg/m3 | OSHA Z-1 |
| | | TWA | 5 mg/m3 | NIOSH REL |

**Biological occupational exposure limits**

| Ingredients | CAS-No. | Control parameters | Biological specimen | Sampling time | Permissible concentration | Basis |
|---|---|---|---|---|---|---|
| Lead | 7439-92-1 | Lead (Lead) | In blood | Not critical | 30 µg/ 100 ml | ACGIH BEI |

**Engineering measures** : Processing may form hazardous compounds (see section 10).
Minimize workplace exposure concentrations.
Dust formation may be relevant in the processing of this product. In addition to substance-specific OELs, general limitations of concentrations of particulates in the air at workplaces have to be considered in workplace risk assessment. Relevant limits include: OSHA PEL for Particulates Not Otherwise Regulated of 15 mg/m3 - total dust, 5 mg/m3 - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m3 - respirable particles, 10 mg/m3 - inhalable particles.

**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

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 : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.
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.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|---|---|---|
| Appearance | : | Viscous semi-solid |
| Color | : | gray |
| Odor | : | Petroleum |
| Odor Threshold | : | No data available |
| pH | : | Not applicable (not an aqueous solution) |
| Melting point/freezing point | : | No data available |
| Initial boiling point and boiling range | : | No data available |
| Flash point | : | >= 252 °C<br>Method: ASTM D 92, Cleveland open cup |
| Evaporation rate | : | No data available |

| | | |
|---|---|---|
| Flammability (solid, gas) | : | No data available |
| Upper explosion limit | : | No data available |
| Lower explosion limit | : | No data available |
| Vapor pressure | : | No data available |
| Relative vapor density | : | No data available |
| Relative density | : | 1.8 |
| Solubility(ies) | | |
| Water solubility | : | negligible |
| Partition coefficient: n-octanol/water | : | No data available |
| Autoignition temperature | : | No data available |
| Decomposition temperature | : | No data available |
| Flow time | : | No data available |
| 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 | : | Can react with strong oxidizing agents.<br>Hazardous decomposition products will be formed upon contact with water or humid air. |
| Conditions to avoid | : | Exposure to moisture. |
| Incompatible materials | : | Oxidizing agents<br>Water |
| Hazardous decomposition products | | |
| Contact with water or humid air | : | Calcium hydroxide |

## SECTION 11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure**

Skin contact
Ingestion
Eye contact

**Acute toxicity**

Not classified based on available information.

**Ingredients:**

**Distillates (petroleum), hydrotreated heavy naphthenic:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 5,000 mg/kg<br>Method: OECD Test Guideline 401<br>Remarks: Based on data from similar materials |
| Acute inhalation toxicity | : | LC50 (Rat): > 5.53 mg/l<br>Exposure time: 4 h<br>Test atmosphere: dust/mist<br>Method: OECD Test Guideline 403<br>Assessment: The substance or mixture has no acute inhalation toxicity<br>Remarks: Based on data from similar materials |
| Acute dermal toxicity | : | LD50 (Rabbit): > 5,000 mg/kg<br>Method: OECD Test Guideline 402<br>Remarks: Based on data from similar materials |

**Talc:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 5,000 mg/kg<br>Remarks: Based on data from similar materials |

**Zinc oxide:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 5,000 mg/kg<br>Method: OECD Test Guideline 401 |
| Acute inhalation toxicity | : | LC50 (Rat): > 5.7 mg/l<br>Exposure time: 4 h<br>Test atmosphere: dust/mist<br>Method: OECD Test Guideline 403<br>Assessment: The substance or mixture has no acute inhalation toxicity |

**Calcium oxide:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 2,000 mg/kg<br>Method: OECD Test Guideline 425<br>Assessment: The substance or mixture has no acute oral toxicity |
| Acute dermal toxicity | : | LD50 (Rabbit): > 2,500 mg/kg<br>Method: OECD Test Guideline 402<br>Assessment: The substance or mixture has no acute dermal toxicity<br>Remarks: Based on data from similar materials |

**12-Hydroxy lithium stearate:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 2,000 mg/kg<br>Assessment: The substance or mixture has no acute oral toxicity |

**Dolomite:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 2,000 mg/kg<br>Method: OECD Test Guideline 420<br>Assessment: The substance or mixture has no acute oral toxicity<br>Remarks: Based on data from similar materials |
| Acute inhalation toxicity | : | LC50 (Rat): > 3 mg/l<br>Exposure time: 4 h<br>Test atmosphere: dust/mist<br>Assessment: The substance or mixture has no acute inhalation toxicity<br>Remarks: Based on data from similar materials |
| Acute dermal toxicity | : | LD50 (Rat): > 2,000 mg/kg<br>Method: OECD Test Guideline 402<br>Assessment: The substance or mixture has no acute dermal toxicity<br>Remarks: Based on data from similar materials |

**Calcium bis(dinonylnaphthalenesulphonate):**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 5,000 mg/kg |
| Acute inhalation toxicity | : | LC50 (Rat): > 18 mg/l<br>Exposure time: 1 h<br>Test atmosphere: dust/mist |
| Acute dermal toxicity | : | LD50 (Rabbit): > 5,000 mg/kg |

**Quartz:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 5,000 mg/kg |

**Lead:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 2,000 mg/kg<br>Remarks: Based on data from similar materials |
| Acute dermal toxicity | : | LD50 (Rat): > 2,000 mg/kg<br>Remarks: Based on data from similar materials |

**Skin corrosion/irritation**

Not classified based on available information.

**Ingredients:**

**Distillates (petroleum), hydrotreated heavy naphthenic:**

Species: Rabbit
Result: No skin irritation
Remarks: Based on data from similar materials

**Talc:**

Species: Rabbit
Result: No skin irritation

**Zinc oxide:**

Species: Rabbit

Method: OECD Test Guideline 404
Result: No skin irritation

**Calcium oxide:**
Species: Rabbit
Method: OECD Test Guideline 404
Result: Skin irritation
Remarks: Based on data from similar materials

**12-Hydroxy lithium stearate:**
Species: Rabbit
Result: No skin irritation
Remarks: Based on data from similar materials

**Dolomite:**
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation
Remarks: Based on data from similar materials

**Calcium bis(dinonylnaphthalenesulphonate):**
Species: Rabbit
Result: Skin irritation

**Lead:**
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation
Remarks: Based on data from similar materials

**Serious eye damage/eye irritation**

Causes serious eye irritation.

**Ingredients:**

**Distillates (petroleum), hydrotreated heavy naphthenic:**
Species: Rabbit
Result: No eye irritation
Remarks: Based on data from similar materials

**Talc:**
Species: Rabbit
Result: No eye irritation

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

**Calcium oxide:**
Species: Rabbit
Result: Irreversible effects on the eye
Method: OECD Test Guideline 405

**12-Hydroxy lithium stearate:**
Species: Rabbit

Result: No eye irritation
Remarks: Based on data from similar materials

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

**Calcium bis(dinonylnaphthalenesulphonate):**
Species: Rabbit
Result: Irritation to eyes, reversing within 21 days
Remarks: Based on data from similar materials

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

**Respiratory or skin sensitization**

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

**Ingredients:**

**Distillates (petroleum), hydrotreated heavy naphthenic:**
Test Type: Buehler Test
Routes of exposure: Skin contact
Species: Guinea pig
Result: negative
Remarks: Based on data from similar materials

**Talc:**
Routes of exposure: Skin contact
Species: Humans
Result: negative

**Zinc oxide:**
Test Type: Maximization Test
Routes of exposure: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: negative

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

**Dolomite:**
Test Type: Local lymph node assay (LLNA)
Routes of exposure: Skin contact
Species: Mouse

Method: OECD Test Guideline 429
Result: negative
Remarks: Based on data from similar materials

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

**Lead:**
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

**Germ cell mutagenicity**

Not classified based on available information.

**Ingredients:**

**Distillates (petroleum), hydrotreated heavy naphthenic:**

Genotoxicity in vitro : 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
Method: OECD Test Guideline 474
Result: negative
Remarks: Based on data from similar materials

**Talc:**

Genotoxicity in vitro : Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)
Result: negative

Genotoxicity in vivo : Test Type: Chromosome aberration test in vitro
Species: Rat
Application Route: Ingestion
Result: negative

**Zinc oxide:**

Genotoxicity in vitro : 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: Rat
Application Route: Inhalation
Method: OECD Test Guideline 474
Result: negative

**Calcium oxide:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative

**Dolomite:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative
Remarks: Based on data from similar materials

**Calcium bis(dinonylnaphthalenesulphonate):**

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative
Remarks: Based on data from similar materials

**Lead:**

Genotoxicity in vitro : Test Type: In vitro sister chromatid exchange assay in mammalian cells
Result: negative
Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Rat
Application Route: Ingestion
Result: positive
Remarks: Based on data from similar materials

**Carcinogenicity**

Not classified based on available information.

**Product:**

Carcinogenicity - Assessment : Petroleum distillates have been classified as not carcinogenic based on DMSO extract content < 3% (Regulation (EC) 1272/2008, Annex VI, Part 3, Note L).

Weight of evidence does not support classification as a carcinogen

**Ingredients:**

**Distillates (petroleum), hydrotreated heavy naphthenic:**

Species: Mouse
Application Route: Skin contact
Exposure time: 78 weeks
Method: OECD Test Guideline 451
Result: negative

**Talc:**

Species: Mouse
Application Route: inhalation (dust/mist/fume)
Exposure time: 2 Years

Result: negative

**Calcium oxide:**

Species: Rat
Application Route: Ingestion
Exposure time: 104 weeks
Result: negative
Remarks: Based on data from similar materials

**Quartz:**

Species: Humans
Application Route: inhalation (dust/mist/fume)
Result: positive
Remarks: IARC (International Agency for Research on Cancer)
The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

Carcinogenicity - Assessment : Positive evidence from human epidemiological studies (inhalation)

**Lead:**

Species: Rat
Application Route: Ingestion
Exposure time: 2 Years
Result: positive
Remarks: Based on data from similar materials

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

| | | |
|---|---|---|
| **IARC** | Group 1: Carcinogenic to humans | |
| | Quartz | 14808-60-7 |
| | Group 2B: Possibly carcinogenic to humans | |
| | Lead | 7439-92-1 |
| **OSHA** | OSHA specifically regulated carcinogen | |
| | Lead | 7439-92-1 |
| **NTP** | Known to be human carcinogen | |
| | Quartz | 14808-60-7 |
| | Reasonably anticipated to be a human carcinogen | |
| | Lead | 7439-92-1 |

**Reproductive toxicity**

May damage fertility or the unborn child.
May cause harm to breast-fed children.

**Ingredients:**

**Talc:**

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

**Zinc oxide:**

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 416
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development
Species: Hamster
Application Route: Ingestion
Result: negative
Remarks: Based on data from similar materials

**Calcium oxide:**

Effects on fetal development : Test Type: Embryo-fetal development
Species: Mouse
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: negative

**Dolomite:**

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

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
Remarks: Based on data from similar materials

**Calcium bis(dinonylnaphthalenesulphonate):**

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

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
Remarks: Based on data from similar materials

**Lead:**

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Mouse
Application Route: Ingestion
Result: positive
Remarks: Based on data from similar materials

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: Ingestion
Result: positive
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : Positive evidence of adverse effects on sexual function and fertility from human epidemiological studies., Positive evidence of adverse effects on development from human epidemiological studies., Studies indicating a hazard to babies during the lactation period

**STOT-single exposure**

Not classified based on available information.

**Ingredients:**

**Calcium oxide:**

Assessment: May cause respiratory irritation.

**STOT-repeated exposure**

Not classified based on available information.

**Ingredients:**

**Zinc oxide:**

Routes of exposure: inhalation (dust/mist/fume)
Assessment: No significant health effects observed in animals at concentrations of 0.2 mg/l/6h/d or less.

**12-Hydroxy lithium stearate:**

Routes of exposure: Ingestion
Assessment: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

**Quartz:**

Routes of exposure: inhalation (dust/mist/fume)
Target Organs: Lungs
Assessment: Shown to produce significant health effects in animals at concentrations of 0.02 mg/l/6h/d or less.

**Lead:**

Target Organs: Kidney, Central nervous system, Blood
Assessment: Causes damage to organs through prolonged or repeated exposure.

**Repeated dose toxicity**

**Ingredients:**

**Distillates (petroleum), hydrotreated heavy naphthenic:**
Species: Rat
NOAEL: > 0.98 mg/l
Application Route: inhalation (dust/mist/fume)
Exposure time: 28 Days
Remarks: Based on data from similar materials

**Zinc oxide:**
Species: Rat
NOAEL: 1.5 mg/m3
Application Route: inhalation (dust/mist/fume)
Exposure time: 3 Months
Method: OECD Test Guideline 413

**12-Hydroxy lithium stearate:**
Species: Rat
NOAEL: > 88 mg/kg
Application Route: Ingestion
Exposure time: 90 Days

**Dolomite:**
Species: Mouse
NOAEL: 1,300 mg/kg
Application Route: Ingestion
Exposure time: 28 Days
Remarks: Based on data from similar materials

**Calcium bis(dinonylnaphthalenesulphonate):**
Species: Rat
NOAEL: 95 mg/kg
LOAEL: 298 mg/kg
Application Route: Ingestion
Exposure time: 28 Days
Method: OECD Test Guideline 422
Remarks: Based on data from similar materials

**Quartz:**
Species: Humans
LOAEL: 0.053 mg/m3
Application Route: inhalation (dust/mist/fume)
Remarks: The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

**Lead:**
Species: Rat
NOAEL: 0.0015 mg/kg
LOAEL: 0.005 mg/kg
Application Route: Ingestion
Exposure time: 6 - 12 Months
Remarks: Based on data from similar materials

**Aspiration toxicity**

Not classified based on available information.

## SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Ingredients:**

**Distillates (petroleum), hydrotreated heavy naphthenic:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Pimephales promelas (fathead minnow)): > 100 mg/l<br>Exposure time: 96 h<br>Method: OECD Test Guideline 203<br>Remarks: Based on data from similar materials |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): > 10,000 mg/l<br>Exposure time: 48 h<br>Remarks: Based on data from similar materials |
| Toxicity to algae | : | EC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201<br>Remarks: Based on data from similar materials |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | NOEC (Daphnia magna (Water flea)): 10 mg/l<br>Exposure time: 21 d<br>Remarks: Based on data from similar materials |
| Toxicity to bacteria | : | NOEC: > 1.93 mg/l<br>Exposure time: 10 min<br>Remarks: Based on data from similar materials |

**Talc:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Brachydanio rerio (zebrafish)): > 100,000 mg/l<br>Exposure time: 24 h |

**Zinc oxide:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Oncorhynchus mykiss (rainbow trout)): 330 - 780 µg/l<br>Exposure time: 96 h<br>Remarks: Based on data from similar materials |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): 6.9 - 16.2 mg/l<br>Exposure time: 48 h<br>Method: OECD Test Guideline 202 |
| Toxicity to algae | : | EC50 (Selenastrum capricornutum (green algae)): 136 µg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201<br><br>NOEC (Selenastrum capricornutum (green algae)): 24 µg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201 |
| M-Factor (Acute aquatic tox- | : | 1 |

icity)

| | | |
|---|---|---|
| Toxicity to fish (Chronic toxicity) | : | NOEC (Oncorhynchus mykiss (rainbow trout)): 199 µg/l<br>Exposure time: 30 d<br>Remarks: Based on data from similar materials |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | NOEC (Daphnia magna (Water flea)): 37 µg/l<br>Exposure time: 21 d<br>Remarks: Based on data from similar materials |
| M-Factor (Chronic aquatic toxicity) | : | 1 |
| Toxicity to bacteria | : | EC50: 5.2 mg/l<br>Exposure time: 3 h<br>Method: OECD Test Guideline 209<br>Remarks: Based on data from similar materials |

**Calcium oxide:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Gasterosteus aculeatus (threespine stickleback)): 457 mg/l<br>Exposure time: 96 h<br>Remarks: Based on data from similar materials |
| Toxicity to daphnia and other aquatic invertebrates | : | LC50: 158 mg/l<br>Exposure time: 96 h<br>Remarks: Based on data from similar materials |
| Toxicity to algae | : | EC50 (Pseudokirchneriella subcapitata (green algae)): 184.57 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201<br>Remarks: Based on data from similar materials<br><br>NOEC (Pseudokirchneriella subcapitata (green algae)): 48 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201<br>Remarks: Based on data from similar materials |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | NOEC: 32 mg/l<br>Exposure time: 12 d<br>Remarks: Based on data from similar materials |
| Toxicity to bacteria | : | EC50: 300.4 mg/l<br>Exposure time: 3 h<br>Method: OECD Test Guideline 209<br>Remarks: Based on data from similar materials |

**12-Hydroxy lithium stearate:**

| | | |
|---|---|---|
| Toxicity to fish | : | LL50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l<br>Exposure time: 96 h<br>Method: OECD Test Guideline 203 |
| Toxicity to daphnia and other | : | EL50 (Daphnia magna (Water flea)): > 100 mg/l |

| | | |
|---|---|---|
| aquatic invertebrates | | Exposure time: 48 h<br>Method: OECD Test Guideline 202 |
| Toxicity to algae | : | NOELR (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201 |

**Dolomite:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Oncorhynchus mykiss (rainbow trout)): > 16.6 mg/l<br>Exposure time: 96 h<br>Method: OECD Test Guideline 203<br>Remarks: No toxicity at the limit of solubility.<br>Based on data from similar materials |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): > 16.6 mg/l<br>Exposure time: 48 h<br>Method: OECD Test Guideline 202<br>Remarks: No toxicity at the limit of solubility.<br>Based on data from similar materials |
| Toxicity to algae | : | NOEC (Desmodesmus subspicatus (green algae)): 14 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201<br>Remarks: Based on data from similar materials |

**Calcium bis(dinonylnaphthalenesulphonate):**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Cyprinus carpio (Carp)): > 0.28 mg/l<br>Exposure time: 96 h<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 203<br>Remarks: No toxicity at the limit of solubility.<br>Based on data from similar materials |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): > 0.18 mg/l<br>Exposure time: 48 h<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 202<br>Remarks: Based on data from similar materials |
| Toxicity to bacteria | : | EC50: 560 mg/l<br>Exposure time: 3 h<br>Method: OECD Test Guideline 209<br>Remarks: Based on data from similar materials |

**Quartz:**

Ecotoxicology Assessment

| | | |
|---|---|---|
| Acute aquatic toxicity | : | No toxicity at the limit of solubility. |
| Chronic aquatic toxicity | : | No toxicity at the limit of solubility. |

**Lead:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Oncorhynchus mykiss (rainbow trout)): 0.107 mg/l<br>Exposure time: 96 h |

| | | |
|---|---|---|
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Ceriodaphnia dubia (water flea)): 0.029 mg/l<br>Exposure time: 48 h |
| Toxicity to algae | : | ErC50 (Pseudokirchneriella subcapitata (green algae)): 0.025 mg/l<br>Exposure time: 72 h<br><br>EC10 (Pseudokirchneriella subcapitata (green algae)): 6.1 µg/l<br>Exposure time: 72 h |
| M-Factor (Acute aquatic toxicity) | : | 10 |
| Toxicity to fish (Chronic toxicity) | : | EC10 (Pimephales promelas (fathead minnow)): 20 µg/l<br>Exposure time: 30 d |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | EC10 (Ceriodaphnia dubia (water flea)): 1.7 µg/l<br>Exposure time: 7 d |
| M-Factor (Chronic aquatic toxicity) | : | 10 |

**Persistence and degradability**

**Ingredients:**

**Distillates (petroleum), hydrotreated heavy naphthenic:**

| | | |
|---|---|---|
| Biodegradability | : | Result: Not readily biodegradable.<br>Biodegradation: 2 - 4 %<br>Exposure time: 28 d<br>Method: OECD Test Guideline 301B |

**12-Hydroxy lithium stearate:**

| | | |
|---|---|---|
| Biodegradability | : | Result: Readily biodegradable.<br>Biodegradation: 78 %<br>Exposure time: 28 d<br>Method: OECD Test Guideline 301C |

**Calcium bis(dinonylnaphthalenesulphonate):**

| | | |
|---|---|---|
| Biodegradability | : | Result: Not readily biodegradable.<br>Biodegradation: 17 %<br>Exposure time: 28 d<br>Method: OECD Test Guideline 301B<br>Remarks: Based on data from similar materials |

**Bioaccumulative potential**

**Ingredients:**

**Zinc oxide:**

| | | |
|---|---|---|
| Bioaccumulation | : | Species: Fish<br>Bioconcentration factor (BCF): 177 |

**Mobility in soil**

No data available

**Other adverse effects**

No data available

## SECTION 13. DISPOSAL CONSIDERATIONS

**Disposal methods**

| | | |
|---|---|---|
| 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.<br>If not otherwise specified: Dispose of as unused product. |

## SECTION 14. TRANSPORT INFORMATION

**International Regulation**

**UNRTDG**

| | | |
|---|---|---|
| UN number | : | UN 3077 |
| Proper shipping name | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.<br>(Zinc, Zinc oxide) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | 9 |

**IATA-DGR**

| | | |
|---|---|---|
| UN/ID No. | : | UN 3077 |
| Proper shipping name | : | Environmentally hazardous substance, solid, n.o.s.<br>(Zinc, Zinc oxide) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | Miscellaneous |
| Packing instruction (cargo aircraft) | : | 956 |
| Packing instruction (passenger aircraft) | : | 956 |

**IMDG-Code**

| | | |
|---|---|---|
| UN number | : | UN 3077 |
| Proper shipping name | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.<br>(Zinc, Zinc oxide) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | 9 |
| EmS Code | : | F-A, S-F |
| Marine pollutant | : | yes |

**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 3077 |
| Proper shipping name | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.<br>(Zinc, Zinc oxide) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | CLASS 9 |
| ERG Code | : | 171 |
| Marine pollutant | : | yes (Zinc, Zinc oxide) |
| Remarks | : | Above applies only to containers over 119 gallons or 450 liters. |

## 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) |
|---|---|---|---|
| Cadmium | 7440-43-9 | 10 | 28571 |
| Zinc | 7440-66-6 | 1000 | 2000 |
| Lead | 7439-92-1 | 10 | 10000 |

**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
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:

| | | |
|---|---|---|
| Zinc | 7440-66-6 | 50 % |
| Zinc oxide | 1314-13-2 | 3 % |
| Lead | 7439-92-1 | 0.1 % |

**US State Regulations**

**Pennsylvania Right To Know**

| | | |
|---|---|---|
| Zinc | 7440-66-6 | 50 - 70 % |

| | | |
|---|---|---|
| Distillates (petroleum), hydrotreated heavy naphthenic | 64742-52-5 | 30 - 50 % |
| Talc | 14807-96-6 | 5 - 10 % |
| Zinc oxide | 1314-13-2 | 1 - 5 % |
| Calcium oxide | 1305-78-8 | 1 - 5 % |
| Lead | 7439-92-1 | 0.1 - 1 % |
| Cadmium | 7440-43-9 | 0 - 0.1 % |
| Distillates (petroleum), solvent-dewaxed heavy paraffinic | 64742-65-0 | 0 - 0.1 % |
| Distillates (petroleum), hydrotreated heavy paraffinic | 64742-54-7 | 0 - 0.1 % |
| Distillates (petroleum), solvent-refined light paraffinic | 64741-89-5 | 0 - 0.1 % |
| Copper metal powder | 7440-50-8 | 0 - 0.1 % |

**New Jersey Right To Know**

| | | |
|---|---|---|
| Zinc | 7440-66-6 | 50 - 70 % |
| Distillates (petroleum), hydrotreated heavy naphthenic | 64742-52-5 | 30 - 50 % |
| Talc | 14807-96-6 | 5 - 10 % |
| Zinc oxide | 1314-13-2 | 1 - 5 % |
| Calcium oxide | 1305-78-8 | 1 - 5 % |
| Quartz | 14808-60-7 | 0.1 - 1 % |
| Lead | 7439-92-1 | 0.1 - 1 % |

**California Prop. 65**

WARNING! This product contains a chemical known in the State of California to cause cancer.

| | |
|---|---|
| Quartz | 14808-60-7 |
| Lead | 7439-92-1 |
| Cadmium | 7440-43-9 |

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

| | |
|---|---|
| Lead | 7439-92-1 |
| Cadmium | 7440-43-9 |

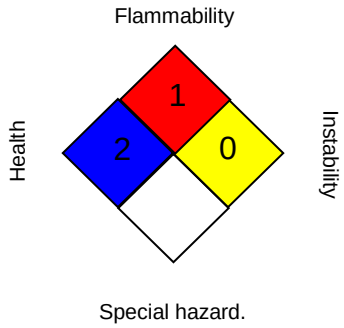
**The ingredients of this product are reported in the following inventories:**

| | | |
|---|---|---|
| DSL | : | All components of this product are on the Canadian DSL |
| TSCA | : | All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances. |
| AICS | : | All ingredients listed or exempt. |

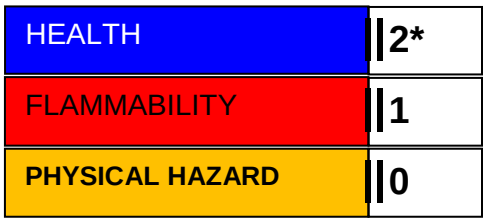
## SECTION 16. OTHER INFORMATION

### Further information

**NFPA:**




**HMIS III:**




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 CARC | : | OSHA Specifically Regulated Chemicals/Carcinogens |
| 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 CARC / PEL | : | Permissible exposure limit (PEL) |
| 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 - Interna-

tional 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

| | | |
|---|---|---|
| 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 | : | 12/21/2015 |

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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