



# Substrate Bonder Safety Data Sheet (SDS)

Issued: February 25, 2023  
Revision: 2

## SECTION 1: Identification

### 1.1. Identification

Product form : Mixture  
Product name : Substrate Bonder  
Product code : SUB100

### 1.2. Recommended use and restrictions on use

Recommended use : Adhesives, sealants  
Restrictions on use : No additional information available

### 1.3. Supplier

Direct Supply Inc.  
1055 36<sup>th</sup> Street SE  
Grand Rapids, MI 49508  
Phone: 616-245-4415  
Email: sales@directsupplyinc.com  
dutchlockadhesives.com  
Emergency telephone number

**In Case of Emergency Contact CHEMTREC: 800-424-9300 (USA)  
703-527-3887 (INTERNATIONAL)**

## SECTION 2: Hazard(s) identification

### 2.1. Classification of the substance or mixture

#### GHS classification

|  |   |
|--|---|
| Skin corrosion/irritation, Category 2                          | H315 Causes skin irritation.  |
| Serious eye damage/eye irritation, Category 2A                 | H319 Causes serious eye irritation.   |
| Respiratory sensitisation, Category 1                          | H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| Skin sensitisation, Category 1                                 | H317 May cause an allergic skin reaction.                                       |
| Carcinogenicity, Category 2                                    | H351 Suspected of causing cancer.   |
| Specific target organ toxicity — Repeated exposure, Category 2 | H373 May cause damage to organs through prolonged or repeated exposure.         |

Full text of H statements see section 16

### 2.2. GHS Label elements, including precautionary statements

#### GHS-US labelling

Hazard pictograms (GHS) :



Signal word (GHS) :

Danger

Hazard statements (GHS US) :

H315 - Causes skin irritation.  
H317 - May cause an allergic skin reaction.  
H319 - Causes serious eye irritation.  
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H351 - Suspected of causing cancer.  
H373 - May cause damage to organs through prolonged or repeated exposure.

Precautionary statements (GHS) :

P201 - Obtain special instructions before use.  
P202 - Do not handle until all safety precautions have been read and understood.  
P260 - Do not breathe mist, spray, vapours.  
P261 - Avoid breathing mist, spray, vapours.  
P264 - Wash hands, forearms and face thoroughly after handling.  
P272 - Contaminated work clothing must not be allowed out of the workplace.  
P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
P284 - [In case of inadequate ventilation] wear respiratory protection.  
P302+P352 - If on skin: Wash with plenty of water.  
P304+P341 - If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.  
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.  
P314 - Get medical advice/attention if you feel unwell.  
P321 - Specific treatment (see supplemental first aid instruction on this label).

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P332+P313 - If skin irritation occurs: Get medical advice/attention.  
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.  
P337+P313 - If eye irritation persists: Get medical advice/attention.  
P342+P311 - If experiencing respiratory symptoms: Call a poison center or doctor.  
P362+P364 - Take off contaminated clothing and wash it before reuse.  
P363 - Wash contaminated clothing before reuse.  
P405 - Store locked up.  
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

### 2.3. Other hazards which do not result in classification

No additional information available

### 2.4. Unknown acute toxicity (GHS\_US)

9.41% of the mixture consists of ingredient(s) of unknown acute toxicity (Inhalation (Dust/Mist))

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

| Name  | Product identifier  | %         | GHS classification  |
|---|---------------------|-----------|---|
| 4,4'Methylene bisphenyl isocyanate          | (CAS-No.) 101-68-8  | 5 - 15    | Acute Tox. 4 (Inhalation), H332<br>Skin Irrit. 2, H315<br>Eye Irrit. 2A, H319<br>Resp. Sens. 1, H334<br>Skin Sens. 1, H317<br>Carc. 2, H351<br>STOT SE 3, H335<br>STOT RE 2, H373 |
| Hydroxy terminated poly(oxyalkyated) polyol | (CAS-No.) 102-60-3  | 1 - 10    | Eye Irrit. 2A, H319   |
| Polyoxypropylenediamine AC3                 | (CAS-No.) 9046-10-0 | 0.5 - 1.5 | Skin Corr. 1C, H314<br>Eye Dam. 1, H318<br>Aquatic Chronic 3, H412  |

\*Chemical name, CAS number and/or exact concentration have been withheld as a trade secret

Full text of hazard classes and H-statements : see section 16

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a poison center or a doctor.

First-aid measures after skin contact : Wash skin thoroughly with mild soap and water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Get medical advice/attention if you feel unwell.

### 4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : May cause damage to organs through prolonged or repeated exposure. Suspected of causing cancer.

Symptoms/effects after inhalation : May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Symptoms/effects after skin contact : Causes skin irritation. May cause an allergic skin reaction.

Symptoms/effects after eye contact : Causes serious eye irritation.

### 4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

## SECTION 5: Fire-fighting measures

### 5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.

Unsuitable extinguishing media : Do not use a heavy water stream.

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### 5.2. Specific hazards arising from the chemical

- Fire hazard : Burning produces irritating, toxic and noxious fumes.  
Explosion hazard : Heat may build pressure, rupturing closed containers.  
Reactivity : No dangerous reactions known.

### 5.3. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire fighting water from entering the environment.  
Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Wear a self contained breathing apparatus. Wear fire/flame resistant/retardant clothing.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Do not get in eyes, on skin, or on clothing. Do not breathe vapour. Ensure adequate ventilation. No open flames. No smoking. Remove ignition sources. Use personal protective equipment as required.

#### 6.1.1. For non-emergency personnel

- Protective equipment : Refer to section 8.2.  
Emergency procedures : Evacuate unnecessary personnel.

#### 6.1.2. For emergency responders

- Protective equipment : Refer to section 8.2.  
Emergency procedures : Ventilate area.

### 6.2. Environmental precautions

- Prevent entry to sewers and public waters.

### 6.3. Methods and material for containment and cleaning up

- For containment : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.  
Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

### 6.4. Reference to other sections

- See Heading 8. Exposure controls and personal protection.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Do not breathe vapours. Do not get in eyes, on skin, or on clothing.  
Hygiene measures : Take off contaminated clothing and wash before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product.

### 7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep only in the original container in a cool well ventilated place. Keep container tightly closed.  
Incompatible products : Strong bases. Strong acids. Strong oxidizers. Water. alcohols. Amides. Phenols. Metal compounds. Mercaptans. zinc.  
Incompatible materials : Sources of ignition. Direct sunlight.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

| 4,4'Methylene bisphenyl isocyanate (101-68-8) |                                |                                      |
|---|--------------------------------|--------------------------------------|
| ACGIH   | Local name                     | Methylene bisphenyl isocyanate (MDI) |
| ACGIH   | ACGIH TWA (mg/m <sup>3</sup> ) | 0.051 mg/m <sup>3</sup>              |
| ACGIH   | ACGIH TWA (ppm)                | 0.005 ppm                            |
| ACGIH   | Remark (ACGIH)                 | TLV® Basis: Resp sens                |

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### 4,4'Methylene bisphenyl isocyanate (101-68-8)

| ACGIH | Regulatory reference                     | ACGIH 2020               |
|-------|--|--------------------------|
| OSHA  | OSHA PEL (Ceiling) (mg/m <sup>3</sup> )  | 0.2 mg/m <sup>3</sup>    |
| OSHA  | OSHA PEL (Ceiling) [ppm]                 | 0.02 ppm                 |
| OSHA  | Regulatory reference (US-OSHA)           | OSHA Annotated Table Z-1 |
| IDLH  | US IDLH (mg/m <sup>3</sup> )             | 75 mg/m <sup>3</sup>     |
| NIOSH | NIOSH REL (TWA) (mg/m <sup>3</sup> )     | 0.05 mg/m <sup>3</sup>   |
| NIOSH | NIOSH REL (TWA) [ppm]                    | 0.005 ppm                |
| NIOSH | NIOSH REL (ceiling) (mg/m <sup>3</sup> ) | 0.2 mg/m <sup>3</sup>    |
| NIOSH | NIOSH REL (Ceiling) [ppm]                | 0.02 ppm                 |

### Hydroxy terminated poly(oxylalkyated) polyol (102-60-3)

Not applicable

### Polyoxypropylenediamine AC3 (9046-10-0)

Not applicable

## 8.2. Appropriate engineering controls

Appropriate engineering controls : Avoid creating mist or spray. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use only in well ventilated areas.  
Environmental exposure controls : Avoid release to the environment. Prevent leakage or spillage.

## 8.3. Individual protection measures/Personal protective equipment

### Personal protective equipment:

Avoid all unnecessary exposure.

#### Hand protection:

Wear suitable gloves resistant to chemical penetration. Latex gloves. Chloroprene rubber. Breakthrough time is > 480 minutes. Nitrile rubber. Breakthrough time: 60 min

#### Eye protection:

Chemical goggles or safety glasses

#### Skin and body protection:

Wear suitable protective clothing

#### Respiratory protection:

In case of inadequate ventilation wear respiratory protection. If excessive exposure exists, use only approved air-purifying or supplied air respirator operated in a positive pressure mode

### Other information:

Do not eat, drink or smoke during use.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state : Liquid  
Appearance : Viscous.  
Colour : straw  
Odour : Solvent  
Odour threshold : No data available  
pH : No data available  
Melting point : No data available  
Freezing point : No data available  
Boiling point : No data available  
Flash point : No data available

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|  |                     |
|--|---------------------|
| Relative evaporation rate (butylacetate=1) | : No data available |
| Flammability (solid, gas)                  | : Non flammable.    |
| Vapour pressure                            | : No data available |
| Relative vapour density at 20 °C           | : No data available |
| Relative density                           | : No data available |
| Solubility                                 | : No data available |
| Log Pow                                    | : No data available |
| Auto-ignition temperature                  | : No data available |
| Decomposition temperature                  | : No data available |
| Viscosity, kinematic                       | : No data available |
| Viscosity, dynamic                         | : No data available |
| Explosive limits                           | : No data available |
| Explosive properties                       | : No data available |
| Oxidising properties                       | : No data available |

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No dangerous reactions known.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

### 10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

### 10.5. Incompatible materials

Strong acids. Strong bases. Strong oxidizers. Water. alcohols. Amides. Phenols. Metal compounds. Mercaptans. zinc.

### 10.6. Hazardous decomposition products

Carbon monoxide. Carbon dioxide. Nitrogen oxides.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Not classified

|  |   |
|--|---|
| Unknown acute toxicity (GHS_US)                                | 9.41% of the mixture consists of ingredient(s) of unknown acute toxicity (Inhalation (Dust/Mist)) |
| <b>4,4'Methylene bisphenyl isocyanate (101-68-8)</b>           |   |
| LD50 oral rat  | > 10000 mg/kg   |
| LD50 dermal rat  | > 9400 mg/kg  |
| ATE (gases)  | 4500 ppmv/4h  |
| ATE (vapours)  | 11 mg/l/4h  |
| ATE (dust,mist)  | 1.5 mg/l/4h   |
| <b>Hydroxy terminated poly(oxylalkyated) polyol (102-60-3)</b> |   |
| LD50 oral rat  | 2890 mg/kg bodyweight   |
| LD50 dermal rat  | > 2000 mg/kg bodyweight   |
| ATE (oral)   | 2890 mg/kg bodyweight   |
| <b>Polyoxypropylenediamine AC3 (9046-10-0)</b>                 |   |
| LD50 oral rat  | 2885 mg/kg  |
| LD50 dermal rabbit   | 2980 mg/kg  |

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### Polyoxypropylenediamine AC3 (9046-10-0)

|                       |                       |
|-----------------------|-----------------------|
| LC50 Inhalation - Rat | > 0.74 mg/l/4h        |
| ATE (oral)            | 2885 mg/kg bodyweight |
| ATE (dermal)          | 2980 mg/kg bodyweight |

|                                   |   |
|-----------------------------------|---|
| Skin corrosion/irritation         | : Causes skin irritation.   |
| Serious eye damage/irritation     | : Causes serious eye irritation.  |
| Respiratory or skin sensitisation | : May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. |
| Germ cell mutagenicity            | : Not classified  |
| Carcinogenicity                   | : Suspected of causing cancer.  |

### 4,4'Methylene bisphenyl isocyanate (101-68-8)

|            |                      |
|------------|----------------------|
| IARC group | 3 - Not classifiable |
|------------|----------------------|

|                       |                  |
|-----------------------|------------------|
| Reproductive toxicity | : Not classified |
| STOT-single exposure  | : Not classified |

### 4,4'Methylene bisphenyl isocyanate (101-68-8)

|                      |                                   |
|----------------------|-----------------------------------|
| STOT-single exposure | May cause respiratory irritation. |
|----------------------|-----------------------------------|

|                        |  |
|------------------------|--|
| STOT-repeated exposure | : May cause damage to organs through prolonged or repeated exposure. |
|------------------------|--|

### 4,4'Methylene bisphenyl isocyanate (101-68-8)

|                        |  |
|------------------------|--|
| STOT-repeated exposure | May cause damage to organs through prolonged or repeated exposure. |
|------------------------|--|

|                                     |   |
|-------------------------------------|---|
| Aspiration hazard                   | : Not classified  |
| Viscosity, kinematic                | : No data available   |
| Likely routes of exposure           | : Inhalation. Skin and eye contact.   |
| Symptoms/effects                    | : May cause damage to organs through prolonged or repeated exposure. Suspected of causing cancer. |
| Symptoms/effects after inhalation   | : May cause allergy or asthma symptoms or breathing difficulties if inhaled.                      |
| Symptoms/effects after skin contact | : Causes skin irritation. May cause an allergic skin reaction.                                    |
| Symptoms/effects after eye contact  | : Causes serious eye irritation.  |

## SECTION 12: Ecological information

### 12.1. Toxicity

#### 4,4'Methylene bisphenyl isocyanate (101-68-8)

|                        |           |
|------------------------|-----------|
| LC50 fish 1            | 1000 mg/l |
| EC50 crustacea         | 1000 mg/l |
| NOEC chronic crustacea | 10 mg/l   |
| NOEC chronic algae     | 1640 mg/l |

#### Polyoxypropylenediamine AC3 (9046-10-0)

|                |           |
|----------------|-----------|
| LC50 fish 1    | > 15 mg/l |
| EC50 crustacea | 80 mg/l   |

### 12.2. Persistence and degradability

#### Polyoxypropylenediamine AC3 (9046-10-0)

|                |     |
|----------------|-----|
| Biodegradation | 0 % |
|----------------|-----|

### 12.3. Bioaccumulative potential

#### Substrate Bonder

|                           |                  |
|---------------------------|------------------|
| Bioaccumulative potential | Not established. |
|---------------------------|------------------|

#### 4,4'Methylene bisphenyl isocyanate (101-68-8)

|            |     |
|------------|-----|
| BCF fish 1 | 200 |
|------------|-----|

#### Polyoxypropylenediamine AC3 (9046-10-0)

|         |      |
|---------|------|
| Log Pow | 1.34 |
|---------|------|

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## 12.4. Mobility in soil

### Substrate Bonder

|                |                  |
|----------------|------------------|
| Ecology - soil | Not established. |
|----------------|------------------|

## 12.5. Other adverse effects

Other information : Avoid release to the environment.

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Sewage disposal recommendations : Do not dispose of waste into sewer.  
Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.  
Ecology - waste materials : Avoid release to the environment.

## SECTION 14: Transport information

### Department of Transportation (DOT)

In accordance with DOT

Not regulated.

### Transport by sea

Not regulated.

### Air transport

Not regulated.

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

#### 4,4'Methylene bisphenyl isocyanate (101-68-8)

Subject to reporting requirements of United States SARA Section 313

Listed on EPA Hazardous Air Pollutant (HAPS)

Listed on EPA Hazardous Air Pollutant (HAPS)

|           |         |
|-----------|---------|
| CERCLA RQ | 5000 lb |
|-----------|---------|

#### Polyoxypropylenediamine AC3 (9046-10-0)

|                          |   |
|--------------------------|---|
| EPA TSCA Regulatory Flag | XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711). |
|--------------------------|---|

### 15.2. International regulations

#### CANADA

#### 4,4'Methylene bisphenyl isocyanate (101-68-8)

Listed on the Canadian DSL (Domestic Substances List) inventory.

#### Hydroxy terminated poly(oxylalkyated) polyol (102-60-3)

Listed on the Canadian DSL (Domestic Substances List) inventory.

#### Polyoxypropylenediamine AC3 (9046-10-0)

Listed on the Canadian DSL (Domestic Substances List) inventory.

#### EU-Regulations

#### 4,4'Methylene bisphenyl isocyanate (101-68-8)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

#### Hydroxy terminated poly(oxylalkyated) polyol (102-60-3)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

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### Polyoxypropylenediamine AC3 (9046-10-0)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

### National regulations

#### 4,4'Methylene bisphenyl isocyanate (101-68-8)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Chinese Catalog of Hazardous Chemicals.  
Listed on the AICS (Australian Inventory of Chemical Substances)  
CSCL: Japanese Chemical Substances Control Law  
Listed on KECL/KECI (Korean Existing Chemicals Inventory)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Mexico - National Inventory of Chemical Substances  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

#### Hydroxy terminated poly(oxyalkyated) polyol (102-60-3)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on KECL/KECI (Korean Existing Chemicals Inventory)  
Listed on Taiwan National Chemical Inventory  
Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on NZIoC (New Zealand Inventory of Chemicals)

#### Polyoxypropylenediamine AC3 (9046-10-0)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Exempt from the United States Toxic Substances Control Act (TSCA) inventory.  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on Taiwan National Chemical Inventory  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on KECL/KECI (Korean Existing Chemicals Inventory)

### 15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm.

| Component                                    | State or local regulations  |
|--|---|
| 4,4'Methylene bisphenyl isocyanate(101-68-8) | U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities; U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations; U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List |

## SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : February 25, 2023  
Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. European Chemicals Agency (ECHA) C&L Inventory database. Accessed at <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>.  
Kristen Forsberg and S.Z. Mansdorf, "Quick Selection Guide to Chemical Protective Clothing", Fifth Edition. National Fire Protection Association. Fire Protection Guide to Hazardous Materials; 10th edition. Manufacturer Information. United Nations Economic Commission for Europe: About the GHS. Accessed at [http://www.unece.org/trans/danger/publi/ghs/ghs\\_welcome\\_e.html](http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html).  
Other information : None.

### Full text of H-statements:

|      |  |
|------|--|
| H314 | Causes severe skin burns and eye damage. |
| H315 | Causes skin irritation.                  |
| H317 | May cause an allergic skin reaction.     |
| H318 | Causes serious eye damage.               |



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|      |  |
|------|--|
| H319 | Causes serious eye irritation.   |
| H332 | Harmful if inhaled.  |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H335 | May cause respiratory irritation.  |
| H351 | Suspected of causing cancer.   |
| H373 | May cause damage to organs through prolonged or repeated exposure.         |
| H412 | Harmful to aquatic life with long lasting effects.                         |

## Abbreviations and acronyms:

|      |   |
|------|---|
|      | ATE: Acute Toxicity Estimate  |
|      | CAS (Chemical Abstracts Service) number   |
|      | CLP: Classification, Labelling, Packaging.  |
|      | EC50: Environmental Concentration associated with a response by 50% of the test population. |
|      | GHS: Globally Harmonized System (of Classification and Labeling of Chemicals).              |
|      | European List of Waste (LoW) code   |
|      | LD50: Lethal Dose for 50% of the test population  |
|      | TWA: Time Weighted Average  |
|      | STEL: Short Term Exposure Limits  |
|      | PBT: Persistent, Bioaccumulative, Toxic   |
|      | WEL: Workplace Exposure Limit   |
| vPvB | Very Persistent and Very Bioaccumulative  |

NFPA health hazard

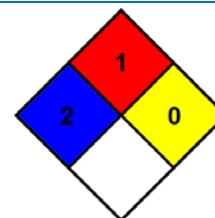
: 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

NFPA fire hazard

: 1 - Materials that must be preheated before ignition can occur.

NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions, and not reactive with water.



Indication of changes:

Regulatory information.

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*