

## TriCure 11C421N

|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| <b>Product Name:</b>  | TriCure 11C421N<br>1060813 Rev.1                          |
| <b>Revision Date:</b> | 28-Aug-2019<br>According to Regulation (EC) No. 1907/2006 |

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product Identifier

|                                |                             |
|--------------------------------|-----------------------------|
| <b>Product Name:</b>           | TriCure 11C421N             |
| <b>Chemical Name:</b>          | Unsaturated Polyester Resin |
| <b>Pure Substance/Mixture:</b> | Mixture                     |

#### 1.2. Product relevant identified uses of the substance or mixture and uses advised against

##### 1.2.1. Relevant Identified Uses

Resins for composites. Contact us before using for food contact application.

#### 1.3. Details of the supplier of the safety data sheet

##### Tricel Composites (GB) Limited

Unit A, Foxway,  
Off Atkinson Street,  
Leeds, West Yorkshire,  
LS10 1PS.  
Tel: +44 (0)113 270 3133

##### Tricel Composites (NI) Limited

Unit 4, Milltown Ind. Estate, Greenan  
Road. Warrenpoint, Newry  
Co. Down,  
BT34 3FN.  
Tel: +44 (0)284 175 3738

## 1.4. Emergency Telephone Number

**Emergency medical information:** 8am-10pm (seven days) contact National Poisons Information Centre, Beaumont Hospital, Dublin 9 DOV2NO, Ireland.

Telephone Number: +353 (0)1 809 2166

|                          |                          |
|--------------------------|--------------------------|
| <b>Leeds:</b>            | <b>Newry:</b>            |
| Tel: +44 (0)113 270 3133 | Tel: +44 (0)284 175 3738 |

### 1.4.1. Poison Information Centre Telephone Number

**European** emergency phone number: 112

**UK:** National Poisons Emergency Number : 0344 892 0111

**Ireland:** National Poisons Information Centre (NPIC) Telephone Healthcare Professionals : +353 (01) 809 2566. (24 hour service) Telephone Members of Public: +353 (01) 809 2166. (8.00 a.m. to 10.00 p.m. 7 days a week)

## 2. Hazards Identification

### 2.1. Classification of the substance or mixture

Classification of the substance or mixture - GHS/CLP (n° 1272/2008)

|                                                    |            |
|----------------------------------------------------|------------|
| Skin Corrosion/Irritation                          | Category 2 |
| Serious Eye Damage/Eye Irritation                  | Category 2 |
| Reproductive Toxicity                              | Category 2 |
| Specific Target Organ Toxicity (Single Exposure)   | Category 3 |
| Specific target organ toxicity - repeated exposure | Category 1 |
| Chronic Aquatic Toxicity                           | Category 3 |
| Flammable liquids                                  | Category 3 |

## 2.2. Label elements

Contains Styrene

### Hazard Pictograms (CLP)



**Signal Word (CLP):** Danger

### 2.2.1. Hazard Statements (CLP)

- H315 - Causes skin irritation.
- H319 - Causes serious eye irritation.
- H335 - May cause respiratory irritation.
- H361d - Suspected of damaging the unborn child.
- H372 - Causes damage to organs (hearing organs) through prolonged or repeated exposure (inhalation).
- H412 - Harmful to aquatic life with long lasting effects.

### Precautionary Statements (CLP)

H226 - Flammable liquid and vapour.

### 2.2.2. EU H -Phrases

- EUH208 Contains phthalic anhydride, cobalt octoate - May produce an allergic reaction

### 2.2.3. Precautionary Statements

- P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
- P243 - Take action to prevent static discharges
- P260 - Do not breathe vapour
- P273 - Avoid release to the environment
- P280 - Wear protective gloves/protective clothing/eye protection/face protection

- P302 + P352 – IF ON SKIN: Wash with plenty of soap and water
- P304 + P340 – IF INHALED: 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
- P403 + P233 – Store in a well-ventilated place. Keep container tightly closed

## 2.3. Other Hazards

PBT/vPvB see section 12.5.

## 3. Composition/Information on Ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

| Chemical Name      | EC-No     | REACH Registration Number | CAS-No   | Weight percent | GHS Classification                                                                                                                                                             |
|--------------------|-----------|---------------------------|----------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Styrene            | 202-851-5 | 01-2119457861-32          | 100-42-5 | ~ 41           | Flam. Liq. 3 (H226) Repr. 2 (H361d) Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Asp. Tox. 1 (H304) STOT SE 3 (H335) STOT RE 1 (H372) Aquatic Chronic 3 (H412) |
| phthalic anhydride | 201-607-5 | 01-2119457017-41          | 85-44-9  | 0.1 - < 1      | Acute Tox. 4 (H302) Skin                                                                                                                                                       |

|                                                         |           |                          |             |              |                                                                                                                                    |
|---------------------------------------------------------|-----------|--------------------------|-------------|--------------|------------------------------------------------------------------------------------------------------------------------------------|
|                                                         |           |                          |             |              | Irrit. 2 (H315)<br>Skin Sens. 1<br>(H317) Eye<br>Dam. 1 (H318)<br>Resp. Sens. 1<br>(H334) STOT<br>SE 3 (H335)                      |
| propane-1,2-<br>diol                                    | 200-338-0 | 01-<br>2119456809-<br>23 | 57-55-6     | < 1          | -                                                                                                                                  |
| Silica,<br>amorphous,<br>fumed,<br>crystalline-<br>free | 231-545-4 | 01-<br>2119379499-<br>16 | 112945-52-5 | < 1          | -                                                                                                                                  |
| cobalt<br>octoate                                       | 205-250-6 | 01-<br>2119524678-<br>29 | 136-52-7    | 0.01 - < 0.1 | Skin Sens. 1A<br>(H317) Eye Irrit.<br>2 (H319) Repr.<br>1B (H360Fd)<br>Aquatic Acute<br>1 (H400)<br>Aquatic<br>Chronic 3<br>(H412) |

Full text of H- and EUH-statements: see section 16

## 4. First Aid Measures

### 4.1. Description of First Aid Measures

**General Advice:** Show this safety data sheet to the doctor in attendance

Do not breathe dust/fume/gas/mist/vapours/spray

**Eye Contact:** Rinse thoroughly with plenty of water, also under the eyelids.

Keep eye wide open while rinsing.

If symptoms persist, call a physician

**Skin Contact:** Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes

If skin irritation persists, call a physician

**Inhalation:** Move to fresh air  
If not breathing, give artificial respiration  
Consult a physician

**Ingestion:** Do NOT induce vomiting  
Rinse mouth.  
Consult a physician

**Protection of first-aiders:**  
Use personal protective equipment

See section 8 for more information

## **4.2. Most important symptoms and effects, both acute and delayed**

**Eye Contact:** Irritating to eyes

**Skin Contact:** Irritating to skin  
May produce an allergic reaction.

**Inhalation:** Harmful: danger of serious damage to health by prolonged exposure through inhalation.  
Irritating to respiratory system.  
May produce an allergic reaction.

**Ingestion:** Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

## **4.3. Indication of any immediate medical attention and special treatment needed.**

**Notes to physician:** No information available

## 5. Firefighting Measures

### 5.1. Extinguishing media

**Suitable Extinguishing Media:** Dry chemical, Foam, Carbon dioxide (CO<sub>2</sub>), (closed systems)

**Extinguishing Media Which Must not be Used for Safety Reasons:** Do not use a solid water stream as it may scatter and spread fire.

### 5.2. Special Hazards Arising from the Substance or Mixture

**Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases:** Vapours may form explosive mixtures with air. Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks)

Heating or fire can release toxic gas : Carbon monoxide

### 5.3. Advice for Firefighters

**Special protective equipment for fire-fighters:** Wear self-contained breathing apparatus and protective suit.

**Other information:** Cool containers / tanks with water spray.

Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

## 6. Accidental Release Measures

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

#### 6.1.1. For non-emergency personnel

**Personal precautions:** Remove all sources of ignition  
Heat, flames and sparks.

Take precautionary measures against static charges.

Ensure adequate ventilation  
Use personal protective equipment

## 6.1.1. For emergency responders

Avoid breathing vapours or mists In the event of fire and/or explosion do not breathe fumes. Use personal protective equipment

## 6.2. Environmental Precautions

The product should not be allowed to enter drains, water courses or the soil. Do not flush into surface water or sanitary sewer system

## 6.3. Methods and Material for Containment and Cleaning Up

**Methods for cleaning up:** Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13) Use clean non-sparking tools to collect absorbed material

## 6.4. Reference to other sections

See section 8 for more information  
See Section 12 for additional Ecological Information

# 7. Handling and Storage

## 7.1. Precautions for safe handling

### 7.1.1. Precautions for safe handling

Avoid static electricity build up with connection to earth Use only in area provided with appropriate exhaust ventilation In case of insufficient ventilation, wear suitable respiratory equipment For personal protection see section 8

## 7.1.2. Prevention of fire and explosion

Keep away from open flames, hot surfaces and sources of ignition Empty containers may contain flammable or explosive vapours

## 7.1.3. Hygiene measures

When using, do not eat, drink or smoke Wash hands before breaks and at the end of workday. Provide regular cleaning of equipment, work area and clothing

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

**Technical Measures/Storage Conditions:** Keep in a dry, cool and well-ventilated place.  
Keep at temperature not exceeding 30°C  
Keep away from heat and sources of ignition.

**Materials to avoid:** Strong oxidizing agents, Peroxides, Reducing agents

**Packaging material:** metallic GRP Tanks (Reinforced Glass Polyester)

**Unsuitable materials for containers:** copper, Copper alloys, Bronze, Zinc

## 7.3. Specific End Use(s)

No information available.

## 8. Exposure Controls/Personal Protection

### 8.1. Control Parameters

#### Occupational Exposure Limits

# MATERIAL SAFETY DATA SHEET

| Chemical Name                 | European Union | ACGIH OEL (Ceiling)                                                                                     | The United Kingdom                                                                                                                            | Ireland                                                                             |
|-------------------------------|----------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Styrene<br>100-42-5           | -              | TLV-8h TWA: 20 ppm<br>- 85<br>mg/m <sup>3</sup><br>TLV-15min STEL: 40<br>ppm -<br>170 mg/m <sup>3</sup> | STEL 250 ppm STEL<br>1080 mg/m <sup>3</sup><br>TWA 100 ppm TWA<br>430<br>mg/m <sup>3</sup>                                                    | TWA 20 ppm TWA 85<br>mg/m <sup>3</sup><br>STEL 40 ppm STEL 170<br>mg/m <sup>3</sup> |
| phthalic anhydride<br>85-44-9 |                | TWA 1 ppm                                                                                               | STEL 12 mg/m <sup>3</sup> TWA 4<br>mg/m <sup>3</sup> Sen+                                                                                     | TWA 4 mg/m <sup>3</sup> STEL 12<br>mg/m <sup>3</sup> Sensitizer                     |
| propane-1,2-diol 57-<br>55-6  |                |                                                                                                         | STEL 450 ppm STEL<br>1422 mg/m <sup>3</sup> STEL 30<br>mg/m <sup>3</sup> TWA 150 ppm<br>TWA 474 mg/m <sup>3</sup> TWA<br>10 mg/m <sup>3</sup> | TWA 150 ppm TWA<br>470<br>mg/m <sup>3</sup> TWA 10<br>mg/m <sup>3</sup>             |
| cobalt octoate 136-<br>52-7   |                | 0.02 mg/m <sup>3</sup>                                                                                  | STEL 0.3 mg/m <sup>3</sup> TWA<br>0.1<br>mg/m <sup>3</sup> Sen+                                                                               | TWA 0.1 mg/m <sup>3</sup><br>Sensitizer                                             |

## Special Hazards Arising from the Substance or Mixture

### Biological standards

### Derived No Effect Level (DNEL)

| Derived No Effect Level (DNEL)                             |           |                  |                         |        |
|------------------------------------------------------------|-----------|------------------|-------------------------|--------|
| Styrene (100-42-5)                                         |           |                  |                         |        |
| Type                                                       | DNEL oral | DNEL dermal      | DNEL inhalation         | Remark |
| Workers - Long Term -<br>Systemic effect                   |           | 406 mg/Kg bw/day | 85 mg/m <sup>3</sup>    |        |
| Workers - Acute Short<br>Term -<br>Local effect            |           |                  | 306 mg/m <sup>3</sup>   |        |
| Workers - Acute Short<br>term -<br>Systemic effect         |           |                  | 289 mg/m <sup>3</sup>   |        |
| General Population -<br>Acute<br>Short Term - Local effect |           |                  | 182.7 mg/m <sup>3</sup> |        |
| General Population -<br>Acute<br>Short Term - Systemic     |           |                  | 174.2 mg/m <sup>3</sup> |        |

# MATERIAL SAFETY DATA SHEET

|                                                  |                  |                  |                        |  |
|--------------------------------------------------|------------------|------------------|------------------------|--|
| effect                                           |                  |                  |                        |  |
| General Population - Long Term - Systemic effect | 2.1 mg/Kg bw/day | 343 mg/Kg bw/day | 10.2 mg/m <sup>3</sup> |  |

| <b>phthalic anhydride (85-44-9)</b>              |                |                 |                        |        |
|--------------------------------------------------|----------------|-----------------|------------------------|--------|
| Type                                             | DNEL oral      | DNEL dermal     | DNEL inhalation        | Remark |
| Workers - Long Term - Systemic effect            |                | 10 mg/kg bw/day | 32.2 mg/m <sup>3</sup> |        |
| General Population - Long Term - Systemic effect | 5 mg/kg bw/day | 5 mg/kg bw/day  | 8.6 mg/m <sup>3</sup>  |        |

| <b>propane-1,2-diol (57-55-6)</b>                |           |             |                       |        |
|--------------------------------------------------|-----------|-------------|-----------------------|--------|
| Type                                             | DNEL oral | DNEL dermal | DNEL inhalation       | Remark |
| Workers - Long Term - Systemic effect            |           |             | 168 mg/m <sup>3</sup> |        |
| Workers - Long Term - Local effect               |           |             | 10 mg/m <sup>3</sup>  |        |
| General Population - Long Term - Systemic effect |           |             | 50 mg/m <sup>3</sup>  |        |
| General Population - Long Term - Local effect    |           |             | 10 mg/m <sup>3</sup>  |        |

| <b>Silica, amorphous, fumed, crystalline-free (112945-52-5)</b> |           |             |                     |        |
|-----------------------------------------------------------------|-----------|-------------|---------------------|--------|
| Type                                                            | DNEL oral | DNEL dermal | DNEL inhalation     | Remark |
| Workers - Long Term - Systemic effect                           |           |             | 4 mg/m <sup>3</sup> |        |

| <b>cobalt octoate (136-52-7)</b>          |                  |             |                         |        |
|-------------------------------------------|------------------|-------------|-------------------------|--------|
| Type                                      | DNEL oral        | DNEL dermal | DNEL inhalation         | Remark |
| Workers - Long Term - Local effect        |                  |             | 235.1 µg/m <sup>3</sup> |        |
| General Population - Long Term - Systemic | 175 µg/kg bw/day |             |                         |        |

# MATERIAL SAFETY DATA SHEET

|                                                  |  |  |                      |  |
|--------------------------------------------------|--|--|----------------------|--|
| effect                                           |  |  |                      |  |
| General Population -<br>Long Term - Local effect |  |  | 37 µg/m <sup>3</sup> |  |

## Predicted No Effect Concentration (PNEC)

| PNEC Component           |               |                |
|--------------------------|---------------|----------------|
| Styrene (100-42-5)       |               |                |
| Exposure                 | Type          | PNEC           |
| Fresh water              | PNEC Aqua     | 0.028 mg/L     |
| Marine water             | PNEC Aqua     | 0.014 mg/L     |
| Intermittent use/release | PNEC Aqua     | 0.04 mg/L      |
| Fresh water              | PNEC Sediment | 0.614 mg/Kg.dw |
| Marine water             | PNEC Sediment | 0.307 mg/Kg.dw |
| Terrestrial Compartment  | PNEC Soil     | 0.2 mg/Kg.dw   |
| STP microorganisms       | PNEC STP      | 5 mg/L         |

| phthalic anhydride (85-44-9) |               |                        |
|------------------------------|---------------|------------------------|
| Exposure                     | Type          | PNEC                   |
| Fresh water                  | PNEC Aqua     | 1 mg/L                 |
| Marine water                 | PNEC Aqua     | 0.1 mg/L               |
| Intermittent use/release     | PNEC Aqua     | 5.6 mg/L               |
|                              | PNEC STP      | 10 mg/L                |
| Fresh water                  | PNEC Sediment | 3.8 mg/kg sediment dw  |
| Marine water                 | PNEC Sediment | 0.38 mg/kg sediment dw |
| Terrestrial Compartment      | PNEC Soil     | 0.173 mg/kg soil dw    |

| propane-1,2-diol (57-55-6) |               |                       |
|----------------------------|---------------|-----------------------|
| Exposure                   | Type          | PNEC                  |
| Fresh water                | PNEC Aqua     | 260 mg/L              |
| Marine water               | PNEC Aqua     | 26 mg/L               |
| Intermittent use/release   | PNEC Aqua     | 183 mg/L              |
|                            | PNEC STP      | 20000 mg/L            |
| Fresh water                | PNEC Sediment | 572 mg/kg sediment dw |

# MATERIAL SAFETY DATA SHEET

|                     |               |                        |
|---------------------|---------------|------------------------|
| Marine water        | PNEC Sediment | 57.2 mg/kg sediment dw |
|                     | PNEC Soil     | 50 mg/kg soil dw       |
| Secondary Poisoning | PNEC Oral     | 1133 mg/kg             |

| <b>Silica, amorphous, fumed, crystalline-free (112945-52-5)</b> |           |             |
|-----------------------------------------------------------------|-----------|-------------|
| Exposure                                                        | Type      | PNEC        |
| Secondary Poisoning                                             | PNEC Oral | 60000 mg/kg |

| <b>cobalt octoate (136-52-7)</b> |               |                        |
|----------------------------------|---------------|------------------------|
| Exposure                         | Type          | PNEC                   |
| Fresh water                      | PNEC Aqua     | 0.62 µg/L              |
| Marine water                     | PNEC Aqua     | 2.36 µg/L              |
| STP microorganisms               | PNEC STP      | 0.37 mg/L              |
| Fresh water                      | PNEC Sediment | 53.8 mg/kg sediment dw |
| Marine water                     | PNEC Sediment | 69.8 mg/kg sediment dw |
| Terrestrial Compartment          | PNEC Soil     | 10.9 mg/kg soil dw     |

## 8.1. Exposure Controls

### 8.1.1. Engineering Measures

Apply technical measures to comply with the occupational exposure limits.  
When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment

### 8.1.2. Personal protective equipment

Use Personal Protective Equipment

### 8.1.3. Respiratory Protection:

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) If exposure limits are likely to be exceeded / In case of insufficient ventilation wear suitable respiratory equipment :

Breathing apparatus with filter Type A ( Organic gases and vapours filter conforming to EN 14387 , APF 40 < 1 hour, APF 200 > 1 hour) / Type A(2)/P3 in combination with Particulates filter conforming to EN 143 , if exposed to dust

## 8.1.4. Eye Protection

Safety glasses with side-shields. Do not wear contact lenses.

## 8.1.5. Skin and Body Protection

Antistatic boots. Protective shoes or boots. Wear fire/ flame resistant/retardant clothing.

## 8.1.6. Hand Protection

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training

Glove material : Neoprene , Nitriles , Viton (R) or Polyvinyl alcohol

Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

## 8.1.7. Environmental Exposure Controls

Do not allow material to contaminate ground water system.

## 9. Physical and Chemical Properties

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

| Property       | Values | Remark |
|----------------|--------|--------|
| Appearance     | blue   |        |
| Physical state | Liquid |        |

# MATERIAL SAFETY DATA SHEET

|                                               |                            |                                |
|-----------------------------------------------|----------------------------|--------------------------------|
|                                               |                            |                                |
| <b>Particle size</b>                          |                            | no data available              |
| <b>Odour</b>                                  | Styrene                    |                                |
| <b>Odour Threshold</b>                        | 0.15 ppm                   | Values related to styrene      |
| <b>pH</b>                                     |                            | no data available              |
| <b>pH (as aqueous solution)</b>               |                            | no data available              |
| <b>Melting point/range</b>                    | - 30 °C                    | Values related to styrene      |
| <b>Freezing Point</b>                         |                            | no data available              |
| <b>Boiling point</b>                          | 145 °C                     | Values related to styrene      |
| <b>Flash point</b>                            | 31 °C                      | Values related to styrene      |
| <b>Evapouration rate</b>                      |                            | no data available              |
| <b>Flammability Limits in Air</b>             |                            |                                |
| <b>upper</b>                                  | 6,1 - 6,8%                 | Values related to styrene      |
| <b>lower</b>                                  | 0,9 -1,1%                  | Values related to styrene      |
| <b>Vapour pressure</b>                        | 1 kPa                      | 25°C Values related to styrene |
| <b>Vapour density</b>                         | 3.6                        | Values related to styrene      |
| <b>Density</b>                                | 1.09 g/cm <sup>3</sup>     | 20°C                           |
| <b>Water solubility</b>                       | Insoluble in water         |                                |
| <b>Partition coefficient: n-octanol/water</b> | 3                          | Values related to styrene      |
| <b>Autoignition temperature</b>               | 490 °C                     | Values related to styrene      |
| <b>Decomposition temperature</b>              |                            | no data available              |
| <b>Viscosity, kinematic</b>                   | 413-505 mm <sup>2</sup> /s | 23°C                           |
| <b>Viscosity, dynamic</b>                     | 450-550 mPa.s              | 23°C                           |
| <b>Explosive properties</b>                   |                            | not applicable                 |
| <b>Oxidizing properties</b>                   |                            | not applicable                 |

## 9.2. Other Information

| Property | Values | Remark |
|----------|--------|--------|
|----------|--------|--------|

**Solubility in other solvents:** Soluble in most organic solvents

## 10. Stability and Reactivity

### 10.1. Reactivity

Product may ignite and burn at temperatures exceeding the flash point

### 10.2. Chemical stability

Stable under recommended storage conditions.

### 10.3. Possibility of hazardous reactions

**Hazardous reactions** In use, may form flammable/explosive vapour-air mixture.

**Hazardous polymerisation** Polymerisation can occur.

### 10.4. Conditions to avoid

Heat, flames and sparks.

Exposure to light.

Take precautionary measures against static charges.

### 10.5. Incompatible materials

**Materials to avoid** Strong oxidizing agents, Peroxides, Reducing agents

### 10.6. Hazardous Decomposition Products

Incomplete combustion and thermolysis produces potentially toxic gases such as carbon monoxide and carbon dioxide

## 11. Toxicological Information

### 11.1. Information on toxicological effects

# MATERIAL SAFETY DATA SHEET

- **Acute toxicity (inhalation):**

Harmful: danger of serious damage to health by prolonged exposure through inhalation Irritating to respiratory system May produce an allergic reaction.

- **Acute toxicity (ingestion):**

Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

| Chemical Name                                          | LD50 Oral                                                      | LD50 Dermal                         | LC50 Inhalation                                           | Read-across (Analogy) |
|--------------------------------------------------------|----------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------|-----------------------|
| Styrene 100-42-5                                       | 5000 mg/kg (Rat)                                               | > 2000 mg/kg bw (Rat) 24h OECD 402  | 11.8 mg/L (Rat) 4h CSR                                    |                       |
| phthalic anhydride 85-44-9                             | 1530 mg/kg bw (Rat)                                            | > 3160 mg/kg bw (Rabbit)            | > 2.14 mg/L (Rat) 4h OECD 403                             |                       |
| propane-1,2-diol 57-55-6                               | 22000 mg/kg bw (Rat)<br>Study predates GLP and OECD guidelines | LD50 (24h) > 2000 mg/kg bw (Rabbit) | LC50 (2h) aerosol > 317042 mg/m <sup>3</sup> air (Rabbit) |                       |
| Silica, amorphous, fumed, crystalline-free 112945-52-5 | > 5000 mg/kg bw (Rat) OECD 401                                 | > 5000 mg/kg (Rabbit)               | > 0.14 mg/L air (Rat) 4h (analytical) OECD 403            |                       |
| cobalt octoate 136-52-7                                | 3129 mg/kg/bw (Rat) OECD 425                                   | > 2000 mg/kg bw (Rat) OECD 402      |                                                           |                       |

## 11.1.1. Skin corrosion/irritation

| Chemical Name                                          | Skin corrosion/irritation                                    | Read-across (Analogy) |
|--------------------------------------------------------|--------------------------------------------------------------|-----------------------|
| Styrene 100-42-5                                       | Irritating to skin<br>in vivo assay rabbit                   |                       |
| phthalic anhydride 85-44-9                             | Irritating to skin in vivo assay rabbit<br>OECD 404          |                       |
| propane-1,2-diol 57-55-6                               | No skin irritation in vivo assay rabbit<br>OECD 404          |                       |
| Silica, amorphous, fumed, crystalline-free 112945-52-5 | No skin irritation rabbit<br>OECD 404                        |                       |
| cobalt octoate 136-52-7                                | No skin corrosion in vitro study OECD 431<br>EU Method B. 40 |                       |

## 11.1.2. Serious Eye Damage/Eye Irritation

| Chemical Name                                             | Serious Eye Damage/Eye Irritation                                                        | Read-across (Analogy) |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------|
| Styrene 100-42-5                                          | Irritating to eyes<br>in vivo assay rabbit                                               |                       |
| phthalic anhydride 85-44-9                                | Irritating to eyes in vivo assay rabbit<br>Draize Test                                   |                       |
| propane-1,2-diol 57-55-6                                  | No eye irritation in vivo assay rabbit<br>OECD 405                                       |                       |
| Silica, amorphous, fumed,<br>crystalline-free 112945-52-5 | No eye irritation rabbit<br>OECD 405                                                     |                       |
| cobalt octoate 136-52-7                                   | Moderate eye irritation OECD 437<br>EU Method B.47 Irritating to eyes rabbit<br>OECD 405 |                       |

## 11.1.3. Respiratory or skin sensitisation: May produce an allergic reaction

| Chemical Name                                             | Respiratory or skin sensitisation                                                                                                    | Read-across (Analogy) |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Styrene 100-42-5                                          | Does not cause skin sensitization Does not<br>cause respiratory sensitization<br>CSR                                                 |                       |
| phthalic anhydride 85-44-9                                | May cause sensitisation by inhalation and<br>skin contact in vivo assay<br>guinea pig OECD 406                                       |                       |
| propane-1,2-diol 57-55-6                                  | Does not cause skin sensitization Does not<br>cause respiratory sensitization<br>in vivo assay guinea pig OECD 406<br>mouse OECD 429 |                       |
| Silica, amorphous, fumed,<br>crystalline-free 112945-52-5 | Does not cause skin sensitization Does not<br>cause respiratory sensitization                                                        |                       |
| cobalt octoate 136-52-7                                   | May cause sensitisation by skin contact in<br>vivo assay<br>mouse OECD 429                                                           |                       |

## 11.1.4. Mutagenic Effects

### In vitro study

| Chemical Name                 | Ames test                                                                                                                                                           | Read-across (Analogy) |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Styrene<br>100-42-5           | Ambiguous<br>In vitro gene mutation study in bacteria<br>(S. typhimurium G46, TA1530, TA 1535,<br>TA100, TA98,<br>TA1538, TA 1537)<br>OECD 471                      |                       |
| phthalic anhydride<br>85-44-9 | negative<br>In vitro gene mutation study in bacteria<br>(S. typhimurium TA 1535, TA 1537, TA 98,<br>TA100 and<br>TA 102)<br>(Escherichia coli WP2 uvrA)<br>OECD 471 |                       |
| propane-1,2-diol<br>57-55-6   | negative<br>In vitro gene mutation study in bacteria<br>Salmonella typhimurium (S. typhimurium,<br>other: TA 92,<br>TA 94, TA 98, TA 100, TA 1535, TA 1537)         |                       |

|                                                           |                                                                                                                                      |                                |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Silica, amorphous, fumed,<br>crystalline-free 112945-52-5 | negative<br>In vitro gene mutation study in bacteria<br>OECD 471                                                                     |                                |
| cobalt octoate<br>136-52-7                                | negative<br>In vitro gene mutation study in bacteria<br>(S. typhimurium TA 1535, TA 1537, TA 98,<br>TA100 and<br>TA 102)<br>OECD 471 | Cas N°: 68956-82-1, 14024-48-7 |

| Chemical Name | In vitro Mammalian Cell Gene Mutation | Read-across (Analogy) |
|---------------|---------------------------------------|-----------------------|
|---------------|---------------------------------------|-----------------------|

# MATERIAL SAFETY DATA SHEET

|                                                        | Test                                                                             |                                                      |
|--------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------|
| Styrene 100-42-5                                       | Ambiguous<br>In vitro gene mutation study in mammalian cells hamster<br>OECD 476 |                                                      |
| phthalic anhydride 85-44-9                             | negative<br>In vitro gene mutation study in mammalian cells hamster<br>OECD 476  |                                                      |
| Silica, amorphous, fumed, crystalline-free 112945-52-5 | negative<br>In vitro gene mutation study in mammalian cells OECD 476             |                                                      |
| cobalt octoate 136-52-7                                | negative<br>In vitro gene mutation study in mammalian cells mouse<br>OECD 476    | Cas N°: 7440-48-4, 1308-06-1, 10124-43-3, 12016-80-7 |
| Chemical Name                                          | In vitro Mammalian Chromosome Aberration Test                                    | Read-across (Analogy)                                |
| Styrene 100-42-5                                       | positive<br>Chromosome aberration test in vitro OECD 473<br>OECD 479             |                                                      |
| phthalic anhydride 85-44-9                             | Ambiguous Chromosome aberration test in vitro<br>hamster OECD 473                |                                                      |
| propane-1,2-diol 57-55-6                               | negative Chromosome aberration test in vitro<br>OECD 473                         |                                                      |
| Silica, amorphous, fumed, crystalline-free 112945-52-5 | negative Chromosome aberration test in vitro<br>OECD 473                         |                                                      |

## In vivo assay

| Chemical Name                                          | Unscheduled DNA Synthesis (UDS)     | Read-across (Analogy) |
|--------------------------------------------------------|-------------------------------------|-----------------------|
| Styrene 100-42-5                                       | negative mouse OECD 486<br>OECD 474 |                       |
| propane-1,2-diol 57-55-6                               | negative rat                        |                       |
| Silica, amorphous, fumed, crystalline-free 112945-52-5 | negative rat                        |                       |

# MATERIAL SAFETY DATA SHEET

|                         |                                      |                                               |
|-------------------------|--------------------------------------|-----------------------------------------------|
| cobalt octoate 136-52-7 | negative rat<br>OECD 474<br>OECD 475 | Cas N°: 68956-82-1, 14024-48-7,<br>10026-24-1 |
|-------------------------|--------------------------------------|-----------------------------------------------|

## 11.1.5. Carcinogenicity

| Carcinogenicity    |          |         |                                                                                                                      |            |
|--------------------|----------|---------|----------------------------------------------------------------------------------------------------------------------|------------|
| Styrene (100-42-5) |          |         |                                                                                                                      |            |
| Exposure routes    | Method   | Species | Dose                                                                                                                 | Evaluation |
| Inhalation         | OECD 453 | rat     | NOAEC systemic (carcinogenicity)<br>>= 4.34 mg/L air (nominal)                                                       | negative   |
| Inhalation         | OECD 453 | mouse   | LOAEC (carcinogenicity)<br>female/male = 0.09 - 0.18 mg/L air resp., NOAEC (carcinogenicity)<br>male = 0.09 mg/L air | positive   |

|      |                          |       |                                                  |          |
|------|--------------------------|-------|--------------------------------------------------|----------|
| Oral | No information available | rat   | NOAEL (carcinogenicity)<br>>= 2000 mg/kg bw /day | positive |
| Oral | No information available | mouse | LOAEL (carcinogenicity) = 150 mg/kg bw /day      | positive |

| phthalic anhydride (85-44-9) |                          |         |                                                                                                                      |            |
|------------------------------|--------------------------|---------|----------------------------------------------------------------------------------------------------------------------|------------|
| Exposure routes              | Method                   | Species | Dose                                                                                                                 | Evaluation |
| Oral                         | No information available | mouse   | NOAEL (carcinogenicity, male) = 3570 mg/kg bw/day (72w)<br>NOAEL (carcinogenicity, female) = 1785 mg/kg bw/day (72w) | negative   |

# MATERIAL SAFETY DATA SHEET

|      |                          |     |                                                    |          |
|------|--------------------------|-----|----------------------------------------------------|----------|
| Oral | No information available | rat | NOAEL (carcinogenicity) = 1000 mg/kg bw/day (105w) | negative |
|------|--------------------------|-----|----------------------------------------------------|----------|

| propane-1,2-diol (57-55-6)                               |                          |         |                                                                                                                         |            |
|----------------------------------------------------------|--------------------------|---------|-------------------------------------------------------------------------------------------------------------------------|------------|
| Exposure routes                                          | Method                   | Species | Dose                                                                                                                    | Evaluation |
| Inhalation                                               | No information available | rat     | NOAEC carcinogenicity (male/female) > 350 mg/m <sup>3</sup> air (18 month)                                              | negative   |
| Dermal                                                   | No information available | mouse   | NOAEL carcinogenicity (female) = 0.02 ml/twice a week                                                                   | negative   |
| Oral                                                     | No information available | rat     | NOAEL carcinogenicity (male) = 1700 mg/kg bw/day<br>NOAEL carcinogenicity (male/female) = 3040 mg/kg bw/day (105 weeks) | negative   |
| Oral                                                     | No information available | mouse   | NOAEL carcinogenicity (male/female) = 2390 mg/kg bw/day                                                                 | negative   |
| Silica, amorphous, fumed, crystalline-free (112945-52-5) |                          |         |                                                                                                                         |            |
| Exposure routes                                          | Method                   | Species | Dose                                                                                                                    | Evaluation |
| Oral                                                     | OECD 453                 | rat     | NOAEL = 1800 - 3200 mg/kg bw/day                                                                                        | negative   |

## 11.1.6. Reproductive toxicity

| Reproductive toxicity |        |         |      |            |
|-----------------------|--------|---------|------|------------|
| Styrene (100-42-5)    |        |         |      |            |
| Exposure routes       | Method | Species | Dose | Evaluation |

# MATERIAL SAFETY DATA SHEET

|            |                          |     |                                                                                                                                                    |          |
|------------|--------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Inhalation | No information available | rat | NOAEL/LOAEL (fertility)<br>60d = 100 - 200<br>mg/kg bw/day                                                                                         | positive |
| Oral       | OECD 422                 | rat | NOAEL/LOAEL (fertility)<br>60d = 200 - 400<br>mg/kg bw/day                                                                                         | positive |
| Inhalation | OECD 416                 | rat | NOAEC (P, F1) = 0.64<br>mg/L air<br>LOAEC (P, F1) = 2.13<br>mg/L air<br>NOAEC (F2) = 0.21<br>mg/L<br>air<br>LOAEC (F2) = 0.64<br>mg/L<br>air (70d) | negative |

## phthalic anhydride (85-44-9)

| Exposure routes | Method                   | Species | Dose                                                                                                                                   | Evaluation |
|-----------------|--------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------|------------|
| Oral            | No information available | mouse   | NOAEL<br>(reproductive,<br>male) = 3570<br>mg/kg bw/day<br>(72w)<br>NOAEL<br>(reproductive,<br>female) = 1785<br>mg/kg<br>bw/day (72w) | negative   |
| Oral            | No information available | rat     | NOAEL<br>(reproductive,<br>female) = 1000<br>mg/kg bw/day<br>(105w)                                                                    | negative   |

## propane-1,2-diol (57-55-6)

| Exposure routes | Method                            | Species | Dose                              | Evaluation |
|-----------------|-----------------------------------|---------|-----------------------------------|------------|
| Oral            | NTP Reproductive<br>Assessment by | mouse   | NOAEL toxicity<br>(male/female) = | negative   |

# MATERIAL SAFETY DATA SHEET

|  |                            |  |                                                                                                                                                |  |
|--|----------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  | Continuous Breeding (RACB) |  | 10100 mg/kg bw/day<br><br>NOAEL fertility (male/female) = 10100 mg/kg bw/day<br>NOAEL developmental effects (male/female) = 10100 mg/kg bw/day |  |
|--|----------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------|--|

| Silica, amorphous, fumed, crystalline-free (112945-52-5) |          |         |                          |            |
|----------------------------------------------------------|----------|---------|--------------------------|------------|
| Exposure routes                                          | Method   | Species | Dose                     | Evaluation |
| Oral                                                     | OECD 415 | rat     | NOAEL = 497 mg/kg bw/day | negative   |

| cobalt octoate (136-52-7) |                                                  |         |                                     |            |
|---------------------------|--------------------------------------------------|---------|-------------------------------------|------------|
| Exposure routes           | Method                                           | Species | Dose                                | Evaluation |
| Oral                      | Read-across (Analogy) Cas N°: 7440-48-4 OECD 422 | rat     | NO(A)EL (P&F) 28d = 30 mg/kg bw/day | positive   |

## 11.1.7. Developmental Toxicity: Suspected of damaging the unborn child

| Developmental Toxicity |                          |         |                                                                                       |            |
|------------------------|--------------------------|---------|---------------------------------------------------------------------------------------|------------|
| Styrene (100-42-5)     |                          |         |                                                                                       |            |
| Exposure routes        | Method                   | Species | Dose                                                                                  | Evaluation |
| Inhalation             | No information available | rat     | NOAEC/LOAEC (maternal toxicity + developemental toxicity) >50d = 1.08 - 2.15 mg/L air | positive   |
| Inhalation             | OECD 414                 | rat     | LOAEC (maternal toxicity) 6-15d = 1.28 mg/L air                                       | positive   |

# MATERIAL SAFETY DATA SHEET

|            |          |        |                                                                          |          |
|------------|----------|--------|--------------------------------------------------------------------------|----------|
| Inhalation | OECD 414 | rat    | NOAEC<br>(developmental toxicity) 6-15d $\geq$ 2.56 mg/L air             | negative |
| Inhalation | OECD 414 | rabbit | NOAEC (maternal toxicity + developmental toxicity) 6-18d = 2.56 mg/L air | negative |

| phthalic anhydride (85-44-9) |                                                         |         |                                                                                             |            |
|------------------------------|---------------------------------------------------------|---------|---------------------------------------------------------------------------------------------|------------|
| Exposure routes              | Method                                                  | Species | Dose                                                                                        | Evaluation |
| Oral                         | Read-across (Analogy)<br>phthalic acid Cas N° : 88-99-3 | rat     | NOAEL (maternal toxicity) = 1000 mg/kg bw/day<br>NOAEL (teratogenicity) = 1700 mg/kg bw/day | positive   |

| propane-1,2-diol (57-55-6) |          |         |                                                                                                    |            |
|----------------------------|----------|---------|----------------------------------------------------------------------------------------------------|------------|
| Exposure routes            | Method   | Species | Dose                                                                                               | Evaluation |
| Oral                       | OECD 414 | mouse   | NOAEL (developmental toxicity) = 10400 mg/kg bw/day<br>NOAEL (maternal toxicity) = 52 mg/kg bw/day | negative   |

# MATERIAL SAFETY DATA SHEET

| Exposure routes | Method   | Species | Dose                                                                                        | Evaluation |
|-----------------|----------|---------|---------------------------------------------------------------------------------------------|------------|
| Oral            | OECD 414 | rat     | NOAEL (maternal toxicity)<br>= 1350 mg/kg bw/day NOAEL (teratogenicity) = 1350 mg/kg bw/day | negative   |

## 11.1.8. Specific target organ toxicity- single exposure

### **Silica, amorphous, fumed, crystalline-free (112945-52-5)**

May cause irritation of respiratory tract

| <b>STOT - single exposure</b>     |                          |         |                                                    |         |
|-----------------------------------|--------------------------|---------|----------------------------------------------------|---------|
| <b>propane-1,2-diol (57-55-6)</b> |                          |         |                                                    |         |
| Exposure routes                   | Method                   | Species | Dose                                               | Remarks |
| Oral                              | No information available | rat     | NOAEL (male/female) 102 weeks = 1700 mg/kg bw/day  |         |
| Dermal                            | No information available | mouse   | NOAEL (female) = 0.02 ml (twice by week, 10 weeks) |         |
| Inhalation                        | No information available | rat     | LOAEC (male) 90d = 160 mg/m <sup>3</sup>           |         |

## 11.1.9. Specific target organ toxicity- repeated exposure

Causes damage to organs through prolonged or repeated exposure , target organ(s)  
: Central nervous system , Ears

| <b>STOT - repeated exposure</b> |        |         |      |         |
|---------------------------------|--------|---------|------|---------|
| <b>styrene (100-42-5)</b>       |        |         |      |         |
| Exposure routes                 | Method | Species | Dose | Remarks |

# MATERIAL SAFETY DATA SHEET

|            |                          |           |                                                                                                                                                                                         |  |
|------------|--------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Inhalation | OECD 412                 | rat mouse | NOAEC male (28d) = 3.47 mg/L air<br>NOAEC (ototoxicity) 28d = 2.13 mg/L air<br>NOAEC (28d) = 0.181 mg/L air<br>NOAEC (28d) = 0.688 mg/L air                                             |  |
| Inhalation | No information available | rat       | NOAEC (nasal tract) = 0.85 mg/L air<br>NOAEC (overall) = 2.13 mg/L air<br>NOAEC (ototoxicity) = 0.85 mg/L air<br>LOAEC (ototoxicity) = 3.41 mg/L air<br>NOAEC (overall) = 2.13 mg/L air |  |
| Oral       | No information available | rat       | NOAEL (toxicity) = 1000 mg/kg bw/day<br>LOAEL (toxicity) = 2000 mg/kg bw/day                                                                                                            |  |
| Oral       | No information available | mouse     | NOAEL (toxicity) = 150 mg/kg bw /day<br>LOAEL (toxicity) = 300 mg/kg bw /day                                                                                                            |  |
| Inhalation | OECD 453                 | rat       | LOAEC local (toxicity) = 0.21 mg/L air                                                                                                                                                  |  |

| phthalic anhydride (85-44-9) |        |         |      |         |
|------------------------------|--------|---------|------|---------|
| Exposure routes              | Method | Species | Dose | Remarks |

# MATERIAL SAFETY DATA SHEET

|      |                          |       |                                                                                    |  |
|------|--------------------------|-------|------------------------------------------------------------------------------------|--|
| Oral | No information available | rat   | NOAEL = 1250 mg/kg bw/day<br>LOAEL = 2500 mg/kg bw/day<br>7 weeks                  |  |
| Oral | No information available | rat   | NOAEL (105 weeks) = 500 mg/kg bw/day                                               |  |
| Oral | No information available | mouse | LOAEL (male) = 2340 mg/kg bw/day<br>LOAEL (female) = 1717 mg/kg bw/day<br>72 weeks |  |

| propane-1,2-diol (57-55-6) |                          |         |                                                                          |         |
|----------------------------|--------------------------|---------|--------------------------------------------------------------------------|---------|
| Exposure routes            | Method                   | Species | Dose                                                                     | Remarks |
| Oral                       | No information available | rat     | NOAEL = 1700 mg/kg bw/day                                                |         |
| Inhalation                 | No information available | rat     | NOAEC = 1000 mg/m <sup>3</sup> air<br>NOAEC = 2200 mg/m <sup>3</sup> air |         |
| Dermal                     | No information available | mouse   | NOAEL = 0.02 ml/twice a week                                             |         |

| Silica, amorphous, fumed, crystalline-free (112945-52-5) |                          |         |                                                                          |         |
|----------------------------------------------------------|--------------------------|---------|--------------------------------------------------------------------------|---------|
| Exposure routes                                          | Method                   | Species | Dose                                                                     | Remarks |
| Oral                                                     | OECD 408                 | rat     | NOEL (highest dose) 4000 <= 4500 mg/kg bw/day<br>90d                     |         |
| Inhalation                                               | OECD 413                 | rat     | NOEC = 1.3 mg/m <sup>3</sup> air<br>NOEC < 1.3 mg/m <sup>3</sup> air 90d |         |
| Dermal                                                   | No information available | rabbit  | NOAEL >= 10000 mg/kg bw/day                                              |         |

# MATERIAL SAFETY DATA SHEET

| cobalt octoate (136-52-7) |                                                                          |         |                                 |         |
|---------------------------|--------------------------------------------------------------------------|---------|---------------------------------|---------|
| Exposure routes           | Method                                                                   | Species | Dose                            | Remarks |
| Oral                      | Read-across<br>(Analogy) cobalt<br>dichloride<br>hexahydrate OECD<br>408 | rat     | NOAEL (90d) = 3<br>mg/kg bw/day |         |

## 11.1.10. Aspiration hazard

Due to the viscosity, the product does not present an aspiration hazard

## 11.1.11. Other Information

None

## 12. Ecological Information

### 12.1. Toxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Do not flush into surface water or sanitary sewer system

#### 12.1.1. Acute Aquatic Toxicity – Component Information

| Chemical Name                 | Toxicity to algae                                                                   | Toxicity to daphnia and other aquatic invertebrates.                                             | Toxicity to fish                                                       | Toxicity to microorganisms                                                                                |
|-------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Styrene<br>100-42-5           | EC50 (72h) = 4.9<br>mg/L<br>(Pseudokirchnerella<br>subcapitata)<br>EPA OTS 797.1050 | EC50 (48h) = 4.7<br>mg/L<br>(Daphnia magna)<br>NOEC = 1.9 mg/L<br>(Daphnia<br>magna)<br>OECD 202 | LC50 (96h) = 4.02 -<br>10<br>mg/L (Pimephales<br>promelas)<br>OECD 203 | EC (30min) = 500<br>mg/L<br>(Activated sludge of<br>a<br>predominantly<br>domestic<br>sewage)<br>OECD 209 |
| phthalic anhydride<br>85-44-9 | EC50 (72h) = 68<br>mg/L<br>NOEC (72h) = 32                                          | EC50 (48h) = 71<br>mg/L<br>(Daphnia magna)                                                       | LC50 (96h) > 99<br>mg/L<br>(Oryzias latipes)                           | EC50 (3h) > 1000<br>mg/L<br>(Activated sludge),                                                           |

# MATERIAL SAFETY DATA SHEET

|  |                                                         |          |          |                                                                              |
|--|---------------------------------------------------------|----------|----------|------------------------------------------------------------------------------|
|  | mg/L<br>(Pseudokirchnerella<br>subcapitata)<br>OECD 201 | OECD 202 | OECD 203 | ISO<br>8192<br>EC50 (16h) = 13 mg/L<br>(Pseudomonas<br>putida), ISO<br>10712 |
|--|---------------------------------------------------------|----------|----------|------------------------------------------------------------------------------|

|                                                                  |                                                                                                                                                                                                                                                  |                                                                                                                                   |                                                                                                                                                                                                        |                                                                                                                                                                             |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| propane-1,2-diol<br>57-55-6                                      | EC50 (72h) = 24200<br>mg/L<br>(Pseudokirchnerella<br>subcapitata)<br>EC50 (48h) = 34100<br>mg/L<br>(Pseudokirchnerella<br>subcapitata)<br>EC50 (96h) =<br>19000mg/L<br>(Pseudokirchnerella<br>subcapitata) OECD<br>201                           | LC50 (48h) = 18340<br>mg/L<br>(Ceriodaphnia<br>dubia) LC50 (96h) =<br>18800 mg/L<br>(Americamysis<br>bahia) EPA 600/4-<br>90/0-27 | LC50 (96h) = 40613<br>mg/L<br>(Oncorhynchus<br>mykiss)                                                                                                                                                 | CE50 (0.5h) > 1000<br>mg/L<br>(Activated sludge)<br>OECD 209<br>NOEC (18h) > 20000<br>mg/L<br>(Pseudomonas<br>putida)                                                       |
| Silica, amorphous,<br>fumed, crystalline-<br>free<br>112945-52-5 |                                                                                                                                                                                                                                                  | EL50 (24h) >= 1000<br>mg/L<br>(Daphnia magna)<br>OECD 202                                                                         | LC50 (96h) > 10000<br>mg/L<br>(Brachydanio rerio)<br>OECD 203                                                                                                                                          |                                                                                                                                                                             |
| cobalt octoate<br>136-52-7                                       | EC50 (72h) = 144 µg<br>Codiss./L<br><br>(Pseudokirchnerella<br>subcapitata)<br><br>NOEC (72h) = 32.2<br>µg./L<br>(Pseudokirchnerella<br>subcapitata)<br><br>LOEC (72h) = 52.7 µg<br>Codiss./L<br>(Pseudokirchnerella<br>subcapitata)<br>OECD 201 |                                                                                                                                   | LC50 (96h) = 1.512<br>mg/L<br>(Oncorhynchus<br>mykiss)<br>NOEC (96h) = 0.939<br>mg/L<br>(Oncorhynchus<br>mykiss)<br>LOEC (96h) = 1.577<br>mg/L<br>(Oncorhynchus<br>mykiss)<br>ASTM guideline<br>(1996) | EC10 (30 min) = 3.73<br>mg/L<br>(Activated sludge)<br><br>EC50 (30 min) = 120<br>mg/L<br>(Activated sludge)<br><br>Read across with<br>Cas N°:<br>7646-79-9<br><br>OECD 209 |

## 12.1.2. Chronic Aquatic Toxicity – Component Information

| Chemical Name                 | Toxicity to algae                                                    | Toxicity to daphnia and other aquatic invertebrates.                                                                                            | Toxicity to fish                                                                                                                                                    | Toxicity to microorganisms |
|-------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Styrene<br>100-42-5           |                                                                      | NOEC (21d) = 1.01 mg/L<br>(Daphnia magna)<br>LOEC (21d) = 2.06 mg/L<br>(Daphnia magna)<br>EC50 (21d) = 1.88 mg/L<br>(Daphnia magna)<br>OECD 203 |                                                                                                                                                                     |                            |
| phthalic anhydride<br>85-44-9 |                                                                      | NOEC (reproduction) 21d = 16 mg/L, EC50 (reproduction) 21d = 42 mg/L (Daphnia magna)<br>OECD 211                                                | LC50 (7d) = 560 mg/L (Danio rerio), OECD 210<br>LOEC (total embryotoxicity) 60d = 32 mg/L, NOEC (mortality, length, weight, embryotoxicity) 60d = 10 mg/L, OECD 210 |                            |
| propane-1,2-diol<br>57-55-6   | NOEC (14d) = 15000 mg/L (Pseudokirchnerella subcapitata)<br>OECD 201 | NOEC (7d) = 13020 mg/L (Ceriodaphnia sp)<br>EPA 600/4-89/001                                                                                    | NOEC (7d) = 11530 mg/L (Pimephales promelas)<br>EPA 600/4-89/001                                                                                                    |                            |
| cobalt octoate<br>136-52-7    | EC50 (7d) = 90.1 µg/L (Lemna minor)                                  | NOECR (21d) = 60.8 µg/L (Daphnia magna)                                                                                                         |                                                                                                                                                                     |                            |

# MATERIAL SAFETY DATA SHEET

|  |                                                                                            |                                                                                                              |  |  |
|--|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--|--|
|  | NOEC (7d) = 3.0 µg/L<br>(Lemna minor)<br>LOEC (7d) = 8.8 µg/L<br>(Lemna minor)<br>OECD 221 | LC50 (21d) = 121.3 mg/L<br>(Daphnia magna)<br>LOECR (21d) = 93.3 µg<br>Codiss./L (Daphnia magna)<br>OECD 211 |  |  |
|--|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--|--|

## 12.1.3. Effects on terrestrial organisms – Component Information

| Acute toxicity               |             |                |                               |         |
|------------------------------|-------------|----------------|-------------------------------|---------|
| phthalic anhydride (85-44-9) |             |                |                               |         |
| Acute toxicity               | Test Method | Species        | Values                        | Remarks |
| plants                       |             | Lactuca sativa | EC50 (germination) = 731 mg/L |         |

| Chronic toxicity   |        |         |        |         |
|--------------------|--------|---------|--------|---------|
| Styrene (100-42-5) |        |         |        |         |
| Chronic toxicity   | Method | Species | Values | Remarks |

|                           |          |                 |                                                                                                                                                                                                          |  |
|---------------------------|----------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Toxicity to invertebrates | OECD 207 | Eisenia foetida | LC50 (14d) = 120 mg/kg soil dw<br>LOEC (burrowing time and mean percent weight change) = 65 mg/kg soil dw<br>LOEC (survival) = 180 mg/kg soil dw<br>NOEC (mean percent weight change) = 34 mg/kg soil dw |  |
|---------------------------|----------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

## 12.2. Persistence and Degradability

| Chemical Name              | Biodegradation                                     | Evaluation            |
|----------------------------|----------------------------------------------------|-----------------------|
| Styrene 100-42-5           | 87% (20d) similar to OECD 301D                     | Readily biodegradable |
| phthalic anhydride 85-44-9 | 68 % (10d), 74 % (30d)<br>OECD 301 D               | Readily biodegradable |
| propane-1,2-diol 57-55-6   | 81,7 % (28d), OECD 301 F<br>95,8 % (64d), OECD 306 | Readily biodegradable |
| cobalt octoate 136-52-7    | 60% (> 10d), OECD 301 B                            | Readily biodegradable |

## 12.1. Bio-accumulative potential

| Bioconcentration factor (BCF) |         |                               |
|-------------------------------|---------|-------------------------------|
| Styrene (100-42-5)            |         |                               |
| Method                        | Species | Bioconcentration factor (BCF) |
| Calculation method            |         | 74                            |

| phthalic anhydride (85-44-9) |         |                               |
|------------------------------|---------|-------------------------------|
| Method                       | Species | Bioconcentration factor (BCF) |
| Calculation method           |         | 3.16 - 3.4                    |

| propane-1,2-diol (57-55-6) |         |                               |
|----------------------------|---------|-------------------------------|
| Method                     | Species | Bioconcentration factor (BCF) |
| Calculation method         |         | 0.09                          |

| Chemical Name              | log Pow |
|----------------------------|---------|
| Styrene 100-42-5           | 3       |
| phthalic anhydride 85-44-9 | 1.6     |
| propane-1,2-diol 57-55-6   | -1.07   |

## 12.2. Mobility in Soil

| Chemical Name              | LogKoc | Koc |
|----------------------------|--------|-----|
| Styrene 100-42-5           | 2.55   | 352 |
| phthalic anhydride 85-44-9 | -      | 31  |
| propane-1,2-diol 57-55-6   | 0,46   | -   |

## 12.3. Results in PBT and vPvB Assessment

| Chemical Name                                          | PBT                                                                                 | vPvB                                                                                    |
|--------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Styrene 100-42-5                                       | This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). | This substance is not considered to be very persistent nor very bioaccumulating (vPvB). |
| phthalic anhydride 85-44-9                             | This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). | This substance is not considered to be very persistent nor very bioaccumulating (vPvB). |
| propane-1,2-diol 57-55-6                               | This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). | This substance is not considered to be very persistent nor very bioaccumulating (vPvB). |
| Silica, amorphous, fumed, crystalline-free 112945-52-5 | This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). | This substance is not considered to be very persistent nor very bioaccumulating (vPvB). |

## 12.4. Other Adverse Effects

None known

## 13. Disposal Considerations

### 13.1. Waste Treatment Methods

#### 13.1.1. Waste from Residues/Unused Products

Dispose of in accordance with the European Directives on waste and hazardous waste.  
Do not flush into surface water or sanitary sewer system

#### 13.1.2. Contaminated Packaging

Empty containers should be taken to an approved waste handling site for recycling or disposal.

#### 13.1.3. Other Information

According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.

Waste codes should be assigned by the user based on the application for which the product was used.

## 14. Transport Information

### 14.1. UN Number

|           |        |
|-----------|--------|
| ADR/RID   | UN1866 |
| IMDG/IMO  | UN1866 |
| ICAO/IATA | UN1866 |
| ADN       | UN1866 |

### 14.1. UN Proper Shipping Name

#### ADR/RID

Resin solution

UN1866, RESIN SOLUTION, 3, PG III, (D/E)

#### IMDG/IMO

Resin solution

UN1866, RESIN SOLUTION, 3, PG III, (31°C c.c.)

#### ICAO/IATA

UN1866, RESIN SOLUTION, 3, PG III

#### ADN

Resin solution

UN1866, RESIN SOLUTION, 3, PG II

### 14.2. Transport hazard class(es)

#### ADR/RID

Hazard class 3

#### IMDG/IMO

Hazard class 3

#### ICAO/IATA

Hazard class 3

## ADN

Hazard class 3

### 14.3. Packing Group

**ADR/RID** III

**IMDG/IMO** III

**ICAO/IATA** III

**ADN** III

### 14.4. Environmental Hazards

**ADR/RID** No

**IMDG/IMO** No

**Marine pollutant** No

**ICAO/IATA** No

**ADN** No

### 14.5. Special Precautions for user

#### ADR/RID

Classification Code F1

Tunnel restriction code (D/E)

Limited quantity 5 L

#### IMDG/IMO

EmS F-E, S-E

Limited quantity 5 L

#### ICAO/IATA

ERG Code 3L

Limited quantity 10 L

#### ADN

Classification Code F1

Limited quantity 5 L

ventilation VE01

#### Special precautions for users

Special precautions No information available

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

Transport in bulk according to MARPOL 73/78 and the IBC Code not applicable

## 15. Regulatory Information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulation (EC) No. 1907/2006 (REACH)

Regulation (EC) No. 1272/2008 (CLP)

Regulation (EU) No. 830/2015

Directive 88/642/EEC

Directive 98/24/EC

Directive 1999/92/EC

Directive 2012/18/EU

The mixture is subject to restrictions on use, see Annex XVII of the Regulation 1907/2006/EC (REACH): Column 1, n° 3; Column 1, n° 40.

European Union

| Chemical Name      | 96/82/EC (SEVESO) - §9 | 96/82/EC (SEVESO) - §6, §7  |
|--------------------|------------------------|-----------------------------|
| Styrene - 100-42-5 | 50000                  | 5000 tonnes<br>50000 tonnes |

#### National regulatory information

##### The United Kingdom

Avoid exceeding of the given occupational exposure limits (see section 8).

##### Ireland

Avoid exceeding of the given occupational exposure limits (see section 8).

### 15.1. Chemical Safety Assessment

## Chemical Safety Assessment

Yes

## Exposure scenario

Relevant information for risk control are communicated in the form of exposure scenario attached to the safety data sheet.

## 16. Other Information

### 16.1.1. Full text of H-Statements referred to under sections 2 and 3

H226 - Flammable liquid and vapour

H302 - Harmful if swallowed

H304 - May be fatal if swallowed and enters airways

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

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

H360Fd - May damage fertility. Suspected of damaging the unborn child

H361d - Suspected of damaging the unborn child

H372 - Causes damage to organs through prolonged or repeated exposure if inhaled

H400 - Very toxic to aquatic life

H412 - Harmful to aquatic life with long lasting effects

EUH208 - May produce an allergic reaction

## Training Advice

Handle in accordance with good industrial hygiene and safety practice. To avoid risks to man and the environment, comply with the instructions for use

## Sources of key data used to compile the datasheet

ECHA

**Former date** 20-Jun-2019  
**Revision date** 28-Aug-2019  
**Revision Note** SDS sections updated : 1 , 3 , 8 , 11 , 12

**This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006**

## Disclaimer

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.

**End of Safety Data Sheet**