## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

- Trade name: IXPER® 35M Magnesium Peroxide
- Chemical name: Mixture of magnesium carbonate, magnesium hydroxide, magnesium oxide and magnesium peroxide
- REACH : Registration number: 01-2119980065-36

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Uses of the Substance/Mixture**

- Bleaching agents
- Vulcanizing agents
- Agriculture industry
- Soil and groundwater remediation
- Oil & gas industry

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

**Company**

SOLVAY CHEMICALS INTERNATIONAL SA
RUE DE RANSBEEK, 310
1120, BRUXELLES
BELGIUM
Tel: +32-2-2642111
Fax: +32-2-2641802

**E-mail address**

manager.sds@solvay.com

### 1.4 Emergency telephone number

+44(0)1235 239 670 [CareChem 24]
+353 (01) 809 2566 (24 hour service) National Poisons Information Centre (NPIC)

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Classification (Regulation (EC) No 1272/2008 )**

| | |
|---|---|
| Eye irritation, Category 2 | H319: Causes serious eye irritation. |
| Specific target organ toxicity - single exposure, Category 3 | H335: May cause respiratory irritation. (Respiratory system) |

### 2.2 Label elements

**Regulation (EC) No 1272/2008**

**Hazardous products which must be listed on the label**

- Reaction mass of magnesium carbonate and magnesium hydroxide and magnesium oxide and magnesium peroxide

**Pictogram**

**Signal word**

- Warning

**Hazard statements**

| | |
|---|---|
| - H319 | Causes serious eye irritation. |
| - H335 | May cause respiratory irritation. |

**Precautionary statements**

Prevention

| | |
|---|---|
| - P261 | Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. |
| - P280 | Wear eye protection/ face protection. |

Response

| | |
|---|---|
| - P304 + P340 + P312 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell. |
| - P337 + P313 | If eye irritation persists: Get medical advice/ attention. |

Storage

| | |
|---|---|
| - P403 + P233 | Store in a well-ventilated place. Keep container tightly closed. |

Disposal

| | |
|---|---|
| - P501 | Dispose of contents/ container to an approved waste disposal plant. |

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

**Results of PBT and vPvB assessment**

- According to Annex XIII of regulation (EC) 1907/2006 a PBT and vPvB assessment shall not be conducted for inorganic substances.
- Not applicable (inorganic substance)

## SECTION 3: Composition/information on ingredients

### 3.1 Substance

| | |
|---|---|
| - Chemical name | Mixture of magnesium carbonate, magnesium hydroxide, magnesium oxide and magnesium peroxide |
| - Formula | MgO2 |
| - Chemical nature | Reaction mass |

**Information on Components and Impurities**

| Chemical name | Identification number | Concentration [%] |
|---|---|---|
| Reaction mass of magnesium carbonate and magnesium hydroxide and magnesium oxide and magnesium peroxide | Registration number: 01-2119980065-36-xxxx | 100 |

### 3.2 Mixture

- Not applicable, this product is a substance.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

**In case of inhalation**

- Move to fresh air.
- If symptoms persist, call a physician.

**In case of skin contact**

- Remove and wash contaminated clothing before re-use.
- Wash off with soap and water.
- If symptoms persist, call a physician.

**In case of eye contact**

- Call a physician or poison control centre immediately.
- In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- In the case of difficulty of opening the lids, administer an analgesic eye wash (oxybuprocaine).

**In case of ingestion**

- Rinse mouth with water.
- Do NOT induce vomiting.
- Oxygen or artificial respiration if needed.
- If symptoms persist, call a physician or Poison Control Centre immediately.

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

**In case of inhalation**

**Effects**
- Respiratory irritation
- May cause nose, throat, and lung irritation.

**In case of skin contact**

**Symptoms**
- Irritation
- Itching

**Effects**
- Repeated exposure may cause skin dryness or cracking.

**In case of eye contact**

**Symptoms**
- Redness
- Lachrymation
- Swelling of tissue

**Effects**
- Eye irritation

**In case of ingestion**

**Symptoms**
- Severe irritation
- Nausea
- Abdominal pain
- Vomiting
- Diarrhoea

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

**Notes to physician**

- Immediate medical attention is required.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

**Suitable extinguishing media**

- Water
- Water spray

**Unsuitable extinguishing media**

- None

### 5.2 Special hazards arising from the substance or mixture

- Oxygen released in thermal decomposition may support combustion

### 5.3 Advice for firefighters

**Special protective equipment for firefighters**

- In the event of fire, wear self-contained breathing apparatus.

## SECTION 6: Accidental release measures

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

**Advice for non-emergency personnel**

- Keep away from incompatible products

**Advice for emergency responders**

- Sweep up to prevent slipping hazard.

### 6.2 Environmental precautions

- Should not be released into the environment.
- Limited quantity
- Flush into sewer with plenty of water.
- Large quantities:
- If the product contaminates rivers and lakes or drains inform respective authorities.

### 6.3 Methods and materials for containment and cleaning up

- Sweep up and shovel into suitable containers for disposal.
- Do not mix waste streams during collection.
- Avoid dust formation.
- Treat recovered material as described in the section "Disposal considerations".
- All receiving equipment should be clean, vented, dry, labelled and made of material that is compatible with the product.
- Never return spills in original containers for re-use.

### 6.4 Reference to other sections

- Refer to protective measures listed in sections 7 and 8.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

- Avoid dust formation.
- Ensure adequate ventilation.
- Keep away from heat and sources of ignition.
- Use only clean and dry utensils.

- Never return unused material to storage receptacle.
- Keep away from incompatible products

**Hygiene measures**

- When using do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.
- Do not ingest.
- Eye wash bottles or eye wash stations in compliance with applicable standards.

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

**Technical measures/Storage conditions**

- Keep only in the original container.
- Store in a receptacle equipped with a vent.
- Keep in a well-ventilated place.
- Keep at temperature not exceeding 40°C
- Keep in a dry place.
- Keep in properly labelled containers.
- Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
- Avoid dust formation.
- Keep away from incompatible products

**Packaging material**

**Suitable material**
- Stainless steel
- Plastic materials.
- Carton + Polyethylene

**Unsuitable material**
- No data available

### 7.3 Specific end use(s)

- Contact your supplier for additional information

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

- Contains no substances with occupational exposure limit values above their regulatory reporting threshold.

**Derived No Effect Level (DNEL) / Derived minimal effect level (DMEL)**

| Product name | Population | Route of exposure | Potential health effects | Exposure time | Value | Remarks |
|---|---|---|---|---|---|---|
| Reaction mass of magnesium carbonate and magnesium hydroxide and magnesium oxide and magnesium peroxide | Workers | Inhalation | Acute local effects | | 13,4 mg/m3 | |
| | Workers | Inhalation | Long-term local effects | | 6,2 mg/m3 | |
| | Consumers | Inhalation | Acute local effects | | 0,94 mg/m3 | |
| | Consumers | Inhalation | Long-term local effects | | 8,63 mg/m3 | |

**Predicted No Effect Concentration ( PNEC )**

| Product name | Compartment | Value | Remarks |
|---|---|---|---|
| Reaction mass of magnesium carbonate and magnesium hydroxide and magnesium oxide and magnesium peroxide | Fresh water | 0,056 mg/l | |
| | Intermittent use/release | 0,062 mg/l | |
| | Marine water | 0,056 mg/l | |
| | Fresh water sediment | 0,21 mg/kg dry weight (d.w.) | |
| | Marine sediment | 0,21 mg/kg dry weight (d.w.) | |
| | Soil | 0,01 mg/kg dry weight (d.w.) | |
| | STP | 10 mg/l | |

## 8.2 Exposure controls

**Control measures**

**Engineering measures**

- Provide appropriate exhaust ventilation at places where dust is formed.
- Apply technical measures to comply with the occupational exposure limits.

**Individual protection measures**

**Respiratory protection**

- Respirator with a particle filter (EN 143)
- Recommended Filter type: P2 filter

**Hand protection**

- Wear suitable gloves.

***Suitable material***

- PVC
- Neoprene
- Natural Rubber

**Eye protection**

- Goggles

**Skin and body protection**
- Dust impervious protective suit

**Hygiene measures**
- When using do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.
- Do not ingest.
- Eye wash bottles or eye wash stations in compliance with applicable standards.

**Environmental exposure controls**
- Dispose of rinse water in accordance with local and national regulations.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | |
|---|---|
| **Physical state** | solid |
| **Form** | powder |
| **Colour** | white |
| **Odour** | odourless |
| **Odour Threshold** | No data available |
| **Melting point/freezing point** | Melting point/range:<br>Decomposition: yes |
| **Initial boiling point and boiling range** | Boiling point/boiling range:<br>Thermal decomposition: yes |
| **Flammability (solid, gas)** | The product is not flammable. |
| **Flammability (liquids)** | No data available |
| **Flammability/Explosive limit** | No data available |
| **Flash point** | Not applicable |
| **Auto-ignition temperature** | No data available |
| **Decomposition temperature** | > 350 °C |
| **pH** | 10,3 ( 10 g/l)<br>suspension<br>pKa: 11,6<br>Hydrogen peroxide |
| **Viscosity** | Viscosity, dynamic : Not applicable |
| **Solubility** | Water solubility:<br>0,031 g/l<br>Solubility in other solvents:<br>acids: soluble |
| **Partition coefficient: n-octanol/water** | Not applicable |
| **Vapour pressure** | Not applicable |
| **Density** | Bulk density: 650 kg/m3 |

| | |
|---|---|
| **Relative density** | 2,44 ( 20 °C) |
| **Relative vapor density** | Not applicable |
| **Particle characteristics** | Particle size:<br>< 0,742 µm , d 10<br>< 3,547 µm , d 50<br>< 71,646 µm , d 90 |
| **Evaporation rate (Butylacetate = 1)** | No data available |

**9.2 Other information**

| | |
|---|---|
| **Explosiveness** | Not explosive |
| **Oxidizing properties** | Not considered as oxidizing |
| **Self-ignition** | The substance or mixture is not classified as self heating. |
| **Molecular weight** | 56,3 g/mol |

## SECTION 10: Stability and reactivity

**10.1 Reactivity**

- Decomposes when moist.
- Decomposes on heating.
- Potential for exothermic hazard

**10.2 Chemical stability**

- Stable under recommended storage conditions.

**10.3 Possibility of hazardous reactions**

- Contact with combustible material may cause fire.
- Contact with flammables may cause fire or explosions.
- Risk of explosion if heated under confinement.
- Fire or intense heat may cause violent rupture of packages.

**10.4 Conditions to avoid**

- To avoid thermal decomposition, do not overheat.

**10.5 Incompatible materials**

- Acids
- Heavy metal salts
- Reducing agents
- Flammable materials

**10.6 Hazardous decomposition products**

- Oxygen
- Hydrogen peroxide

## SECTION 11: Toxicological information

**11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**

**Acute toxicity**

**Acute oral toxicity**

By analogy
LD50: > 5.000 mg/kg - Rat
Test substance: calcium peroxide
Unpublished reports

**Acute inhalation toxicity** No data available

**Acute dermal toxicity** No data available

**Acute toxicity (other routes of administration)** No data available

**Skin corrosion/irritation**

By analogy
Rabbit
No skin irritation
Test substance: calcium peroxide
Not classified as irritating to skin
Unpublished reports

**Serious eye damage/eye irritation**

By analogy
Rabbit
Irreversible effects on the eye
Test substance: calcium peroxide
Unpublished reports

**Respiratory or skin sensitisation**

Does not cause skin sensitisation.

**Mutagenicity**

**Genotoxicity in vitro**

In vitro tests have shown mutagenic effects.

**Genotoxicity in vivo**

In vivo tests did not show mutagenic effects

**Carcinogenicity** No data available

**Toxicity for reproduction and development**

**Toxicity to reproduction/Fertility**

No toxicity to reproduction

**Developmental Toxicity/Teratogenicity**

No toxicity to reproduction

**STOT**

**STOT - single exposure**

Exposure routes: Inhalation
Target Organs: Respiratory system
May cause respiratory irritation.

**STOT - repeated exposure**

The substance or mixture is not classified as specific target organ toxicant, repeated exposure according to GHS criteria.
By analogy
Inhalation (vapour) 90-day - Rat
NOAEC: 7 ppm
Test substance: Hydrogen peroxide
Target Organs: Respiratory Tract
Method: OECD Test Guideline 413
Unpublished reports

**Aspiration toxicity** No data available

**11.2 Information on other hazards**

**Endocrine disrupting properties** The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

**Experience with human exposure** No data available

**Further information** No data available

## SECTION 12: Ecological information

### 12.1 Toxicity

**Aquatic Compartment**

**Acute toxicity to fish**

LC50 - 96 h : 16,4 mg/l - Pimephales promelas (fathead minnow)
semi-static test
Analytical monitoring: yes

Test substance: Hydrogen peroxide
By analogy
Unpublished internal reports
Harmful to fish.

**Acute toxicity to daphnia and other aquatic invertebrates**

EC50 - 48 h : 56 mg/l - Daphnia magna (Water flea)
static test
Analytical monitoring: yes
Method: OECD Test Guideline 202
Unpublished internal reports
Harmful to aquatic invertebrates.

**Toxicity to aquatic plants**

ErC50 - 72 h : 2,62 mg/l - Skeletonema costatum (marine diatom)
static test
Analytical monitoring: yes
Test substance: Hydrogen peroxide
By analogy
Unpublished internal reports
Harmful to algae.

**Toxicity to microorganisms**

EC50 - 3 h : > 1.000 mg/l - activated sludge
static test
Analytical monitoring: no
Method: OECD Test Guideline 209
Unpublished internal reports

**Chronic toxicity to fish** No data available

**Chronic toxicity to daphnia and other aquatic invertebrates** No data available

### 12.2 Persistence and degradability

**Abiotic degradation**

**Photodegradation** Not applicable
Medium
Air

complexation/precipitation of inorganic materials
Medium

Water
Soil

hydrolyses
Medium
Water

**Physical- and photo-chemical elimination** No data available

**Biodegradation**

**Biodegradability**

Not applicable, mixture of inorganic substances

**12.3 Bioaccumulative potential**

**Partition coefficient: n-octanol/water**

Not applicable (inorganic substance)

**Bioconcentration factor (BCF)**

Not applicable (inorganic substance)

**12.4 Mobility in soil**

**Adsorption potential (Koc)**

Air
Not applicable

Water
low solubility and mobility

Soil/sediments
No data available

**Known distribution to environmental compartments** No data available

**12.5 Results of PBT and vPvB assessment** According to Annex XIII of regulation (EC) 1907/2006 a PBT and vPvB assessment shall not be conducted for inorganic substances.
Not applicable (inorganic substance)

**12.6 Endocrine disrupting properties** The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

**12.7 Other adverse effects**

**Ecotoxicity assessment**

**Short-term (acute) aquatic hazard**

Harmful to aquatic life.

**Long-term (chronic) aquatic hazard**

No adverse chronic effect observed up to and including the threshold of 1 mg/L.

## SECTION 13: Disposal considerations

**13.1 Waste treatment methods**

**Product Disposal**

- Dilute with plenty of water.
- Dispose of wastes in an approved waste disposal facility.

- Can be landfilled, when in compliance with local regulations.
- In accordance with local and national regulations.

**Advice on cleaning and disposal of packaging**

- Clean container with water.
- Empty containers should be taken to an approved waste handling site for recycling or disposal.
- Uncleaned empty packaging
- Dispose of as unused product.
- In accordance with local and national regulations.

## SECTION 14: Transport information

**ADN/ADNR**
not regulated

**ADR**
not regulated

**RID**
not regulated

**IMDG**
not regulated

**IATA**
not regulated

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transport regulations for hazardous materials, it would be advisable to check their validity with your sales office.

## SECTION 15: Regulatory information

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

**Notification status**

| Inventory Information | Status |
|---|---|
| United States TSCA Inventory | - All substances listed as active on the TSCA inventory |
| Canadian Domestic Substances List (DSL) | - One or more components not listed on inventory |
| Australian Inventory of Industrial Chemicals (AIIC) | - One or more components not listed on inventory |
| Japan. CSCL - Inventory of Existing and New Chemical Substances | - Listed on Inventory |
| Korea. Korean Existing Chemicals Inventory (KECI) | - Listed on Inventory |
| China. Inventory of Existing Chemical Substances in China (IECSC) | - Listed on Inventory |
| Philippines Inventory of Chemicals and Chemical Substances (PICCS) | - One or more components not listed on inventory |
| Taiwan Chemical Substance Inventory (TCSI) | - Listed on Inventory |
| New Zealand. Inventory of Chemical Substances | - All components are listed on the NZIoC inventory. Additional HSNO obligations |

| | |
|---|---|
| | may apply. Please refer to Section 15 of SDS for New Zealand. |
| EU. European Registration, Evaluation, Authorization and Restriction of Chemical (REACH) | - When purchased from a Solvay legal entity based in the EEA ("European Economic Area"), this product is compliant with the registration provisions of the REACH Regulation (EC) No. 1907/2006 as all its components are either excluded, exempt, and/or registered. When purchased from a legal entity outside of the EEA, please contact your local representative for additional information. |

**15.2 Chemical safety assessment**

- A Chemical Safety Assessment has been carried out for this substance.
- See Exposure scenario

## SECTION 16: Other information

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

- H319: Causes serious eye irritation.
- H335: May cause respiratory irritation.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

- ADR: European Agreement on International Carriage of Dangerous Goods by Road.
- ADN: European Agreement on the International Carriage of Dangerous Goods by Inland Waterways.
- RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
- IATA: International Air Transport Association.
- ICAO-TI: Technical Instructions for Safe Transport of Dangerous Goods by Air.
- IMDG: International Maritime Dangerous Goods.
- TWA: Time weighted average
- ATE: Estimated value of acute toxicity
- EC: European Community number
- CAS: Chemical Abstracts Service.
- LD50: Substance that causes 50% (half) death in the test animals group (Median Fatal Dose).
- LC50: Substance concentration causing 50% (half) death in the test animals group.
- EC50: Effective Concentration of the substance causing the maximum of 50%.
- PBT: Persistent, Bioaccumulative and Toxic substance.
- vPvB: Very Persistent and Very Bioaccumulative.
- GHS/CLP/SEA: Classification, labeling, packaging regulation
- DNEL: Derived No Effect Level
- PNEC: Predicted No Effect Concentration
- STOT: Specific Target Organ Toxicity

**Not all acronyms listed above are referenced in this SDS.**

**Further information**

- Distribute new edition to clients
- See section 15

NB: In this document the numerical separator of the thousands is the "." (point), the decimal separator is "," (comma).

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. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in any other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.

# Annex

## Scenario List



## 1. ES1 : Formulation

### 1.1. Scenario description

| | | | |
|---|---|---|---|
| Main User Groups | : | **SU 3** | Industrial uses: Uses of substances as such or in preparations at industrial sites |
| Environmental release category | : | **ERC2** | Formulation of preparations |
| Process category | : | **PROC3** | Use in closed batch process (synthesis or formulation) |
| | | **PROC5** | Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) |
| | | **PROC8a** | Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities |
| | | **PROC8b** | Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities |
| | | **PROC9** | Transfer of substance or preparation into small containers (dedicated filling line, including weighing) |

### 1.2. Conditions of use affecting exposure

### 1.2.1 Contributing scenario controlling environmental exposure for: ERC2 Formulation of preparations

**Product characteristics**

| | | |
|---|---|---|
| Concentration of the Substance in Mixture/Article | : | Covers the percentage of the substance in the product up to 100 % (unless stated differently). |

**Amount**

| | | |
|---|---|---|
| Maximum daily site tonnage (kg/day): | : | 1000 |
| Annual site tonnage (tonnes/year): | : | 100 |
| Fraction of Regional tonnage used locally: | : | 1 |
| Maximum daily local emission to air | : | 25 kg/day |
| Maximum daily local emission to waste water | : | 20 kg/day |

**Environmental factors**

| | | |
|---|---|---|
| Flow rate | : | 18.000 m3/d |

**Other given operational conditions affecting environmental exposure**

| | | |
|---|---|---|
| Emission or Release Factor: Air | : | 2,5 % |
| Emission or Release Factor: Water | : | 2 % |
| Emission or Release Factor: Soil | : | 0,01 % |

**Technical conditions and measures / Organizational measures**

| | | |
|---|---|---|
| Water | : | Typical onsite wastewater treatment technology provides removal efficiency of (%):(Effectiveness (of a measure): 100 %) |

**Conditions and measures related to sewage treatment plant**

| | | |
|---|---|---|
| Type of Sewage Treatment Plant | : | Municipal STP |
| Flow rate of sewage treatment plant effluent | : | 2.000 m3/d |
| Sludge Treatment | : | Sewage sludge may be recovered for agricultural or horticultural purposes |

**1.2.2 Contributing scenario controlling worker exposure for: PROC8a Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities Transfer of solid product., CS39 Equipment cleaning and maintenance**

**Product characteristics**

| | | |
|---|---|---|
| Concentration of the Substance in Mixture/Article | | Covers the percentage of the substance in the product up to 100 % (unless stated differently). |
| Physical Form (at time of use) | : | Solid, high dustiness |

**Frequency and duration of use**

| | | |
|---|---|---|
| Exposure duration | : | < 8 h |

**Other operational conditions affecting workers exposure**

| | | |
|---|---|---|
| Outdoor / Indoor | : | Indoor |
| Remarks | : | Assumes activities are at ambient temperature (unless stated differently). |

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear respiratory protection., APF 20 (Effectiveness (of a measure): 95 %)
If splashes or direct exposure to dust are likely to occur, Tightly fitting safety goggles, Face-shield
Wear protective gloves., PVC, Natural Rubber, Neoprene gloves
Wear suitable working clothes., in case of exposure to dust clouds, Dust impervious protective suit

**1.2.3 Contributing scenario controlling worker exposure for: PROC3 Use in closed batch process (synthesis or formulation), CS29 Mixing operations (closed systems)**

**Product characteristics**

| | | |
|---|---|---|
| Concentration of the Substance in Mixture/Article | | Covers the percentage of the substance in the product up to 100 % (unless stated differently). |
| Physical Form (at time of use) | : | Solid, high dustiness |

**Frequency and duration of use**

| | | |
|---|---|---|
| Exposure duration | : | < 8 h |

**Other operational conditions affecting workers exposure**

| | | |
|---|---|---|
| Outdoor / Indoor | : | Indoor |
| Remarks | : | Assumes activities are at ambient temperature (unless stated differently). |

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.

**Conditions and measures related to personal protection, hygiene and health evaluation**

If splashes or direct exposure to dust are likely to occur, Tightly fitting safety goggles, Face-shield
Wear protective gloves., PVC, Natural Rubber, Neoprene gloves
Wear suitable working clothes., in case of exposure to dust clouds, Dust impervious protective suit

**1.2.4 Contributing scenario controlling worker exposure for: PROC8b Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities Transfer of solid product.**

**Product characteristics**

| | | |
|---|---|---|
| Concentration of the Substance in Mixture/Article | | Covers the percentage of the substance in the product up to 100 % (unless stated differently). |
| Physical Form (at time of use) | : | Solid, high dustiness |

**Frequency and duration of use**

| | | |
|---|---|---|
| Exposure duration | : | < 8 h |

**Other operational conditions affecting workers exposure**

| | | |
|---|---|---|
| Outdoor / Indoor | : | Indoor |
| Remarks | : | Assumes activities are at ambient temperature (unless stated differently). |

**Technical conditions and measures**

Local exhaust ventilation - efficiency of at least (Effectiveness (of a measure): 95 %)
Provide enhanced general ventilation by mechanical means.

**Conditions and measures related to personal protection, hygiene and health evaluation**

If splashes or direct exposure to dust are likely to occur, Tightly fitting safety goggles, Face-shield
Wear protective gloves., PVC, Natural Rubber, Neoprene gloves
Wear suitable working clothes., in case of exposure to dust clouds, Dust impervious protective suit

**1.2.5 Contributing scenario controlling worker exposure for: PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), CS30 Mixing operations (open systems), PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing) Transfer of solid product.**

**Product characteristics**

| | | |
|---|---|---|
| Concentration of the Substance in Mixture/Article | | Covers the percentage of the substance in the product up to 100 % (unless stated differently). |
| Physical Form (at time of use) | : | Solid, high dustiness |

**Frequency and duration of use**

| | | |
|---|---|---|
| Exposure duration | : | < 8 h |

**Other operational conditions affecting workers exposure**

| | | |
|---|---|---|
| Outdoor / Indoor | : | Indoor |
| Remarks | : | Assumes activities are at ambient temperature (unless stated differently). |

**Technical conditions and measures**

Local exhaust ventilation - efficiency of at least (Effectiveness (of a measure): 90 %)
Provide enhanced general ventilation by mechanical means.

**Conditions and measures related to personal protection, hygiene and health evaluation**

If splashes or direct exposure to dust are likely to occur, Tightly fitting safety goggles, Face-shield
Wear protective gloves., PVC, Natural Rubber, Neoprene gloves
Wear suitable working clothes., in case of exposure to dust clouds, Dust impervious protective suit

## 1.3. Exposure estimation and reference to its source

**Environment**

| Release factor | Value type | Compartment | Environmental exposure | RCR |
|---|---|---|---|---|
| ERC2 | Local PEC | Fresh water | 0,0564 µg/L | < 0,01 |
| | | Fresh water sediment | 0,2177 µg/kg (dw) | < 0,01 |
| | | Marine water | 0,00526 µg/L | < 0,01 |
| | | Marine sediment | 0,0203 µg/kg (dw) | < 0,01 |
| | | STP | 0 mg/L | < 0,01 |
| | | Agricultural soil | 0,001 mg/kg dry weight (d.w.) | 0,141 |
| | Regional PEC | Fresh water | 0,0564 µg/L | < 0,01 |
| | | Marine water | 0,0053 µg/L | < 0,01 |
| | | Fresh water sediment | < 0,0002 mg/kg dry weight (d.w.) | < 0,01 |
| | | Marine sediment | < 0,0001 mg/kg dry weight (d.w.) | < 0,01 |
| | | Air | < 0,0001 mg/m³ | |
| | | Agricultural soil | < 0,0001 mg/kg dry weight (d.w.) | < 0,01 |

**Human Health**

| Contributing Scenario | Specific conditions | Value type | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC8a | | Worker - inhalative, long-term - local | 0,75 mg/m³ | 0,121 |
| PROC3 | | Worker - inhalative, long-term - local | 0,3 mg/m³ | 0,048 |
| PROC8b | | Inhalation - Long-term – local effects | 0,375 mg/m³ | 0,06 |
| PROC5 | | Worker - inhalative, long-term - local | 0,75 mg/m³ | 0,121 |
| PROC9 | | Worker - inhalative, long-term - local | 0,6 mg/m³ | 0,097 |

RCR = Risk characterisation ratio

ERC2 Exposure Assessment Method : Used CHESAR model., Used EUSES model.
PROC8a Exposure Assessment Method : ECETOC TRA v3.0 worker
PROC3 Exposure Assessment Method : ECETOC TRA v3.0 worker
PROC8b Exposure Assessment Method : ECETOC TRA v3.0 worker
PROC5 Exposure Assessment Method : ECETOC TRA v3.0 worker
PROC9 Exposure Assessment Method : ECETOC TRA v3.0 worker

## 1.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

### 1.4.1 Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are :
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are

managed to at least equivalent levels.

**1.4.2 Health**
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

# 2. ES2 : Soil remediation

## 2.1. Scenario description

| | | | |
|---|---|---|---|
| Main User Groups | : | **SU 22** | Professional uses: Public domain (administration, education, entertainment, services, craftsmen) |
| Sectors of end-use | : | **SU0** | Other |
| Environmental release category | : | **ERC8e** | Wide dispersive outdoor use of reactive substances in open systems |
| Process category | : | **PROC4** | Use in batch and other process (synthesis) where opportunity for exposure arises |
| | | **PROC5** | Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) |
| | | **PROC8a** | Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities |

## 2.2. Conditions of use affecting exposure

### 2.2.1 Contributing scenario controlling environmental exposure for: ERC8e Wide dispersive outdoor use of reactive substances in open systems

No exposure assessment presented for the environment, Environmental exposure assessment for this scenario is not relevant.

**Amount**

Maximum daily site tonnage (kg/day): : 1000

### 2.2.2 Contributing scenario controlling worker exposure for: PROC8a Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities Transfer of solid product.

**Product characteristics**

| | | |
|---|---|---|
| Concentration of the Substance in Mixture/Article | | Covers the percentage of the substance in the product up to 100 % (unless stated differently). |
| Physical Form (at time of use) | : | powder, granules, pellets |

**Frequency and duration of use**

Exposure duration : <= 1 h

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Outdoor

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear respiratory protection., APF 20 (Effectiveness (of a measure): 95 %)
If splashes or direct exposure to dust are likely to occur, Tightly fitting safety goggles, Face-shield
Wear protective gloves., PVC, Natural Rubber, Neoprene gloves
Wear suitable working clothes., in case of exposure to dust clouds, Dust impervious protective suit

### 2.2.3 Contributing scenario controlling worker exposure for: PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), CS30 Mixing operations (open systems)

**Product characteristics**

| | | |
|---|---|---|
| Concentration of the Substance in Mixture/Article | | Covers the percentage of the substance in the product up to 50% |
| Physical Form (at time of use) | : | Powders dissolved in a liquid or incorporated in a liquid matrix |

**Frequency and duration of use**

Exposure duration : <= 8 h

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Outdoor

**Conditions and measures related to personal protection, hygiene and health evaluation**

If splashes or direct exposure to dust are likely to occur, Tightly fitting safety goggles, Face-shield
Wear protective gloves., PVC, Natural Rubber, Neoprene gloves
Wear suitable working clothes., in case of exposure to dust clouds, Dust impervious protective suit

**2.2.4 Contributing scenario controlling worker exposure for: PROC8a Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities liquid**

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 50%
Physical Form (at time of use) : Powders dissolved in a liquid or incorporated in a liquid matrix

**Frequency and duration of use**

Exposure duration : <= 8 h

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Outdoor

**Conditions and measures related to personal protection, hygiene and health evaluation**

If splashes or direct exposure to dust are likely to occur, Tightly fitting safety goggles, Face-shield
Wear protective gloves., PVC, Natural Rubber, Neoprene gloves
Wear suitable working clothes., in case of exposure to dust clouds, Dust impervious protective suit

**2.2.5 Contributing scenario controlling worker exposure for: PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises**

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 50%
Physical Form (at time of use) : Powders dissolved in a liquid or incorporated in a liquid matrix

**Frequency and duration of use**

Exposure duration : <= 8 h

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Outdoor

**Conditions and measures related to personal protection, hygiene and health evaluation**

If splashes or direct exposure to dust are likely to occur, Tightly fitting safety goggles, Face-shield
Wear protective gloves., PVC, Natural Rubber, Neoprene gloves
Wear suitable working clothes., in case of exposure to dust clouds, Dust impervious protective suit

## 2.3. Exposure estimation and reference to its source

**Human Health**

| Contributing Scenario | Specific conditions | Value type | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC8a | powder | Worker - inhalative, long-term - local | 0,085 mg/m³ | 0,014 |
| PROC5 | | Worker - inhalative, long-term - local | 0,1 mg/m³ | 0,016 |
| PROC8a | Transfer of liquid product. | Worker - inhalative, long-term - local | 0,062 mg/m³ | 0,01 |
| PROC4 | Transfer of liquid product. | Worker - inhalative, long-term - local | < 0,0001 mg/m³ | < 0,01 |

RCR = Risk characterisation ratio

PROC8a Exposure Assessment Method : ART 1.0
PROC5 Exposure Assessment Method : ART 1.0
PROC8a Exposure Assessment Method : ART 1.0
PROC4 Exposure Assessment Method : ART 1.0

## 2.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.