**SCÉNARIO D’EXPOSITION POUR LA COMMUNICATION**

**Nom de la substance:** calcium chloride

**numéro CE:** 233-140-8

**Numéro CAS:** 10043-52-4

**Numéro d’enregistrement:**

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**Chapitre 1. ES 1: Fabrication**

**1.1. Section de titre**

Intitulé de l’ES: Manufacture

|  |  |
| --- | --- |
| **Environnement** |  |
| 1: *Manufacturing of substances* | ERC 1 |
| **Travailleur** |  |
| 2: *Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment condition* | PROC 1 |
| 3: *Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment condition* | PROC 2 |
| 4: *Manufacture in closed batch processes with occasional controlled exposure or processes with equivalent containment condition* | PROC 3 |
| 5: Chemical production where opportunity for exposure arises | PROC 4 |
| 6: *Transfer of a substance or mixture during process sampling at dedicated facilities* | PROC 8b, PROC 26 |
| 7: *Transfer of a substance or mixture during process sampling at non-dedicated facilities* | PROC 8a, PROC 26 |
| 8: *Transfer of substance or mixture into small containers (dedicated filling line, including weighing)* | PROC 9, PROC 26 |
| 9: Tabletting, compression, extrusion, pelettisation, granulation | PROC 14 |
| 10: Use as laboratory reagent | PROC 15, PROC 26 |
| 11: *Transfer of substance or mixture (charging/discharging) at non dedicated-facilities* | PROC 8a, PROC 26 |
| 12: *Transfer of substance or mixture (charging/discharging) at dedicated-facilities* | PROC 8b, PROC 26 |
| 13: *Equipment cleaning and maintenance at non-dedicated facility* | PROC 8a, PROC 28 |
| 14: Handling of solid inorganic substances at ambient temperature | PROC 26 |
| 15: *Manual maintenance (cleaning and repair) of machinery at non-dedicated facility* | PROC 28 |

**1.2. Conditions d’utilisation affectant l’exposition**

**1.2.1. Contrôle de l’exposition des travailleurs**

**Conditions d’utilisation applicables à l’ensemble des scénarios de contribution**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 100 % |
| *Solid, medium dustiness. Covers also liquid form* |
| **Quantité utilisée (ou contenue dans les articles), fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 8 h/day |
| **Conditions et mesures techniques et organisationnelles** |
| Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). |
| Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. |
| **Conditions et mesures relatives à la protection individuelle, l’hygiène et l’évaluation de la santé** |
| Use suitable eye protection. |
| Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| **Autres conditions affectant l’exposition des travailleurs** |
| Indoor use |
| Assumes process temperature up to 20 °C |

**1.3. Estimation de l’exposition et référence à sa source**

**1.3.1. Exposition des travailleurs: *Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment condition* (PROC 1)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1.774 mg/m³ (Données mesurées) | 0.355 |
| Par inhalation, local, aigu | 1.774 mg/m³ (Données mesurées) | 0.177 |

**1.3.2. Exposition des travailleurs: *Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment condition* (PROC 2)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1.774 mg/m³ (Données mesurées) | 0.355 |
| Par inhalation, local, aigu | 1.774 mg/m³ (Données mesurées) | 0.177 |

**1.3.3. Exposition des travailleurs: *Manufacture in closed batch processes with occasional controlled exposure or processes with equivalent containment condition* (PROC 3)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1.774 mg/m³ (Données mesurées) | 0.355 |
| Par inhalation, local, aigu | 1.774 mg/m³ (Données mesurées) | 0.177 |

**1.3.4. Exposition des travailleurs: Chemical production where opportunity for exposure arises (PROC 4)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1.881 mg/m³ (Données mesurées) | 0.376 |
| Par inhalation, local, aigu | 1.881 mg/m³ (Données mesurées) | 0.188 |

**1.3.5. Exposition des travailleurs: *Transfer of a substance or mixture during process sampling at dedicated facilities* (PROC 8b, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 2.742 mg/m³ (Données mesurées) | 0.548 |
| Par inhalation, local, aigu | 2.742 mg/m³ (Données mesurées) | 0.274 |

**1.3.6. Exposition des travailleurs: *Transfer of a substance or mixture during process sampling at non-dedicated facilities* (PROC 8a, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 2.742 mg/m³ (Données mesurées) | 0.548 |
| Par inhalation, local, aigu | 2.742 mg/m³ (Données mesurées) | 0.274 |

**1.3.7. Exposition des travailleurs: *Transfer of substance or mixture into small containers (dedicated filling line, including weighing)* (PROC 9, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 2.742 mg/m³ (Données mesurées) | 0.548 |
| Par inhalation, local, aigu | 2.742 mg/m³ (Données mesurées) | 0.274 |

**1.3.8. Exposition des travailleurs: Tabletting, compression, extrusion, pelettisation, granulation (PROC 14)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 2.742 mg/m³ (Données mesurées) | 0.548 |
| Par inhalation, local, aigu | 2.742 mg/m³ (Données mesurées) | 0.274 |

**1.3.9. Exposition des travailleurs: Use as laboratory reagent (PROC 15, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1.774 mg/m³ (Données mesurées) | 0.355 |
| Par inhalation, local, aigu | 1.774 mg/m³ (Données mesurées) | 0.177 |

**1.3.10. Exposition des travailleurs: *Transfer of substance or mixture (charging/discharging) at non dedicated-facilities* (PROC 8a, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 2.742 mg/m³ (Données mesurées) | 0.548 |
| Par inhalation, local, aigu | 2.742 mg/m³ (Données mesurées) | 0.274 |

**1.3.11. Exposition des travailleurs: *Transfer of substance or mixture (charging/discharging) at dedicated-facilities* (PROC 8b, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 2.742 mg/m³ (Données mesurées) | 0.548 |
| Par inhalation, local, aigu | 2.742 mg/m³ (Données mesurées) | 0.274 |

**1.3.12. Exposition des travailleurs: *Equipment cleaning and maintenance at non-dedicated facility* (PROC 8a, PROC 28)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 2.742 mg/m³ (Données mesurées) | 0.548 |
| Par inhalation, local, aigu | 2.742 mg/m³ (Données mesurées) | 0.274 |

**1.3.13. Exposition des travailleurs: Handling of solid inorganic substances at ambient temperature (PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 2.742 mg/m³ (Données mesurées) | 0.548 |
| Par inhalation, local, aigu | 2.742 mg/m³ (Données mesurées) | 0.274 |

**1.3.14. Exposition des travailleurs: *Manual maintenance (cleaning and repair) of machinery at non-dedicated facility* (PROC 28)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 2.742 mg/m³ (Données mesurées) | 0.548 |
| Par inhalation, local, aigu | 2.742 mg/m³ (Données mesurées) | 0.274 |

**1.4. Guide destiné à l’utilisateur en aval pour déterminer s’il travaille dans les limites établies par le scénario d’exposition**

**Chapitre 2. ES 2: Formulation ou remballage**

**2.1. Section de titre**

Intitulé de l’ES: Formulation or re-packing; Distribution of substance

|  |  |
| --- | --- |
| **Environnement** |  |
| 1: Formulation into mixture | ERC 2 |
| **Travailleur** |  |
| 2: *Chemical production in closed process without likelihood of exposure or in containment conditions.* | PROC 1 |
| 3: *Chemical production in closed continuous process with occasional controlled exposure.* | PROC 2 |
| 4: *Formulation in closed batch processes with occasional controlled exposure.* | PROC 3 |
| 5: *Chemical production where opportunity for exposure arises* | PROC 4 |
| 6: Mixing or blending in batch processes | PROC 5 |
| 7: *Transfer of a substance or mixture during process sampling at dedicated facilities* | PROC 8b, PROC 26 |
| 8: *Transfer of a substance or mixture during process sampling at non-dedicated facilities* | PROC 8a, PROC 26 |
| 9: *Transfer of substance or mixture into small containers (dedicated filling line, including weighing)* | PROC 9, PROC 26 |
| 10: Use as laboratory reagent | PROC 15, PROC 26 |
| 11: Tabletting, compression, extrusion, pelettisation, granulation | PROC 14 |
| 12: *Transfer of substance or mixture (charging/discharging) at non dedicated-facilities* | PROC 8a, PROC 26 |
| 13: *Transfer of substance or mixture (charging/discharging) at dedicated-facilities* | PROC 8b, PROC 26 |
| 14: *Equipment cleaning and maintenance at non-dedicated facility* | PROC 8a, PROC 28 |
| 15: Manual maintenance (cleaning and repair) of machinery | PROC 28 |

**2.2. Conditions d’utilisation affectant l’exposition**

**2.2.1. Contrôle de l’exposition des travailleurs**

**Conditions d’utilisation applicables à l’ensemble des scénarios de contribution**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 100 % |
| *Solid, medium dustiness. Covers also liquid form* |
| **Conditions et mesures techniques et organisationnelles** |
| Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. |
| **Conditions et mesures relatives à la protection individuelle, l’hygiène et l’évaluation de la santé** |
| Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| *Use suitable eye protection.* |
| **Autres conditions affectant l’exposition des travailleurs** |
| Indoor use |
| Assumes process temperature up to 20 °C |

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**Conditions particulières d’utilisation par scénario de contribution**

|  |  |
| --- | --- |
| **Scénario de contribution** | **Mesures spécifiques** |
| ***Chemical production in closed process without likelihood of exposure or in containment conditions.* (PROC 1)** | Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour). |
| ***Chemical production in closed continuous process with occasional controlled exposure.* (PROC 2)** | Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour). |
| ***Formulation in closed batch processes with occasional controlled exposure.* (PROC 3)** | Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour). |
| ***Chemical production where opportunity for exposure arises* (PROC 4)** | Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.* |
| **Mixing or blending in batch processes (PROC 5)** | Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.* |
| ***Transfer of a substance or mixture during process sampling at dedicated facilities* (PROC 8b, PROC 26)** | Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). |
| ***Transfer of a substance or mixture during process sampling at non-dedicated facilities* (PROC 8a, PROC 26)** | Covers use up to 1 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.* |
| ***Transfer of substance or mixture into small containers (dedicated filling line, including weighing)* (PROC 9, PROC 26)** | Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.* |
| **Use as laboratory reagent (PROC 15, PROC 26)** | Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour). |
| **Tabletting, compression, extrusion, pelettisation, granulation (PROC 14)** | Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour). |
| ***Transfer of substance or mixture (charging/discharging) at non dedicated-facilities* (PROC 8a, PROC 26)** | Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.* |
| ***Transfer of substance or mixture (charging/discharging) at dedicated-facilities* (PROC 8b, PROC 26)** | Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). |
| ***Equipment cleaning and maintenance at non-dedicated facility* (PROC 8a, PROC 28)** | Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  *Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]*  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.* |
| **Manual maintenance (cleaning and repair) of machinery (PROC 28)** | Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  *Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]*  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.* |

**2.3. Estimation de l’exposition et référence à sa source**

**2.3.1. Exposition des travailleurs: *Chemical production in closed process without likelihood of exposure or in containment conditions.* (PROC 1)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.01 mg/m³ (TRA Workers 3.0) | < 0.01 |
| Par inhalation, local, aigu | 0.04 mg/m³ (TRA Workers 3.0) | < 0.01 |

**2.3.2. Exposition des travailleurs: *Chemical production in closed continuous process with occasional controlled exposure.* (PROC 2)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.5 mg/m³ (TRA Workers 3.0) | 0.1 |
| Par inhalation, local, aigu | 2 mg/m³ (TRA Workers 3.0) | 0.2 |

**2.3.3. Exposition des travailleurs: *Formulation in closed batch processes with occasional controlled exposure.* (PROC 3)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1 mg/m³ (TRA Workers 3.0) | 0.2 |
| Par inhalation, local, aigu | 4 mg/m³ (TRA Workers 3.0) | 0.4 |

**2.3.4. Exposition des travailleurs: *Chemical production where opportunity for exposure arises* (PROC 4)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**2.3.5. Exposition des travailleurs: Mixing or blending in batch processes (PROC 5)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**2.3.6. Exposition des travailleurs: *Transfer of a substance or mixture during process sampling at dedicated facilities* (PROC 8b, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**2.3.7. Exposition des travailleurs: *Transfer of a substance or mixture during process sampling at non-dedicated facilities* (PROC 8a, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.1 mg/m³ (TRA Workers 3.0) | 0.02 |
| Par inhalation, local, aigu | 2 mg/m³ (TRA Workers 3.0) | 0.2 |

**2.3.8. Exposition des travailleurs: *Transfer of substance or mixture into small containers (dedicated filling line, including weighing)* (PROC 9, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**2.3.9. Exposition des travailleurs: Use as laboratory reagent (PROC 15, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.5 mg/m³ (TRA Workers 3.0) | 0.1 |
| Par inhalation, local, aigu | 2 mg/m³ (TRA Workers 3.0) | 0.2 |

**2.3.10. Exposition des travailleurs: Tabletting, compression, extrusion, pelettisation, granulation (PROC 14)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1 mg/m³ (TRA Workers 3.0) | 0.2 |
| Par inhalation, local, aigu | 4 mg/m³ (TRA Workers 3.0) | 0.4 |

**2.3.11. Exposition des travailleurs: *Transfer of substance or mixture (charging/discharging) at non dedicated-facilities* (PROC 8a, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**2.3.12. Exposition des travailleurs: *Transfer of substance or mixture (charging/discharging) at dedicated-facilities* (PROC 8b, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**2.3.13. Exposition des travailleurs: *Equipment cleaning and maintenance at non-dedicated facility* (PROC 8a, PROC 28)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.5 mg/m³ (TRA Workers 3.0) | 0.1 |
| Par inhalation, local, aigu | 2 mg/m³ (TRA Workers 3.0) | 0.2 |

**2.3.14. Exposition des travailleurs: Manual maintenance (cleaning and repair) of machinery (PROC 28)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.5 mg/m³ (PROC 8a estimate used to cover PROC 28) | 0.1 |
| Par inhalation, local, aigu | 2 mg/m³ (PROC 8a estimate used to cover PROC 28) | 0.2 |

**2.4. Guide destiné à l’utilisateur en aval pour déterminer s’il travaille dans les limites établies par le scénario d’exposition**

**Chapitre 3. ES 3: Utilisation sur sites industriels; Divers secteurs (SU 1, SU 2a, SU 2b, SU 4, SU 5, SU 6b, SU 8, SU 9, SU 11, SU 12, SU 13, SU 14, SU 15, SU 16, SU 17)**

**3.1. Section de titre**

Intitulé de l’ES: *Use at industrial site (e.g. Industrial Indoor use as Chemical Intermediate and Process aid, Industrial Outdoor use)*

Secteur d’utilisation: Agriculture, sylviculture, pêche (SU 1), Exploitation minière (hors industries offshore) (SU 2a), Industries offshore (SU 2b), Fabrication de produits alimentaires (SU 4), Fabrication de textiles, cuir, fourrure (SU 5), Fabrication de pulpe, papier et produits papetiers (SU 6b), Fabrication de substances chimiques en vrac, à grande échelle (y compris les produits pétroliers) (SU 8), Fabrication de substances chimiques fines (SU 9), Fabrication de produits en caoutchouc (SU 11), Fabrication de produits en matières plastiques, y compris formulation et conversion (SU 12), Fabrication d’autres produits minéraux non métalliques, p. ex. plâtre, ciment (SU 13), Fabrication de métaux de base, y compris les alliages (SU 14), Fabrication de produits métalliques, à l’exclusion des machines et équipements (SU 15), Fabrication de produits informatiques, électroniques et optiques, équipements électriques (SU 16), Fabrication générale, p. ex. machines, équipements, véhicules, autres matériels de transport (SU 17)

|  |  |
| --- | --- |
| **Environnement** |  |
| 1: Use as an intermediate | ERC 6a |
| 2: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) | ERC 4 |
| **Travailleur** |  |
| 3: *Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment conditions* | PROC 1 |
| 4: *Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions* | PROC 2 |
| 5: *Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment condition* | PROC 3 |
| 6: Chemical production where opportunity for exposure arises | PROC 4 |
| 7: Mixing or blending in batch processes | PROC 5 |
| 8: Calendering operations | PROC 6 |
| 9: Indoor use; Industrial spraying; Solid in solution | PROC 7 |
| 10: Outdoor use; Industrial spraying | PROC 7 |
| 11: Outdoor use; Industrial spraying | PROC 7 |
| 12: *Transfer of a substance or mixture during process sampling at non-dedicated facilities with a local exhaust ventilation* | PROC 8a, PROC 26 |
| 13: *Transfer of a substance or mixture during process sampling at non-dedicated facilities without a local exhaust ventilation* | PROC 8a, PROC 26 |
| 14: *Transfer of a substance or mixture during process sampling at dedicated facilities with a local exhaust ventilation* | PROC 8b, PROC 26 |
| 15: *Transfer of a substance or mixture during process sampling at dedicated facilities without a local exhaust ventilation* | PROC 8b, PROC 26 |
| 16: *Transfer of substance or mixture (charging/discharging) at non-dedicated facilities with a local exhaust ventilation.* | PROC 8a, PROC 26 |
| 17: *Transfer of substance or mixture (charging/discharging) at non-dedicated facilities without a local exhaust ventilation.* | PROC 8a, PROC 26 |
| 18: *Transfer of substance or mixture (charging/discharging) at dedicated facilities with a local exhaust ventilation.* | PROC 8b, PROC 26 |
| 19: *Transfer of substance or mixture (charging/discharging) at dedicated facilities without a local exhaust ventilation.* | PROC 8b, PROC 26 |
| 20: *Equipment cleaning and maintenance at non-dedicated facility* | PROC 8a, PROC 28 |
| 21: *Transfer of substance or mixture into small containers (dedicated filling line, including weighing) at facilities with a local exhaust ventilation* | PROC 9, PROC 26, PROC 27b |
| 22: *Transfer of substance or mixture into small containers (dedicated filling line, including weighing) at facilities without a local exhaust ventilation* | PROC 9, PROC 26 |
| 23: Roller application or brushing | PROC 10 |
| 24: Treatment of articles by dipping and pouring | PROC 13 |
| 25: Tabletting, compression, extrusion, pelettisation, granulation | PROC 14 |
| 26: Use as laboratory reagent | PROC 15, PROC 26, PROC 27b |
| 27: *Manufacturing and processing of minerals and/or metals at substantially elevated temperature (> melting point - High fugacity)* | PROC 22, PROC 27a |
| 28: *Manufacturing and processing of minerals and/or metals at substantially elevated temperature (>= melting point. Medium fugacity)* | PROC 22, PROC 27a |
| 29: *Open processing and transfer operations at substantially elevated temperature (=< melting point - Medium fugacity)* | PROC 23, PROC 27a |
| 30: *Open processing and transfer operations at substantially elevated temperature (> melting point - High fugacity)* | PROC 23, PROC 27a |
| 31: *Manual maintenance (cleaning and repair) of machinery at noon-dedicated facilities* | PROC 28 |

**3.2. Conditions d’utilisation affectant l’exposition**

**3.2.1. Contrôle de l’exposition des travailleurs**

**Conditions d’utilisation applicables à l’ensemble des scénarios de contribution**

|  |
| --- |
| **Conditions et mesures techniques et organisationnelles** |
| Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. |
| **Conditions et mesures relatives à la protection individuelle, l’hygiène et l’évaluation de la santé** |
| Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| *Use suitable eye protection.* |
| **Autres conditions affectant l’exposition des travailleurs** |
| Assumes process temperature up to 20 °C |

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**Conditions particulières d’utilisation par scénario de contribution**

|  |  |
| --- | --- |
| **Scénario de contribution** | **Mesures spécifiques** |
| ***Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment conditions* (PROC 1)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Indoor use |
| ***Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions* (PROC 2)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Indoor use |
| ***Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment condition* (PROC 3)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Indoor use |
| **Chemical production where opportunity for exposure arises (PROC 4)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Local exhaust ventilation; Inhalation - minimum efficiency of 90 %  Indoor use |
| **Mixing or blending in batch processes (PROC 5)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS.  Outdoor use |
| **Calendering operations (PROC 6)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.*  Indoor use |
| **Indoor use; Industrial spraying; Solid in solution (PROC 7)** | Covers concentrations up to 35 %  *Physical form of the product is assumed as liquid, this is conservative as it is a solid in a liquid with a very low vapour pressure.*  Covers use up to 2 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  *Covers exposure in the presence of local exhaust ventilation of minimum 95% efficiency or respiratory protection with minimum 90% efficiency (e.g. APF of10)*  *covers spraying with moderate application rate (0.3-3 L/minute)*  *Covers spraying direction only horizontal or downward*  Indoor use |
| **Outdoor use; Industrial spraying (PROC 7)** | Covers concentrations up to 35 %  *Physical form of the product is assumed as liquid, this is conservative as it is a solid in a liquid with a very low vapour pressure.*  Covers use up to 0.25 h/day  *Covers activity where the primary emission source is located in the breathing zone of the worker (i.e. the volume of air within 1 metre in any direction of the worker’s head)*  *covers any spraying direction*  *covers spraying with high compressed air*  *covers high spraying application rate (> 3 L/minute)*  *Covers spraying activity wearing respiratory protection with minimum efficiency of 95% (i.e. APF of 20)*  Outdoor use |
| **Outdoor use; Industrial spraying (PROC 7)** | Covers concentrations up to 35 %  *Physical form of the product is assumed as liquid, this is conservative as it is a solid in a liquid with a very low vapour pressure.*  Covers use up to 2 h/day  *Covers activity where the primary emission source is located out the breathing zone of the worker (i.e. the volume of air is more than 1 metre in any direction of the worker’s head)*  *Covers spraying direction only horizontal or downward*  *covers spraying with high compressed air*  *covers high spraying application rate (> 3 L/minute)*  Outdoor use  *covers partial personal enclosure (e.g. truck cabin)* |
| ***Transfer of a substance or mixture during process sampling at non-dedicated facilities with a local exhaust ventilation* (PROC 8a, PROC 26)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 1 h/day  Local exhaust ventilation; Inhalation - minimum efficiency of 90 %  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Indoor use |
| ***Transfer of a substance or mixture during process sampling at non-dedicated facilities without a local exhaust ventilation* (PROC 8a, PROC 26)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 1 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.*  Indoor use |
| ***Transfer of a substance or mixture during process sampling at dedicated facilities with a local exhaust ventilation* (PROC 8b, PROC 26)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Local exhaust ventilation; Inhalation - minimum efficiency of 95 %  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Indoor use |
| ***Transfer of a substance or mixture during process sampling at dedicated facilities without a local exhaust ventilation* (PROC 8b, PROC 26)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Indoor use |
| ***Transfer of substance or mixture (charging/discharging) at non-dedicated facilities with a local exhaust ventilation.* (PROC 8a, PROC 26)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Local exhaust ventilation; Inhalation - minimum efficiency of 90 %  Indoor use |
| ***Transfer of substance or mixture (charging/discharging) at non-dedicated facilities without a local exhaust ventilation.* (PROC 8a, PROC 26)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.*  Indoor or outdoor use |
| ***Transfer of substance or mixture (charging/discharging) at dedicated facilities with a local exhaust ventilation.* (PROC 8b, PROC 26)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Local exhaust ventilation; Inhalation - minimum efficiency of 95 %  Indoor use |
| ***Transfer of substance or mixture (charging/discharging) at dedicated facilities without a local exhaust ventilation.* (PROC 8b, PROC 26)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Indoor or outdoor use |
| ***Equipment cleaning and maintenance at non-dedicated facility* (PROC 8a, PROC 28)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Local exhaust ventilation; Inhalation - minimum efficiency of 90 %  *Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]*  Indoor use |
| ***Transfer of substance or mixture into small containers (dedicated filling line, including weighing) at facilities with a local exhaust ventilation* (PROC 9, PROC 26, PROC 27b)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Local exhaust ventilation; Inhalation - minimum efficiency of 90 %  Indoor use |
| ***Transfer of substance or mixture into small containers (dedicated filling line, including weighing) at facilities without a local exhaust ventilation* (PROC 9, PROC 26)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.*  Indoor or outdoor use |
| **Roller application or brushing (PROC 10)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.*  Indoor use |
| **Treatment of articles by dipping and pouring (PROC 13)** | Solid, medium dustiness  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Indoor use |
| **Tabletting, compression, extrusion, pelettisation, granulation (PROC 14)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Indoor use |
| **Use as laboratory reagent (PROC 15, PROC 26, PROC 27b)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Indoor use |
| ***Manufacturing and processing of minerals and/or metals at substantially elevated temperature (> melting point - High fugacity)* (PROC 22, PROC 27a)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Local exhaust ventilation; Inhalation - minimum efficiency of 90 %  Indoor use |
| ***Manufacturing and processing of minerals and/or metals at substantially elevated temperature (>= melting point. Medium fugacity)* (PROC 22, PROC 27a)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Local exhaust ventilation; Inhalation - minimum efficiency of 90 %  Indoor use |
| ***Open processing and transfer operations at substantially elevated temperature (=< melting point - Medium fugacity)* (PROC 23, PROC 27a)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Indoor use |
| ***Open processing and transfer operations at substantially elevated temperature (> melting point - High fugacity)* (PROC 23, PROC 27a)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a good standard of controlled ventilation (5 to 10 air changes per hour).  Local exhaust ventilation; Inhalation - minimum efficiency of 90 %  Indoor use |
| ***Manual maintenance (cleaning and repair) of machinery at noon-dedicated facilities* (PROC 28)** | Covers concentrations up to 100 %  *Solid, medium dustiness. Covers also liquid form*  Covers use up to 8 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Local exhaust ventilation; Inhalation - minimum efficiency of %  *Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]*  Indoor use |

**3.3. Estimation de l’exposition et référence à sa source**

**3.3.1. Exposition des travailleurs: *Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment conditions* (PROC 1)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.01 mg/m³ (TRA Workers 3.0) | < 0.01 |
| Par inhalation, local, aigu | 0.04 mg/m³ (TRA Workers 3.0) | < 0.01 |

**3.3.2. Exposition des travailleurs: *Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions* (PROC 2)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.5 mg/m³ (TRA Workers 3.0) | 0.1 |
| Par inhalation, local, aigu | 2 mg/m³ (TRA Workers 3.0) | 0.2 |

**3.3.3. Exposition des travailleurs: *Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment condition* (PROC 3)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1 mg/m³ (TRA Workers 3.0) | 0.2 |
| Par inhalation, local, aigu | 4 mg/m³ (TRA Workers 3.0) | 0.4 |

**3.3.4. Exposition des travailleurs: Chemical production where opportunity for exposure arises (PROC 4)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**3.3.5. Exposition des travailleurs: Mixing or blending in batch processes (PROC 5)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**3.3.6. Exposition des travailleurs: Calendering operations (PROC 6)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**3.3.7. Exposition des travailleurs: Indoor use; Industrial spraying; Solid in solution (PROC 7)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1.2 mg/m³ (ART) | 0.24 |
| Par inhalation, local, aigu | 9.6 mg/m³ (ART) | 0.96 |

**3.3.8. Exposition des travailleurs: Outdoor use; Industrial spraying (PROC 7)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1.2 mg/m³ (ART) | 0.24 |
| Par inhalation, local, aigu | 9.6 mg/m³ (ART) | 0.96 |

**3.3.9. Exposition des travailleurs: Outdoor use; Industrial spraying (PROC 7)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1.2 mg/m³ (ART) | 0.24 |
| Par inhalation, local, aigu | 9.6 mg/m³ (ART) | 0.96 |

**3.3.10. Exposition des travailleurs: *Transfer of a substance or mixture during process sampling at non-dedicated facilities with a local exhaust ventilation* (PROC 8a, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.1 mg/m³ (TRA Workers 3.0) | 0.02 |
| Par inhalation, local, aigu | 2 mg/m³ (TRA Workers 3.0) | 0.2 |

**3.3.11. Exposition des travailleurs: *Transfer of a substance or mixture during process sampling at non-dedicated facilities without a local exhaust ventilation* (PROC 8a, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.1 mg/m³ (TRA Workers 3.0) | 0.02 |
| Par inhalation, local, aigu | 2 mg/m³ (TRA Workers 3.0) | 0.2 |

**3.3.12. Exposition des travailleurs: *Transfer of a substance or mixture during process sampling at dedicated facilities with a local exhaust ventilation* (PROC 8b, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.05 mg/m³ (TRA Workers 3.0) | 0.01 |
| Par inhalation, local, aigu | 0.2 mg/m³ (TRA Workers 3.0) | 0.02 |

**3.3.13. Exposition des travailleurs: *Transfer of a substance or mixture during process sampling at dedicated facilities without a local exhaust ventilation* (PROC 8b, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1 mg/m³ (TRA Workers 3.0) | 0.2 |
| Par inhalation, local, aigu | 4 mg/m³ (TRA Workers 3.0) | 0.4 |

**3.3.14. Exposition des travailleurs: *Transfer of substance or mixture (charging/discharging) at non-dedicated facilities with a local exhaust ventilation.* (PROC 8a, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**3.3.15. Exposition des travailleurs: *Transfer of substance or mixture (charging/discharging) at non-dedicated facilities without a local exhaust ventilation.* (PROC 8a, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**3.3.16. Exposition des travailleurs: *Transfer of substance or mixture (charging/discharging) at dedicated facilities with a local exhaust ventilation.* (PROC 8b, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.035 mg/m³ (TRA Workers 3.0) | < 0.01 |
| Par inhalation, local, aigu | 0.14 mg/m³ (TRA Workers 3.0) | 0.014 |

**3.3.17. Exposition des travailleurs: *Transfer of substance or mixture (charging/discharging) at dedicated facilities without a local exhaust ventilation.* (PROC 8b, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**3.3.18. Exposition des travailleurs: *Equipment cleaning and maintenance at non-dedicated facility* (PROC 8a, PROC 28)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.5 mg/m³ (TRA Workers 3.0) | 0.1 |
| Par inhalation, local, aigu | 2 mg/m³ (TRA Workers 3.0) | 0.2 |

**3.3.19. Exposition des travailleurs: *Transfer of substance or mixture into small containers (dedicated filling line, including weighing) at facilities with a local exhaust ventilation* (PROC 9, PROC 26, PROC 27b)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**3.3.20. Exposition des travailleurs: *Transfer of substance or mixture into small containers (dedicated filling line, including weighing) at facilities without a local exhaust ventilation* (PROC 9, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.5 mg/m³ (TRA Workers 3.0) | 0.1 |
| Par inhalation, local, aigu | 2 mg/m³ (TRA Workers 3.0) | 0.2 |

**3.3.21. Exposition des travailleurs: Roller application or brushing (PROC 10)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**3.3.22. Exposition des travailleurs: Treatment of articles by dipping and pouring (PROC 13)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1 mg/m³ (TRA Workers 3.0) | 0.2 |
| Par inhalation, local, aigu | 4 mg/m³ (TRA Workers 3.0) | 0.4 |

**3.3.23. Exposition des travailleurs: Tabletting, compression, extrusion, pelettisation, granulation (PROC 14)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1 mg/m³ (TRA Workers 3.0) | 0.2 |
| Par inhalation, local, aigu | 4 mg/m³ (TRA Workers 3.0) | 0.4 |

**3.3.24. Exposition des travailleurs: Use as laboratory reagent (PROC 15, PROC 26, PROC 27b)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.5 mg/m³ (TRA Workers 3.0) | 0.1 |
| Par inhalation, local, aigu | 2 mg/m³ (TRA Workers 3.0) | 0.2 |

**3.3.25. Exposition des travailleurs: *Manufacturing and processing of minerals and/or metals at substantially elevated temperature (> melting point - High fugacity)* (PROC 22, PROC 27a)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.1 mg/m³ (TRA Workers 3.0) | 0.02 |
| Par inhalation, local, aigu | 0.4 mg/m³ (TRA Workers 3.0) | 0.04 |

**3.3.26. Exposition des travailleurs: *Manufacturing and processing of minerals and/or metals at substantially elevated temperature (>= melting point. Medium fugacity)* (PROC 22, PROC 27a)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.1 mg/m³ (TRA Workers 3.0) | 0.02 |
| Par inhalation, local, aigu | 0.4 mg/m³ (TRA Workers 3.0) | 0.04 |

**3.3.27. Exposition des travailleurs: *Open processing and transfer operations at substantially elevated temperature (=< melting point - Medium fugacity)* (PROC 23, PROC 27a)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1 mg/m³ (TRA Workers 3.0) | 0.2 |
| Par inhalation, local, aigu | 4 mg/m³ (TRA Workers 3.0) | 0.4 |

**3.3.28. Exposition des travailleurs: *Open processing and transfer operations at substantially elevated temperature (> melting point - High fugacity)* (PROC 23, PROC 27a)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.03 mg/m³ (TRA Workers 3.0) | < 0.01 |
| Par inhalation, local, aigu | 0.12 mg/m³ (TRA Workers 3.0) | 0.012 |

**3.3.29. Exposition des travailleurs: *Manual maintenance (cleaning and repair) of machinery at noon-dedicated facilities* (PROC 28)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.5 mg/m³ (ECETOC TRA Workers) | 0.1 |
| Par inhalation, local, aigu | 2 mg/m³ (ECETOC TRA Workers) | 0.2 |

**3.4. Guide destiné à l’utilisateur en aval pour déterminer s’il travaille dans les limites établies par le scénario d’exposition**

Outil d’étalonnage: For the evaluation of spraying activities the ART (Advanced Reach Tool) modeling tool has been used. In case the DU cannot demonstrate safe use with the conditions currently presented in this SDS Annex, the ART modeling Tool can be used as scaling tool.

**Chapitre 4. ES 4: Utilisation étendue par les travailleurs professionnels; Divers secteurs (SU 0, SU 1, SU 13, SU 19, SU 20)**

**4.1. Section de titre**

Intitulé de l’ES: Professional use; Indoor use

Secteur d’utilisation: Autres (SU 0), Agriculture, sylviculture, pêche (SU 1), Fabrication d’autres produits minéraux non métalliques, p. ex. plâtre, ciment (SU 13), Bâtiment et travaux de construction (SU 19), Services de santé (SU 20)

|  |  |
| --- | --- |
| **Environnement** |  |
| 1: Indoor use; Professional use | ERC 8a |
| **Travailleur** |  |
| 2: *Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment conditions* | PROC 1 |
| 3: *Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions* | PROC 2 |
| 4: *Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment condition* | PROC 3 |
| 5: Chemical production where opportunity for exposure arises | PROC 4 |
| 6: Mixing or blending in batch processes | PROC 5 |
| 7: *Transfer of substance or mixture (charging/discharging) at non-dedicated facilities* | PROC 8a, PROC 26 |
| 8: *Transfer of substance or mixture (charging/discharging) at dedicated facilities* | PROC 8b, PROC 26 |
| 9: *Transfer of substance or mixture into small containers (dedicated filling line, including weighing)* | PROC 9, PROC 26 |
| 10: Roller application or brushing | PROC 10 |
| 11: Indoor use; Non-industrial spraying; Solid in solution | PROC 11 |
| 12: Use as laboratory reagent | PROC 15, PROC 26 |
| 13: Manual activities involving hand contact | PROC 19 |
| 14: Use of functional fluids in small devices | PROC 20 |
| 15: *Equipment cleaning and maintenance at non-dedicated facility* | PROC 8a, PROC 28 |
| 16: *Manual maintenance (cleaning and repair) of machinery at non-dedicated facility* | PROC 28 |

**4.2. Conditions d’utilisation affectant l’exposition**

**4.2.1. Contrôle de l’exposition des travailleurs**

**Conditions d’utilisation applicables à l’ensemble des scénarios de contribution**

|  |
| --- |
| **Conditions et mesures relatives à la protection individuelle, l’hygiène et l’évaluation de la santé** |
| *Use suitable eye protection.* |
| **Autres conditions affectant l’exposition des travailleurs** |
| Indoor use |
| Assumes process temperature up to 20 °C |

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**Conditions particulières d’utilisation par scénario de contribution**

|  |  |
| --- | --- |
| **Scénario de contribution** | **Mesures spécifiques** |
| ***Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment conditions* (PROC 1)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| ***Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions* (PROC 2)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| ***Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment condition* (PROC 3)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| **Chemical production where opportunity for exposure arises (PROC 4)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Local exhaust ventilation; Inhalation - minimum efficiency of 80 %  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| **Mixing or blending in batch processes (PROC 5)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Local exhaust ventilation; Inhalation - minimum efficiency of 80 %  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| ***Transfer of substance or mixture (charging/discharging) at non-dedicated facilities* (PROC 8a, PROC 26)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Local exhaust ventilation; Inhalation - minimum efficiency of 80 %  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| ***Transfer of substance or mixture (charging/discharging) at dedicated facilities* (PROC 8b, PROC 26)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Local exhaust ventilation; Inhalation - minimum efficiency of 80 %  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| ***Transfer of substance or mixture into small containers (dedicated filling line, including weighing)* (PROC 9, PROC 26)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Local exhaust ventilation; Inhalation - minimum efficiency of 80 %  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| **Roller application or brushing (PROC 10)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Local exhaust ventilation; Inhalation - minimum efficiency of 90 %  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| **Indoor use; Non-industrial spraying; Solid in solution (PROC 11)** | Covers concentrations up to 35 %  *Physical form of the product is assumed as liquid, this is conservative as it is a solid in a liquid with a very low vapour pressure.*  Covers use up to 2 h/day  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  *Covers exposure in the presence of local exhaust ventilation of minimum 95% efficiency or respiratory protection with minimum 90% efficiency (e.g. APF of10)*  *covers spraying with moderate application rate (0.3-3 L/minute)*  *Covers spraying direction only horizontal or downward*  Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| **Use as laboratory reagent (PROC 15, PROC 26)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| **Manual activities involving hand contact (PROC 19)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Local exhaust ventilation; Inhalation - minimum efficiency of 80 %  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| **Use of functional fluids in small devices (PROC 20)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| ***Equipment cleaning and maintenance at non-dedicated facility* (PROC 8a, PROC 28)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  *Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.* |
| ***Manual maintenance (cleaning and repair) of machinery at non-dedicated facility* (PROC 28)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Provide a basic standard of general ventilation (1 to 3 air changes per hour).  Local exhaust ventilation; Inhalation - minimum efficiency of %  *Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |

**4.3. Estimation de l’exposition et référence à sa source**

**4.3.1. Exposition des travailleurs: *Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment conditions* (PROC 1)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.01 mg/m³ (TRA Workers 3.0) | < 0.01 |
| Par inhalation, local, aigu | 0.04 mg/m³ (TRA Workers 3.0) | < 0.01 |

**4.3.2. Exposition des travailleurs: *Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions* (PROC 2)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1 mg/m³ (TRA Workers 3.0) | 0.2 |
| Par inhalation, local, aigu | 4 mg/m³ (TRA Workers 3.0) | 0.4 |

**4.3.3. Exposition des travailleurs: *Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment condition* (PROC 3)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**4.3.4. Exposition des travailleurs: Chemical production where opportunity for exposure arises (PROC 4)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**4.3.5. Exposition des travailleurs: Mixing or blending in batch processes (PROC 5)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**4.3.6. Exposition des travailleurs: *Transfer of substance or mixture (charging/discharging) at non-dedicated facilities* (PROC 8a, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1.4 mg/m³ (TRA Workers 3.0) | 0.28 |
| Par inhalation, local, aigu | 5.6 mg/m³ (TRA Workers 3.0) | 0.56 |

**4.3.7. Exposition des travailleurs: *Transfer of substance or mixture (charging/discharging) at dedicated facilities* (PROC 8b, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**4.3.8. Exposition des travailleurs: *Transfer of substance or mixture into small containers (dedicated filling line, including weighing)* (PROC 9, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**4.3.9. Exposition des travailleurs: Roller application or brushing (PROC 10)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**4.3.10. Exposition des travailleurs: Indoor use; Non-industrial spraying; Solid in solution (PROC 11)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1.2 mg/m³ (ART) | 0.24 |
| Par inhalation, local, aigu | 9.6 mg/m³ (ART) | 0.96 |

**4.3.11. Exposition des travailleurs: Use as laboratory reagent (PROC 15, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**4.3.12. Exposition des travailleurs: Manual activities involving hand contact (PROC 19)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**4.3.13. Exposition des travailleurs: Use of functional fluids in small devices (PROC 20)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1 mg/m³ (TRA Workers 3.0) | 0.2 |
| Par inhalation, local, aigu | 4 mg/m³ (TRA Workers 3.0) | 0.4 |

**4.3.14. Exposition des travailleurs: *Equipment cleaning and maintenance at non-dedicated facility* (PROC 8a, PROC 28)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**4.3.15. Exposition des travailleurs: *Manual maintenance (cleaning and repair) of machinery at non-dedicated facility* (PROC 28)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (ECETOC TRA Workers) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (ECETOC TRA Workers) | 0.28 |

**4.4. Guide destiné à l’utilisateur en aval pour déterminer s’il travaille dans les limites établies par le scénario d’exposition**

Outil d’étalonnage: For the evaluation of spraying activities the ART (Advanced Reach Tool) modeling tool has been used. In case the DU cannot demonstrate safe use with the conditions currently presented in this SDS Annex, the ART modeling Tool can be used as scaling tool.

**Chapitre 5. ES 5: Utilisation étendue par les travailleurs professionnels; Divers secteurs (SU 0, SU 1, SU 5, SU 13, SU 19, SU 20)**

**5.1. Section de titre**

Intitulé de l’ES: Professional use; Outdoor use

Secteur d’utilisation: Autres (SU 0), Agriculture, sylviculture, pêche (SU 1), Fabrication de textiles, cuir, fourrure (SU 5), Fabrication d’autres produits minéraux non métalliques, p. ex. plâtre, ciment (SU 13), Bâtiment et travaux de construction (SU 19), Services de santé (SU 20)

|  |  |
| --- | --- |
| **Environnement** |  |
| 1: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) | ERC 8d |
| **Travailleur** |  |
| 2: *Chemical production in closed process without likelihood of exposure or in containment conditions.* | PROC 1 |
| 3: *Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions* | PROC 2 |
| 4: *Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions* | PROC 3 |
| 5: Chemical production where opportunity for exposure arises | PROC 4 |
| 6: Mixing or blending in batch processes | PROC 5 |
| 7: *Transfer of substance or mixture (charging/discharging) at non-dedicated facilities* | PROC 8a, PROC 26 |
| 8: *Transfer of substance or mixture (charging/discharging) at dedicated facilities* | PROC 8b, PROC 26 |
| 9: *Transfer of substance or mixture into small containers (dedicated filling line, including weighing)* | PROC 9, PROC 26 |
| 10: Roller application or brushing | PROC 10 |
| 11: Outdoor use; Non-industrial spraying | PROC 11 |
| 12: Outdoor use; Non-industrial spraying | PROC 11 |
| 13: Use as laboratory reagent | PROC 15, PROC 26 |
| 14: Mixing operations; Manual activities involving hand contact | PROC 19 |
| 15: *Equipment cleaning and maintenance at non-dedicated facility* | PROC 8a |
| 16: Use of functional fluids in small devices | PROC 20 |

**5.2. Conditions d’utilisation affectant l’exposition**

**5.2.1. Contrôle de l’exposition des travailleurs**

**Conditions d’utilisation applicables à l’ensemble des scénarios de contribution**

|  |
| --- |
| **Autres conditions affectant l’exposition des travailleurs** |
| Outdoor use |
| Assumes process temperature up to 20 °C |

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**Conditions particulières d’utilisation par scénario de contribution**

|  |  |
| --- | --- |
| **Scénario de contribution** | **Mesures spécifiques** |
| ***Chemical production in closed process without likelihood of exposure or in containment conditions.* (PROC 1)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *Use suitable eye protection* |
| ***Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions* (PROC 2)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *Use suitable eye protection* |
| ***Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions* (PROC 3)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *Use suitable eye protection* |
| **Chemical production where opportunity for exposure arises (PROC 4)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS.  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *Use suitable eye protection* |
| **Mixing or blending in batch processes (PROC 5)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS.  *Use suitable eye protection* |
| ***Transfer of substance or mixture (charging/discharging) at non-dedicated facilities* (PROC 8a, PROC 26)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *Use suitable eye protection*  Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS. |
| ***Transfer of substance or mixture (charging/discharging) at dedicated facilities* (PROC 8b, PROC 26)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *Use suitable eye protection*  Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS. |
| ***Transfer of substance or mixture into small containers (dedicated filling line, including weighing)* (PROC 9, PROC 26)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  *Use suitable eye protection*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS. |
| **Roller application or brushing (PROC 10)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *Use suitable eye protection*  Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS. |
| **Outdoor use; Non-industrial spraying (PROC 11)** | Covers concentrations up to 35 %  *Physical form of the product is assumed as liquid, this is conservative as it is a solid in a liquid with a very low vapour pressure.*  Covers use up to 2 h/day  *Covers activity where the primary emission source is located out the breathing zone of the worker (i.e. the volume of air is more than 1 metre in any direction of the worker’s head)*  Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.  *Covers spraying direction only horizontal or downward*  *covers spraying with high compressed air*  *covers high spraying application rate (> 3 L/minute)*  *Use suitable eye protection.*  Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *covers partial personal enclosure (e.g. truck cabin)* |
| **Outdoor use; Non-industrial spraying (PROC 11)** | Covers concentrations up to 35 %  *Physical form of the product is assumed as liquid, this is conservative as it is a solid in a liquid with a very low vapour pressure.*  Covers use up to 0.25 h/day  *Covers activity where the primary emission source is located in the breathing zone of the worker (i.e. the volume of air within 1 metre in any direction of the worker’s head)*  Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.  *covers any spraying direction*  *covers spraying with high compressed air*  *covers high spraying application rate (> 3 L/minute)*  *Use suitable eye protection.*  *Covers spraying activity wearing respiratory protection with minimum efficiency of 95% (i.e. APF of 20)*  Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. |
| **Use as laboratory reagent (PROC 15, PROC 26)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *Use suitable eye protection* |
| **Mixing operations; Manual activities involving hand contact (PROC 19)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *Use suitable eye protection*  Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS. |
| ***Equipment cleaning and maintenance at non-dedicated facility* (PROC 8a)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  *Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *Use suitable eye protection*  Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS. |
| **Use of functional fluids in small devices (PROC 20)** | Covers concentrations up to 100 %  Solid, medium dustiness  Covers use up to 8 h/day  *Assumes a good basic standard of occupational hygiene is implemented*  Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.  *Use suitable eye protection* |

**5.3. Estimation de l’exposition et référence à sa source**

**5.3.1. Exposition des travailleurs: *Chemical production in closed process without likelihood of exposure or in containment conditions.* (PROC 1)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 7E-3 mg/m³ (TRA Workers 3.0) | < 0.01 |
| Par inhalation, local, aigu | 0.028 mg/m³ (TRA Workers 3.0) | < 0.01 |

**5.3.2. Exposition des travailleurs: *Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions* (PROC 2)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**5.3.3. Exposition des travailleurs: *Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions* (PROC 3)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**5.3.4. Exposition des travailleurs: Chemical production where opportunity for exposure arises (PROC 4)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**5.3.5. Exposition des travailleurs: Mixing or blending in batch processes (PROC 5)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**5.3.6. Exposition des travailleurs: *Transfer of substance or mixture (charging/discharging) at non-dedicated facilities* (PROC 8a, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**5.3.7. Exposition des travailleurs: *Transfer of substance or mixture (charging/discharging) at dedicated facilities* (PROC 8b, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**5.3.8. Exposition des travailleurs: *Transfer of substance or mixture into small containers (dedicated filling line, including weighing)* (PROC 9, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**5.3.9. Exposition des travailleurs: Roller application or brushing (PROC 10)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**5.3.10. Exposition des travailleurs: Outdoor use; Non-industrial spraying (PROC 11)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1.2 mg/m³ (ART) | 0.24 |
| Par inhalation, local, aigu | 9.6 mg/m³ (ART) | 0.96 |

**5.3.11. Exposition des travailleurs: Outdoor use; Non-industrial spraying (PROC 11)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 1.2 mg/m³ (ART) | 0.24 |
| Par inhalation, local, aigu | 9.6 mg/m³ (ART) | 0.96 |

**5.3.12. Exposition des travailleurs: Use as laboratory reagent (PROC 15, PROC 26)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**5.3.13. Exposition des travailleurs: Mixing operations; Manual activities involving hand contact (PROC 19)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.35 mg/m³ (TRA Workers 3.0) | 0.07 |
| Par inhalation, local, aigu | 1.4 mg/m³ (TRA Workers 3.0) | 0.14 |

**5.3.14. Exposition des travailleurs: *Equipment cleaning and maintenance at non-dedicated facility* (PROC 8a)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**5.3.15. Exposition des travailleurs: Use of functional fluids in small devices (PROC 20)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.7 mg/m³ (TRA Workers 3.0) | 0.14 |
| Par inhalation, local, aigu | 2.8 mg/m³ (TRA Workers 3.0) | 0.28 |

**5.4. Guide destiné à l’utilisateur en aval pour déterminer s’il travaille dans les limites établies par le scénario d’exposition**

Orientations: Application of de-icing agent (mixture of 70% NaCl and 30% of a 20% solution of CaCl2) assumes a fraction of 0.06 of CaCl2 in road salt with an annual tonnage of 0.09 tonnes/km for 25 emission days per year. Application of de-icing agent (liquid CaCl2 brine (max. 35% solution)) assumes a fraction of 0.35 of CaCl2 in road salt with an annual tonnage of 0.28 tonnes/km for 25 emission days per year. Application of Dust suppressor (solid CaCl2 (up to 80%)) assumes a fraction of 0.8 of CaCl2 in road salt with an annual tonnage of 2.4 tonnes/km for 3 emission days per year. Application of Dust suppressor (solid CaCl2 (up to 37%)) assumes a fraction of 0.37 of CaCl2 in road salt with an annual tonnage of 1.11 tonnes/km for 3 emission days per year.

**Chapitre 6. ES 6: Utilisation par les consommateurs; Divers produits (PC 0, PC 2, PC 4, PC 12, PC 16, PC 27, PC 35, PC 37)**

**6.1. Section de titre**

Intitulé de l’ES: Consumer use; Indoor or outdoor use

Catégorie de produit: Autres (PC 0), Adsorbants (PC 2), Produits antigel et de dégivrage (PC 4), Engrais (PC 12), Fluides de transfert de chaleur (PC 16), Produits phytopharmaceutiques (PC 27), Produit de lavage et de nettoyage (PC 35), Produits chimiques de traitement de l’eau (PC 37)

|  |  |
| --- | --- |
| **Environnement** |  |
| 1: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) | ERC 8a |
| 2: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) | ERC 8d |
| **Consommateur** |  |
| 3: Dust suppressant; No spraying | PC 0 |
| 4: Dust suppressant; Spraying | PC 0 |
| 5: *Humidity adsorbants* | PC 0 |
| 6: *Cement/concrete/mortar* | PC 0 |
| 7: Adsorbents | PC 2 |
| 8: Anti-freeze and de-icing products; No spraying | PC 4 |
| 9: Anti-freeze and de-icing products; Spraying | PC 4 |
| 10: Fertilizers; No spraying | PC 12 |
| 11: Fertilizers; Spraying | PC 12 |
| 12: Heat transfer fluids | PC 16 |
| 13: Plant protection products; No spraying | PC 27 |
| 14: Plant protection products; Spraying | PC 27 |
| 15: Water treatment chemicals | PC 37 |
| 16: Washing and cleaning products; No spraying | PC 35 |
| 17: Washing and cleaning products; Spraying | PC 35 |

**6.2. Conditions d’utilisation affectant l’exposition**

**6.2.1. Contrôle de l’exposition des consommateurs: Dust suppressant; No spraying (PC 0)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 100 % |
| *Solid, medium dustiness. Covers also liquid form* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers use up to 24 h* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |
| **Autres conditions affectant l’exposition des consommateurs** |
| Release area <= 125 m2 |

**6.2.2. Contrôle de l’exposition des consommateurs: Dust suppressant; Spraying (PC 0)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 45 % |
| *Physical form of the product is assumed as liquid, this is conservative as it is a solid in a liquid with a very low vapour pressure.* |
| *Covers spraying activity* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers 10 minutes spraying application* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |

**6.2.3. Contrôle de l’exposition des consommateurs: *Humidity adsorbants* (PC 0)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 100 % |
| *Solid, medium dustiness. Covers also liquid form* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers use up to 24 h* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |
| **Autres conditions affectant l’exposition des consommateurs** |
| Release area <= 125 m2 |

**6.2.4. Contrôle de l’exposition des consommateurs: *Cement/concrete/mortar* (PC 0)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 100 % |
| *Solid, medium dustiness. Covers also liquid form* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers use up to 24 h* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |
| **Autres conditions affectant l’exposition des consommateurs** |
| Release area <= 125 m2 |

**6.2.5. Contrôle de l’exposition des consommateurs: Adsorbents (PC 2)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 100 % |
| *Solid, medium dustiness. Covers also liquid form* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers use up to 24 h* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |
| **Autres conditions affectant l’exposition des consommateurs** |
| Release area <= 125 m2 |

**6.2.6. Contrôle de l’exposition des consommateurs: Anti-freeze and de-icing products; No spraying (PC 4)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 100 % |
| *Solid, medium dustiness. Covers also liquid form* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| For each use event, covers use amounts up to 5E4 g/event |
| Covers use up to 1 events per day |
| *Covers use up to 24 h* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |
| **Autres conditions affectant l’exposition des consommateurs** |
| Release area <= 125 m2 |

**6.2.7. Contrôle de l’exposition des consommateurs: Anti-freeze and de-icing products; Spraying (PC 4)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 45 % |
| *Physical form of the product is assumed as liquid, this is conservative as it is a solid in a liquid with a very low vapour pressure.* |
| *Covers spraying activity* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers 10 minutes spraying application* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |

**6.2.8. Contrôle de l’exposition des consommateurs: Fertilizers; No spraying (PC 12)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 100 % |
| *Solid, medium dustiness. Covers also liquid form* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers use up to 24 h* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |
| **Autres conditions affectant l’exposition des consommateurs** |
| Release area <= 125 m2 |

**6.2.9. Contrôle de l’exposition des consommateurs: Fertilizers; Spraying (PC 12)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 45 % |
| *Physical form of the product is assumed as liquid, this is conservative as it is a solid in a liquid with a very low vapour pressure.* |
| *Covers spraying activity* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers 10 minutes spraying application* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |

**6.2.10. Contrôle de l’exposition des consommateurs: Heat transfer fluids (PC 16)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 100 % |
| *Solid, medium dustiness. Covers also liquid form* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers use up to 24 h* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |
| **Autres conditions affectant l’exposition des consommateurs** |
| Release area <= 125 m2 |

**6.2.11. Contrôle de l’exposition des consommateurs: Plant protection products; No spraying (PC 27)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 100 % |
| *Solid, medium dustiness. Covers also liquid form* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers use up to 24 h* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |
| **Autres conditions affectant l’exposition des consommateurs** |
| Release area <= 125 m2 |

**6.2.12. Contrôle de l’exposition des consommateurs: Plant protection products; Spraying (PC 27)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 45 % |
| *Physical form of the product is assumed as liquid, this is conservative as it is a solid in a liquid with a very low vapour pressure.* |
| *Covers spraying activity* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers 10 minutes spraying application* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |

**6.2.13. Contrôle de l’exposition des consommateurs: Water treatment chemicals (PC 37)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 100 % |
| *Solid, medium dustiness. Covers also liquid form* |
| *Covers exposure via inhalation route* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers use up to 24 h* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |
| **Autres conditions affectant l’exposition des consommateurs** |
| Release area <= 125 m2 |

**6.2.14. Contrôle de l’exposition des consommateurs: Washing and cleaning products; No spraying (PC 35)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 100 % |
| *Solid, medium dustiness. Covers also liquid form* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers use up to 24 h* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |
| **Autres conditions affectant l’exposition des consommateurs** |
| Release area <= 125 m2 |

**6.2.15. Contrôle de l’exposition des consommateurs: Washing and cleaning products; Spraying (PC 35)**

|  |
| --- |
| **Caractéristiques du produit (article)** |
| Covers concentrations up to 45 % |
| *Physical form of the product is assumed as liquid, this is conservative as it is a solid in a liquid with a very low vapour pressure.* |
| *Covers spraying activity* |
| **Quantité utilisée, fréquence et durée d’utilisation/d’exposition** |
| Covers use up to 1 events per day |
| *Covers 10 minutes spraying application* |
| **Informations et conseils en matière de comportements à adopter à l’intention des consommateurs** |
| *Requires room with good ventilation* |
| *Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.* |

**6.3. Estimation de l’exposition et référence à sa source**

**6.3.1. Exposition des consommateurs: Dust suppressant; No spraying (PC 0)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 5E-3 mg/m³ (ConsExpo) | < 0.01 |
| Par inhalation, local, aigu | 0.01 mg/m³ (ConsExpo) | < 0.01 |

**6.3.2. Exposition des consommateurs: Dust suppressant; Spraying (PC 0)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.687 mg/m³ (ConsExpo) | 0.275 |
| Par inhalation, local, aigu | 0.69 mg/m³ (ConsExpo) | 0.138 |

**6.3.3. Exposition des consommateurs: *Humidity adsorbants* (PC 0)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 5E-3 mg/m³ (ConsExpo) | < 0.01 |
| Par inhalation, local, aigu | 0.01 mg/m³ (ConsExpo) | < 0.01 |

**6.3.4. Exposition des consommateurs: *Cement/concrete/mortar* (PC 0)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 5E-3 mg/m³ (ConsExpo) | < 0.01 |
| Par inhalation, local, aigu | 0.01 mg/m³ (ConsExpo) | < 0.01 |

**6.3.5. Exposition des consommateurs: Adsorbents (PC 2)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 5E-3 mg/m³ (ConsExpo) | < 0.01 |
| Par inhalation, local, aigu | 0.01 mg/m³ (ConsExpo) | < 0.01 |

**6.3.6. Exposition des consommateurs: Anti-freeze and de-icing products; No spraying (PC 4)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 5E-3 mg/m³ (ConsExpo) | < 0.01 |
| Par inhalation, local, aigu | 0.01 mg/m³ (ConsExpo) | < 0.01 |

**6.3.7. Exposition des consommateurs: Anti-freeze and de-icing products; Spraying (PC 4)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.687 mg/m³ (ConsExpo) | 0.275 |
| Par inhalation, local, aigu | 0.69 mg/m³ (ConsExpo) | 0.138 |

**6.3.8. Exposition des consommateurs: Fertilizers; No spraying (PC 12)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 5E-3 mg/m³ (ConsExpo) | < 0.01 |
| Par inhalation, local, aigu | 0.01 mg/m³ (ConsExpo) | < 0.01 |

**6.3.9. Exposition des consommateurs: Fertilizers; Spraying (PC 12)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.687 mg/m³ (ConsExpo) | 0.275 |
| Par inhalation, local, aigu | 0.69 mg/m³ (ConsExpo) | 0.138 |

**6.3.10. Exposition des consommateurs: Heat transfer fluids (PC 16)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 5E-3 mg/m³ (ConsExpo) | < 0.01 |
| Par inhalation, local, aigu | 0.01 mg/m³ (ConsExpo) | < 0.01 |

**6.3.11. Exposition des consommateurs: Plant protection products; No spraying (PC 27)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 5E-3 mg/m³ (ConsExpo) | < 0.01 |
| Par inhalation, local, aigu | 0.01 mg/m³ (ConsExpo) | < 0.01 |

**6.3.12. Exposition des consommateurs: Plant protection products; Spraying (PC 27)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.687 mg/m³ (ConsExpo) | 0.275 |
| Par inhalation, local, aigu | 0.69 mg/m³ (ConsExpo) | 0.138 |

**6.3.13. Exposition des consommateurs: Water treatment chemicals (PC 37)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 5E-3 mg/m³ (ConsExpo) | < 0.01 |
| Par inhalation, local, aigu | 0.01 mg/m³ (ConsExpo) | < 0.01 |

**6.3.14. Exposition des consommateurs: Washing and cleaning products; No spraying (PC 35)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 5E-3 mg/m³ (ConsExpo) | < 0.01 |
| Par inhalation, local, aigu | 0.01 mg/m³ (ConsExpo) | < 0.01 |

**6.3.15. Exposition des consommateurs: Washing and cleaning products; Spraying (PC 35)**

| **Voie d’exposition et type d’effets** | **Estimation de l’exposition** | **RCR** |
| --- | --- | --- |
| Par inhalation, local, à long terme | 0.687 mg/m³ (ConsExpo) | 0.275 |
| Par inhalation, local, aigu | 0.69 mg/m³ (ConsExpo) | 0.138 |

**6.4. Guide destiné à l’utilisateur en aval pour déterminer s’il travaille dans les limites établies par le scénario d’exposition**