

Fiche de Données de Sécurité
Acide malique



Revision 12

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SECTION 1: Identification de la substance/du mélange et de la société/l'entreprise

1.1. Identificateur de produit

Dénomination commerciale: **Acide malique**
Numéro d'enregistrement REACH: 01-2119906954-31-0000
Numéro index: NON DISPONIBLE
Identification chimique internationale: Malic acid
Numéro CAS: 6915-15-7
Numéro CE: 230-022-8

1.2. Utilisations identifiées pertinentes de la substance ou du mélange et utilisations déconseillées

Utilisation industrielle:

Intermédiaire, Mélanges et préparations, Agent de contrôle de pH.

Utilisation professionnelle:

Mélanges et préparations, Engrais, Produits de traitement de surface des métaux, Produits de traitement de surfaces non métalliques, Produits tels que régulateurs de pH, floculants, précipitants, agents de neutralisation, agents antitartre, Produits de lavage et de nettoyage, Cosmétiques, produits de soins personnels, Adoucissants d'eau, Produits chimiques de traitement de l'eau, Substances chimiques de laboratoire.

Utilisation des consommateurs:

Additif pour alimentation humaine et animale, Cosmétiques, produits de soins personnels, Adoucissants d'eau, désinfectants, Produits de lavage et de nettoyage, Solutions de détartrage pour l'équipement pour l'hémodialyse.

1.3. Renseignements concernant le fournisseur de la fiche de données de sécurité

Fournisseur:



Mon-Droguiste.Com
39 Bis Rue Du Moulin Rouge
10150 Charmont Sous Barbuise
Tél : +33.(0)3.25.41.04.05
Email : contact@mon-droguiste.com
Web : www.mon-droguiste.com

1.4. Numéro d'appel d'urgence

Carechem 24 International (h24):

Europe: +44 1235 239670
Middle East/Africa: +44 1235 239671
Americas: +1 215 207 0061
Asia-Pacific: +65 3158 1412

SECTION 2: Identification des dangers

2.1. Classification de la substance ou du mélange

Reg CE 1272/2008

Classes de danger et Code(s) des
mentions de danger

Lésions oculaires
graves/irritation oculaire
H319: Provoque une grave irritation oculaire.

Code(s) des classes et catégories
de danger

Eye Irrit. 2

2.2. Éléments d'étiquetage

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étiquetage conformément Règlement 1272/2008/CE:

Contient: Acide malique
INDEX N° Non disponible
CAS N° 6915-15-7
EC N° 230-022-8

Pictogramme:



ATTENTION

Mentions de danger:

H319: Provoque une grave irritation oculaire.

Conseils de prudence:

P264: Se laver les yeux soigneusement après manipulation.

P305+P351+P338: EN CAS DE CONTACT AVEC LES YEUX: Rincer avec précaution à l'eau pendant plusieurs minutes. Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer.

P280: Porter des gants de protection et équipement de protection des yeux/du visage. (Voir FDS).

P337+P313: Si l'irritation oculaire persiste: consulter un médecin.

2.3. Autres dangers

Risques de coups de poussière (voir section 9.2)

SECTION 3: Composition/informations sur les composants

3.1. Substances

Acide malique

Identification chimique internationale: Malic acid
Numéro index: NON DISPONIBLE

Représentation des molécules: C4H6O5
Les gammes de concentration: >=99.0 %
Numéro d'enregistrement REACH: 01-2119906954-31-0000
Numéro CAS: 6915-15-7
Numéro CE: 230-022-8

SECTION 4: Premiers secours

4.1. Description des premiers secours

L'inhalation:

Transférer la personne à l'air frais. Respiration artificielle en cas de respiration irrégulière ou d'arrêt respiratoire.

la Peau:

Après contact avec la peau, se laver immédiatement et abondamment avec du savon et de l'eau. Consulter un médecin.

le Contact avec les yeux:

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En cas de contact avec les yeux, laver immédiatement et abondamment avec de l'eau et consulter un spécialiste.
Appeler immédiatement un médecin.

1'Ingestion:

Appeler immédiatement un médecin. Se rincer la bouche. Ne pas faire vomir sans l'avis d'un médecin. Ne jamais rien faire avaler a une personne inconsciente.

4.2. Principaux symptômes et effets, aigus et différés

Irritant pour les yeux et la peau.

4.3. Indication des éventuels soins médicaux immédiats et traitements particuliers nécessaires

Voir la section 4.1.

SECTION 5: Mesures de lutte contre l'incendie

5.1. Moyens d'extinction

Moyens d'extinction adaptés:

Mousse, poudre, eau pulvérisée.

Moyens d'extinction non adaptés:

Ne pas utiliser de jet d'eau car il pourrait disperser le matériau ou propager le feu.

5.2. Dangers particuliers résultant de la substance ou du mélange

En cas de combustion, émet des fumées toxiques de dioxyde de carbone / monoxyde de carbone.

5.3. Conseils aux pompiers

En cas d'incendie, porter un appareil respiratoire autonome.
Les récipients fermés peuvent être refroidis par eau pulvérisée.
Utiliser des dispositifs de protection personnelle pour la peau/les yeux.

SECTION 6: Mesures à prendre en cas de déversement accidentel

6.1. Précautions individuelles, équipement de protection et procédures d'urgence

Éloigner de la zone concernée les personnes non préposées à l'intervention d'urgence.
Éviter d'être en contact avec la substance ou de manipuler les conteneurs sans protections adéquates.
Utiliser les dispositifs de protection personnelle indiqués à la section 8.
En cas d'émanations de quantités considérables, utiliser un respirateur autonome.
Éliminer toute source d'ignition.
Oter tous les produits incompatibles conformément aux instructions décrites dans la section 10,5 de la fiche technique de sécurité.
Éviter toute formation de poussière.

6.2. Précautions pour la protection de l'environnement

Contrôler la fuite le mieux possible.
Éviter que le matériau répandu atteigne le réseau d'égouts, les puits ou les eaux de surface ou souterraines. Si le matériau répandu s'est écoulé dans un cours d'eau, dans un réseau d'égouts ou qu'il a contaminé le sol ou la végétation, prévenir les autorités compétentes.

6.3. Méthodes et matériel de confinement et de nettoyage

Lors du nettoyage, ne pas utiliser d'appareils qui puissent créer des sources d'amorçage.
Recueillir mécaniquement le matériau répandu et le mettre dans un conteneur adéquat pour l'évacuer conformément aux indications de la section 13. Après l'avoir recueilli, aérer et laver la zone concernée avec de l'eau avant d'en autoriser l'accès.
Ne pas décharger le flux de lavage dans les eaux libres ou dans les systèmes d'égouts.

6.4. Référence à d'autres sections

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Voir les sections 8 et 13.

SECTION 7: Manipulation et stockage

7.1. Précautions a prendre pour une manipulation sans danger

Recommandations pour une utilisation sure:

Prévoir un renouvellement d'air et/ou une ventilation suffisante dans les ateliers.
Éviter le contact avec la peau et les yeux.
Eviter l'accumulation de charges électrostatiques, a risque d'explosion des poussières.
Éviter la formation de particules respirables.

Recommandations générales sur l'hygiene professionnelle:

Ne pas manger, boire ou fumer en manipulant ce produit.
Se laver le visage et les mains soigneusement apres manipulation.
Enlever les vetements contaminés et les laver avant réutilisation.

7.2. Conditions nécessaires pour assurer la sécurité du stockage, tenant compte d'éventuelles incompatibilités

Éliminer toutes les sources de combustion.
Garder le conteneur fermé hermétiquement dans un environnement sec et bien ventilé.
Éviter la formation de poudre.
Conserver loin des matériaux incompatibles (voir le point 10.5).
Maintenir loin des aliments, de la nourriture et des boissons.

7.3. Utilisation(s) finale(s) particuliere(s)

Aucune identification.

SECTION 8: Contrôles de l'exposition/Protection individuelle

(*)8.1. Parametres de contrôle

NIVEAUX DÉRIVÉS SANS EFFET (DNEL) / NIVEAUX DÉRIVÉS AVEC EFFET MINIMUM (DMEL):

Ouvriers:

Orale: Pas pertinent.

Effets systémiques a long terme:

Inhalation: DNEL 36.6 mg/m3 facteur d'évaluation 12.5
Dermique: DNEL 5.2 mg/kg bw/day facteur d'évaluation 50

Effets systémiques a court terme:

Inhalation: Aucun danger identifié.
Dermique: Aucun danger identifié.

Effets locaux a long terme:

Inhalation: Aucun danger identifié.
Dermique: Aucun danger identifié.

Effets locaux a court terme:

Inhalation: Aucun danger identifié.
Dermique: Aucun danger identifié.

Population générale:

Effets systémiques a long terme:

Inhalation: DNEL 9 mg/m3 facteur d'évaluation 25
Dermique: DNEL 2.6 mg/kg bw/day facteur d'évaluation 100
Oral: DNEL 2.6 mg/kg bw/day facteur d'évaluation 100

Effets systémiques a court terme:

Inhalation: Aucun danger identifié.
Dermique: Aucun danger identifié.



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Oral: Aucun danger identifié.

Effets locaux a long terme:

Inhalation: Aucun danger identifié.

Dermique: Aucun danger identifié.

Effets locaux a court terme:

Inhalation: Aucun danger identifié.

Dermique: Aucun danger identifié.

CONCENTRATION PRÉVUE SANS EFFET (PNEC):

Environnemental:

Eau:

PNEC eau (eau douce): Aucun danger identifié.

PNEC eau (eau de mer): Aucun danger identifié.

PNEC eau (eau a écoulement intermittent): Aucun danger identifié.

Sédiment:

PNEC sédiment (eau douce): Aucun danger identifié.

PNEC sédiment (eau de mer): Aucun danger identifié.

Sol:

PNEC sol: Aucun danger identifié.

STP:

PNEC STP: Aucun danger identifié.

Occupational Exposure limit values:

National: Non déterminé.

Communauté Européenne: Non déterminé.

8.2. Contrôles de l'exposition

Contrôles techniques appropriés:

Voir aussi l'annexe de la présente fiche.

Protection des yeux / du visage:

Lunettes ou visieres de protection.

Protection de la peau / mains:

Le matériau des gants doit être imperméable et stable avec la substance. Les informations spécifiques concernant la conformité du matériau et de l'épaisseur des gants ne sont pas disponibles. Consulter le fournisseur du gant pour obtenir des informations spécifiques concernant la conformité des gants. Remplacer les gants en cas de contamination interne, lorsqu'ils sont troués ou si la contamination externe ne peut être supprimée. La durée effective de la protection fournie dépend des conditions d'utilisation.

Protection de la peau / corps:

Utiliser des vêtements de protection adéquates pour les substances chimiques.

Protection des voies respiratoires:

Masque avec filtre anti-poussieres P3 s'il s'agit d'un solide ou avec filtre de type A pour les vapeurs et gaz organiques ayant un point d'ébullition >65°C s'il s'agit d'un produit fondu. (EN 149)

Contrôles d'exposition liés a la protection de l'environnement:

Voir aussi l'annexe de la présente fiche.

SECTION 9: Propriétés physiques et chimiques

9.1. Informations sur les propriétés physiques et chimiques essentielles

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- a1) **aspect:** Solide en poudre cristalline
- a2) **Couleur:** Blanc
- b) **Odeur:** Caractéristique
- c) **Seuil olfactif:** NON DISPONIBLE
- d) **pH:** NON DISPONIBLE
- e1) **Point de fusion:** 131 °C @1013 hPa
- f1) **Point initial d'ébullition:** NON APPLICABLE
- g) **Point d'éclair:** NON DISPONIBLE
- h) **Taux d'évaporation:** NON APPLICABLE
- i) **Inflammabilité (solide, gaz):** Non inflammable
- j1) **Limite supérieure d'inflammabilité:** NON DISPONIBLE
- j2) **Limite inférieure d'inflammabilité:** NON DISPONIBLE
- j3) **Limite supérieure d'explosivité:** NON DISPONIBLE
- j4) **Limite inférieure d'explosivité:** 187.5 g/m3
- k) **Pression de vapeur:** 0.00039 Pa @25°C
- l) **Densité de vapeur:** NON DISPONIBLE
- m) **Densité relative:** 1.615 @20°C
- n) **Solubilité dans l'eau:** 647 g/l @20°C (pH 8)
- o) **Coefficient de partage: n-octanol/eau:** -6.14 @20°C (pH 0.4)
- p) **Température d'auto-inflammabilité:** NON DISPONIBLE
- q) **Température de décomposition:** 170-180 °C
- r) **Viscosité:** NON APPLICABLE
- s) **Propriétés explosives:** NON EXPLOSIF
- t) **Propriétés comburantes:** NON OXYDANT

9.2. Autres informations

Parametres:

Résultats:

Caractéristiques de l'échantillon:

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Distribution dimensionnelle des particules (μm): ≤ 70
Teneur en humidité(%): 0.12

Risque d'explosion de poussières:

Énergie d'allumage minimale (MIE), (mJ):
Sans inductance (Électrostatique) ($< 25 \mu\text{H}$): > 1000
Avec inductance (Mécanique) (1mH): 80-100

Gravité de l'explosion (sphere de 20 litres):

Pression maximale d'explosion Pmax (barg): 6.4 at 2375 g/m³
(dP/dt)max (bar/s): 256 at 2167 g/m³
Valeur Kst (bar.m/s): 69
Classe St: 1
Température ambiante(°C): 20

SECTION 10: Stabilité et réactivité

10.1. Réactivité

Stable dans des conditions normales.

10.2. Stabilité chimique

Stable dans des conditions normales.

10.3. Possibilité de réactions dangereuses

Pas remarquées dans des conditions normales.

10.4. Conditions à éviter

Éviter la formation de charges électrostatiques.
Éviter l'exposition à des sources de chaleur.
Éviter la formation de poudre.

10.5. Matières incompatibles

Agents oxydants, agents réducteurs, alcalins, métaux alcalins, amines, carbonates.
Ne pas utiliser de conteneurs en fer, en zinc ou en aluminium. Si elles se trouvent en contact avec ces matériaux, les solutions aqueuses d'acide malique peuvent développer de l'hydrogène gazeux (explosif).

10.6. Produits de décomposition dangereux

Fumées âcres et irritantes.

SECTION 11: Informations toxicologiques

(*)11.1. Informations sur les effets toxicologiques

Toxicité aiguë:

Oral:

Méthode:

Équivalent ou semblable à OECD Guideline 401 (Acute Oral Toxicity).

Rat (Wistar), mâle/femelle, oral: gavage.

Résultats:

LD50: 3500 mg/kg bw basée sur: test mat.

Inhalation:

Méthode:

Read-across avec une substance structurellement similaires ou de substitution.

According to OECD Guideline 403 (Acute Inhalation Toxicity).

According to EU Method B.2 (Acute Toxicity (Inhalation)).

Rat (Sprague-Dawley), mâle/femelle, inhalation: dust (nose only).

Résultats:

LC50 (4h): 1.306 mg/L air, basée sur: test mat. (Concentration maximale réalisable).



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Conclusions: Pas Classée.

Dermal:

Méthode:

Read-across avec une substance structurellement similaires ou de substitution.
Others. Publication.
Lapin (New Zealand White), coverage: occlusive.

Résultats:

LD50: 20000 mg/kg bw, basée sur: not specified.

Corrosion cutanée/irritation cutanée:

Méthode:

Read-across avec une substance structurellement similaires ou de substitution.
According to OECD Guideline 404 (Acute Dermal Irritation / Corrosion).
Lapin (others: small white Russian), coverage: occlusive (shaved).

Résultats: Légèrement irritant. Pas Classée.

Lésions oculaires graves/irritation oculaire:

Méthode:

Read-across avec une substance structurellement similaires ou de substitution.
According to OECD Guideline 405 (Acute Eye Irritation / Corrosion).
Lapin (others: small white Russian).

Résultats: Irritant. Classée Catégorie 2 (H319)

Sensibilisation respiratoire ou cutanée:

Sensibilisation respiratoire: Données non disponibles.

Sensibilisation cutanée:

Méthode:

Read-across avec une substance structurellement similaires ou de substitution.
According to OECD Guideline 406 (Skin Sensitisation).
Guinea pig (Dunkin-Hartley), femelle, induction: intradermal and epicutaneous.

Résultats: Non sensibilisant.

Mutagenicité sur les cellules germinales:

In vitro:

Bacterial reverse mutation assay (e.g. Ames test) (gene mutation):

Méthode:

Équivalent ou semblable a OECD Guideline 471 (Bacterial Reverse Mutation Assay).
S. typhimurium TA 98, TA 100, TA 1535 and TA 1537.
S. typhimurium, other: TA 92 and TA 94. (met. act.: with and without).

Résultats: Négative.

Mammalian cell gene mutation assay (gene mutation):

Méthode:

Read-across avec une substance structurellement similaires ou de substitution.
According to OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test).
mouse lymphoma L5178Y cells, (met. act.: with and without).

Résultats: Négative.

Mammalian chromosome aberration test (chromosome aberration):

Méthode:

Équivalent ou semblable a OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test).
Chinese hamster lung fibroblasts (V79) (met. act.: without).

Résultats: Négative.

In vivo: Données non disponibles.

Cancérogénicité: Pas Classée.

Toxicité pour la reproduction:

Effets sur la fonction sexuelle et la fertilité:

Oral:

Méthode:

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Équivalent ou semblable a OECD Guideline 416 (Two-Generation Reproduction Toxicity Study).

Rat (not specified), mâle/femelle, oral: feed.

Résultats:

NOAEL (P0): 10000 ppm (520 mg/kg bw/day), basée sur: test mat.

LOAEL (F2): 10000 ppm (520 mg/kg bw/day), basée sur: test mat.

Valeur utilisée pour la CSA: LOAEL: 520 mg/kg bw/day

Effets sur le développement des descendants:

Oral:

Méthode:

Équivalent ou semblable a OECD Guideline 414 (Prenatal Developmental Toxicity Study).

Rat (Wistar), oral: gavage.

Résultats:

NOEL (maternal toxicity): 350 mg/kg bw/day, basée sur: test mat.

NOEL (developmental toxicity): 350 mg/kg bw/day, basée sur: test mat.

Conclusions: Pas Classée.

Toxicité spécifique pour certains organes cibles (STOT) - Exposition unique:

Pas Classée.

Toxicité spécifique pour certains organes cibles (STOT) - Exposition répétée:

Oral:

Méthode:

Équivalent ou semblable a OECD Guideline 452 (Chronic Toxicity Studies).

Rat (not specified), mâle/femelle, oral: feed, chronic toxicity.

Résultats:

NOEL: 5000 ppm (260 mg/kg bw/day), basée sur: test mat.

LOEL: 50000 ppm, basée sur: test mat.

Valeur utilisée pour la CSA: NOAEL: 260 mg/kg bw/day.

Conclusions: Pas Classée.

Danger par aspiration: Pas Classée.

SECTION 12: Informations écologiques

(*)12.1. Toxicité

Toxicité pour l'environnement aquatique:

Toxicité a court terme pour l'environnement aquatique:

Poissons:

Méthode:

Read-across avec une substance structurellement similaires ou de substitution.

According to OECD Guideline 203 (Fish, Acute Toxicity Test).

Danio rerio (previous name: Brachydanio rerio), eau douce, semi-static.

Résultats:

LC50 (96 h): > 100 mg/L, test mat., nominal, basée sur: mortalité.

Invertébrés aquatiques:

Méthode:

Read-across avec une substance structurellement similaires ou de substitution.

According to OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test).

Daphnia magna, eau douce, semi-static.

Résultats:

LC50 (48h): 240 mg/L, test mat., basée sur: mortalité.

Algues et cyanobactéries aquatiques:

Méthode:

Read-across avec une substance structurellement similaires ou de substitution.

According to OECD Guideline 201 (Alga, Growth Inhibition Test).

Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum), eau douce; static.

Résultats:

EC50 (72 h): > 100 mg/L, test mat., nominal, basée sur: biomasse.

EC50 (72 h): > 100 mg/L, test mat., nominal, basée sur: taux de croissance.

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NOEC (72 h): 100 mg/L, test mat., nominal, basée sur: biomasse.
NOEC (72 h): 100 mg/L, test mat., nominal, basée sur: taux de croissance.
Valeur utilisée pour la CSA: EC50/LC50 or NOEC: 100 mg/L

Micro-organismes aquatiques:

Méthode:

Read-across avec une substance structurellement similaires ou de substitution.
According to OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test).
Activated sludge of a predominantly domestic sewage, eau douce, static.

Résultats:

EC50 (3 h): > 300 mg/L, test mat., nominal, basée sur: taux de respiration.

Toxicité a long terme pour l'environnement aquatique: Données non disponibles.

Toxicité pour l'environnement terrestre: Données non disponibles.

Conclusions: Pas Classée.

(*)12.2. Persistance et dégradabilité

Dégradabilité:

Dégradation abiotique:

Aux termes du règlement REACH 1907/2006/CE, cette évaluation n'est pas requise si la substance est facilement biodégradable.

Dégradation biotique:

Environnement aquatique:

Méthode:

According to OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test).
Activated sludge, domestic, non-adapted, aerobic.

Résultats:

Dégradation % de la substance d'essai:

60.3% après 11 d (O2 evolution)

67.5% après 28 d (O2 evolution)

Conclusions: Facilement biodégradable.

(*)12.3. Potentiel de bioaccumulation

Potentiel de bioaccumulation:

Aux termes du règlement REACH 1907/2006/CE, l'examen de bioaccumulation n'est pas nécessaire si la substance a un faible potentiel de bioaccumulation, calculé sur la base d'une valeur du log Pow (Kow) < 3.
La valeur déterminée de manière expérimentale du Log Pow est - 1.3, ceci implique un faible potentiel de bioaccumulation.

(*)12.4. Mobilité dans le sol

Adsorption/désorption:

Aux termes du règlement REACH 1907/2006/CE, les tests de screening concernant l'absorption / désorption n'ont pas besoin d'être effectués quand la substance a un faible potentiel d'absorption calculé sur la base d'un log Pow de - 1.3.

Volatilisation:

Méthode:

(Q) SAR.

Software HENRYWIN (v3.20).

Résultats:

Henry's Law constant: 0.000000101 Pa m³/mol à 25°C.

Répartition entre les compartiments de l'environnement:

Méthode:

Supporting Study.

Calculation according to Mackay, Level III. Calculation programme: EPI Suite (v.4.11).

Media: air - biote - sédiments - sol - eau.

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Résultats:

Moyenne du pourcentage de distribution:

Air (%): 0
Eau (%): 26.4
Sol (%): 73.6
Sédiment (%): 0.03

(*)12.5. Résultats des évaluations PBT et vPvB

En tenant compte de toutes les données disponibles concernant la dégradation biotique et abiotique, la bioaccumulation et la toxicité, on peut affirmer que la substance ne remplit pas les conditions pour être considérée comme PBT ni vPvB.

12.6. Autres effets néfastes

Aucun autre connue.

SECTION 13: Considérations relatives à l'élimination

13.1. Méthodes de traitement des déchets

Récupérer si possible, ou envoyer à des installations d'incinération agréées. Pour la manipulation et les mesures à prendre en cas de dispersion accidentelle du déchet, les indications fournies aux sections 6 et 7 sont valables. Pour les conteneurs, il est conseillé de procéder au recyclage sur le lieu d'évacuation. Intervenir conformément aux dispositions locales et nationales en vigueur.

SECTION 14: Informations relatives au transport

14.1. Numéro ONU

NON APPLICABLE

14.2. Nom d'expédition des Nations unies

NON APPLICABLE

14.3. Classe(s) de danger pour le transport

NON APPLICABLE

14.4. Groupe d'emballage

NON APPLICABLE

14.5. Dangers pour l'environnement

NON APPLICABLE

14.6. Précautions particulières à prendre par l'utilisateur

ADR/RID

- Code de restriction dans les tunnels: NON APPLICABLE
- Catégorie des quantités limitées par unité de transport: NON APPLICABLE
- Code LQ quantités limitées par colis: NON APPLICABLE
- Code E Quantités exemptées.: NON APPLICABLE

IMDG

- Code LQ quantités limitées par colis: NON APPLICABLE
- Code E Quantités exemptées: NON APPLICABLE
- Ems: NON APPLICABLE

ICAO/IATA

- Instructions d'emballage/quantité nette maximum par colis par avion, combis et cargos: NON APPLICABLE
- Instructions d'emballage/quantité nette maximum par colis relevant du régime de quantités limitées: NON APPLICABLE

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- Code EQ concernant le régime des quantités exemptées: NON APPLICABLE

14.7. Transport en vrac conformément a l'annexe II de la convention Marpol et au recueil IBC

NON APPLICABLE

SECTION 15: Informations réglementaires

15.1. Réglementations/Législation particulières a la substance ou au mélange en matière de sécurité, de santé et d'environnement

REGLEMENT EUROPÉEN 1907/2006/CE (Reach);
REGLEMENT EUROPÉEN 1272/2008/CE (CLP);
REGLEMENT EUROPÉEN 830/2015/UE:
DIRECTIVE 24/1998/CE;
DIRECTIVE 37/2004/CE;
DIRECTIVE 92/1999/CE;
DIRECTIVE 18/2012/UE;

(*)15.2. Évaluation de la sécurité chimique

Évaluation de la sécurité chimique (CSA): Oui.
Rapport sur la sécurité chimique (CSR) Oui.

Scénario d'exposition: Les informations pertinentes pour la maîtrise des risques sont communiquées sous la forme d'un scénario d'exposition joint a la fiche de données de sécurité.

(*)SECTION 16: Autres informations

Cette Fiche de Données de Sécurité a été rédigée conformément au règlement 830/2015/UE.

(*) situées sur le côté gauche indiquent les modifications effectuées par rapport a la dernière version.

Principales sources bibliographiques:
GESTIS International Limit Values.

Acronymes:

ACGIH: American Conference of Governmental Industrial Hygienist.
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ASTM: American Society of Testing and Materials.
B: Bioaccumulable.
BCF: BioConcentration Factor.
BSAF: Biological Soil Accumulation Factor.
CSA: Chemical Safety Assessment.
CSR: Chemical Safety Report.
DIN: Deutsches Institut für Normung.
DMEL: Derived Minimal Effect Level.
DNEL: Derived No Effect Level.
Ec: Effective concentration.
EC50: Effective Concentration 50 (that produces an effect (other than death) for 50% of organisms test).
ECx: Effective Concentration 50 (that produces an effect (other than death) for X% of organisms test).
EPA: Environmental Protection Agency.
IATA: International Air Transport Association.
IBC: International code for the construction and equipment of ships carrying dangerous Bulk Chemicals.
ICAO: International Civil Air-transport Organisation.
IMGD: International Maritime Dangerous Goods code.
ISO: International Standards Organisation.

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KoC: organic carbon/water partition coefficient (adsorption coefficient).
KoW: n-octanol/water partition coefficient.
LC50: Lethal Concentration for 50% of animal test.
LCx: Lethal Concentration for X% of animal test.
LD50: Lethal Dose for 50% test animal.
LDx: Lethal Dose for X% test animal.
LLNA: Local Lymph Node Assay.
LOAEC: Lowest Observed Adverse Effect Concentration.
LOAEL: Lowest Observed Adverse Effect Level.
LOEC: Lowest Observed Effect Concentration.
LOEL: Lowest Observed Effect Level.
MARPOL: International Convention for the Prevention of Pollution from Ships.
NOAEC: No Observed Adverse Effects Concentration.
NOAEL: No Observed Adverse Effect Level.
NOEC: No Observed Effect Concentration.
NOEL: No Observed Effect Level.
OECD-OCSE: Organisation for Economic Co-operation and Development.
P: Persistent.
PBT: Persistent Bioaccumulable and Toxic.
PNEC: Predicted No Effect Concentration.
(Q)SAR: Quantitative Structure-Activity Relationship.
RID: Regulations concerning the International carriage of Dangerous goods by rail.
SDS: Safety Data Sheet.
STP: Sewage Treatment Plant.
TLV: Threshold Limit Value.
TLV-C: Threshold Limit Value - Ceiling.
TLV-STEL: Threshold Limit Value - Short Term Exposure Limit.
TLV-TWA: Threshold Limit Value - Time Weighted Average.
vPvB: very Persistent and very Bio-accumulative.

Les informations contenues dans la présente fiche de sécurité ont été établies sur la base de nos connaissances à la date de publication de ce document. Ces informations ne sont données qu'à titre indicatif en vue de permettre des opérations de manipulation, fabrication, stockage, transport, distribution, mise à disposition, utilisation et élimination dans des conditions satisfaisantes de sécurité, et ne sauraient donc être interprétées comme une garantie ou considérées comme des spécifications de qualité. Ces informations ne concernent en outre que le produit nommément désigné et, sauf indication contraire spécifique, peuvent ne pas être applicables en cas de mélange dudit produit avec d'autres substances ou utilisables pour tout procédé de fabrication.



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1. ES1: FORMULATION OR RE-PACKING

FORMULATION OF PREPARATIONS/PRODUCTS FOR USE AS FERTILIZERS/ METAL SURFACE TREATMENT PRODUCTS, INCLUDING GALVANIC AND ELECTROPLATING PRODUCTS/ NON-METAL-SURFACE TREATMENT PRODUCTS/ PRODUCTS SUCH AS PH-REGULATORS, FLOCCULANTS, PRECIPITANTS, NEUTRALIZATION AGENTS/ PERFUMES, FRAGRANCES/ WASHING AND CLEANING PRODUCTS (INCLUDING SOLVENT BASED PRODUCTS)/ WATER SOFTENERS / WATER TREATMENT CHEMICALS/ COSMETICS, PERSONAL CARE PRODUCTS

Product category formulated: PC 12: Fertilizers; PC 14: Metal surface treatment products; PC 15: Non-metal-surface treatment products; PC 20: Products such as ph-regulators, flocculants, precipitants, neutralization agents; PC 28: Perfumes, Fragrances; PC 35: Washing and Cleaning Products; PC 36: Water softeners; PC 37: Water treatment chemicals; PC 39: Cosmetics, personal care products

Environment contributing scenario(s):		
CS 1	Formulation	ERC 2
CS 2	Formulation of solid matrix preparations/products for use as Fertilizers/ Metal surface treatment products, including galvanic and electroplating products/ Non-metal-surface treatment products/ Products such as ph-regulators, flocculants, precipitants, neutralization agents/ Perfumes, fragrances/ Washing and cleaning products (including solvent based products)/ Water softeners / Water treatment chemicals/ Cosmetics, personal care products	ERC 3
Worker contributing scenario(s):		
CS 3	PROC 3: Manufacture or formulation in closed batch processes with occasion controlled exposure or equivalent containment	PROC 3, PROC 1; PROC 2
CS 4	PROC 5: Mixing or blending in batch processes	PROC 5
CS 5	PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
CS 6	PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (concentration of substance < 5%)	PROC 8a
CS 7	PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
CS 8	PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (concentration of substance < 5%)	PROC 8b
CS 9	PROC 9: Transfer of substance or preparation into small	PROC 9

	containers (dedicated filling line, including weighing)	
CS 10	PROC 13: Treatment of articles by dipping and pouring; Treatment of growth substrates or seeds by dipping and pouring.	PROC 13
CS 11	PROC 14: Tableting, compression, extrusion, pelletisation, granulation	PROC 14
CS 12	PROC 15: Use as laboratory reagent	PROC 15
CS 13	PROC 28: Manual maintenance (cleaning and repair) of equipment	PROC 28

1.2. Conditions of use affecting exposure

1.2.1 Env CS 1: Formulation (ERC 2)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

1.2.2 Env CS 2: Formulation of solid matrix preparations/products for use as Fertilizers/ Metal surface treatment products, including galvanic and electroplating products/ Non-metal-surface treatment products/ Products such as ph-regulators, flocculants, precipitants, neutralization agents/ Perfumes, fragrances/ Washing and cleaning products (including solvent based products)/ Water softeners / Water treatment chemicals/ Cosmetics, personal care products (ERC 3)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

1.2.3 Worker CS 3: Manufacture or formulation in closed batch processes with occasion controlled exposure or equivalent containment (PROC 3, PROC 1; PROC 2)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Closed batch process with occasional controlled exposure	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0

	Method
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No [Effectiveness Dermal: 0%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: One hand face only (240 cm ²)	
• Operating temperature: ≤ 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

1.2.3.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	1 mg/m ³ (TRA Workers)	RCR = 0.027
Dermal, systemic, long term	0.69 mg/kg bw/day (TRA Workers)	RCR = 0.133
Combined routes, systemic, long-term		RCR = 0.16

1.2.4 Worker CS4: Mixing or blending in batch processes (PROC 5)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands face (480 cm ²)	
• Operating temperature: ≤ 130.0 °C	TRA Workers 3.0

	Method
• Place of use: Outdoor/indoor	TRA Workers 3.0

1.2.4.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	17.5 mg/m ³ (TRA Workers)	RCR = 0.478
Dermal, systemic, long term	1.371 mg/kg bw/day (TRA Workers)	RCR = 0.264
Combined routes, systemic, long-term		RCR = 0.742

1.2.5 Worker CS 5: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: Yes (Respirator with APF of 10) [Effectiveness Inhalation: 90%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: ≤ 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

1.2.5.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	5 mg/m ³ (TRA Workers)	RCR = 0.137
Dermal, systemic, long term	2.742 mg/kg bw/day (TRA Workers)	RCR = 0.527
Combined routes, systemic, long-term		RCR = 0.664

1.2.6 Worker CS 6: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (concentration of substance < 5%) (PROC 8a)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 5.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
• Work procedures minimising of splashes and spills <i>RMM for qualitative eye irritation risk assessment</i>	
• Minimisation of manual phases/work tasks <i>RMM for qualitative eye irritation risk assessment</i>	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: ≤ 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

1.2.6.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	10 mg/m ³ (TRA Workers)	RCR = 0.273
Dermal, systemic, long term	0.548 mg/kg bw/day (TRA Workers)	RCR = 0.106
Combined routes, systemic, long-term		RCR = 0.379

1.2.7 Worker CS 7: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: <= 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

1.2.7.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	25 mg/m ³ (TRA Workers)	RCR = 0.683
Dermal, systemic, long term	1.371 mg/kg bw/day (TRA Workers)	RCR = 0.264
Combined routes, systemic, long-term		RCR = 0.947

1.2.8 Worker CS 8: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (concentration of substance < 5%) (PROC 8b)

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: <= 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

1.2.8.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	5 mg/m ³ (TRA Workers)	RCR = 0.137
Dermal, systemic, long term	0.548 mg/kg bw/day (TRA Workers)	RCR = 0.106
Combined routes, systemic, long-term		RCR = 0.242

1.2.9 Worker CS 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0

	Method
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands face (480 cm ²)	
• Operating temperature: <= 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

1.2.9.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	20 mg/m ³ (TRA Workers)	RCR = 0.546
Dermal, systemic, long term	1.372 mg/kg bw/day (TRA Workers)	RCR = 0.264
Combined routes, systemic, long-term		RCR = 0.81

1.2.10 Worker CS 10: Treatment of articles by dipping and pouring; Treatment of growth substrates or seeds by dipping and pouring. (PROC 13)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 10.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• General ventilation: Enhanced general ventilation (5-10 air changes per hour) [Effectiveness Inhalation: 70%]	TRA Workers 3.0

	Method
• Local exhaust ventilation: Yes [Effectiveness Inhalation: 90%, Dermal: 0%]	TRA Workers 3.0
• Minimisation of manual phases/work tasks	
• Work procedures minimising of splashes and spills	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Place of use: Indoor/Outdoor	TRA Workers 3.0
• Operating temperature: <= 200.0 °C	TRA Workers 3.0

1.2.10.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	25.14 mg/m ³ (TRA Workers)	RCR = 0.687
Dermal, systemic, long term	0.823 mg/kg bw/day (TRA Workers)	RCR = 0.158
Combined routes, systemic, long-term		RCR = 0.845

1.2.11 Worker CS 11: Tableting, compression, extrusion, pelletisation, granulation (PROC 14)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 10.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Minimisation of manual phases/work tasks	TRA Workers 3.0
• Work procedures minimising of splashes and spills	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Place of use: Indoor/Outdoor	TRA Workers 3.0

	Method
• Operating temperature: ≤ 200.0 °C	TRA Workers 3.0

1.2.11.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	25.14 mg/m ³ (TRA Workers)	RCR = 0.687
Dermal, systemic, long term	0.206 mg/kg bw/day (TRA Workers)	RCR = 0.04
Combined routes, systemic, long-term		RCR = 0.727

1.2.12 Worker CS 12: Use as laboratory reagent (PROC 15)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: Yes [Effectiveness Inhalation: 90%, Dermal: 0%]	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: One hand face only (240 cm ²)	
• Operating temperature: ≤ 200.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

1.2.12.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	27.93 mg/m ³ (TRA Workers)	RCR = 0.763

Route of exposure and type of effects	Exposure concentration	Risk quantification
Dermal, systemic, long term	0.068 mg/kg bw/day (TRA Workers)	RCR = 0.013
Combined routes, systemic, long-term		RCR = 0.776

1.2.13 Worker CS 13: Manual maintenance (cleaning and repair) of equipment (PROC 28)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 10.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Minimisation of manual phases/work tasks	
• Work procedures minimising of splashes and spills	
• Washing of equipment before maintenance	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Place of use: Indoor and outdoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

1.2.13.1 Exposure and risks for workers

Quality risk assessment: activity carried out only by well-equipped and well-trained personnel.

2. ES 2: USE AT INDUSTRIAL SITES

USE AT INDUSTRIAL SITE OF REACTIVE / NON-REACTIVE PROCESSING AID ; USE AS LABORATORY REAGENT

Sector of use: SU 1: Agriculture, forestry, fishery; SU 15: Manufacture of fabricated metal products, except machinery and equipment; SU 16: Manufacture of computer, electronic and optical products, electrical equipment; SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment.; SU 19: Building and construction work; SU 20: Health services; SU 24: Scientific research and development

Environment contributing scenario(s):		
CS 1	Use at industrial site of non-reactive processing aid (no inclusion into or onto article)	ERC 4
CS 2	Use of reactive processing aid at industrial site (no inclusion into or onto article)	ERC 6b
Worker contributing scenario(s):		
CS 3	PROC 5: Mixing or blending in batch processes	PROC 5
CS 4	PROC 7: Industrial spraying	PROC 7
CS 5	PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
CS 6	PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
CS 7	PROC 14 : Tableting, compression, extrusion, pellettisation, granulation	PROC 14
CS 8	PROC 15: Use as laboratory reagent	PROC 15
CS 9	PROC 21: Low energy manipulation and handling of substances bound in/on materials or articles	PROC 21

2.2 Conditions of use affecting exposure

2.2.1 Env CS 1: Use at industrial site of non-reactive processing aid (no inclusion into or onto article) (ERC 4)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

2.2.2 Env CS 2: Use of reactive processing aid at industrial site (no inclusion into or onto article) (ERC 6b)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

2.2.3 Worker CS 3: Mixing or blending in batch processes (PROC 5)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: Yes [Effectiveness Inhalation: 90%, Dermal: 0%]	TRA Workers 3.0
• General ventilation: Good general ventilation (3-5 air changes per hour) [Effectiveness Inhalation: 30%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands face (480 cm ²)	
• Operating temperature: <= 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

2.2.3.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	1.75 mg/m ³ (TRA Workers)	RCR = 0.048
Dermal, systemic, long term	2.742 mg/kg bw/day (TRA Workers)	RCR = 0.527
Combined routes, systemic, long-term		RCR = 0.575

2.2.4 Worker CS 4: Industrial spraying (PROC 7)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	

	Method
• Local exhaust ventilation: Yes [Effectiveness Inhalation: 95%, Dermal: 0%]	TRA Workers 3.0
• General ventilation: Good general ventilation (3-5 air changes per hour) [Effectiveness Inhalation: 30%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands and upper wrists (1500 cm ²)	
• Operating temperature: ≤ 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

2.2.4.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	3.5 mg/m ³ (TRA Workers)	RCR = 0.096
Dermal, systemic, long term	4.286 mg/kg bw/day (TRA Workers)	RCR = 0.824
Combined routes, systemic, long-term		RCR = 0.92

2.2.5 Worker CS 5: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0

	Method
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: Yes (Respirator with APF of 10) [Effectiveness Inhalation: 90%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: ≤ 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

2.2.5.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	5 mg/m ³ (TRA Workers)	RCR = 0.137
Dermal, systemic, long term	2.742 mg/kg bw/day (TRA Workers)	RCR = 0.527
Combined routes, systemic, long-term		RCR = 0.664

2.2.6 Worker CS 6: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	

	Method
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: ≤ 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

2.2.6.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	25 mg/m ³ (TRA Workers)	RCR = 0.683
Dermal, systemic, long term	1.371 mg/kg bw/day (TRA Workers)	RCR = 0.264
Combined routes, systemic, long-term		RCR = 0.947

2.2.7 Worker CS 7: Tableting, compression, extrusion, pellettisation, granulation (PROC 14)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: Yes [Effectiveness Inhalation: 90%, Dermal: 0%]	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands face (480 cm ²)	
• Operating temperature: ≤ 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

2.2.7.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	1 mg/m ³ (TRA Workers)	RCR = 0.027
Dermal, systemic, long term	0.686 mg/kg bw/day (TRA Workers)	RCR = 0.132
Combined routes, systemic, long-term		RCR = 0.159

2.2.8 Worker CS 8: Use as laboratory reagent (PROC 15)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: Yes [Effectiveness Inhalation: 90%, Dermal: 0%]	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: One hand face only (240 cm ²)	
• Operating temperature: ≤ 200.0 °C	TRA Workers 3.0
• Place of use: Indoor	TRA Workers 3.0

2.2.8.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	27.93 mg/m ³ (TRA Workers)	RCR = 0.763
Dermal, systemic, long term	0.068 mg/kg bw/day (TRA Workers)	RCR = 0.013
Combined routes, systemic, long-term		RCR = 0.776

2.2.9 Worker CS 9: Low energy manipulation and handling of substances bound in/on materials or articles (PROC 21)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands and forearms (1980 cm ²)	
• Operating temperature: <= 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

2.2.9.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	10 mg/m ³ (TRA Workers)	RCR = 0.273
Dermal, systemic, long term	0.566 mg/kg bw/day (TRA Workers)	RCR = 0.109
Combined routes, systemic, long-term		RCR = 0.382

3. ES 3: USE AT INDUSTRIAL SITES

USE AT INDUSTRIAL SITE AS INTERMEDIATE

Sector of use: SU 0: Other; SU 9: Manufacture of fine chemicals

Environment contributing scenario(s):		
CS 1	Use at industrial site as intermediate	ERC 6a
Worker contributing scenario(s):		
CS 2	PROC 1: Use in closed process, no likelihood of exposure	PROC 1
CS 3	PROC 2: Use in closed, continuous process with occasional controlled exposure	PROC 2
CS 4	PROC 3: Manufacture or formulation in closed batch processes with occasion controlled exposure or equivalent containment	PROC 3
CS 5	PROC 4: Chemical production where opportunity for exposure arises	PROC 4
CS 6	PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
CS 7	PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
CS 8	PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing	PROC 9
CS 9	PROC 15: Use as laboratory reagent	PROC 15

3.2 Conditions of use affecting exposure

3.2.1 Env CS 1: Use at industrial site as intermediate (ERC 6a)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

3.2.2 Worker CS 2: Use in closed process, no likelihood of exposure (PROC 1)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Closed process without likelihood of exposure	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0

	Method
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No [Effectiveness Dermal: 0%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: One hand face only (240 cm ²)	
• Place of use: Indoor/Outdoor	TRA Workers 3.0
• Operating temperature: ≤ 200.0 °C	TRA Workers 3.0

3.2.2.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	0.056 mg/m ³ (TRA Workers)	RCR < 0.01
Dermal, systemic, long term	0.034 mg/kg bw/day (TRA Workers)	RCR < 0.01
Combined routes, systemic, long-term		RCR < 0.01

3.2.3 Worker CS 3: Use in closed, continuous process with occasional

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Closed continuous process with occasional controlled exposure	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No [Effectiveness Dermal: 0%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	

	Method
• Skin surface potentially exposed: Two hands face (480 cm ²)	
• Operating temperature: ≤ 130.0 °C	TRA Workers 3.0
• Place of use: Indoor/Outdoor	TRA Workers 3.0

3.2.3.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	1 mg/m ³ (TRA Workers)	RCR = 0.027
Dermal, systemic, long term	1.37 mg/kg bw/day (TRA Workers)	RCR = 0.264
Combined routes, systemic, long-term		RCR = 0.291

3.2.4 Worker CS 4: Manufacture or formulation in closed batch processes with occasion controlled exposure or equivalent containment (PROC 3)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Closed batch process with occasional controlled exposure	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No [Effectiveness Dermal: 0%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: One hand face only (240 cm ²)	
• Operating temperature: ≤ 130.0 °C	TRA Workers 3.0
• Place of use: Indoor/Outdoor	TRA Workers 3.0

3.2.4.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	1 mg/m ³ (TRA Workers)	RCR = 0.027
Dermal, systemic, long term	0.69 mg/kg bw/day (TRA Workers)	RCR = 0.133
Combined routes, systemic, long-term		RCR = 0.16

3.2.5 Worker CS 5: Chemical production where opportunity for exposure arises (PROC 4)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: Yes [Effectiveness Inhalation: 90%, Dermal: 0%]	TRA Workers 3.0
• General ventilation: Good general ventilation (3-5 air changes per hour) [Effectiveness Inhalation: 30%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands face (480 cm ²)	
• Operating temperature: <= 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

3.2.5.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	1.75 mg/m ³ (TRA Workers)	RCR = 0.048
Dermal, systemic, long term	1.372 mg/kg bw/day (TRA Workers)	RCR = 0.264
Combined routes, systemic, long-term		RCR = 0.312

3.2.6 Worker CS 6: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: Yes (Respirator with APF of 10) [Effectiveness Inhalation: 90%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: <= 130.0 °C	TRA Workers 3.0
• Place of use: Indoor/Outdoor	TRA Workers 3.0

3.2.6.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	5 mg/m ³ (TRA Workers)	RCR = 0.137
Dermal, systemic, long term	1.371 mg/kg bw/day (TRA Workers)	RCR = 0.264
Combined routes, systemic, long-term		RCR = 0.4

3.2.7 Worker CS 7: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: <= 130.0 °C	TRA Workers 3.0
• Place of use: Indoor/Outdoor	TRA Workers 3.0

3.2.7.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	25 mg/m ³ (TRA Workers)	RCR = 0.683
Dermal, systemic, long term	1.371 mg/kg bw/day (TRA Workers)	RCR = 0.264
Combined routes, systemic, long-term		RCR = 0.947

3.2.8 Worker CS 8: Transfer of substance or preparation into small containers (dedicated filling line, including weighing (PROC 9))

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	

	Method
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands face (480 cm ²)	
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0
• Place of use: Indoor/Outdoor	TRA Workers 3.0

3.2.8.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	20 mg/m ³ (TRA Workers)	RCR = 0.546
Dermal, systemic, long term	1.372 mg/kg bw/day (TRA Workers)	RCR = 0.264
Combined routes, systemic, long-term		RCR = 0.81

3.2.9 Worker CS 9: Use as laboratory reagent (PROC 15)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: Yes [Effectiveness Inhalation: 90%, Dermal: 0%]	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Work procedures minimising of splashes and spills	
• Minimisation of manual phases/work tasks	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and	TRA Workers 3.0

	Method
(other) appropriate dermal protection [Effectiveness Dermal: 80%]	
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: One hand face only (240 cm ²)	
• Operating temperature: ≤ 200.0 °C	TRA Workers 3.0
• Place of use: Indoor	TRA Workers 3.0

3.2.9.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	27.93 mg/m ³ (TRA Workers)	RCR = 0.763
Dermal, systemic, long term	0.068 mg/kg bw/day (TRA Workers)	RCR = 0.013
Combined routes, systemic, long-term		RCR = 0.776

4. ES 4: WIDESPREAD USE BY PROFESSIONAL WORKERS

USE BY PROFESSIONAL WORKER OF FORMULATED PRODUCT IN METAL SURFACE TREATMENT PRODUCTS, INCLUDING GALVANIC AND ELECTROPLATING PRODUCTS/ NON-METAL-SURFACE TREATMENT PRODUCTS/ PRODUCTS SUCH AS PH-REGULATORS, FLOCCULANTS, PRECIPITANTS, NEUTRALIZATION AGENTS/ PERFUMES, FRAGRANCES/ WASHING AND CLEANING PRODUCTS (INCLUDING SOLVENT BASED PRODUCTS)/ WATER SOFTENERS / WATER TREATMENT CHEMICALS/ COSMETICS, PERSONAL CARE PRODUCTS

Sector of use: SU 15: Manufacture of fabricated metal products, except machinery and equipment; SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment.; SU 18: Manufacture of furniture; SU 19: Building and construction work

Environment contributing scenario(s):		
CS 1	Widespread use of non-reactive aid indoor/outdoor ERC 8d / 8a,	ERC 8d, ERC 8a
CS 2	Widespread use of reactive aid indoor/outdoor ERC 8d / 8a,	ERC 8e, ERC 8b
Worker contributing scenario(s):		
CS 3	PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities - indoor	PROC 8a
CS 4	PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities - outdoor	PROC 8a
CS 5	PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - indoor	PROC 8b
CS 6	PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - outdoor	PROC 8b
CS 7	PROC 10 : Roller application or brushing - indoor/outdoor	PROC 10
CS 8	PROC 11 : Non industrial spraying	PROC 11

4.2 Conditions of use affecting exposure

4.2.1 Env CS 1: Widespread use of non-reactive aid indoor/outdoor ERC 8d / 8a

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

4.2.2 Env CS 2: Widespread use of reactive aid indoor/outdoor ERC 8B / 8e

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

4.2.3 Worker CS 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities - indoor (PROC 8a)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: <= 40.0 °C	TRA Workers 3.0
• Place of use: Indoor/Outdoor	TRA Workers 3.0

4.2.3.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	10 mg/m ³ (TRA Workers)	RCR = 0.273
Dermal, systemic, long term	0.548 mg/kg bw/day (TRA Workers)	RCR = 0.106
Combined routes, systemic, long-term		RCR = 0.379

4.2.4 Worker CS 4: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities - outdoor (PROC 8a)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 10.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0
• Place of use: Outdoor	TRA Workers 3.0

4.2.4.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	21 mg/m ³ (TRA Workers)	RCR = 0.574
Dermal, systemic, long term	1.645 mg/kg bw/day (TRA Workers)	RCR = 0.316
Combined routes, systemic, long-term		RCR = 0.89

4.2.5 Worker CS 5: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - indoor (PROC 8b)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 5.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	

	Method
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0
• Place of use: Indoor	TRA Workers 3.0

4.2.5.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	10 mg/m ³ (TRA Workers)	RCR = 0.273
Dermal, systemic, long term	0.548 mg/kg bw/day (TRA Workers)	RCR = 0.106
Combined routes, systemic, long-term		RCR = 0.379

4.2.6 Worker CS 6: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - outdoor (PROC 8b)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 10.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	

	Method
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0
• Place of use: Outdoor	TRA Workers 3.0

4.2.6.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	21 mg/m ³ (TRA Workers)	RCR = 0.574
Dermal, systemic, long term	1.645 mg/kg bw/day (TRA Workers)	RCR = 0.316
Combined routes, systemic, long-term		RCR = 0.89

4.2.7 Worker CS 7: Roller application or brushing - indoor/outdoor (PROC 10)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 10.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0
• Place of use: Indoor	TRA Workers 3.0

4.2.7.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	6 mg/m ³ (TRA Workers)	RCR = 0.164
Dermal, systemic, long term	1.646 mg/kg bw/day (TRA Workers)	RCR = 0.317

Route of exposure and type of effects	Exposure concentration	Risk quantification
Combined routes, systemic, long-term		RCR = 0.48

4.2.8 Worker CS 8: Non industrial spraying (PROC 11)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 5.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 4.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands and upper wrists (1500 cm ²)	
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0
• Place of use: Outdoor	TRA Workers 3.0

4.2.8.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	16.8 mg/m ³ (TRA Workers)	RCR = 0.459
Dermal, systemic, long term	2.143 mg/kg bw/day (TRA Workers)	RCR = 0.412
Combined routes, systemic, long-term		RCR = 0.871

5. ES 5: WIDESPREAD USE BY PROFESSIONAL WORKERS - WIDESPREAD USE BY PROFESSIONAL WORKERS; FERTILIZERS (PC12).

Product category used: PC 12: Fertilizers

Sector of use: SU 1: Agriculture, forestry, fishery

Environment contributing scenario(s):		
CS 1	Outdoor/indoor use of fertilizer (co-formulant).	ERC 8d, ERC 8a
CS 2	Indoor use of fertilizer (nutrient). Solid fertilizer applied onto soil surface without ploughing (e.g. top dressing). Solid and liquid fertilizer applied into soil by ploughing or by placement techniques or in fertilizer coated seeds etc. Solid and liquid fertilizer spreading by helicopter, forest Liquid fertilizer application, including foliar application, dressing, sprinkler, pivot etc	ERC 8e, ERC 8b
Worker contributing scenario(s):		
CS 3	Handling of liquid/solid fertilizer in stages with significant contact (indoor/outdoor).	PROC 5
CS 4	Unloading and loading of solid/liquid fertilizer in non-dedicated facilities (e.g. farm outdoor conditions), including sampling and cleaning fertilizer residues from the equipment (indoor/outdoor).	PROC 8a
CS 5	Unloading and loading of solid/liquid fertilizer in dedicated facilities (e.g. in greenhouses where dedicated engineering controls are in place), including sampling (indoor/outdoor).	PROC 8b
CS 6	Packing solids/liquids in a dedicated filling line, including weighing (indoor/indoor).	PROC 9
CS 7	Air-dispersive application of solid/liquid fertilizers (indoor/outdoor).	PROC 11
CS 8	Chemical analyses of solid/liquid fertilizers.	PROC 15

5.2 Conditions of use affecting exposure

5.2.1 Env CS 1: Outdoor/indoor use of fertilizer (co-formulant). (ERC 8d)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

5.2.2 Env CS 2: Indoor use of fertilizer (nutrient). Solid fertilizer applied onto soil surface without ploughing (e.g. top dressing). Solid and liquid fertilizer applied into soil by ploughing or by placement techniques or in fertilizer coated seeds etc. Solid and liquid fertilizer spreading by helicopter, forest Liquid fertilizer application, including foliar application, dressing, sprinkler, pivot etc (ERC 8e)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary

poisoning.

5.2.3 Worker CS 3: Handling of liquid/solid fertilizer in stages with significant contact (indoor/outdoor). (PROC 5)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 10.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• General ventilation: Good general ventilation (3-5 air changes per hour) [Effectiveness Inhalation: 30%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Place of use: Indoor/Outdoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

5.2.3.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	21 mg/m ³ (TRA Workers)	RCR = 0.574
Dermal, systemic, long term	1.645 mg/kg bw/day (TRA Workers)	RCR = 0.316
Combined routes, systemic, long-term		RCR = 0.89

5.2.4 Worker CS 4: Unloading and loading of solid/liquid fertilizer in non-dedicated facilities (e.g. farm outdoor conditions), including sampling and cleaning fertilizer residues from the equipment (indoor/outdoor). (PROC 8a)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 10.0 %	TRA Workers 3.0

	Method
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• General ventilation: Good general ventilation (3-5 air changes per hour) [Effectiveness Inhalation: 30%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0
• Place of use: Indoor/Outdoor	TRA Workers 3.0

5.2.4.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	21 mg/m ³ (TRA Workers)	RCR = 0.574
Dermal, systemic, long term	1.645 mg/kg bw/day (TRA Workers)	RCR = 0.316
Combined routes, systemic, long-term		RCR = 0.89

5.2.5 Worker CS 5: Unloading and loading of solid/liquid fertilizer in dedicated facilities (e.g. in greenhouses where dedicated engineering controls are in place), including sampling (indoor/outdoor). (PROC 8b)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 10.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• General ventilation: Good general ventilation (3-5 air changes per hour) [Effectiveness Inhalation: 30%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	

	Method
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands (960 cm ²)	
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0
• Place of use: Indoor/Outdoor	TRA Workers 3.0

5.2.5.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	21 mg/m ³ (TRA Workers)	RCR = 0.574
Dermal, systemic, long term	1.645 mg/kg bw/day (TRA Workers)	RCR = 0.316
Combined routes, systemic, long-term		RCR = 0.89

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5.2.6 Worker CS 6: Packing solids/liquids in a dedicated filling line, including weighing (indoor/indoor). (PROC 9)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 10.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Place of use: Indoor/Outdoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

5.2.6.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	12 mg/m ³ (TRA Workers)	RCR = 0.328
Dermal, systemic, long term	0.823 mg/kg bw/day (TRA Workers)	RCR = 0.158
Combined routes, systemic, long-term		RCR = 0.486

5.2.7 Worker CS 7: Air-dispersive application of solid/liquid fertilizers (indoor/outdoor). (PROC 11)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 1.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands and upper wrists (1500 cm ²)	
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0
• Place of use: Indoor/Outdoor	TRA Workers 3.0

5.2.7.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	20 mg/m ³ (TRA Workers)	RCR = 0.546
Dermal, systemic, long term	2.143 mg/kg bw/day (TRA Workers)	RCR = 0.412
Combined routes, systemic, long-term		RCR = 0.959

5.2.8 Worker CS 8: Chemical analyses of solid/liquid fertilizers. (PROC 15)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (unspecified form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

5.2.8.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	5 mg/m ³ (TRA Workers)	RCR = 0.137
Dermal, systemic, long term	0.068 mg/kg bw/day (TRA Workers)	RCR = 0.013
Combined routes, systemic, long-term		RCR = 0.15

6. ES 6: WIDESPREAD USE BY PROFESSIONAL WORKERS - USE BY PROFESSIONAL WORKER IN PROFESSIONAL LABORATORIES (COVERED ERCs : 8A,8B,8C,9A)

Sector of use: SU 20: Health services; SU 24: Scientific research and development; SU 9: Manufacture of fine chemicals

Environment contributing scenario(s):		
CS 1	Use by professional worker in professional laboratories	ERC 8a
CS 2	Use by professional worker in professional laboratories (covered ERCs : 8a,8b,8c,9a)	ERC 8b, ERC 8a
CS 3	Use by professional worker in professional laboratories	ERC 8c
CS 4	Use by professional workers in professional laboratories	ERC 9a
Worker contributing scenario(s):		
CS 5	PROC 4: Chemical production where opportunity for exposure arises	PROC 4
CS 6	PROC 5 : Mixing and blending in batch processes	PROC 5
CS 7	PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9

6.2 Conditions of use affecting exposure

6.2.1 Env CS 1: Use by professional worker in professional laboratories (ERC 8a)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

6.2.2 Env CS 2: Use by professional worker in professional laboratories (covered ERCs : 8a,8b,8c,9a) (ERC 8b)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

6.2.3 Env CS 3: Use by professional worker in professional laboratories (ERC 8c)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

6.2.4 Env CS 4: Use by professional workers in professional laboratories (ERC 9a)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

6.2.5 Worker CS 5: Chemical production where opportunity for exposure arises (PROC 4)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: Yes [Effectiveness Inhalation: 80%, Dermal: 0%]	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands face (480 cm ²)	
• Operating temperature: <= 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

6.2.5.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	10 mg/m ³ (TRA Workers)	RCR = 0.273
Dermal, systemic, long term	1.372 mg/kg bw/day (TRA Workers)	RCR = 0.264
Combined routes, systemic, long-term		RCR = 0.537

6.2.6 Worker CS 6: Mixing and blending in batch processes (PROC 5)

Conditions of use

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: Yes [Effectiveness Inhalation: 80%, Dermal: 0%]	TRA Workers 3.0
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands face (480 cm ²)	
• Operating temperature: ≤ 130.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

6.2.6.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	10 mg/m ³ (TRA Workers)	RCR = 0.273
Dermal, systemic, long term	2.742 mg/kg bw/day (TRA Workers)	RCR = 0.527
Combined routes, systemic, long-term		RCR = 0.8

6.2.7 Worker CS 7: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

	Method
Product (Article) characteristics	
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
• General ventilation: Good general ventilation (3-5 air changes per hour) [Effectiveness Inhalation: 30%]	TRA Workers 3.0

	Method
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Use of eye protection: Yes	
Other conditions affecting workers exposure	
• Skin surface potentially exposed: Two hands face (480 cm ²)	
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0
• Place of use: Indoor <i>Covers Outdoor use too</i>	TRA Workers 3.0

6.2.7.1 Exposure and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	14 mg/m ³ (TRA Workers)	RCR = 0.383
Dermal, systemic, long term	1.372 mg/kg bw/day (TRA Workers)	RCR = 0.264
Combined routes, systemic, long-term		RCR = 0.646

7. ES 7: CONSUMER USE

CONSUMER USE OF SUBSTANCE IN FORMULATION FOR: FERTILIZERS, ASEPTIC/DISINFECTANT SOLUTIONS, WATER SOFTENERS, WATER TREATMENT CHEMICALS, DISINFECTANT/DISINCRUSTANT SOLUTIONS FOR HEMODIALYSIS EQUIPMENT, COSMETICS AND PERSONAL CARE PRODUCTS

Environment contributing scenario(s):		
CS 1	Consumer use of formulated non-reactive processing aid - indoor PC 35-PC 36-PC 37-PC 39	ERC 8a
CS 2	Outdoor/indoor use of fertilizer (co-formulant).	ERC 8d, ERC 8a
CS 3	Indoor use of fertilizer (nutrient). Solid fertilizer applied onto soil surface without ploughing (e.g. top dressing). Solid and liquid fertilizer applied into soil by ploughing or by placement techniques or in fertilizer coated seeds etc. Solid and liquid fertilizer spreading by helicopter, forest Liquid fertilizer application, including foliar application, dressing, sprinkler, pivot etc	ERC 8e, ERC 8b
Consumer contributing scenario(s):		
CS 4	Water softners	PC 36
CS 5	Cosmetics, personal care products	PC 39
CS 6	Disinfectant/disincrustant solutions for hemodialysis equipment	PC 35
CS 7	Water treatment chemicals	PC 37
CS 8	Aseptic/disinfectant solutions	PC 35
CS 9	Consumer use of liquid fertilizer - including spraying application - indoor/outdoor	PC 12
CS 10	Consumer use of solid fertilizer - including spraying application - indoor/outdoor	PC 12

7.2 Conditions of use affecting exposure

7.2.1 Env CS 1: Consumer use of formulated non-reactive processing aid - indoor PC 35-PC 36-PC 37-PC 39 (ERC 8a)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

7.2.2 Env CS 2: Outdoor/indoor use of fertilizer (co-formulant). (ERC 8d)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

7.2.3 Env CS 3: Indoor use of fertilizer (nutrient). Solid fertilizer applied onto soil surface without ploughing (e.g. top dressing). Solid and liquid fertilizer applied into soil by ploughing or by placement techniques or in fertilizer coated seeds etc. Solid and liquid fertilizer spreading by helicopter, forest Liquid fertilizer application, including foliar application, dressing, sprinkler, pivot etc (ERC 8e)

Exposure assessment and risk characterization are not required for the environment as no hazard has been identified for the environment. Additionally the substance has no potential to cause toxic effects if accumulated via food chain. Consequently there is no need to perform an assessment for secondary poisoning.

7.2.4 Cons CS 4: Water softeners (PC 36)

Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: $\leq 10.0\%$	TRA Consumers 3.1 (R15)
• Exposure via inhalation route: Yes	TRA Consumers 3.1 (R15)
• Exposure via dermal route: Dermal exposure assumed to be negligible	TRA Consumers 3.1 (R15)
• Exposure via oral route: Oral exposure is considered to be not relevant	TRA Consumers 3.1 (R15)
• Spray: No	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Frequency: 1 time/day	
• Frequency of use over a year: Infrequent	TRA Consumers 3.1 (R15)
• Frequency of use over a day: = 1.0 events per day	TRA Consumers 3.1 (R15)
• Amount of product used per application: ≤ 30000 g/event	TRA Consumers 3.1 (R15)
• Exposure time per event: = 1.0 h/event	TRA Consumers 3.1 (R15)
Information and behavioral advice for consumers	
• Adult/child assumed: Adult	TRA Consumers 3.1 (R15)
• Place of use: Indoor	TRA Consumers 3.1 (R15)
Other conditions affecting consumers exposure	
• Inhalation factor: = 1.0	TRA Consumers 3.1 (R15)

7.2.4.1 Exposure and risks for consumers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	0.021 mg/m ³ (TRA Consumers)	RCR < 0.01
Dermal, systemic, long term	0 mg/kg bw/day (TRA Consumers)	RCR < 0.01
Oral, systemic, long term	0 mg/kg bw/day (TRA Consumers)	RCR < 0.01

Route of exposure and type of effects	Exposure concentration	Risk quantification
Combined routes, systemic, long-term		RCR < 0.01

7.2.5 Cons CS 5: Cosmetics, personal care products (PC 39)

Conditions of use

	Method
Product (article) characteristics	
• Concentration of the substance in the product: ≤ 1.0 %	ConsExpo 4.1
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Consumers 3.1 (R15)
• Exposure via inhalation route: Yes	TRA Consumers 3.1 (R15)
• Exposure via dermal route: Yes	TRA Consumers 3.1 (R15)
• Exposure via oral route: Oral exposure is considered to be not relevant	TRA Consumers 3.1 (R15)
• Spray: No	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Frequency: 2 times/week	ConsExpo 4.1
• Frequency of use over a year: Frequent	TRA Consumers 3.1 (R15)
• Frequency of use over a day: = 1.0 events per day	TRA Consumers 3.1 (R15)
• Amount of product used per application: ≤ g/event	TRA Consumers 3.1 (R15)
• Exposure time per event: = h/event	TRA Consumers 3.1 (R15)
Information and behavioral advice for consumers	
• Adult/child assumed	TRA Consumers 3.1 (R15)
• Place of use: Indoor	TRA Consumers 3.1 (R15)
Other conditions affecting consumers exposure	
• Body parts potentially exposed: Upper part of the body	ConsExpo 4.1 TRA Consumers 3.1 (R15)
• Dermal transfer factor: = 1.0	ConsExpo 4.1 TRA Consumers 3.1 (R15)
• Inhalation factor: = 1.0	TRA Consumers 3.1 (R15)

7.2.5.1 Exposure and risks for consumers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	2.98E-4 mg/m ³ (ConsExpo 4.1)	RCR < 0.01
Dermal, systemic, long term	2.286 mg/kg bw/day (ConsExpo 4.1)	RCR = 0.879
Oral, systemic, long term	0 mg/kg bw/day (TRA Consumers)	RCR < 0.01
Combined routes, systemic, long-term		RCR = 0.879

7.2.6 Cons CS 6: Disinfectant/disincrustant solutions for hemodialysis equipment (PC 35)

Conditions of use

	Method

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 10.0 %	TRA Consumers 3.1 (R15)
• Exposure via inhalation route: Inhalation exposure is considered to be not relevant	TRA Consumers 3.1 (R15)
• Exposure via dermal route: No dermal contact	TRA Consumers 3.1 (R15)
• Exposure via oral route: Oral exposure is considered to be not relevant	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Frequency: 1 time/day	
• Frequency of use over a year: Frequent	TRA Consumers 3.1 (R15)
• Frequency of use over a day: = 1.0 events per day	TRA Consumers 3.1 (R15)
Information and behavioral advice for consumers	
• Adult/child assumed: Adult	TRA Consumers 3.1 (R15)

7.2.6.1 Exposure and risks for consumers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	0 mg/m ³ (TRA Consumers)	RCR < 0.01
Dermal, systemic, long term	0 mg/kg bw/day (TRA Consumers)	RCR < 0.01
Oral, systemic, long term	0 mg/kg bw/day (TRA Consumers)	RCR < 0.01
Combined routes, systemic, long-term		RCR < 0.01

7.2.7 Cons CS 7: Water treatment chemicals (PC 37)

Conditions of use

	Method
Product (article) characteristics	
• Concentration of the substance in the product: ≤ 10.0 %	ConsExpo 4.1
• Percentage (w/w) of substance in mixture/article: ≤ 10.0 %	TRA Consumers 3.1 (R15)
• Exposure via inhalation route: Yes	TRA Consumers 3.1 (R15)
• Exposure via dermal route: Yes	TRA Consumers 3.1 (R15)
• Exposure via oral route: Oral exposure is considered to be not relevant	TRA Consumers 3.1 (R15)
• Spray: No	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Frequency: 1 time/day	ConsExpo 4.1
• Amount of product used per application: ≤ 1000 g/event	ConsExpo 4.1 TRA Consumers 3.1 (R15)
• Exposure time per event: = h/event	TRA Consumers 3.1 (R15)
• Frequency of use over a year: Frequent	TRA Consumers 3.1 (R15)
• Frequency of use over a day: = 1.0 events per day	TRA Consumers 3.1 (R15)
Information and behavioral advice for consumers	
• Adult/child assumed	TRA Consumers 3.1 (R15)

	Method
• Place of use: Indoor	TRA Consumers 3.1 (R15)
Other conditions affecting consumers exposure	
• Body parts potentially exposed: Upper part of the body	ConsExpo 4.1 TRA Consumers 3.1 (R15)
• Inhalation factor: = 1.0	TRA Consumers 3.1 (R15)
• Dermal transfer factor: = 1.0	TRA Consumers 3.1 (R15)

7.2.7.1 Exposure and risks for consumers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	8.79E-3 mg/m ³ (ConsExpo 4.1)	RCR < 0.01
Dermal, systemic, long term	0.714 mg/kg bw/day (ConsExpo 4.1)	RCR = 0.275
Oral, systemic, long term	0 mg/kg bw/day (TRA Consumers)	RCR < 0.01
Combined routes, systemic, long-term		RCR = 0.276

7.2.8 Cons CS 8: Aseptic/disinfectant solutions (PC 35)

Conditions of use

	Method
Product (article) characteristics	
• Concentration of the substance in the product: ≤ 10.0 %	ConsExpo 4.1
• Percentage (w/w) of substance in mixture/article: ≤ 10.0 %	TRA Consumers 3.1 (R15)
• Exposure via inhalation route: Yes	TRA Consumers 3.1 (R15)
• Exposure via dermal route: Yes	TRA Consumers 3.1 (R15)
• Exposure via oral route: Oral exposure is considered to be not relevant	TRA Consumers 3.1 (R15)
• Spray: No	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Frequency: 1 time/day	ConsExpo 4.1
• Amount of product used per application: ≤ 1000 g/event	TRA Consumers 3.1 (R15) ConsExpo 4.1
• Exposure time per event: = h/event	TRA Consumers 3.1 (R15)
• Frequency of use over a year: Frequent	TRA Consumers 3.1 (R15)
• Frequency of use over a day: = 1.0 events per day	TRA Consumers 3.1 (R15)
Information and behavioral advice for consumers	
• Adult/child assumed	TRA Consumers 3.1 (R15)
• Place of use: Indoor	TRA Consumers 3.1 (R15)
Other conditions affecting consumers exposure	
• Body parts potentially exposed: Upper part of the body	TRA Consumers 3.1 (R15) ConsExpo 4.1
• Inhalation factor: = 1.0	TRA Consumers 3.1 (R15)
• Dermal transfer factor: = 1.0	TRA Consumers 3.1 (R15)

7.2.8.1 Exposure and risks for consumers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	1.79E-3 mg/m ³ (ConsExpo 4.1)	RCR < 0.01
Dermal, systemic, long term	1.429 mg/kg bw/day (ConsExpo 4.1)	RCR = 0.55
Oral, systemic, long term	0 mg/kg bw/day (TRA Consumers)	RCR < 0.01
Combined routes, systemic, long-term		RCR = 0.55

7.2.9 Cons CS 9: Consumer use of liquid fertilizer - including spraying application - indoor/outdoor (PC 12)

Conditions of use

	Method
Product (article) characteristics	
• Physical form of the used product: Liquid	
• Percentage (w/w) of substance in mixture/article: ≤ 0.1 % <i>Typical dilution factor of fertilizer for consumer end use: 15/20</i>	TRA Consumers 3.1 (R15)
• Exposure via dermal route: Yes	TRA Consumers 3.1 (R15)
• Exposure via oral route: Oral exposure is considered to be not relevant	TRA Consumers 3.1 (R15)
• Exposure via inhalation route: Yes	TRA Consumers 3.1 (R15)
• Spray: Yes	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Frequency of use over a year: Infrequent	TRA Consumers 3.1 (R15)
• Frequency of use over a day: = 1.0 events per day	TRA Consumers 3.1 (R15)
• Amount of product used per application: ≤ 1000 g/event	TRA Consumers 3.1 (R15)
• Exposure time per event: = 4.0 h/event	TRA Consumers 3.1 (R15)
Information and behavioral advice for consumers	
• Adult/child assumed: Adult	TRA Consumers 3.1 (R15)
• Place of use: Indoor	TRA Consumers 3.1 (R15)
Other conditions affecting consumers exposure	
• Inhalation factor: = 0.85	TRA Consumers 3.1 (R15)
• Dermal transfer factor: = 1.0	TRA Consumers 3.1 (R15)
• Body parts potentially exposed: Hands	TRA Consumers 3.1 (R15)

7.2.9.1 Exposure and risks for consumers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	8.333 mg/m ³ (TRA Consumers)	RCR = 0.926
Dermal, systemic, long term	0.143 mg/kg bw/day (TRA Consumers)	RCR = 0.055

Route of exposure and type of effects	Exposure concentration	Risk quantification
Oral, systemic, long term	0 mg/kg bw/day (TRA Consumers)	RCR < 0.01
Combined routes, systemic, long-term		RCR = 0.981

7.2.10 Cons CS 10: Consumer use of solid fertilizer - including spraying application - indoor/outdoor (PC 12)

Conditions of use

	Method
Product (article) characteristics	
• Physical form of the used product: Solid (unspecified form)	
• Percentage (w/w) of substance in mixture/article: ≤ 10.0 %	TRA Consumers 3.1 (R15)
• Exposure via dermal route: Yes	TRA Consumers 3.1 (R15)
• Exposure via oral route: Oral exposure is considered to be not relevant	TRA Consumers 3.1 (R15)
• Exposure via inhalation route: Yes	TRA Consumers 3.1 (R15)
• Spray: No	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Frequency of use over a year: Infrequent	TRA Consumers 3.1 (R15)
• Frequency of use over a day: = 1.0 events per day	TRA Consumers 3.1 (R15)
• Amount of product used per application: ≤ 3000 g/event	TRA Consumers 3.1 (R15)
• Exposure time per event: = 2.0 h/event	TRA Consumers 3.1 (R15)
Information and behavioral advice for consumers	
• Adult/child assumed: Adult	TRA Consumers 3.1 (R15)
• Place of use: Indoor	TRA Consumers 3.1 (R15)
Other conditions affecting consumers exposure	
• Inhalation factor: = 1.0	TRA Consumers 3.1 (R15)
• Dermal transfer factor: = 0.1	TRA Consumers 3.1 (R15)
• Body parts potentially exposed: Hands	TRA Consumers 3.1 (R15)

7.2.10.1 Exposure and risks for consumers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	0.011 mg/m ³ (TRA Consumers)	RCR < 0.01
Dermal, systemic, long term	1.429 mg/kg bw/day (TRA Consumers)	RCR = 0.55
Oral, systemic, long term	0 mg/kg bw/day (TRA Consumers)	RCR < 0.01
Combined routes, systemic, long-term		RCR = 0.551