## ABSCHNITT 1. Bezeichnung des Stoffs bzw. des Gemischs und des Unternehmens

### 1.1. Produktidentifikator

Chemischer Name : Schwefelsäure , Diwasserstoffsulfatlösung (15-51%).

Art der Produktes : Reiner Produkt im Lösung .

Reach Registrierungnummer : 01-2119458838-20

### 1.2. Relevante identifizierte Verwendungen des Stoffs oder Gemischs und Verwendungen von denen abgeraten wird

* Identifizierte(n) Verwendung(en) : Siehe Tabelle auf der ersten Seite des Anhangs.

* Verwendung(en) von denen abgeraten wird : Dieses Produkt ist nicht für irgendeiner anderen industriellen, gewerblichen Verwendung oder Verwendung durch den Verbraucher als in der Tabelle auf der ersten Seite des Anhangs empfohlen.

### 1.3. Einzelheiten zum Lieferanten, der das Sicherheitsdatenblatt bereitstellt

* Firmenidentifizierung : BRENNTAG N.V. - Nijverheidslaan 38 - BE-8540 DEERLIJK
TEL: +32(0)56/77.69.44 - FAX: +32(0)56/77.57.11
E-MAIL: info@brenntag.be - Website: www.brenntag.be

BRENNTAG Nederland B.V. - Donker Duyvisweg 44 - NL-3316 BM DORDRECHT
TEL: +31(0)78/65.44.944 - FAX: +31(0)78/65.44.919
E-MAIL: info@brenntag.nl - Website: www.brenntag.nl

### 1.4. Notrufnummer

* Notrufnummer : Belgien : Antigifzentrum - Brüssel
TEL: +32(0)70/245.245

Die Niederlande : National Vergiftungen Information Zentrum - Bilthoven
TEL: +31(0)30/274.88.88 (Ausschließlich zum Zwecke der Unterrichtung medizinisches Personal bei akuten Intoxikationen)

## ABSCHNITT 2. Mögliche Gefahren

### 2.1. Einstufung des Stoffs oder Gemischs

**Einstufung gemäß der Richtlinie 67/548/EEG oder 1999/45/EG**

Ätzend (C; R35)

**Einstufung gemäß der Verordnung (EG) Nr. 1272/2008**

Hautätzend - Kategorie 1A - Gefahr (Skin Corr. 1A; H314)

### 2.2. Kennzeichnungselemente

**Kennzeichnung gemäß der Verordnung (EG) Nr. 1272/2008**

• Gefährliches Bestandteil(en) : Schwefelsäure ...%

• Gefahren Piktogramm(e)

• Signalwort : Gefahr

• Gefahrenhinweise : H314 - Verursacht schwere Verätzungen der Haut und Augenschäden.

• Sicherheitshinweise

- Prävention : P260 - Staub, Rauch, Gas, Nebel, Dampf, Aerosol nicht einatmen. P280 - Schutzhandschuhe, Schutzkleidung, Augenschutz, Gesichtsschutz tragen.

- Reaktion : P301+P330+P331 - BEI VERSCHLUCKEN : Mund ausspülen. KEIN Erbrechen herbeiführen. P303+P361+P353 - BEI BERÜHRUNG MIT DER HAUT (oder dem Haar) : Alle kontaminierten Kleidungsstücke sofort ausziehen. Haut mit Wasser abwaschen/duschen. P305+P351+P338 - BEI KONTAKT MIT DEN AUGEN :

## ABSCHNITT 2. Mögliche Gefahren (Fortsetzung)

Einige Minuten lang behutsam mit Wasser ausspülen. Vorhandene Kontaktlinsen nach Möglichkeit entfernen. Weiter spülen. P363 - Kontaminierte Kleidung vor erneutem Tragen waschen.

### 2.3. Sonstige Gefahren

| | | |
|---|---|---|
| Physikalishe/chemische Gefahren | : | Korrodiert Metalle unter Wasserstoffgasentwicklung. |
| Gefahren für die Gesundheid | : | Ein Gesundheits gefährliche Konzentration in der Luft wird beim Verdampfen von diese Substanz bei ca. 20°C nicht oder sehr langsam erreicht; durch Sprühen viel schneller. |
| Gefahren für die Umwelt | : | Produkt verursacht eine starke Verminderung des pH-Werts von Wasser und Boden.<br>Dieses Produkt ist kein Substance oder enthält keine PBT oder vPvB (gemäß Anhang XIII). |
| Gefahren für die Sicherheit | : | Explosionsgefahr durch viele Reaktionen. |

## ABSCHNITT 3. Zusammensetzung/Angaben zu Bestandteilen

### 3.1. Stoffe

| Name Komponent(en) | | Gew. % | CAS nr | EINECS nr | Index nr | Reach nr | EINSTUFUNG |
|---|---|---|---|---|---|---|---|
| Schwefelsäure...% | : | 15 -51 % | 7664-93-9 | 231-639-5 | 016-020-00-8 | 01-2119458838-20 | C; R35<br>---<br>Skin Corr. 1A; H314 |

*

Der vollständige Text von die R-Sätze und (EU)H-Hinweise is im Abschnitt 16.

Anmerkung B (Verordnung (EG) Nr. 1272/2008) gilt für das Produkt oder für ein oder mehrere von seine Bestandteilen.

Hinweis: SCL gilt

## ABSCHNITT 4. Erste-Hilfe-Maßnahmen

### 4.1. Beschreibung der Erste-Hilfe-Maßnahmen

| | | |
|---|---|---|
| Allgemein | : | JEDENFALLS ARZT KONSULTIEREN.<br>Bewußtlosen Menschen nichts eingeben. |
| Erste Hilfe | | |
| - Einatmen | : | Frische Luft zuführen.<br>Opfer zur Ruhe kommen lassen, in halb-sitzender Lage bringen.<br>Bei unregelmässiger Atmung oder beim Atemstillstand, künstlich beatmen.<br>Nehmen Sie das Opfer zum Krankenhaus. |
| - Hautkontakt | : | Verunreinigte Kleidung ablegen während das Spülen.<br>Haut sofort mit viel Wasser ausspülen. (ev. Duschen).<br>Ein Arzt konsultieren. |
| - Augenkontakt | : | SOFORT gründlich und länger (mindestens 15 Min.) mit viel Wasser ausspülen.<br>Kontaktlinsen ausnehmen.<br>Augenarzt konsultieren.<br>Während der Transport; Augen fortwährend ausspülen oder tröpfeln. |
| - Verschlucken | : | KEIN ERBRECHEN HERBEIFÜHREN. Der Mund spülen mit Wasser.<br>Slachtopfer viel Wasser trinken lassen.<br>Patient SOFORT nach Krankenhaus brengen. |

### 4.2. Wichtigste akute oder verzögert auftretende Symptome und Wirkungen

Siehe Abschnitt 11.

## ABSCHNITT 4. Erste-Hilfe-Maßnahmen (Fortsetzung)

### 4.3. Hinweise auf ärztliche Soforthilfe und Spezialbehandlung

Für fachliche Beratung Ärzte sollten sich an die NVCI oder die belgische Antigiftzentrum.

## ABSCHNITT 5. Maßnahmen zur Brandbekämpfung

### 5.1. Löschmittel

Löschmittel

- Geeignete : Löschpulver , Alkoholbeständiges Schaum , Kohlenstoffdioxid (CO2) , Sand .
- Nicht geeignete : Wasser .

### 5.2. Besondere vom Stoff oder Gemisch ausgehende Gefahren

Spezielle Expositionsgefahren : Bei Feuer können giftige und korrosieve Schwefeloxyden freikommen.

### 5.3. Hinweise für die Brandbekämpfung

Schutzende Ausrüstung : In nächster Nähe des Feuers geschlossenes Atemschutzgerät verwenden und angemessene Schutzkleidung tragen.

Besondere Massnahmen : Zur Kühlung in der Nähe befindlichen Geräts Wassersprühstrahl oder -nebel verwenden. Es ist zu vermeiden, daß zur Brandlöschung verwendetes Wasser in die Umwelt gelangt.
Löschwasser neutralisieren mit basischen Produkten.

## ABSCHNITT 6. Maßnahmen bei unbeabsichtigter Freisetzung

### 6.1. Personenbezogene Vorsichtsmaßnahmen, Schutzausrüstungen und in Notfällen anzuwendende Verfahren

Personenbezogene Vorsichtsmaßnahmen : Sofort die Personen am angesteckten Ort räumen und gut lüften.
Einatmung der Dämpfe und Berührung mit Augen, Haut und Kleider vermeiden.
Empfohlene Personenschutzausrüstung tragen. (Siehe Abschnitt 8)

### 6.2. Umweltschutzmaßnahmen

Umweltschutzmaßnahmen : Wenn möglich Undichtheiten beseitigen.
Das gekleckerte Produkt soviel wie möglich mit inertem Material eindeichen.
Eindringen das Produkt in Kanalisation, öffentlichen Gewässer oder dem Boden verhindern.
Falls die Flüssigkeit in die Kanalisation oder öffentliche Gewässer gelangt, sind die Behörden zu benachrichtigen.

### 6.3. Methoden und Material für Rückhaltung nd Reinigung

Reinigungsmethode : Die Leckflüssigkeit auffangen in abgeschlossenen und Korrosionbeständigen Fässer.
Die Flüssigkeit sofort mit vielen Wasser verdünnen und neutralisieren mit Base. ( z. B. Natriumbikarbonat )
Reichlich mit Wasser ausspülen.

### 6.4. Verweis auf andere Abschnitte

Für persönliche Schutzmittel, siehe Abschnitt 8.
Für Behandlung das Abfallprodukt, siehe Abschnitt 13.

## ABSCHNITT 7. Handhabung und Lagerung

### 7.1. Schutzsmaßnahmen zur sicheren Handhabung

* Handhabung : KONTAKT MIT ALLES VERMEIDEN !!
Einatmung der Dämpfe und Berührung mit Augen, Haut und Kleider vermeiden.
Empfohlene Personenschutzausrüstung tragen. (Siehe Abschnitt 8)

## ABSCHNITT 7. Handhabung und Lagerung (Fortsetzung)

Aufwarmen, spritzen und Dampfbildung vermeiden bei leermachen, übergiessen verdünnen oder auflösen des Produkts.
Beim Verdünnen, immer die säure Lösung auf das Wasser giessen, nimmer andersherum.
Bei der Arbeit nicht essen, trinken oder rauchen.
Waschen Sie Ihre Hände, vorher und nachher, das Sie mit dem Produkt bearbeitet haben.
Notvorrichtungen für Augenspülungen und Duschen für Erste-Hilfe- Maßnahmen bei der Behandlung von Erfrierungsverletzungen sollten dort, wo eine potentielle Exposition eintreten kann, in unmittelbarer Nähe verfügbar sein.

### 7.2. Bedingungen zur sicheren Lagerung unter Berücksichtigung von Unverträglichkeiten

Lagerung : Nur im gut abgeschlossenen Originalbehälter an einem kühlen, gut gelüfteten und trockenen Ort aufbewahren.
Alle gefährlichen Produkte müßten auf einen Leckbehälter gesetzt werden oder eingetonnt werden.
Fernhalten von : Laugen , Reduktionsmittel , Brennstoffe .

Geeignetes Verpakkungsmaterial : Polyethylen , Polypropylen , Glas .

Nicht geeignetes Verpakkungsmaterial : Metalle .

### 7.3. Spezifische Endanwendungen

Für den identifizierten Verwendungen, siehe Unterabschnitt 1.2 und/oder Expositionsszenarien.

## ABSCHNITT 8. Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstunge

### 8.1. Zu überwachende Parameter

* Berufsbedingte Expositionsgrenzen : Schwefelsäure...% : Grenzwert (BE) : 0,2 mg/m³ (2014) ( Nebel ) (C)
Schwefelsäure...% : Grenzwert (GGM 8 St) (NL) : 0,05 mg/m³ (2011)
(C) Die Erwähnung "C" bedeutet, daß der betreffende Beamte vom Anwendungsbereich des königlichen Erlasses vom 2. Dezember 1993 über den Schutz der Arbeiter vor den Risiken aufhebt, die mit der Ausstellung mit karzinogenen und mutagenen Beamten an der Arbeit zusammenhängen.

Biologischen Grenzwerte : Bei Vorliegen der Daten werden diese aufgenommen.

DNELs : • Schwefelsäure...% : Arbeiter, akut - lokale Effekte, einatmen : 0,1 mg/m³
• Schwefelsäure...% : Arbeiter, langzeit - lokale Effekte, einatmen : 0,05 mg/m³

PNECs : • Schwefelsäure...% : Intermittierend Freisetzung : -
• Schwefelsäure...% : Wasserreinigungsinstallation : 8,8 mg/l
• Schwefelsäure...% : Salzwassersediment : 0,002 mg/l
• Schwefelsäure...% : Süßwassersediment : 0,002 mg/l
• Schwefelsäure...% : Salzwasser : 0,00025 mg/l
• Schwefelsäure...% : Süßwasser : 0,0025 mg/l
• Schwefelsäure...% : Boden : -

### 8.2. Begrenzung und Überwachung der Exposition

Technische Massnahmen : Ventilation ( Wenn möglich über den Boden ), Lokale Absaugung .

Persönliche Schutzmittel

* - Atemschutz : CE-Geeignetes Atemschutzgerät für säure Gasen und Dämpfe (type E, gelb).

- Hautschutz : Geeignete Schutzkleidung ( Säurebeständig ) .

* - Handschutz : Geeignete Materialien für Schutzhandschuhe (EN 374):
Die arbeitsplatzspezifische Eignung sollte mit den Schutzhandschuhherstellern abgeklärt werden.
- Material : Viton
- Dicke 0,7 mm
- Durchbruchszeit : > 480'

## ABSCHNITT 8. Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstunge

| | |
|---|---|
| - Augen-/Gesichtsschutz | : Anschliessende Sicherheitsgläser oder Gesichtsschutz. |
| Begrenzung und Überwachung der Umweltexposition | : Siehe Abschnitte 6, 7, 12 und 13. |

## ABSCHNITT 9. Physikalische und chemische Eigenschaften

### 9.1. Angaben zu den grundlegenden physikalischen und chemischen Eigenschaften

Siehe technisches Datenblatt für weitere Informationen.

| | | |
|---|---|---|
| | Physikalische Form (20°C) | : Flüssigkeit . |
| | Aussicht/Farbe | : Klar , Farblos . |
| | Geruch | : Geruchlos . |
| * | Geruchsschwelle | : Nicht anwendbar. |
| * | pH-Wert | : < 1 |
| | Schmelz-/Gefrierpunkt | : -50 bis -35 °C |
| | Siedepunkt/Siedestrecke (1013 hPa) | : 105 - 130 °C |
| | Flammpunkt | : Nicht anwendbar. |
| | Feuergefahr | : Nicht anwendbar. |
| | Verdampfungsgeschwindigkeit | : Nicht anwendbar. |
| | Explosionsgrenzen in Luft | : Nicht anwendbar. |
| | Dampfdruck (20°C) | : 0,5 - 2 kPa |
| | Relative Dichte der gesättigten Mischung Dampf/Luft (Luft=1) | : 1,0 |
| * | Die relative Dichte (Wasser=1) | : 1,1 - 1,7 |
| | Dichte (20°C) | : 1,1 - 1,4 kg/l |
| | Löslichkeit in Wasser | : Völlig löslich . |
| | Löslich in | : Diethylether . |
| * | Log P Oktanol/Wasser (20°C) | : 1 - 2,20 ( geschätzt ) |
| | Zuendtemperatur | : Nicht anwendbar. |
| | Minimum Entzündungsenergie | : Nicht anwendbar. |
| | Zersetzungstemperatur | : Es liegen keine Angaben vor. |
| | Viskosität (20°C) | : < 5 mPa.s ( Dynamisch ) |
| * | Explosive Eigenschaften | : Keine chemischen Gruppen mit explosive Eigenschaften zugeordnet . |
| * | Oxidationseigenschaften | : Keine chemischen Gruppen mit oxidierenden Eigenschaften zugeordnet . |

### 9.2. Sonstige Angaben

| | |
|---|---|
| Weitere Angaben | : Sehr hygroskopisch . |

## ABSCHNITT 10. Stabilität und Reaktivität

### 10.1. Reaktivität

| | |
|---|---|
| Reaktivität | : Das Produkt ist ein starkes Oxidationsmittel und reagiert heftig mit brennbaren Stoffen und Reduktionsmitteln.<br>Reagiert heftig mit Oxidationsmitteln und Basen.<br>Reagiert mit : Organische Materiale , Lösungsmittels . |

### 10.2. Chemische Stabilität

| | |
|---|---|
| Stabilität | : Instabil bei Kontakt mit Feuchtigkeit . |

### 10.3. Möglichkeit gefährlicher Reaktionen

## ABSCHNITT 10. Stabilität und Reaktivität (Fortsetzung)

Gefährliche Reaktionen : Exotherme Reaktion mit: Wasser , Laugen .
Berührung mit metallischen Substanzen kann zum Freiwerden von entzündlichen Wasserstoffgas führen.

### 10.4. Zu vermeidenden Bedingungen

Zu vermeidenden Zuständen : Wärmequellen .

### 10.5. Unverträgliche Materialien

* Nicht in Verbindung bringen mit : Oxidationsmittel , Laugen , Reduktionsmittel , Brennstoffe , Organische Materiale , Lösungsmittels , Metalle .

### 10.6. Gefährliche Zersetzungsprodukte

* Gefährliche Zersetzungsprodukte : Schwefeloxide , Wasserstoffgaz .

## ABSCHNITT 11. Toxikologische Angaben

### 11.1. Angaben zu toxikologischen Wirkungen

Akute Toxizität

* - Einatmen : Symptome umfassen:
• Schwefelsäure...% : LC50 (Ratte, Inhalation, 4 St) : 0,375 mg/l ( OECD-Leitsatz 403) Sore throat, Hust, Schwindel, Atemnot .

* - Hautkontakt : Symptome umfassen: Rötung , Brandiges Gefühl .
• Schwefelsäure...% : LD50 (Kaninchen, Dermal) : Es liegen keine Angaben vor.

* - Nahrungsaufnahme : Symptome umfassen: Irritation von Lippen, Mund und Rachen , Bauchschmerzen .
• Schwefelsäure...% : LD50 (Ratte, Oral) : 2140 mg/kg ( OECD-Leitsatz 401)

* Atz-/Reizwirkung auf die Haut : Verursacht schwere Verätzungen.

* Schwere Augenschädigung/-reizung : Verursacht schwere Augenschäden.

Aspirationsgefahr : Das Produkt kann sich auf die oberen und unteren Atemwege, verursacht Infektionen und eingeschränkter Lungenfunktion.

Sensibilisierung der Atemwege/Haut : Wahrscheinlich nicht sensibel .

Karzinogenität : Nicht als karcinogen klassifiziert .
IARC : Gruppe 1 (für Menschen krebserregend)

Mutagenität : Nicht als mutagen klassifiziert .

Reproduktionstoxizität : Nicht für Reproduktionstoxizität klassifiziert .

Spezifische Zielorgan-Toxizität - einmaliger Exposition : Beim Menschen : Nicht für Organtoxizität klassifiziert .
Bei Tieren : Keine Effekten bekannt.

Spezifische Zielorgan-Toxizität - wiederholter Exposition : Beim Menschen : Nicht für Organtoxizität klassifiziert .
Bei Tieren : Keine Effekten bekannt.

## ABSCHNITT 12. Umweltbezogene Angaben

### 12.1. Toxizität

* Ekotoxizität : • Schwefelsäure...% : LC50 (Fisch, 96 St) : 16 28 mg/l (Lepomis macrochirus)
• Schwefelsäure...% : CE50 (Alge, 72 St) : >100 mg/l (Desmodesmus subspicatus) ( OECD-Leitsatz 201)
• Schwefelsäure...% : CE50 (Daphnia magna, 48 St) : >100 mg/l ( OECD-Leitsatz 202)

### 12.2. Persistenz und Abbaubarkeit

Persistenz und Abbaubarkeit : • Schwefelsäure...% : Persistenz und Abbaubarkeit : Anorganisch .

### 12.3. Bioakkumulationspotenzial

## ABSCHNITT 12. Umweltbezogene Angaben (Fortsetzung)

Bioakkumulation : • Schwefelsäure...% : Bioakkumulation : Keine Bio-Akkumulation .

### 12.4. Mobilität im Boden

* Mobilität : • Schwefelsäure...% : Mobilität : Hydrolyse .

### 12.5. Ergebnisse der PBT- und vPvB-Beurteilung

Ergebnisse : • Schwefelsäure...% : PBT/vPvB : Nein

### 12.6. Andere schädliche Wirkungen

Potenzial zur fotochemischen Ozonbildung : Es liegen keine Angaben vor.

Potenzial zum Ozonabbau : Keine .

Potenzial zur Störung der endokrinen Systeme : Es liegen keine Angaben vor.

Potenzial zur Erwärmung der Erdatmosphäre : Es liegen keine Angaben vor.

## ABSCHNITT 13. Hinweise zur Entsorgung

### 13.1. Verfahren der Abfallbehandlung

Produktvernichtung : Das Produkt muss vernichtet werden gemäss der lokale und internationale Gesetzgebung, durch ein gesetzlich erkannte und spezialisierte Firma.

Europäische Abfallstoffenliste : XXXXXX - Europäischer Abfallproduktcode. Dieser Code wird auf der Grundlage von die gegenwärtigsten Anwendungen zugewiesen und kann nicht für Verunreinigungen repräsentativ sein, die am wirkungsvollen Gebrauch des Produktes entstanden wurden. Der Produzent der Vergeudung muß seinen Prozeß selbst auswerten und muß die passende überschüssige Kodierung bewilligen. Sehen Sie Entscheidung 2001/118/EG.

Behandlung der Verpakkung : Die gebrauchte Verpakkung ist ausschliesslich für die Verpakkung dieses Produktes zu benutzen.
Nach Gebrauch die Verpackung sorgfältig ausleeren und abschliessen.
Wenn es sich um Retourverpakkung händelt, kann die leere Verpakkung wieder am Lieferant angeboten werden.

## ABSCHNITT 14. Angaben zum Transport

### 14.1. UN-Nummer

UN Nr : 2796

### 14.2. Ordnungsgemäße UN-Versandbezeichnung

ADR/RID-Name : UN 2796 Schwefelsäure, 8, II, (E)

ADN-Name : UN 2796 Schwefelsäure , 8, II

IMDG-Name : UN 2796 Sulphuric acid , 8, II

* IATA-Name : UN 2796 Sulphuric acid , 8, II

### 14.3. Transportgefahrenklassen

Klasse : 8

### 14.4. Verpackungsgruppe

Verpackungstyp : II

### 14.5. Umweltgefahren

Umweltgefährlich : Nein

## ABSCHNITT 14. Angaben zum Transport (Fortsetzung)

Meeresschadstoff : Nein

### 14.6. Besondere Vorsichtsmaßnahmen für den Verwender

Gefahrandeutung : 80
Gefahrsymbol(e) : 8
EmS-N° : F-A , S-B

### 14.7. Massengutbeforderung gemäß Anhang II des MARPOL-Übereinkommens 73/78 und gemäß IBC-Code

Schiffstyp : Es liegen keine Angaben vor.
Verschmutzungskategorie : Es liegen keine Angaben vor.

## ABSCHNITT 15. Rechtsvorschriften

### 15.1. Vorschriften zu Sicherheit, Gesundheits- und Umweltschutz/spezifische Rechtsvorschriften für den Stoff oder das Gemisch

Inventarisierungen : Australische Inventarisation (AICS): Aufgenommen im Inventarisation.
Kanadische Inventarisation (DSL): Aufgenommen im Inventarisation.
Chinesisches Inventarisation (IECS): Aufgenommen im Inventarisation.
Europäische Inventarisation (EINECS): Aufgenommen im Inventarisation.
Koreanische Inventarisation (KECI): Aufgenommen im Inventarisation.
USA-Inventarisation (TSCA): Aufgenommen im Inventarisation.

NFPA-N° : 3-0-2

* Einschlägigen EU Vorschrift(en) : Richtlinie 98/24/EG des Rates vom 7. April 1998 zum Schutz von Gesundheit und Sicherheit der Arbeitnehmer vor der Gefährdung durch chemische Arbeitsstoffe bei der Arbeit
Richtlinie 2004/37/EG des Europäischen Parlaments und des Rates vom 29. April 2004 über den Schutz der Arbeitnehmer gegen Gefährdung durch Karzinogene oder Mutagene bei der Arbeit
Verordnung (EG) Nr. 273/2004 des Europäischen Parlament und des Rates vom 11. Februar 2004 betreffend Drogenausgangsstoffe
Entscheidung 2001/118/EG der Kommission vom 16. Januar 2001 zur Änderung der Entscheidung 2000/532/EG über ein Abfallverzeichnis
Verordnung (EG) Nr. 1272/2008 des Europäischen Parlaments und des Rates vom 16. Dezember 2008 über die Einstufung, Kennzeichnung und Verpackung von Stoffen und Gemischen, zur Änderung und Aufhebung der Richtlinien 67/548/EWG und 1999/45/EG und zur Änderung der Verordnung (EG) Nr. 1907/2006
Verordnung (EU) Nr. 453/2010 der Kommission vom 20. Mai 2010 zur Änderung der Verordnung (EG) Nr. 1907/2006 des Europäischen Parlaments und des Rates zur Registrierung, Bewertung, Zulassung und Beschränkung chemischer Stoffe ( Reach)

Nationalen Vorschriften

- Deutschland : WGK : 1

* - Niederlande : Wasserbeschwerlichkeit : 9
Sanierungsanspannung : B
SZW-Liste von krebserzeugender Substanzen : Dämpfe von Schwefelsäure

### 15.2. Stoffsicherheitsbeurteilung

* Eine Stoffsicherheitsbeurteilung wurde aus der Bestandteile aus denen sich dieses Produkt durchgeführt.

## ABSCHNITT 16. Sonstige Angaben

Dieses Sicherheitsblatt ist ausschliesslich bestimmt für industriel/professionel Gebrauch.
Dieses Sicherheitsdatenblatt ist aufgestellt worden gemäss der Verordnung (EU) Nr. 453/2010.

## ABSCHNITT 16. Sonstige Angaben (Fortsetzung)

* Änderung hinsichtlich voriger Revision.

| | | |
|---|---|---|
| * | Änderungen | : Abschnitt 1 , Abschnitt 3 , Abschnitt 7 , Abschnitt 8 , Abschnitt 9 , Abschnitt 10 , Abschnitt 11 , Abschnitt 12 , Abschnitt 14 , Abschnitt 15 , Abschnitt 16 . |
| | Quelle der Daten | : Die Angaben stützen sich auf den heutigen Stand unserer Kenninnisse ( Produzente die Grundstoffe , Chemiekarte , ...).<br>Sehe auch auf der Adresse:<br>http://apps.echa.europa.eu/registered/registered-sub.aspx#search |
| | R-Sätz(e) | : R35 - Verursacht schwere Verätzungen. |
| | (EU)H-Hinweis(e) | : H314 - Verursacht schwere Verätzungen der Haut und Augenschäden. |
| * | Liste der Abkürzungen und Akronyme | : ADN (Accord européen relatif au transport international des marchandises Dangereuses par voie de Navigation intérieur) : Europäisches Übereinkommen über die internationale Beförderung gefährlicher Güter in der Binnenschifffahrt<br>ADR (Accord européen relatif au transport international des marchandises Dangereuses par Route) : Europäisches Übereinkommen über die internationale Beförderung gefährlicher Güter auf der Straße<br>DNEL (Derived No Effect Level) : Grenzwert, unterhalb dessen der Stoff keine Wirkung ausübt<br>EC50 : mittlere Effektive Konzentration<br>EmS (Emergency Schedule) : den ersten Code verweist auf die einschlägigen Brandklasse und den zweite code verweist auf die einschlägingen Verschütten Zeitplan<br>IARC (International Agency for Research on Cancer) : Internationale Agentur für Krebsforschung (IAK)<br>IATA (International Air Transport Association) :Übereinkommen über die internationale Beförderung gefährlicher Güter im Luftverkehr<br>IMDG (International Maritime Dangerous Goods code) : Internationalen Übereinkommens für Gefahrgutkennzeichnung für gefährliche Güter im Seeschiffsverkehr<br>LC50 : mittlere Letale Konzentration<br>LD50 : mittlere Letale Dosis<br>NFPA (National Fire Protection Association) oder Gefahrendiamant<br>NOEC (No Observed Effect Concentration) : Konzentration ohne beobachtbare schädliche Wirkung<br>NVCI : National Vergiftungen Information Zentrum<br>OECD (Organisation for Economic Cooperation and Development) : Organisation für wirtschaftliche Zusammenarbeit und Entwicklung<br>PBT : persistente, bioakkumulierbar und toxisch<br>PNEC (Predicted No Effect Concentration) : Konzentration unter die Exposition gegenüber<br>einem Stoff ohne Wirkung<br>REACH : Registrierung, Bewertung, Zulassung und beschränkung von Chemikalien<br>RID (Règlement concernant le transport International ferroviaire des marchandises Dangereuses) : internationalen Beförderung gefährlicher Güter im Schienenverkehr<br>SCL (Specific Concentration Limits) : spezifische Konzentrationsgrenzwerte<br>Skin Corr. 1A : Hautätzend - Kategorie 1A<br>SZW-Liste : Liste krebserzeugender Substanzen und Vorgänge als Zielen in Artikel 4.11 des Erlass über Arbeitsbedingungen<br>GGM (Gewichteter Gleitender Mittelwert) : die durchschnittliche Exposition über einen bestimmten Zeitraum<br>WGK (Wassergefahrdungsklasse)<br>vPvB : sehr persistent und sehr bioakkumulierbar |

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**Ende des Dokumentes**

| No. | Short title | Main User Group (SU) | Sector of Use (SU) | Product Category (PC) | Process Category (PROC) | Environmental Release Category (ERC) | Article Category (AC) | Specified |
|---|---|---|---|---|---|---|---|---|
| 1 | Manufacture of substance | 3 | NA | NA | 1, 2, 3, 4, 8a, 8b, 9 | 1 | NA | ES529 |
| 2 | Use as an intermediate | 3 | 4, 6b, 8, 9, 14 | 19 | 1, 2, 3, 4, 8a, 8b, 9 | 6a | NA | ES679 |
| 3 | Formulation & (re)packing of substances and mixtures | 3 | 10 | NA | 1, 3, 5, 8a, 8b, 9 | 2 | NA | ES689 |
| 4 | Use in Cleaning Agents | 22 | NA | 35 | 8a | 8a | NA | ES904 |
| 5 | Use in laboratories | 22 | NA | 21 | 15 | 8a, 8b | NA | ES906 |
| 6 | Use for extractions and processing of minerals, ores | 3 | 2a, 14 | 20, 40 | 2, 3, 4 | 4, 6b | NA | ES784 |
| 7 | Use as processing aid | 3 | 4, 5, 6b, 8, 9, 11, 23 | 20 | 1, 2, 3, 4, 8a, 8b, 9, 13 | 6b | NA | ES782 |
| 8 | Use in electrolytic processes | 3 | 14, 15, 17 | 14, 20 | 1, 2, 8b, 9, 13 | 5, 6b | NA | ES788 |
| 9 | Use in the process of surface treatments, purification and etching | 3 | 2a, 14, 15, 16 | 14, 15 | 1, 2, 3, 4, 8a, 8b, 9, 13 | 6b | NA | ES786 |
| 10 | Use in gas treatment | 3 | 8 | 20 | 1, 2, 8b | 7 | NA | ES790 |
| 11 | Use in production of sulphuric acid contained batteries | 3 | NA | NA | 2, 3, 4, 9 | 2, 5 | NA | ES792 |
| 12 | Use in recycling of sulphuric acid contained batteries | 3 | NA | NA | 2, 4, 5, 8a | 1 | NA | ES794 |
| 13 | Use in maintenance of sulphuric acid contained batteries | 22 | NA | NA | 19 | 8b, 9b | NA | ES798 |
| 14 | Use of sulphuric acid contained batteries | 21 | NA | NA | NA | 9b | 3 | ES1117 |

| **1. Short title of Exposure Scenario 1: Manufacture of substance** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Process categories | PROC1: Use in closed process, no likelihood of exposure<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Use in closed batch process (synthesis or formulation)<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | |
| Environmental Release Categories | ERC1: Manufacture of substances | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC1** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 25% - 100% |
| Amount used | Annual amount per site | 1,2 Million tonnes/year |
| | Annual amount used per region | 19 Million tonnes/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Technical conditions and measures at process level (source) to prevent release<br>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil<br>Organizational measures to prevent/limit release from the site | Air | Exhaust gases may be treated by scrubbers or emissions may be measured and controlled according to local legislation |
| | Water | The wastewater neutralisation process is extremely efficient with almost total neutralisation achieved |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | On-site waste water treatment |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Incineration or in a landfill |
| **2.2 Contributing scenario controlling worker exposure for:PROC1, PROC2, PROC3, PROC4,** | | |

| **PROC8a, PROC8b, PROC9** | | |
|---|---|---|
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 25% - 100% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | 0,06 hPa |
| Amount used | Worker exposure considered to be negligible due to the specialized systems and closed nature of the production process | |
| Frequency and duration of use | Frequency of use | 220 days/year |
| | Exposure duration per day | 480 min |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 $cm^2$ |
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases | |
| Other operational conditions affecting workers exposure | Outdoors not close to buildings(PROC1, PROC2, PROC8a, PROC8b) | |
| | Outdoors near to buildings(PROC3, PROC4) | |
| | Indoors, any sized room, with good natural ventilation(PROC9) | |
| | Process may involve high temperature (50 - 150℃)(PRO C1, PROC2, PROC3, PROC4) | |
| | Room size and ventilation rate are not relevant as workers work in a control room, with no direct contact to the installations housing the material. | |
| | Due to the nature of the substance the process should be kept as contained as possible | |
| Technical conditions and measures to control dispersion from source towards the worker | Use vapour recovery system(except PROC8a) | |
| | Provide local exhaust ventilation (LEV).(PROC1, PROC3, PROC8b) | |
| | Complete segregation(PROC1, PROC2) | |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance | |
| | Substance-handling procedures shall be well documented and strictly supervised | |
| | Workers involved in sampling and transfer of materials to road tankers are trained in the procedures and protective equipment is intended to cope with the worst case scenario, in order to minimize exposure and risks | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) | |
| | | |

**3. Exposure estimation and reference to its source**

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC1 | --- | Fresh water | PEC | 0,011µg/L | 0,00440 |
| ERC1 | --- | Marine water | PEC | 0,0016µg/L | 0,00640 |
| ERC1 | --- | Fresh water sediment | PEC | 0,97ng/kg | 0,00049 |
| ERC1 | --- | Marine sediment | PEC | 0,14ng/kg | 0,00007 |
| ERC1 | --- | Soil | PEC | 0,05µg/kg | --- |
| ERC1 | --- | Air | PEC | 0,18ng/m3 | --- |

**Workers**

Advanced REACH Tool (ART model)

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1 | 90th percentile value | worker inhalation, long term - systemic | 0,0094ng/m3 | --- |
| PROC2 | 90th percentile value | worker inhalation, long term - systemic | 0,092ng/m3 | --- |
| PROC3 | 90th percentile value | worker inhalation, long term - systemic | 0,42µg/m³ | --- |
| PROC4 | 90th percentile value | worker inhalation, long term - systemic | 14µg/m³ | --- |
| PROC8a | 90th percentile value | worker inhalation, long term - systemic | 23µg/m³ | --- |
| PROC8b | 90th percentile value | worker inhalation, long term - systemic | 0,0048µg/m³ | --- |
| PROC9 | 90th percentile value | worker inhalation, long term - systemic | 2,8µg/m³ | --- |

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| **1. Short title of Exposure Scenario 2: Use as an intermediate** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Sectors of end-use | SU4: Manufacture of food products<br>SU6b: Manufacture of pulp, paper and paper products<br>SU8: Manufacture of bulk, large scale chemicals (including petroleum products)<br>SU9: Manufacture of fine chemicals<br>SU14: Manufacture of basic metals, including alloys | |
| Chemical product category | PC19: Intermediate | |
| Process categories | PROC1: Use in closed process, no likelihood of exposure<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Use in closed batch process (synthesis or formulation)<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | |
| Environmental Release Categories | ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC6a** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | The substance is used up in the process |
| Amount used | Annual amount per site | 300000 ton(s)/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Technical conditions and measures at process level (source) to prevent release<br>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil<br>Organizational measures to prevent/limit release from the site | Air | Exhaust gases may be treated by scrubbers or emissions may be measured and controlled according to local legislation |
| | Water | The wastewater neutralisation process is extremely efficient with almost total neutralisation achieved |
| | | |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | On-site waste water treatment |

| | | |
|---|---|---|
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Incineration or in a landfill |
| **2.2 Contributing scenario controlling worker exposure for:PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | The substance is used up in the process |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | 0,06 hPa |
| Amount used | Worker contact is generally very low as most operations are remotely controlled and sampling/analysis events are of short duration. | |
| Frequency and duration of use | Frequency of use | 220 days/year |
| | Exposure duration per day | 480 min |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 cm² |
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases | |
| Other operational conditions affecting workers exposure | Outdoors not close to buildings(PROC1, PROC2, PROC8a, PROC8b) | |
| | Outdoors near to buildings(PROC3, PROC4) | |
| | Indoors, any sized room, with good natural ventilation(PROC9) | |
| | Process may involve high temperature (50 - 150℃)(PRO C1, PROC2, PROC3, PROC4) | |
| | Room size and ventilation rate are not relevant as workers work in a control room, with no direct contact to the installations housing the material. | |
| | Due to the nature of the substance the process should be kept as contained as possible | |
| Technical conditions and measures to control dispersion from source towards the worker | Use vapour recovery system(except PROC8a) | |
| | Provide local exhaust ventilation (LEV).(PROC1, PROC3, PROC8b) | |
| | Complete segregation(PROC1, PROC2) | |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance | |
| | Substance-handling procedures shall be well documented and strictly supervised | |
| | Workers involved in sampling and transfer of materials to road tankers are trained in the procedures and protective equipment is intended to cope with the worst case scenario, in order to minimize exposure and risks | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) | |
| | | |

## 3. Exposure estimation and reference to its source

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC6a | --- | Fresh water | PEC | 0,2µg/L | 0,08 |
| ERC6a | --- | Marine water | PEC | 0,03µg/L | 0,12 |
| ERC6a | --- | Fresh water sediment | PEC | 0,0018µg/kg | 0,0009 |
| ERC6a | --- | Marine sediment | PEC | 0,0026µg/kg | 0,0013 |
| ERC6a | --- | Soil | PEC | 0,92µg/kg | --- |
| ERC6a | --- | Air | PEC | 0,0032µg/m³ | --- |

**Workers**

Advanced REACH Tool (ART model)

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1 | 90th percentile value | worker inhalation, long term - systemic | 0,0094ng/m3 | --- |
| PROC2 | 90th percentile value | worker inhalation, long term - systemic | 0,092ng/m3 | --- |
| PROC3 | 90th percentile value | worker inhalation, long term - systemic | 0,42µg/m³ | --- |
| PROC4 | 90th percentile value | worker inhalation, long term - systemic | 14µg/m³ | --- |
| PROC8a | 90th percentile value | worker inhalation, long term - systemic | 23µg/m³ | --- |
| PROC8b | 90th percentile value | worker inhalation, long term - systemic | 0,0048µg/m³ | --- |
| PROC9 | 90th percentile value | worker inhalation, long term - systemic | 2,8µg/m³ | --- |

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management

Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| **1. Short title of Exposure Scenario 3: Formulation & (re)packing of substances and mixtures** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Sectors of end-use | SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) | |
| Process categories | PROC1: Use in closed process, no likelihood of exposure<br>PROC3: Use in closed batch process (synthesis or formulation)<br>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)<br>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | |
| Environmental Release Categories | ERC2: Formulation of preparations | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC2** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| Amount used | Annual amount per site | 300000 ton(s)/year |
| | Annual amount used per region | 3 Million tonnes/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Technical conditions and measures at process level (source) to prevent release<br>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil<br>Organizational measures to prevent/limit release from the site | Air | Exhaust gases may be treated by scrubbers or emissions may be measured and controlled according to local legislation |
| | Water | The wastewater neutralisation process is extremely efficient with almost total neutralisation achieved |
| | | |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | On-site waste water treatment |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Incineration or in a landfill |

**2.2 Contributing scenario controlling worker exposure for:PROC1, PROC3, PROC5, PROC8a, PROC8b, PROC9**

| | | |
|---|---|---|
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | 0,06 hPa |
| Amount used | Worker exposure considered to be negligible due to the specialized systems. | |
| Frequency and duration of use | Frequency of use | 220 days/year |
| | Exposure duration per day | 480 min |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 cm² |
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases | |
| Other operational conditions affecting workers exposure | Outdoors not close to buildings(PROC1, PROC8a, PROC8b) | |
| | Outdoors near to buildings(PROC3) | |
| | Indoors, any sized room, with good natural ventilation(PROC5, PROC9) | |
| | Process may involve high temperature (50 - 150℃)(PRO C1, PROC3) | |
| | Room size and ventilation rate are not relevant as workers work in a control room, with no direct contact to the installations housing the material. | |
| | Due to the nature of the substance the process should be kept as contained as possible | |
| Technical conditions and measures to control dispersion from source towards the worker | Use vapour recovery system(except PROC5) | |
| | Provide local exhaust ventilation (LEV).(PROC1, PROC3, PROC5, PROC8b) | |
| | Complete segregation(PROC1) | |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance | |
| | Substance-handling procedures shall be well documented and strictly supervised | |
| | Workers involved in sampling and transfer of materials to road tankers are trained in the procedures and protective equipment is intended to cope with the worst case scenario, in order to minimize exposure and risks | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) | |

**3. Exposure estimation and reference to its source**

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC2 | --- | Fresh water | PEC | 0,0443µg/L | 0,01772 |
| ERC2 | --- | Marine water | PEC | 0,0064µg/L | 0,02568 |
| ERC2 | --- | Fresh water sediment | PEC | 0,0038µg/kg | 0,00192 |
| ERC2 | --- | Marine sediment | PEC | 0,0005µg/kg | 0,00028 |
| ERC2 | --- | Soil | PEC | 0,2µg/kg | --- |
| ERC2 | --- | Air | PEC | 0,0007µg/m³ | --- |

**Workers**

Advanced REACH Tool (ART model)

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1 | 90th percentile value | worker inhalation, long term - systemic | 0,0009ng/m3 | --- |
| PROC3 | 90th percentile value | worker inhalation, long term - systemic | 0,42µg/m³ | --- |
| PROC5 | 90th percentile value | worker inhalation, long term - systemic | 0,016mg/m³ | --- |
| PROC8a | 90th percentile value | worker inhalation, long term - systemic | 0,023mg/m³ | --- |
| PROC8b | 90th percentile value | worker inhalation, long term - systemic | 0,0004µg/m³ | --- |
| PROC9 | 90th percentile value | worker inhalation, long term - systemic | 0,0028mg/m³ | --- |

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| **1. Short title of Exposure Scenario 4: Use in Cleaning Agents** | | |
|---|---|---|
| Main User Groups | SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen) | |
| Chemical product category | PC35: Washing and cleaning products (including solvent based products) | |
| Process categories | PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities | |
| Environmental Release Categories | ERC8a: Wide dispersive indoor use of processing aids in open systems | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC8a** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| Amount used | Annual amount per site | 1 kg |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | Municipal sewage treatment plant |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | None (emissions to drains) |
| Conditions and measures related to external treatment of waste for disposal | Waste treatment | Amount of substance in waste resulting from service life of articles:, Not applicable. |
| | Waste treatment | Release fraction to air from waste handling:, Not applicable. |
| | Waste treatment | Release fraction to wastewater from waste handling:, Not applicable. |
| | Waste treatment | Fraction disposed of as secondary waste:, Not applicable. |
| **2.2 Contributing scenario controlling worker exposure for:PROC8a** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | 0,06 hPa |
| Frequency and duration of use | Frequency of use | 220 days/year |
| | Exposure duration per | 480 min |

| | | |
|---|---|---|
| | day | |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 cm² |
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases | |
| Other operational conditions affecting workers exposure | Indoors, any sized room, with good natural ventilation | |
| | Due to the nature of the substance the process should be kept as contained as possible | |
| Technical conditions and measures to control dispersion from source towards the worker | LEV not required | |
| | | |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance | |
| | Substance-handling procedures shall be well documented and strictly supervised | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Only basic skin protection is required | |
| | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) | |

## 3. Exposure estimation and reference to its source

**Environment**

No exposure assessment presented for the environment.

**Workers**

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| **1. Short title of Exposure Scenario 5: Use in laboratories** | | |
|---|---|---|
| Main User Groups | SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen) | |
| Chemical product category | PC21: Laboratory chemicals | |
| Process categories | PROC15: Use as laboratory reagent | |
| Environmental Release Categories | ERC8a: Wide dispersive indoor use of processing aids in open systems<br>ERC8b: Wide dispersive indoor use of reactive substances in open systems | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| Amount used | Annual amount per site | 5000 ton(s)/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | Municipal sewage treatment plant |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Incineration or in a landfill |
| **2.2 Contributing scenario controlling worker exposure for:PROC15** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | 0,06 hPa |
| Amount used | Worker exposure considered to be negligible due to the specialized systems. | |
| Frequency and duration of use | Frequency of use | 220 days/year |
| | Exposure duration per day | 480 min |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 cm² |
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases | |

| | |
|---|---|
| Other operational conditions affecting workers exposure | Indoors, any sized room, with good natural ventilation |
| | Due to the nature of the substance the process should be kept as contained as possible |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance |
| | Substance-handling procedures shall be well documented and strictly supervised |
| | Workers involved in sampling and transfer of materials to road tankers are trained in the procedures and protective equipment is intended to cope with the worst case scenario, in order to minimize exposure and risks |
| Conditions and measures related to personal protection, hygiene and health evaluation | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) |

## 3. Exposure estimation and reference to its source

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC8a | --- | Fresh water | PEC | 0,138µg/L | 0,05520 |
| ERC8a | --- | Marine water | PEC | 0,0074µg/L | 0,02956 |
| ERC8a | --- | Fresh water sediment | PEC | 0,011µg/kg | 0,00580 |
| ERC8a | --- | Marine sediment | PEC | 0,639ng/kg | 0,00032 |
| ERC8a | --- | Soil | PEC | 0,134µg/kg | --- |
| ERC8a | --- | Air | PEC | 0,48ng/m3 | --- |
| ERC8b | --- | Fresh water | PEC | 2,12ng/L | 0,00085 |
| ERC8b | --- | Marine water | PEC | 0,0666ng/L | 0,00026 |
| ERC8b | --- | Fresh water sediment | PEC | 0,183ng/kg | 0,00009 |
| ERC8b | --- | Marine sediment | PEC | 0,0058ng/kg | 0,00000 |
| ERC8b | --- | Soil | PEC | 0,134ng/kg | --- |
| ERC8b | --- | Air | PEC | 0,0048ng/m3 | --- |

**Workers**

Advanced REACH Tool (ART model)

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC15 | 90th percentile value | worker inhalation, long term - systemic | 0,023µg/m³ | --- |

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| **1. Short title of Exposure Scenario 6: Use for extractions and processing of minerals, ores** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Sectors of end-use | SU2a: Mining (without offshore industries)<br>SU14: Manufacture of basic metals, including alloys | |
| Chemical product category | PC20: Products such as ph-regulators, flocculants, precipitants, neutralization agents<br>PC40: Extraction agents | |
| Process categories | PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Use in closed batch process (synthesis or formulation)<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises | |
| Environmental Release Categories | ERC4: Industrial use of processing aids in processes and products, not becoming part of articles<br>ERC6b: Industrial use of reactive processing aids | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| Amount used | Annual amount per site | 438 ton(s)/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | Municipal sewage treatment plant |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Metal recovery, incineration or landfill |
| **2.2 Contributing scenario controlling worker exposure for:PROC2, PROC3, PROC4** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | 0,06 hPa |
| Amount used | Worker contact is generally very low as most operations are remotely controlled and sampling/analysis events are of short duration. | |
| Frequency and duration of use | Frequency of use | 220 days/year |

| | | |
|---|---|---|
| | Exposure duration per day | 480 min |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 cm² |
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases | |
| Other operational conditions affecting workers exposure | Outdoors not close to buildings(PROC2) | |
| | Outdoors near to buildings(PROC3, PROC4) | |
| | Process may involve high temperature (50 - 150℃) | |
| | Room size and ventilation rate are not relevant as workers work in a control room, with no direct contact to the installations housing the material. | |
| | Due to the nature of the substance the process should be kept as contained as possible | |
| Technical conditions and measures to control dispersion from source towards the worker | Use vapour recovery system(PROC2, PROC4) | |
| | Provide local exhaust ventilation (LEV).(PROC2) | |
| | Complete segregation(PROC2) | |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance | |
| | Substance-handling procedures shall be well documented and strictly supervised | |
| | Workers involved in sampling and transfer of materials to road tankers are trained in the procedures and protective equipment is intended to cope with the worst case scenario, in order to minimize exposure and risks | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) | |

## 3. Exposure estimation and reference to its source

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC4 | --- | Fresh water | PEC | 0,025µg/L | 0,01000 |
| ERC4 | --- | Marine water | PEC | 0,0036µg/L | 0,01424 |
| ERC4 | --- | Fresh water sediment | PEC | 0,0021µg/kg | 0,00106 |
| ERC4 | --- | Marine sediment | PEC | 0,0003µg/kg | 0,00015 |
| ERC4 | --- | Soil | PEC | 0,112µg/kg | --- |
| ERC4 | --- | Air | PEC | 0,0004µg/m³ | --- |
| ERC6b | --- | Fresh water | PEC | 0,026ng/L | 0,00001 |
| ERC6b | --- | Marine water | PEC | 0,0037ng/L | 0,00001 |

| | | | | | |
|---|---|---|---|---|---|
| ERC6b | --- | Fresh water sediment | PEC | 0,0000µg/kg | 0,00000 |
| ERC6b | --- | Marine sediment | PEC | 0,0000µg/kg | 0,00000 |
| ERC6b | --- | Soil | PEC | 0,0001µg/kg | --- |
| ERC6b | --- | Air | PEC | 0,0000µg/m³ | --- |

**Workers**

Advanced REACH Tool (ART model)

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC2 | 90th percentile value | worker inhalation, long term - systemic | 0,092ng/m3 | --- |
| PROC3 | 90th percentile value | worker inhalation, long term - systemic | 0,42µg/m³ | --- |
| PROC4 | 90th percentile value | worker inhalation, long term - systemic | 0,014mg/m³ | --- |

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| **1. Short title of Exposure Scenario 7: Use as processing aid** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Sectors of end-use | SU4: Manufacture of food products<br>SU5: Manufacture of textiles, leather, fur<br>SU6b: Manufacture of pulp, paper and paper products<br>SU8: Manufacture of bulk, large scale chemicals (including petroleum products)<br>SU9: Manufacture of fine chemicals<br>SU11: Manufacture of rubber products<br>SU23: Electricity, steam, gas water supply and sewage treatment | |
| Chemical product category | PC20: Products such as ph-regulators, flocculants, precipitants, neutralization agents | |
| Process categories | PROC1: Use in closed process, no likelihood of exposure<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Use in closed batch process (synthesis or formulation)<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)<br>PROC13: Treatment of articles by dipping and pouring | |
| Environmental Release Categories | ERC6b: Industrial use of reactive processing aids | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC6b** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| Amount used | Annual amount per site | 100000 ton(s)/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Technical conditions and measures at process level (source) to prevent release<br>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil<br>Organizational measures to | Air | Exhaust gases may be treated by scrubbers or emissions may be measured and controlled according to local legislation |
| | Water | The wastewater neutralisation process is extremely efficient with almost total neutralisation achieved |

| | | |
|---|---|---|
| prevent/limit release from the site | | |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | On-site waste water treatment |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Incineration or in a landfill |
| **2.2 Contributing scenario controlling worker exposure for:PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC13** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | 0,06 hPa |
| Amount used | Worker contact is generally very low as most operations are remotely controlled and sampling/analysis events are of short duration. | |
| Frequency and duration of use | Frequency of use | 220 days/year |
| | Exposure duration per day | 480 min |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 $cm^2$ |
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases | |
| Other operational conditions affecting workers exposure | Outdoors not close to buildings(PROC1, PROC2, PROC8a, PROC8b) | |
| | Outdoors near to buildings(PROC3, PROC4) | |
| | Indoors, any sized room, with good natural ventilation(PROC9, PROC13) | |
| | Process may involve high temperature (50 - 150℃)(PRO C1, PROC2, PROC3, PROC4) | |
| | Room size and ventilation rate are not relevant as workers work in a control room, with no direct contact to the installations housing the material. | |
| | Due to the nature of the substance the process should be kept as contained as possible | |
| Technical conditions and measures to control dispersion from source towards the worker | Use vapour recovery system(except PROC8a, PROC13) | |
| | Provide local exhaust ventilation (LEV).(PROC1, PROC2, PROC3, PROC8b) | |
| | Complete segregation(PROC1, PROC2) | |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance | |
| | Substance-handling procedures shall be well documented and strictly supervised | |
| | Workers involved in sampling and transfer of materials to road tankers are trained in the procedures and protective equipment is intended to cope with the worst case scenario, in order to minimize exposure and risks | |

| | |
|---|---|
| Conditions and measures related to personal protection, hygiene and health evaluation | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) |

## 3. Exposure estimation and reference to its source

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC6b | --- | Fresh water | PEC | 0,0059µg/L | 0,00236 |
| ERC6b | --- | Marine water | PEC | 0,0009µg/L | 0,00344 |
| ERC6b | --- | Fresh water sediment | PEC | 0,0005µg/kg | 0,00026 |
| ERC6b | --- | Marine sediment | PEC | 0,074ng/kg | 0,00004 |
| ERC6b | --- | Soil | PEC | 0,027µg/kg | --- |
| ERC6b | --- | Air | PEC | 0,0000µg/m³ | --- |

**Workers**

Advanced REACH Tool (ART model)

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1 | 90th percentile value | worker inhalation, long term - systemic | 0,0094ng/m3 | --- |
| PROC2 | 90th percentile value | worker inhalation, long term - systemic | 0,092ng/m3 | --- |
| PROC3 | 90th percentile value | worker inhalation, long term - systemic | 0,42µg/m³ | --- |
| PROC4 | 90th percentile value | worker inhalation, long term - systemic | 0,014mg/m³ | --- |
| PROC8a | 90th percentile value | worker inhalation, long term - systemic | 0,023mg/m³ | --- |
| PROC8b | 90th percentile value | worker inhalation, long term - systemic | 0,0048µg/m³ | --- |
| PROC9 | 90th percentile value | worker inhalation, long term - systemic | 0,0028mg/m³ | --- |
| PROC13 | 90th percentile value | worker inhalation, long term - systemic | 0,016mg/m³ | --- |

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| **1. Short title of Exposure Scenario 8: Use in electrolytic processes** | |
|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites |
| Sectors of end-use | SU14: Manufacture of basic metals, including alloys<br>SU15: Manufacture of fabricated metal products, except machinery and equipment<br>SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment |
| Chemical product category | PC14: Metal surface treatment products, including galvanic and electroplating products<br>PC20: Products such as ph-regulators, flocculants, precipitants, neutralization agents |
| Process categories | PROC1: Use in closed process, no likelihood of exposure<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)<br>PROC13: Treatment of articles by dipping and pouring |
| Environmental Release Categories | ERC5: Industrial use resulting in inclusion into or onto a matrix<br>ERC6b: Industrial use of reactive processing aids |

| **2.1 Contributing scenario controlling environmental exposure for: ERC5, ERC6b** | | |
|---|---|---|
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 95-98% |
| Amount used | Annual amount per site | 2306 ton(s)/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | Municipal sewage treatment plant |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Metal recovery, incineration or landfill |

| **2.2 Contributing scenario controlling worker exposure for:PROC1, PROC2, PROC8b, PROC9, PROC13** | | |
|---|---|---|
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 95-98% |

| | | |
|---|---|---|
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | 0,06 hPa |
| Amount used | Worker exposure should be low and controlled | |
| Frequency and duration of use | Frequency of use | 220 days/year |
| | Exposure duration per day | 480 min |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 cm² |
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases | |
| Other operational conditions affecting workers exposure | Outdoors not close to buildings(PROC1, PROC2, PROC8a, PROC8b) | |
| | Indoors, any sized room, with good natural ventilation(PROC9, PROC13) | |
| | Process may involve high temperature (50 - 150℃)(PRO C1, PROC2) | |
| | Room size and ventilation rate are not relevant as workers work in a control room, with no direct contact to the installations housing the material. | |
| | Due to the nature of the substance the process should be kept as contained as possible | |
| Technical conditions and measures to control dispersion from source towards the worker | Use vapour recovery system(except PROC13) | |
| | Provide local exhaust ventilation (LEV).(PROC1, PROC8b) | |
| | Complete segregation(PROC1, PROC2) | |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance | |
| | Substance-handling procedures shall be well documented and strictly supervised | |
| | Workers involved in sampling and transfer of materials to road tankers are trained in the procedures and protective equipment is intended to cope with the worst case scenario, in order to minimize exposure and risks | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) | |
| | Wear respiratory protection (Efficiency: 90 %)(PROC13) | |

## 3. Exposure estimation and reference to its source

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC5 | --- | Fresh water | PEC | 0,0681µg/L | 0,02724 |
| ERC5 | --- | Marine water | PEC | 0,0099µg/L | 0,03948 |
| ERC5 | --- | Fresh water sediment | PEC | 0,0059µg/kg | 0,00294 |

| | | | | | |
|---|---|---|---|---|---|
| ERC5 | --- | Marine sediment | PEC | 0,0008µg/kg | 0,00043 |
| ERC5 | --- | Soil | PEC | 0,309µg/kg | --- |
| ERC5 | --- | Air | PEC | 0,0011µg/m³ | --- |
| ERC6b | --- | Fresh water | PEC | 0,136ng/L | 0,00005 |
| ERC6b | --- | Marine water | PEC | 0,0197ng/L | 0,00008 |
| ERC6b | --- | Fresh water sediment | PEC | 0,0118ng/kg | 0,00001 |
| ERC6b | --- | Marine sediment | PEC | 0,0017ng/kg | 0,00000 |
| ERC6b | --- | Soil | PEC | 0,618ng/kg | --- |
| ERC6b | --- | Air | PEC | 0,0022ng/m3 | --- |

**Workers**

Advanced REACH Tool (ART model)

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1 | 90th percentile value | worker inhalation, long term - systemic | 0,0094ng/m3 | --- |
| PROC2 | 90th percentile value | worker inhalation, long term - systemic | 0,092ng/m3 | --- |
| PROC8b | 90th percentile value | worker inhalation, long term - systemic | 0,0048µg/m³ | --- |
| PROC9 | 90th percentile value | worker inhalation, long term - systemic | 0,0028mg/m³ | --- |
| PROC13 | 90th percentile value | worker inhalation, long term - systemic | 0,47mg/m³ | --- |

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| **1. Short title of Exposure Scenario 9: Use in the process of surface treatments, purification and etching** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Sectors of end-use | SU2a: Mining (without offshore industries)<br>SU14: Manufacture of basic metals, including alloys<br>SU15: Manufacture of fabricated metal products, except machinery and equipment<br>SU16: Manufacture of computer, electronic and optical products, electrical equipment | |
| Chemical product category | PC14: Metal surface treatment products, including galvanic and electroplating products<br>PC15: Non-metal-surface treatment products | |
| Process categories | PROC1: Use in closed process, no likelihood of exposure<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Use in closed batch process (synthesis or formulation)<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)<br>PROC13: Treatment of articles by dipping and pouring | |
| Environmental Release Categories | ERC6b: Industrial use of reactive processing aids | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC6b** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| Amount used | Annual amount per site | 10000 ton(s)/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | Municipal sewage treatment plant |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Incineration or in a landfill |

| **2.2 Contributing scenario controlling worker exposure for:PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC13** | | |
|---|---|---|
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | 0,06 hPa |
| Amount used | Worker exposure considered to be negligible due to the specialized systems and closed nature of the production process | |
| Frequency and duration of use | Frequency of use | 220 days/year |
| | Exposure duration per day | 480 min |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 cm² |
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases | |
| Other operational conditions affecting workers exposure | Outdoors not close to buildings(PROC1, PROC2, PROC8a, PROC8b) | |
| | Outdoors near to buildings(PROC3, PROC4) | |
| | Indoors, any sized room, with good natural ventilation(PROC9, PROC13) | |
| | Process may involve high temperature (50 - 150℃)(PRO C1, PROC2, PROC3, PROC4) | |
| | Room size and ventilation rate are not relevant as workers work in a control room, with no direct contact to the installations housing the material. | |
| | Due to the nature of the substance the process should be kept as contained as possible | |
| Technical conditions and measures to control dispersion from source towards the worker | Use vapour recovery system(except PROC8a, PROC13) | |
| | Provide local exhaust ventilation (LEV).(PROC1, PROC2, PROC3, PROC8b) | |
| | Complete segregation(PROC1, PROC2) | |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance | |
| | Substance-handling procedures shall be well documented and strictly supervised | |
| | Workers involved in sampling and transfer of materials to road tankers are trained in the procedures and protective equipment is intended to cope with the worst case scenario, in order to minimize exposure and risks | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) | |
| | | |

**3. Exposure estimation and reference to its source**

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC6b | --- | Fresh water | PEC | 0,591ng/L | 0,00024 |
| ERC6b | --- | Marine water | PEC | 0,0856ng/L | 0,00034 |
| ERC6b | --- | Fresh water sediment | PEC | 0,051ng/kg | 0,00003 |
| ERC6b | --- | Marine sediment | PEC | 0,0074ng/kg | 0,00000 |
| ERC6b | --- | Soil | PEC | 2,68ng/kg | --- |
| ERC6b | --- | Air | PEC | 0,0096ng/m3 | --- |

**Workers**

Advanced REACH Tool (ART model)

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1 | 90th percentile value | worker inhalation, long term - systemic | 0,0094ng/m3 | --- |
| PROC2 | 90th percentile value | worker inhalation, long term - systemic | 0,0920ng/m3 | --- |
| PROC3 | 90th percentile value | worker inhalation, long term - systemic | 0,42µg/m³ | --- |
| PROC4 | 90th percentile value | worker inhalation, long term - systemic | 0,014mg/m³ | --- |
| PROC8a | 90th percentile value | worker inhalation, long term - systemic | 0,023mg/m³ | --- |
| PROC8b | 90th percentile value | worker inhalation, long term - systemic | 0,0048µg/m³ | --- |
| PROC9 | 90th percentile value | worker inhalation, long term - systemic | 0,0028mg/m³ | --- |
| PROC13 | 90th percentile value | worker inhalation, long term - systemic | 0,016mg/m³ | --- |

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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

| **1. Short title of Exposure Scenario 10: Use in gas treatment** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Sectors of end-use | SU8: Manufacture of bulk, large scale chemicals (including petroleum products) | |
| Chemical product category | PC20: Products such as ph-regulators, flocculants, precipitants, neutralization agents | |
| Process categories | PROC1: Use in closed process, no likelihood of exposure<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | |
| Environmental Release Categories | ERC7: Industrial use of substances in closed systems | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC7** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| Amount used | Annual amount per site | 30000 ton(s)/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Technical conditions and measures at process level (source) to prevent release<br>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil<br>Organizational measures to prevent/limit release from the site | Water | Spent acid solutions are neutralized to circumneutral pH prior to discharge |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | Municipal sewage treatment plant |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Incineration or in a landfill |
| **2.2 Contributing scenario controlling worker exposure for:PROC1, PROC2, PROC8b** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| | Physical Form (at time of use) | liquid |

| | | |
|---|---|---|
| | Vapour pressure | 0,06 hPa |
| Amount used | Worker exposure should be low and controlled | |
| Frequency and duration of use | Frequency of use | 220 days/year |
| | Exposure duration per day | 480 min |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 cm² |
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases | |
| Other operational conditions affecting workers exposure | Outdoors not close to buildings | |
| | Process may involve high temperature (50 - 150℃) | |
| | Room size and ventilation rate are not relevant as workers work in a control room, with no direct contact to the installations housing the material. | |
| | Due to the nature of the substance the process should be kept as contained as possible | |
| Technical conditions and measures to control dispersion from source towards the worker | Use vapour recovery system | |
| | Provide local exhaust ventilation (LEV).(PROC1, PROC8b) | |
| | Complete segregation(PROC1, PROC2) | |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance | |
| | Substance-handling procedures shall be well documented and strictly supervised | |
| | Workers involved in sampling and transfer of materials to road tankers are trained in the procedures and protective equipment is intended to cope with the worst case scenario, in order to minimize exposure and risks | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) | |

## 3. Exposure estimation and reference to its source

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC7 | --- | Fresh water | PEC | 0,0886µg/L | 0,03544 |
| ERC7 | --- | Marine water | PEC | 0,0128µg/L | 0,05120 |
| ERC7 | --- | Fresh water sediment | PEC | 0,0076µg/kg | 0,00383 |
| ERC7 | --- | Marine sediment | PEC | 0,0011µg/kg | 0,00056 |
| ERC7 | --- | Soil | PEC | 0,0029mg/kg | --- |
| ERC7 | --- | Air | PEC | 0,0014µg/m³ | --- |

**Workers**

Advanced REACH Tool (ART model)

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1 | 90th percentile value | worker inhalation, long term - systemic | 0,0094ng/m3 | --- |
| PROC2 | 90th percentile value | worker inhalation, long term - systemic | 0,092ng/m3 | --- |
| PROC8b | 90th percentile value | worker inhalation, long term - systemic | 0,0048µg/m³ | --- |

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| **1. Short title of Exposure Scenario 11: Use in production of sulphuric acid contained batteries** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Process categories | PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Use in closed batch process (synthesis or formulation)<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | |
| Environmental Release Categories | ERC2: Formulation of preparations<br>ERC5: Industrial use resulting in inclusion into or onto a matrix | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC5** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| Amount used | Annual amount per site | 2500 ton(s)/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | Municipal sewage treatment plant |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Incineration or in a landfill |
| **2.2 Contributing scenario controlling worker exposure for:PROC2, PROC3, PROC4, PROC9** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 98% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | 0,06 hPa |
| Amount used | Worker exposure should be low and controlled | |
| Frequency and duration of use | Frequency of use | 220 days/year |
| | Exposure duration per day | 480 min |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 cm² |

| | |
|---|---|
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases |
| Other operational conditions affecting workers exposure | Indoors, any sized room, with good natural ventilation |
| | Room size and ventilation rate are not relevant as workers work in a control room, with no direct contact to the installations housing the material. |
| | Due to the nature of the substance the process should be kept as contained as possible |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance |
| | Substance-handling procedures shall be well documented and strictly supervised |
| | Workers involved in sampling and transfer of materials to road tankers are trained in the procedures and protective equipment is intended to cope with the worst case scenario, in order to minimize exposure and risks |
| Conditions and measures related to personal protection, hygiene and health evaluation | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) |
| | |

## 3. Exposure estimation and reference to its source

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC2 | --- | Fresh water | PEC | 0,0369µg/L | 0,01476 |
| ERC2 | --- | Marine water | PEC | 0,0054µg/L | 0,02144 |
| ERC2 | --- | Fresh water sediment | PEC | 0,0032µg/kg | 0,00160 |
| ERC2 | --- | Marine sediment | PEC | 0,0005µg/kg | 0,00023 |
| ERC2 | --- | Soil | PEC | 0,166µg/kg | --- |
| ERC2 | --- | Air | PEC | 0,0006µg/m³ | --- |
| ERC5 | --- | Fresh water | PEC | 0,0788µg/L | 0,03152 |
| ERC5 | --- | Marine water | PEC | 0,0107µg/L | 0,04280 |
| ERC5 | --- | Fresh water sediment | PEC | 0,0064µg/kg | 0,00319 |
| ERC5 | --- | Marine sediment | PEC | 0,0009µg/kg | 0,00046 |
| ERC5 | --- | Soil | PEC | 0,335µg/kg | --- |
| ERC5 | --- | Air | PEC | 0,0012µg/m³ | --- |

**Workers**

Advanced REACH Tool (ART model)

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC2 | 90th percentile value | worker inhalation, long term - systemic | 1,4µg/m³ | --- |
| PROC3 | 90th percentile value | worker inhalation, long term - systemic | 0,014mg/m³ | --- |
| PROC4 | 90th percentile value | worker inhalation, long term - systemic | 0,0012mg/m³ | --- |
| PROC9 | 90th percentile value | worker inhalation, long term - systemic | 0,0012mg/m³ | --- |

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| **1. Short title of Exposure Scenario 12: Use in recycling of sulphuric acid contained batteries** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Process categories | PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)<br>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities | |
| Environmental Release Categories | ERC1: Manufacture of substances | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC1** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 25% - 40% |
| Amount used | Annual amount per site | 2500 ton(s)/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | Municipal sewage treatment plant |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Incineration or in a landfill |
| **2.2 Contributing scenario controlling worker exposure for:PROC2, PROC4, PROC5, PROC8a** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 25% - 40% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | 0,06 hPa |
| Amount used | Worker exposure considered to be negligible due to the specialized systems. | |
| Frequency and duration of use | Frequency of use | 220 days/year |
| | Exposure duration per day | 480 min |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |

| | | |
|---|---|---|
| | Exposed skin surface | 480 cm² |
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases | |
| Other operational conditions affecting workers exposure | Indoors, any sized room, with good natural ventilation | |
| | Room size and ventilation rate are not relevant as workers work in a control room, with no direct contact to the installations housing the material. | |
| | Due to the nature of the substance the process should be kept as contained as possible | |
| Technical conditions and measures to control dispersion from source towards the worker | Provide local exhaust ventilation (LEV). | |
| | | |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance | |
| | Substance-handling procedures shall be well documented and strictly supervised | |
| | Workers involved in sampling and transfer of materials to road tankers are trained in the procedures and protective equipment is intended to cope with the worst case scenario, in order to minimize exposure and risks | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) | |
| | | |

## 3. Exposure estimation and reference to its source

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC1 | --- | Fresh water | PEC | 0,0074µg/L | 0,00295 |
| ERC1 | --- | Marine water | PEC | 0,0011µg/L | 0,00428 |
| ERC1 | --- | Fresh water sediment | PEC | 0,0638ng/kg | 0,00032 |
| ERC1 | --- | Marine sediment | PEC | 0,0093ng/kg | 0,00005 |
| ERC1 | --- | Soil | PEC | 0,0335µg/kg | --- |
| ERC1 | --- | Air | PEC | 0,0001µg/m³ | --- |

**Workers**

Advanced REACH Tool (ART model)

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC2 | 90th percentile value | worker inhalation, long term - systemic | 0,0012mg/m³ | --- |
| PROC4 | 90th percentile value | worker inhalation, long | 0,004mg/m³ | --- |

| | | | | |
|---|---|---|---|---|
| | | term - systemic | | |
| PROC5 | 90th percentile value | worker inhalation, long term - systemic | 0,013mg/m³ | --- |
| PROC8a | 90th percentile value | worker inhalation, long term - systemic | 0,006mg/m³ | --- |

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| **1. Short title of Exposure Scenario 13: Use in maintenance of sulphuric acid contained batteries** | | |
|---|---|---|
| Main User Groups | SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen) | |
| Process categories | PROC19: Hand-mixing with intimate contact and only PPE available | |
| Environmental Release Categories | ERC8b: Wide dispersive indoor use of reactive substances in open systems<br>ERC9b: Wide dispersive outdoor use of substances in closed systems | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC8b, ERC9b** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 25% - 40% |
| Amount used | Annual amount per site | 2500 ton(s)/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | Municipal sewage treatment plant |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Incineration or in a landfill |
| **2.2 Contributing scenario controlling worker exposure for:PROC19** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 25% - 40% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | 2,14 hPa |
| Amount used | Worker exposure considered to be negligible due to the specialized systems. | |
| Frequency and duration of use | Frequency of use | 220 days/year |
| | Exposure duration per day | 480 min |
| | Intermittent contact is expected | |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 cm² |
| | Please note that due to the corrosive nature of the substance dermal exposure is not considered relevant for risk characterization as it must be prevented in all cases | |
| Other operational conditions affecting workers exposure | Indoors, any sized room, with good natural ventilation | |

| | |
|---|---|
| | Due to the nature of the substance the process should be kept as contained as possible |
| Organisational measures to prevent /limit releases, dispersion and exposure | Only properly trained and authorised personal shall handle the substance |
| | Substance-handling procedures shall be well documented and strictly supervised |
| | Workers involved in sampling and transfer of materials to road tankers are trained in the procedures and protective equipment is intended to cope with the worst case scenario, in order to minimize exposure and risks |
| Conditions and measures related to personal protection, hygiene and health evaluation | Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) |
| | |

## 3. Exposure estimation and reference to its source

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC8b | --- | Fresh water | PEC | 0,001µg/L | 0,00424 |
| ERC8b | --- | Marine water | PEC | 0,333ng/L | 0,00133 |
| ERC8b | --- | Fresh water sediment | PEC | 0,914ng/kg | 0,00046 |
| ERC8b | --- | Marine sediment | PEC | 0,0288ng/kg | 0,00001 |
| ERC8b | --- | Soil | PEC | 0,671ng/kg | --- |
| ERC8b | --- | Air | PEC | 0,002ng/m3 | --- |
| ERC9b | --- | Fresh water | PEC | 0,003µg/L | 0,01340 |
| ERC9b | --- | Marine water | PEC | 1,85ng/L | 0,00740 |
| ERC9b | --- | Fresh water sediment | PEC | 2,89ng/kg | 0,00140 |
| ERC9b | --- | Marine sediment | PEC | 0,16ng/kg | 0,00008 |
| ERC9b | --- | Soil | PEC | 0,003µg/kg | --- |
| ERC9b | --- | Air | PEC | 0,12ng/m3 | --- |

**Workers**

Advanced REACH Tool (ART model)

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| --- | 90th percentile value | worker inhalation, long term - systemic | 0,002mg/m³ | --- |

The ECETOC exposure estimation is considered to be unsatisfactory and is not considered relevant for the risk characterisation purposes

## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the

**Exposure Scenario**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| **1. Short title of Exposure Scenario 14: Use of sulphuric acid contained batteries** | | |
|---|---|---|
| Main User Groups | SU 21: Consumer uses: Private households (= general public = consumers) | |
| Article categories | AC3: Electrical batteries and accumulators | |
| Environmental Release Categories | ERC9b: Wide dispersive outdoor use of substances in closed systems | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC9b** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 25% - 40% |
| Amount used | Annual amount per site | 2500 ton(s)/year |
| Frequency and duration of use | Continuous exposure | 365 days/year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18.000 m3/d |
| | Dilution Factor (River) | 10 |
| | Dilution Factor (Coastal Areas) | 100 |
| Conditions and measures related to sewage treatment plant | Type of Sewage Treatment Plant | Municipal sewage treatment plant |
| | Flow rate of sewage treatment plant effluent | 2.000 m3/d |
| | Sludge Treatment | Incineration or in a landfill |
| **2.2 Contributing scenario controlling consumer exposure for:AC3** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product: 25% - 40% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | < 0,1 hPa |
| Frequency and duration of use | Exposure duration per day | 240 min |
| Human factors not influenced by risk management | Breathing volume | 10 m3/day |
| | Exposed skin surface | 480 cm² |
| Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene) | Consumer Measures | Batteries should only be opened in a well-ventilated place |
| | Consumer Measures | Batteries should not be opened unnecessarily |
| | Consumer Measures | Batteries should stand on firm ground to prevent spill |
| | Consumer Measures | Wear suitable coveralls to prevent exposure to the skin. |
| | Consumer Measures | Wear acid-resistant gloves |

| | |
|---|---|
| Consumer Measures | Wear protective eye glasses for protection against liquid splashes. |

## 3. Exposure estimation and reference to its source

**Environment**

EUSES V2.1 tier 2

| Contributing Scenario | Specific conditions | Compartment | Value | Level of Exposure | RCR |
|---|---|---|---|---|---|
| ERC9b | --- | Fresh water | PEC | 0,0335µg/L | 0,0134 |
| ERC9b | --- | Marine water | PEC | 0,0018µg/L | 0,0074 |
| ERC9b | --- | Fresh water sediment | PEC | 2,89ng/kg | 0,0014 |
| ERC9b | --- | Marine sediment | PEC | 0,16ng/kg | 0,0001 |
| ERC9b | --- | Soil | PEC | 33,5ng/kg | --- |
| ERC9b | --- | Air | PEC | 0,12ng/m3 | --- |

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

| DISTRIBUTOR COMPANY INFORMATION | | | |
|---|---|---|---|
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