

SCHWEFELSAEUR >51%**Code : 16564****ABSCHNITT 1. Bezeichnung des Stoffs bzw. des Gemischs und des Unternehmens****1.1. Produktidentifikator**

Chemischer Name : Schwefelsäure , Diwasserstoffsulfatlösung (>51%).
Art der Produktes : Reiner Produkt im Lösung .
Reach Registrierungsnummer : 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 : BRENTAG 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

BRENTAG Nederland B.V. - Donker Duyvisweg 44 - NL-3316 BM DORDRECHT
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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 :

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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

- Physikalische/chemische Gefahren : Korrodiert Metalle unter Wasserstoffgasentwicklung.
- Gefahren für die Gesundheit : 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.
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...%	> 51 %	7664-93-9	231-639-5	016-020-00-8	01-2119458838-20	C; R35 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.
Bewußtlosen Menschen nichts eingeben.
- Erste Hilfe
- * - Einatmen : Frische Luft zuführen.
Opfer zur Ruhe kommen lassen, in halb-sitzender Lage bringen.
Bei unregelmässiger Atmung oder beim Atemstillstand, künstlich beatmen.
Sofort ärztlichen Rat einholen / ärztliche Hilfe hinzuziehen.
- * - Hautkontakt : Verunreinigte Kleidung ablegen während das Spülen.
Haut sofort mit viel Wasser ausspülen. (ev. Duschen).
Sofort ärztlichen Rat einholen / ärztliche Hilfe hinzuziehen.
- * - Augenkontakt : SOFORT gründlich und länger (mindestens 15 Min.) mit viel Wasser ausspülen.
Kontaktlinsen ausnehmen.
Sofort ärztlichen Rat einholen / ärztliche Hilfe hinzuziehen.
Während der Transport; Augen fortwährend ausspülen oder tröpfeln.
- Verschlucken : KEIN ERBRECHEN HERBEIFÜHREN. Der Mund spülen mit Wasser.
Slachtopfer viel Wasser trinken lassen.
Patient SOFORT nach Krankenhaus bringen.

4.2. Wichtigste akute oder verzögert auftretende Symptome und Wirkungen

Siehe Abschnitt 11.

SCHWEFELSAEUR >51%**Code : 16564****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 Antgiftzentrum.

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 korrosive Schwefeloxiden freikommen.

5.3. Hinweise für die Brandbekämpfung

- Schützende 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 Personenschutz ausrüstung tragen. (Siehe Abschnitt 8)

6.2. Umweltschutzmaßnahmen

- Umweltschutzmaßnahmen : Wenn möglich Undichtheiten beseitigen.
Das gekleckerte Produkt soviel wie möglich mit inertem Material eindeichen.
Eindringen des 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 und Reinigung

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

6.4. Verweis auf andere Abschnitte

- Für persönliche Schutzmittel, siehe Abschnitt 8.
- Für Behandlung des Abfallprodukt, siehe Abschnitt 13.

ABSCHNITT 7. Handhabung und Lagerung**7.1. Schutzmaßnahmen zur sicheren Handhabung**

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

ABSCHNITT 7. Handhabung und Lagerung (Fortsetzung)

Aufwärmen, 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 eingetont werden.
 Fernhalten von : Laugen , Reduktionsmittel , Brennstoffe .
 Lagerungstemperatur: 10-30 °C

Geeignetes Verpackungsmaterial : Kohlenstoffstahl , Polyethylen , Polypropylen , Glas .

* Nicht geeignetes Verpackungsmaterial : Metalle .

7.3. Spezifische Endanwendungen

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

ABSCHNITT 8. Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstung
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...% : Wasserreinigungsinstitution : 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-Gasschutzmaske (Filtertyp E).

- 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
 - Durchbruchzeit : > 480'

SCHWEFELSAEUR >51%**Code : 16564****ABSCHNITT 8. Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstungen**

- 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 : Farblos . (> 70%: Dunkelbraun)
- Geruch : Geruchlos .
- * Geruchsschwelle : Nicht anwendbar.
- * pH-Wert : < 1
- * Schmelz-/Gefrierpunkt : -35 bis 5 °C
- * Siedepunkt/Siedestrecke (1013 hPa) : 130 - 338 °C
- Flammpunkt : Nicht anwendbar.
- Feuergefahr : Nicht anwendbar.
- Verdampfungsgeschwindigkeit : Nicht anwendbar.
- Explosionsgrenzen in Luft : Nicht anwendbar.
- * Dampfdruck (20°C) : 0,4 - 2 kPa
- Relative Dichte der gesättigten Mischung Dampf/Luft (Luft=1) : 1,0
- * Die relative Dichte : 1,8305 (100%)
1,3950 (50%)
1,2850 (38%)
- Dichte (20°C) : 1,40 - 1,84 kg/l
- Löslichkeit in Wasser : Völlig löslich .
- Löslich in : Diethylether .
- Log P Oktanol/Wasser (20°C) : Nicht anwendbar.
- Zuendtemperatur : Nicht anwendbar.
- Minimum Entzündungsenergie : Nicht anwendbar.
- * Zersetzungstemperatur : 338 °C
- Viskosität (20°C) : 11 - 28 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.
Reagiert heftig mit Oxidationsmitteln und Basen.
Reagiert mit : Organische Materiale , Lösungsmittels .

10.2. Chemische Stabilität

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ABSCHNITT 10. Stabilität und Reaktivität (Fortsetzung)

Stabilität : Instabil bei Kontakt mit Feuchtigkeit .

10.3. Möglichkeit gefährlicher Reaktionen

 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 : Hochtemperatur , Wasser .

10.5. Unverträgliche Materialien

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

10.6. Gefährliche Zersetzungsprodukte

* Gefährliche Zersetzungsprodukte : Schwefeloxide , Wasserstoffgaz .

ABSCHNITT 11. Toxikologische Angaben
11.1. Angaben zu toxikologischen Wirkungen

- Akute Toxizität
- * - Einatmen : Symptome umfassen: Sore throat, Hust, Schwindel, Atemnot
 • Schwefelsäure...% : LC50 (Ratte, Inhalation, 4 St) : 0,375 mg/l (OECD-Leitsatz 403)
 - * - Hautkontakt : Symptome umfassen: Rötung, Schmerz. Ernstige Verätzungen .
 • Schwefelsäure...% : LD50 (Kaninchen, Dermal) : Es liegen keine Angaben vor.
 - * - Nahrungsaufnahme : Symptome umfassen: Brandige Schmerzen im Mund, Kehle, Speiseröhre und Magen
 • 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

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

12.3. Bioakkumulationspotenzial

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 Abfallstoffliste : 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 Verpackung : Die gebrauchte Verpackung ist ausschliesslich für die Verpackung dieses Produktes zu benutzen.
Nach Gebrauch die Verpackung sorgfältig ausleeren und abschliessen.
Wenn es sich um Retourverpackung handelt, kann die leere Verpackung wieder am Lieferant angeboten werden.**ABSCHNITT 14. Angaben zum Transport****14.1. UN-Nummer**

UN Nr : 1830

14.2. Ordnungsgemäße UN-Versandbezeichnung

ADR/RID-Name : UN 1830 Schwefelsäure, 8, II, (E)

ADN-Name : UN 1830 Schwefelsäure , 8, II

IMDG-Name : UN 1830 Sulphuric acid , 8, II

* IATA-Name : UN 1830 Sulphuric acid , 8, II

14.3. Transportgefahrenklassen

Klasse : 8

14.4. Verpackungsgruppe

Verpackungstyp : II

SCHWEFELSAEUR >51%**Code : 16564****ABSCHNITT 14. Angaben zum Transport (Fortsetzung)****14.5. Umweltgefahren**

Umweltgefährlich : Nein
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 Inventarisierung (AICS): Aufgenommen im Inventarisierung.
Kanadische Inventarisierung (DSL): Aufgenommen im Inventarisierung.
Chinesisches Inventarisierung (IECS): Aufgenommen im Inventarisierung.
Europäische Inventarisierung (EINECS): Aufgenommen im Inventarisierung.
Koreanische Inventarisierung (KECI): Aufgenommen im Inventarisierung.
USA-Inventarisierung (TSCA): Aufgenommen im Inventarisierung.

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
Entscheidung 2001/118/EG der Kommission vom 16. Januar 2001 zur Änderung der Entscheidung 2000/532/EG über ein Abfallverzeichnis
Verordnung (EG) Nr. 273/2004 des Europäischen Parlament und des Rates vom 11. Februar 2004 betreffend Drogenausgangsstoffe
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 Produkt durchgeführt.

ABSCHNITT 16. Sonstige Angaben

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

ABSCHNITT 16. Sonstige Angaben (Fortsetzung)

* Änderung hinsichtlich voriger Revision.

- * Änderungen : Abschnitt 1 , Abschnitt 3 , Abschnitt 4 , 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 Kenntnisse (Produzente die Grundstoffe , Chemiekarte , ...).
Sehe auch auf der Adresse:
<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
ADR (Accord européen relatif au transport international des marchandises Dangereuses par Route) : Europäisches Übereinkommen über die internationale Beförderung gefährlicher Güter auf der Straße
DNEL (Derived No Effect Level) : Grenzwert, unterhalb dessen der Stoff keine Wirkung ausübt
EC50 : mittlere Effektive Konzentration
EmS (Emergency Schedule) : den ersten Code verweist auf die einschlägigen Brandklasse und den zweite code verweist auf die einschlägigen Verschütten Zeitplan
IARC (International Agency for Research on Cancer) : Internationale Agentur für Krebsforschung (IAK)
IATA (International Air Transport Association) : Übereinkommen über die internationale Beförderung gefährlicher Güter im Luftverkehr
IMDG (International Maritime Dangerous Goods code) : Internationalen Übereinkommens für Gefahrgutkennzeichnung für gefährliche Güter im Seeschiffsverkehr
LC50 : mittlere Letale Konzentration
LD50 : mittlere Letale Dosis
NFFPA (National Fire Protection Association) oder Gefahrendiamant
NOEC (No Observed Effect Concentration) : Konzentration ohne beobachtbare schädliche Wirkung
NVCI : National Vergiftungen Information Zentrum
OECD (Organisation for Economic Cooperation and Development) : Organisation für wirtschaftliche Zusammenarbeit und Entwicklung
PBT : persistente, bioakkumulierbar und toxisch
PNEC (Predicted No Effect Concentration) : Konzentration unter die Exposition gegenüber einem Stoff ohne Wirkung
REACH : Registrierung, Bewertung, Zulassung und beschränkung von Chemikalien
RID (Règlement concernant le transport International ferroviaire des marchandises Dangereuses) : internationalen Beförderung gefährlicher Güter im Schienenverkehr
SCL (Specific Concentration Limits) : spezifische Konzentrationsgrenzwerte
Skin Corr. 1A : Hautätzend - Kategorie 1A
SZW-Liste : Liste krebserzeugender Substanzen und Vorgänge als Zielen in Artikel 4.11 des Erlass über Arbeitsbedingungen
GGM (Gewichteter Gleitender Mittelwert) : die durchschnittliche Exposition über einen bestimmten Zeitraum
vPvB : sehr persistent und sehr bioakkumulierbar
WGK (Wassergefährdungsklasse)

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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

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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	<p>PROC1: Use in closed process, no likelihood of exposure</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Use in closed batch process (synthesis or formulation)</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p>
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 Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil 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,

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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°C)(PROC1, 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

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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.

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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 SU6b: Manufacture of pulp, paper and paper products SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU14: Manufacture of basic metals, including alloys
Chemical product category	PC19: Intermediate
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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 Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil 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

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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 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°C)(PROC1, 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	
Conditions and measures related to personal protection, hygiene and health evaluation	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	
	Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall)	

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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/m ³	---

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/m ³	---
PROC2	90th percentile value	worker inhalation, long term - systemic	0,092ng/m ³	---
PROC3	90th percentile value	worker inhalation, long term - systemic	0,42µg/m ³	---
PROC4	90th percentile value	worker inhalation, long term - systemic	14µg/m ³	---
PROC8a	90th percentile value	worker inhalation, long term - systemic	23µg/m ³	---
PROC8b	90th percentile value	worker inhalation, long term - systemic	0,0048µg/m ³	---
PROC9	90th percentile value	worker inhalation, long term - systemic	2,8µg/m ³	---

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

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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.

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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 PROC3: Use in closed batch process (synthesis or formulation) PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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 Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil 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

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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 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, PROC8a, PROC8b)	
	Outdoors near to buildings(PROC3)	
	Indoors, any sized room, with good natural ventilation(PROC5, PROC9)	
	Process may involve high temperature (50 - 150°C)(PROC1, 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

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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/m ³	---

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/m ³	---
PROC3	90th percentile value	worker inhalation, long term - systemic	0,42µg/m ³	---
PROC5	90th percentile value	worker inhalation, long term - systemic	0,016mg/m ³	---
PROC8a	90th percentile value	worker inhalation, long term - systemic	0,023mg/m ³	---
PROC8b	90th percentile value	worker inhalation, long term - systemic	0,0004µg/m ³	---
PROC9	90th percentile value	worker inhalation, long term - systemic	0,0028mg/m ³	---

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.

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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

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	day	
	Intermittent contact is expected	
Human factors not influenced by risk management	Breathing volume	10 m ³ /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	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.

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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 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 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	

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

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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.

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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) SU14: Manufacture of basic metals, including alloys
Chemical product category	PC20: Products such as ph-regulators, flocculants, precipitants, neutralization agents PC40: Extraction agents
Process categories	PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) 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 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

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	Exposure duration per day	480 min
	Intermittent contact is expected	
Human factors not influenced by risk management	Breathing volume	10 m ³ /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(PROC2)	
	Outdoors near to buildings(PROC3, PROC4)	
	Process may involve high temperature (50 - 150°C)	
	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/m ³	---
ERC6b	---	Fresh water	PEC	0,026ng/L	0,00001
ERC6b	---	Marine water	PEC	0,0037ng/L	0,00001

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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/m ³	---

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/m ³	---
PROC3	90th percentile value	worker inhalation, long term - systemic	0,42µg/m ³	---
PROC4	90th percentile value	worker inhalation, long term - systemic	0,014mg/m ³	---

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.

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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 SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper products SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU11: Manufacture of rubber products 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 PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 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 Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil 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

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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°C)(PROC1, 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	

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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

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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/m ³	---

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/m ³	---
PROC2	90th percentile value	worker inhalation, long term - systemic	0,092ng/m ³	---
PROC3	90th percentile value	worker inhalation, long term - systemic	0,42µg/m ³	---
PROC4	90th percentile value	worker inhalation, long term - systemic	0,014mg/m ³	---
PROC8a	90th percentile value	worker inhalation, long term - systemic	0,023mg/m ³	---
PROC8b	90th percentile value	worker inhalation, long term - systemic	0,0048µg/m ³	---
PROC9	90th percentile value	worker inhalation, long term - systemic	0,0028mg/m ³	---
PROC13	90th percentile value	worker inhalation, long term - systemic	0,016mg/m ³	---

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

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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.

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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 SU15: Manufacture of fabricated metal products, except machinery and equipment SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category	PC14: Metal surface treatment products, including galvanic and electroplating products PC20: Products such as ph-regulators, flocculants, precipitants, neutralization agents
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC13: Treatment of articles by dipping and pouring
Environmental Release Categories	ERC5: Industrial use resulting in inclusion into or onto a matrix 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%
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	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 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)	
	Indoors, any sized room, with good natural ventilation(PROC9, PROC13)	
	Process may involve high temperature (50 - 150°C)(PROC1, 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	0,0681 µg/L	0,02724
ERC5	---	Marine water	PEC	0,0099 µg/L	0,03948
ERC5	---	Fresh water sediment	PEC	0,0059 µg/kg	0,00294

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ERC5	---	Marine sediment	PEC	0,0008µg/kg	0,00043
ERC5	---	Soil	PEC	0,309µg/kg	---
ERC5	---	Air	PEC	0,0011µg/m ³	---
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/m ³	---

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/m ³	---
PROC2	90th percentile value	worker inhalation, long term - systemic	0,092ng/m ³	---
PROC8b	90th percentile value	worker inhalation, long term - systemic	0,0048µg/m ³	---
PROC9	90th percentile value	worker inhalation, long term - systemic	0,0028mg/m ³	---
PROC13	90th percentile value	worker inhalation, long term - systemic	0,47mg/m ³	---

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.

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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) SU14: Manufacture of basic metals, including alloys SU15: Manufacture of fabricated metal products, except machinery and equipment SU16: Manufacture of computer, electronic and optical products, electrical equipment
Chemical product category	PC14: Metal surface treatment products, including galvanic and electroplating products PC15: Non-metal-surface treatment products
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 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

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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 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°C)(PROC1, 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

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Environment

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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/m ³	---
PROC4	90th percentile value	worker inhalation, long term - systemic	0,014mg/m ³	---
PROC8a	90th percentile value	worker inhalation, long term - systemic	0,023mg/m ³	---
PROC8b	90th percentile value	worker inhalation, long term - systemic	0,0048µg/m ³	---
PROC9	90th percentile value	worker inhalation, long term - systemic	0,0028mg/m ³	---
PROC13	90th percentile value	worker inhalation, long term - systemic	0,016mg/m ³	---

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.

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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.

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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 PROC2: Use in closed, continuous process with occasional controlled exposure 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 Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil 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

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	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 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	
	Process may involve high temperature (50 - 150°C)	
	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/m ³	---

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Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	90th percentile value	worker inhalation, long term - systemic	0,0094ng/m ³	---
PROC2	90th percentile value	worker inhalation, long term - systemic	0,092ng/m ³	---
PROC8b	90th percentile value	worker inhalation, long term - systemic	0,0048µg/m ³	---

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.

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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 PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Environmental Release Categories	ERC2: Formulation of preparations 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 cm ²

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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/m ³	---
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/m ³	---

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Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC2	90th percentile value	worker inhalation, long term - systemic	1,4µg/m ³	---
PROC3	90th percentile value	worker inhalation, long term - systemic	0,014mg/m ³	---
PROC4	90th percentile value	worker inhalation, long term - systemic	0,0012mg/m ³	---
PROC9	90th percentile value	worker inhalation, long term - systemic	0,0012mg/m ³	---

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.

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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 PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
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

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	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	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/m ³	---

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Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC2	90th percentile value	worker inhalation, long term - systemic	0,0012mg/m ³	---
PROC4	90th percentile value	worker inhalation, long	0,004mg/m ³	---

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		term - systemic		
PROC5	90th percentile value	worker inhalation, long term - systemic	0,013mg/m ³	---
PROC8a	90th percentile value	worker inhalation, long term - systemic	0,006mg/m ³	---

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.

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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 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 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	Indoors, any sized room, with good natural ventilation	

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	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

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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

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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.

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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 cm ²
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

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Consumer Measures

Wear protective eye glasses for protection against liquid splashes.

3. Exposure estimation and reference to its source

Environment

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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.

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