MONOETHYLENGLYKOL >99%

Code : 14223

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

1.1. Produktidentifikator

Chemischer Name : 1,2-Ethandiol , 1,2-Dihydroxyäthan , Ethylenglykol , Monoethylenglykol , MEG.

Art der Produktes : Reiner Produkt .

Reach Registrierungnummer : 01-2119456816-28

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.
Nicht für die Verwendung in Dekorationsgegenständen, in Scherzspielen und in Spielen (gemäß Anhang XVII der Verordnung (EG) Nr. 1907/2006) (3. Flüssige Stoffe oder Gemische, die nach den Definitionen in der Richtlinie 67/548/EWG und der Richtlinie 1999/45/EG als gefährlich gelten).

1.3. Einzelheiten zum Lieferanten, der das Sicherheitsdatenblatt bereitstellt

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

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

1.4. Notrufnummer

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

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

ABSCHNITT 2. Mögliche Gefahren

2.1. Einstufung des Stoffs oder Gemischs

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

Schädlich (Xn; R22)

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

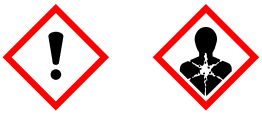
Akute Toxizität, oral - Kategorie 4 - Achtung (Acute Tox. 4, oral; H302)
Spezifische Zielorgan-Toxizität - Wiederholte Exposition - Kategorie 2 - Achtung (STOT RE 2; H373)

2.2. Kennzeichnungselemente

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

* • Gefährliches Bestandteil(en) : 1,2-Ethandiol

• Gefahren Piktogramm(e)



• Signalwort : Achtung

• Gefahrenhinweise : H302 - Gesundheitsschädlich bei Verschlucken. H373 - Kann die Organe schädigen bei längerer oder wiederholter Exposition.

ABSCHNITT 2. Mögliche Gefahren (Fortsetzung)

• Sicherheitshinweise

- Prävention : P260 - Staub, Rauch, Gas, Nebel, Dampf, Aerosol nicht einatmen. P264 - Nach Gebrauch Haut gründlich waschen. P270 - Bei Verwendung dieses Produkts nicht essen, trinken oder rauchen.
- Reaktion : P301+P312 - BEI VERSCHLUCKEN : Bei Unwohlsein GIFTINFORMATIONSZENTRUM oder Arzt anrufen. P330 - Mund ausspülen.
- Hinweise zur Entsorgung : P501 - Diesen Produkt und seinen Behälter der Problemabfallentsorgung zuführen.

2.3. Sonstige Gefahren

Physikalishe/chemische Gefahren : Keine bedeutende Gefahr.

Gefahren für die Gesundheid : Ein Gesundheits gefährliche Konzentration in der Luft wird beim Verdampfen von diese Substanz bei ca. 20°C nicht oder sehr langsam erreicht; durch Sprühen viel schneller.
Das Produkt kann auf zentral Nervensystem einwirken.

Gefahren für die Umwelt : Keine bedeutende Gefahr. Dieses Produkt ist kein Substance oder enthält keine PBT oder vPvB (gemäß Anhang XIII).

Gefahren für die Sicherheit : Der Dampf vermischt sich gut mit Luft.

ABSCHNITT 3. Zusammensetzung/Angaben zu Bestandteilen

3.1. Stoffe

	Name Komponent(en)		Gew. %	CAS nr	EINECS nr	Index nr	Reach nr	EINSTUFUNG
*	1,2-Ethandiol	:	> 99 %	107-21-1	203-473-3	603-027-00-1	01-2119456816-28	Xn; R22 --- Acute Tox. 4 (oral); H302 STOT RE 2; H373

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

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.
Ein Arzt konsultieren.
- Hautkontakt : Verunreinigte Kleidung ablegen.
Haut gründlich mit Seife/Wasser spülen. (ev. Duschen).
Ein Arzt konsultieren.
- Augenkontakt : Sofort gründlich und länger (mindestens 15 Min.) mit vielem Wasser ausspülen.
Kontaktlinsen ausnehmen.
Augenarzt konsultieren.
* - Verschlucken : KEIN ERBRECHEN HERBEIFÜHREN. Der Mund spülen mit Wasser.
Sofort GIFTINFORMATIONSZENTRUM oder Arzt anrufen.
Aktivkohle verabreichen .

4.2. Wichtigste akute oder verzögert auftretende Symptome und Wirkungen

Siehe Abschnitt 11.

4.3. Hinweise auf ärztliche Soforthilfe und Spezialbehandlung

ABSCHNITT 4. Erste-Hilfe-Maßnahmen (Fortsetzung)

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

ABSCHNITT 5. Maßnahmen zur Brandbekämpfung

5.1. Löschmittel

Löschmittel

- Geeignete : Löschpulver , Alkoholbeständiges Schaum , Kohlenstoffdioxid (CO2) , Sprühwasser .
- Nicht geeignete : Festen Wasserstrahl .

5.2. Besondere vom Stoff oder Gemisch ausgehende Gefahren

Spezielle Expositionsgefahren : Beim Feuer können Kohlenstoffoxiden (CO) und Rauch freikommen.

5.3. Hinweise für die Brandbekämpfung

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

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

ABSCHNITT 6. Maßnahmen bei unbeabsichtigter Freisetzung

6.1. Personenbezogene Vorsichtsmaßnahmen, Schutzausrüstungen und in Notfällen anzuwendende Verfahren

Personenbezogene Vorsichtsmaßnahmen : Alle mögliche Zündquelle (offenes Feuer, Funken, rauchen, ...) sind auszuschließen.
Sofort die Personen am angesteckten Ort räumen und gut lüften.
Einatmung der Dämpfe und Berührung mit Augen, Haut und Kleider vermeiden.
Empfohlene Personenschutzausrüstung tragen. (Siehe Abschnitt 8)

6.2. Umweltschutzmaßnahmen

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

6.3. Methoden und Material für Rückhaltung nd Reinigung

Reinigungsmethode : Die Leckflüssigkeit auffangen in abgeschlossenen Fässern.
Verschüttetes Produkt so bald wie möglich mit Hilfe von absorbierendem Material aufnehmen.
Rückstände mit vielen Wasser wegspülen.

6.4. Verweis auf andere Abschnitte

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

ABSCHNITT 7. Handhabung und Lagerung

7.1. Schutzsmaßnahmen zur sicheren Handhabung

* Handhabung : Pass auf : HAUTRESORPTION !
NEBELFORMUNG VERMEIDEN ! STRENGE HYGIENE !
Einatmung der Dämpfe und Berührung mit Augen, Haut und Kleider vermeiden.
Empfohlene Personenschutzausrüstung tragen. (Siehe Abschnitt 8)

ABSCHNITT 7. Handhabung und Lagerung (Fortsetzung)

Bei der Arbeit nicht essen, trinken oder rauchen.
Notvorrichtungen für Augenspülungen und Duschen für Erste-Hilfe- Maßnahmen bei der Behandlung von Erfrierungsverletzungen sollten dort, wo eine potentielle Exposition eintreten kann, in unmittelbarer Nähe verfügbar sein.

7.2. Bedingungen zur sicheren Lagerung unter Berücksichtigung von Unverträglichkeiten

Lagerung	:	Nur im gut abgeschlossenen Originalbehälter an einem kühlen, gut gelüfteten und trockenen Ort aufbewahren. Alle gefährlichen Produkte müßten auf einen Leckbehälter gesetzt werden oder eingetonnt werden. Fernhalten von : Oxidationsmittel , Oxidierende Säure . Lagerungstemperatur: 0-40 °C
Feuer- und Explosionsprävention	:	Alle Zündquelle (offenes Feuer, Funken, rauchen, ...) entfernen.
Geeignetes Verpakkungsmaterial	:	Polypropylen , Polyethylen , Rostfreier Stahl .
Nicht geeignetes Verpakkungsmaterial	:	Gummi , Aluminium .

7.3. Spezifische Endanwendungen

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

ABSCHNITT 8. Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstunge

8.1. Zu überwachende Parameter

*	Berufsbedingte Expositionsgrenzen	:	1,2-Ethandiol : Grenzwert (BE) : 20 ppm (52 mg/m³) (2014) (D) (M) 1,2-Ethandiol : Kurze Zeitwert (BE) : 40 ppm (104 mg/m³) (2014) (D) (M) 1,2-Ethandiol : Grenzwert (GGM 8 St) (NL) : 20 ppm (52 mg/m³) (2007) (H) 1,2-Ethandiol : Grenzwert (GGM 15 min) (NL) : 40 ppm (104 mg/m³) (2007) (H) (D) Die Erwähnung "D" bedeute dass die Aufnahme via die Haut, die Schleimhäute oder die Augen ein bedeutend Teil von des totales Aussetzung bilde. Diese Aufname kann das Gefolge sein von sowohl direkt Kontakt als seine Anwesenheit in die Luft. (H) Die Zuweisung von ein "H" deute an dass der Stoff relativ einfach durch die Haut werde geabsorbierd. (M) Die Erwähnung "M" bedeute dass während die Aussetzung über den Grenzwert Irritation werd verursacht oder dass er Gefahr bestehe vor akute Vergiftung.
	Biologischen Grenzwerte	:	Bei Vorliegen der Daten werden diese aufgenommen.
	DNELs	:	• 1,2-Ethandiol : Arbeiter, langzeit - lokale Effekte, einatmen : 35 mg/m³ • 1,2-Ethandiol : Arbeiter, langzeit - systemische Effekte, einatmen : 35 mg/m³ • 1,2-Ethandiol : Verbraucher, langzeit - lokale Effekte, einatmen : 7 mg/m³ • 1,2-Ethandiol : Verbraucher, langzeit - lokale Effekte, dermal : 53 mg/kg bw/ Tag • 1,2-Ethandiol : Verbraucher, langzeit - systemische Effekte, einatmen : 7 mg/m³ • 1,2-Ethandiol : Verbraucher, langzeit - systemische Effekte, dermal : 53 mg/kg bw/ Tag • 1,2-Ethandiol : Arbeiter, langzeit - systemische Effekte, dermal : 106 mg/kg bw/ Tag
	PNECs	:	• 1,2-Ethandiol : Süßwasser : 10 mg/l • 1,2-Ethandiol : Salzwasser : 1 mg/l • 1,2-Ethandiol : Intermittierend Freisetzung : 10 mg/l • 1,2-Ethandiol : Süßwassersediment : 20,9 mg/kg • 1,2-Ethandiol : Boden : 1,53 mg/kg • 1,2-Ethandiol : Wasserreinigungsinstallation : 199,5 mg/l

8.2. Begrenzung und Überwachung der Exposition

Technische Massnahmen	:	Ventilation (Über den Boden), Lokale Absaugung .
Persönliche Schutzmittel		

ABSCHNITT 8. Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstunge

- Atemschutz	: CE-geeignetes Atemschutzgerät für organische Dämpfe und Lösungsmitteln (type A, braun).
- Hautschutz	: Geeignete Schutzkleidung .
- Handschutz	: Geeignete Materialien für Schutzhandschuhe (EN 374): Die arbeitsplatzspezifische Eignung sollte mit den Schutzhandschuhherstellern abgeklärt werden. - Material : Butylgummi - Dicke : 0,7 mm - Durchbruchszeit : > 480'
- 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

	Physikalische Form (20°C)	: Zähflüssig .
	Aussicht/Farbe	: Farblos .
	Geruch	: Geruchlos .
	Geruchsschwelle	: Nicht anwendbar.
	pH-Wert	: 5,5 - 7,5 (50% Lös.).
*	Schmelz-/Gefrierpunkt	: -13 °C
	Siedepunkt/Siedestrecke (1013 hPa)	: 197,4 °C
	Flammpunkt	: 111 °C
	Feuergefahr	: P4
	Verdampfungsgeschwindigkeit	: ca. 2500 (Ether = 1)
	Explosionsgrenzen in Luft	: 3,2 - 43 Vol.%
	Dampfdruck (25°C)	: 0,012 kPa
	Relativer Dampfdichte (Luft=1)	: 2,1
	Relative Dichte der gesättigten Mischung Dampf/Luft (Luft=1)	: 1,00
	Die relative Dichte (Wasser=1)	: 1,1
	Löslichkeit in Wasser	: Völlig löslich .
	Löslich in	: Polare Lösungsmittel .
	Log P Oktanol/Wasser (20°C)	: -1,36
	Zuendtemperatur	: 398 °C
	Minimum Entzündungsenergie	: Es liegen keine Angaben vor.
	Zersetzungstemperatur	: > 500 °C
	Viskosität (25°C)	: 16,1 mPa.s (Dynamisch)
	Explosive Eigenschaften	: Keine chemischen Gruppen mit explosive Eigenschaften zugeordnet .
	Oxidationseigenschaften	: Keine chemischen Gruppen mit oxidierenden Eigenschaften zugeordnet .

9.2. Sonstige Angaben

Oberflächenspannung (20°C)	: 48 mN/m
Spezifishe Leitung	: 1,16*10E8 pS/m
Thermisch Ausdehnungkoeffizient	: 0,00057 V/V °C
% Flüchtige Bestandteile (in Gewicht)	: > 99
Weitere Angaben	: Hygroskopisch .

ABSCHNITT 10. Stabilität und Reaktivität

10.1. Reaktivität

Reaktivität : Reagiert heftig mit: Oxidationsmittel , Oxidierende Säure .

10.2. Chemische Stabilität

Stabilität : Stabil unter normalen Bedingungen.

10.3. Möglichkeit gefährlicher Reaktionen

Gefährliche Reaktionen : Reagiert heftig mit Säuren => Kann Explosion und Brand verursachen !

10.4. Zu vermeidenden Bedingungen

Zu vermeidenden Zuständen : Hochtemperatur , Feuchtigkeit , Direktes Sonnenlicht .

10.5. Unverträgliche Materialien

Nicht in Verbindung bringen mit : Oxidationsmittel , Oxidierende Säure , Aluminium , Gummi .

10.6. Gefährliche Zersetzungsprodukte

Gefährliche Zersetzungsprodukte : Kohlstoffoxide .

ABSCHNITT 11. Toxikologische Angaben

11.1. Angaben zu toxikologischen Wirkungen

Akute Toxizität

* - Einatmen : Das Produkt kann auf zenhal Nervensystem einwirken, mit der Folge Senkung des Bewustseins.
Symptome umfassen: Schmerzlicher Kehle , Hust , Benommenheit , Schwindligkeit , Koordinationsverlust , Übelkeit ,
Bei höher Konzentration : Bewustlosigkeit .
• 1,2-Ethandiol : LC50 (Ratte, Inhalation, 6 St) : >2,5 mg/l

- Hautkontakt : Symptome umfassen: Rötung , Schmerzen .
• 1,2-Ethandiol : LD50 (Kaninchen, Dermal) : 9530 mg/kg

- Nahrungsaufnahme : Gesundheitsschädlich bei Verschlucken.
Symptome umfassen: Zuckungen , Übelkeit , Schwindel , Zittern , Bewustlosigkeit .
• 1,2-Ethandiol : LD50 (Ratte, Oral) : 7712 mg/kg

Atz-/Reizwirkung auf die Haut : Hautkontakt kann zu Schäden Ekzem.

Schwere Augenschädigung/-reizung : Leicht irritierend .

Aspirationsgefahr : In ernstigen Fällen: Hart und Lungeabweichungen können passieren.

Sensibilisierung der Atemwege/Haut : Nicht sensibel .

Karzinogenität : Nicht als karcinogen klassifiziert .

Mutagenität : Nicht als mutagen klassifiziert .

Reproduktionstoxizität : Nicht für Reproduktionstoxizität klassifiziert .
Verursacht Fetotoxizität bei Tieren;wird als Nebeneffekt der maternalen Toxizität betrachtet.

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

Spezifische Zielorgan-Toxizität - wiederholter Exposition : Beim Menschen : Kann die Organe schädigen bei längerer oder wiederholter Exposition. (Zielorgan(e) : Nieren)

ABSCHNITT 12. Umweltbezogene Angaben

12.1. Toxizität

* Ekotoxizität : • 1,2-Ethandiol : LC50 (Fisch, 96 St) : 72860 mg/l (Pimephales promelas)
• 1,2-Ethandiol : CE50 (Alge, 96 St) : 6500-13000 mg/l (Pseudokirchneriella subcapitata)

ABSCHNITT 12. Umweltbezogene Angaben (Fortsetzung)

• 1,2-Ethandiol : CE50 (Daphnia magna, 48 St) : >100 mg/l (OECD-Leitsatz 202)
• 1,2-Ethandiol : NOEC (Alge, 72 St) : >100 mg/l (Pseudokirchneriella subcapitata) (OECD-Leitsatz 201)

12.2. Persistenz und Abbaubarkeit

Persistenz und Abbaubarkeit : • 1,2-Ethandiol : Persistenz und Abbaubarkeit : Leicht biologisch abbaubar .

12.3. Bioakkumulationspotenzial

* Bioakkumulation : • 1,2-Ethandiol : Bioakkumulation : Keine Bio-Akkumulation .

12.4. Mobilität im Boden

* Mobilität : • 1,2-Ethandiol : Mobilität : Aufgrund eines niedrigen adsorptionskoeffizienten Koc wird eine hohe Mobilität im Boden angenommen.

12.5. Ergebnisse der PBT- und vPvB-Beurteilung

Ergebnisse : • 1,2-Ethandiol : PBT/vPvB : Nein

12.6. Andere schädliche Wirkungen

Potenzial zur fotochemischen Ozonbildung	: Es liegen keine Angaben vor.
Potenzial zum Ozonabbau	: Es liegen keine Angaben vor.
Potenzial zur Störung der endokrinen Systeme	: Es liegen keine Angaben vor.
Potenzial zur Erwärmung der Erdatmosphäre	: Es liegen keine Angaben vor.

ABSCHNITT 13. Hinweise zur Entsorgung

13.1. Verfahren der Abfallbehandlung

Produktvernichtung	: Das Produkt muss vernichtet werden gemäss der lokale und internationale Gesetzgebung, durch ein gesetzlich erkannte und spezialisierte Firma.
Europäische Abfallstoffenliste	: XXXXXX - Europäischer Abfallproduktcode. Dieser Code wird auf der Grundlage von die gegenwärtigsten Anwendungen zugewiesen und kann nicht für Verunreinigungen repräsentativ sein, die am wirkungsvollen Gebrauch des Produktes entstanden wurden. Der Produzent der Vergeudung muß seinen Prozeß selbst auswerten und muß die passende überschüssige Kodierung bewilligen. Sehen Sie Entscheidung 2001/118/EG.
Behandlung der Verpakkung	: Die gebrauchte Verpakkung ist ausschliesslich für die Verpakkung dieses Produktes zu benutzen. Nach Gebrauch die Verpackung sorgfältig ausleeren und abschliessen. Wenn es sich um Retourverpakkung händelt, kann die leere Verpakkung wieder am Lieferant angeboten werden.

ABSCHNITT 14. Angaben zum Transport

14.1. UN-Nummer

UN Nr : -

14.2. Ordnungsgemäße UN-Versandbezeichnung

*	ADR/RID-Name	: -
	ADN-Name	: -
	IMDG-Name	: -
	IATA-Name	: -

ABSCHNITT 14. Angaben zum Transport (Fortsetzung)

14.3. Transportgefahrenklassen

Klasse : -

14.4. Verpackungsgruppe

Verpackungstyp : -

14.5. Umweltgefahren

Umweltgefährlich : -

Meeresschadstoff : -

14.6. Besondere Vorsichtsmaßnahmen für den Verwender

Gefahrandeutung : -

Gefahrsymbol(e) : -

EmS-N° : -

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

* Schiffstyp : -

* Verschmutzungskategorie : -

ABSCHNITT 15. Rechtsvorschriften

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

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

* NFPA-N° : 2-1-0

Einschlägigen EU Vorschrift(en) : Richtlinie 98/24/EG des Rates vom 7. April 1998 zum Schutz von Gesundheit und Sicherheit der Arbeitnehmer vor der Gefährdung durch chemische Arbeitsstoffe bei der Arbeit
Richtlinie 1999/13/EG des Rates vom 11. März 1999 über die Begrenzung von Emissionen flüchtiger organischer Verbindungen, die bei bestimmten Tätigkeiten und in bestimmten Anlagen bei derVerwendung organischer Lösungsmittel entstehen
Richtlinie 2004/42/EG des Europäischen Parlaments und des Rates vom 21. April 2004 über die Begrenzung der Emissionen flüchtiger organischer Verbindungen aufgrund der
Verwendung organischer Lösemittel in bestimmten Farben und Lacken und in Produkten der Fahrzeugreparaturlackierung sowie zur Änderung der Richtlinie 1999/13/EG
Entscheidung 2001/118/EG der Kommission vom 16. Januar 2001 zur Änderung der Entscheidung 2000/532/EG über ein Abfallverzeichnis
Verordnung (EG) Nr. 1272/2008 des Europäischen Parlaments und des Rates vom 16. Dezember 2008 über die Einstufung, Kennzeichnung und Verpackung von Stoffen und Gemischen, zur Änderung und Aufhebung der Richtlinien 67/548/EWG und 1999/45/EG und zur Änderung der Verordnung (EG) Nr. 1907/2006
Verordnung (EU) Nr. 453/2010 der Kommission vom 20. Mai 2010 zur Änderung der Verordnung (EG) Nr. 1907/2006 des Europäischen Parlaments und des Rates zur Registrierung, Bewertung, Zulassung und Beschränkung chemischer Stoffe (Reach)

ABSCHNITT 15. Rechtsvorschriften (Fortsetzung)

* Die Beschränkungen in Anhang XVII der Verordnung (EG) Nr. 1907/2006 sind zu beachten.

* Nationalen Vorschriften

* - Deutschland : WGK : 1

* - Niederlande : Wasserbeschwerlichkeit : 11
Sanierungsanspannung : B

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 industriel/professionel Gebrauch.

* Änderung hinsichtlich voriger Revision.

* Änderungen : Abschnitt 1 , Abschnitt 2 , Abschnitt 3 , Abschnitt 4 , Abschnitt 7 , Abschnitt 8 , Abschnitt 11 , Abschnitt 12 , Abschnitt 14 , Abschnitt 15 , Abschnitt 16 .

* Quelle der Daten : Die Angaben stützen sich auf den heutigen Stand unserer Kenninnisse (Produzent(en) , Chemiekarte ,...)
Sehe auch auf der Adresse:
http://apps.echa.europa.eu/registered/registered-sub.aspx#search

R-Sätz(e) : R22 - Gesundheitsschädlich beim Verschlucken.

(EU)H-Hinweis(e) : H302 - Gesundheitsschädlich bei Verschlucken.
H373 - Kann die Organe schädigen bei längerer oder wiederholter Exposition.

* Liste der Abkürzungen und Akronyme : Acute Tox. 4, oral : Akute Toxizität, oral - Kategorie 4
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
CO : Kohlenstoffmonoxid
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 einschlägingen Verschütten Zeitplan
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
NFPA (National Fire Protection Association) oder Gefahrendiamant
NOEC (No Observed Effect Concentration) : Konzentration ohne beobachtbare schädliche Wirkung
NOx : Stickoxiden
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

ABSCHNITT 16. Sonstige Angaben (Fortsetzung)

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
STOT RE 2 : Spezifische Zielorgan-Toxizität - Wiederholte Exposition - Kategorie 2
GGM (Gewichteter Gleitender Mittelwert) : die durchschnittliche Exposition über einen bestimmten Zeitraum
WGK (Wassergefahrdungsklasse)
vPvB : sehr persistent und sehr bioakkumulierbar

Diese Information ist unseres Wissens korrekt und vollständig am Daten der Ausgabe des Sicherheitsdatenblatts. Diese Information betrifft nur dieses Produkt und gibt keine Garantie auf der Qualität und vollständigkeit der Eigenschaften des Produkts, oder falls das Produkt zusammen mit anderen Produkten oder im einzigen anderen Prozess gebraucht wird.
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Ende des Dokumentes

No.	Short title	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Manufacture of substance	3	NA	NA	1, 2, 3, 4, 8a, 8b, 15	1	NA	ES0004676
2	Use as an intermediate	3	NA	NA	1, 2, 3, 4, 8a, 8b, 9, 15	6a	NA	ES5
3	Distribution of substance	3	NA	NA	1, 2, 3, 4, 8a, 8b, 9, 15	1	NA	ES10
4	Formulation & (re)packing of substances and mixtures	3	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15	2	NA	ES12
5	Polymer production	3	NA	NA	1, 2, 3, 4, 5, 6, 8a, 8b, 9, 15	6c	NA	ES262
6	Production of rigid foam	21	NA	32	NA	8f	NA	ES43
7	Uses in coatings	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 10, 13, 15	4	NA	ES16
8	Use in coatings/adhesives/sealants/foams/polymer processing	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 10, 11, 13, 14, 15, 19	8d	NA	ES18
9	Uses in coatings	21	NA	9a, 15, 18, 31	NA	8d	NA	ES148
10	Use in adhesives and sealants	21	NA	1	NA	8c	NA	ES31
11	Use in Cleaning Agents	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 10, 13	4	NA	ES35
12	Use in Cleaning Agents	22	NA	NA	1, 2, 3, 4, 8a, 8b, 10, 11, 13	8a	NA	ES38
13	Use in Cleaning Agents	21	NA	35	NA	8a	NA	ES32
14	Use in agrochemicals	22	NA	NA	1, 2, 4, 8a, 8b, 9, 11, 13	8d	NA	ES236
15	Use as lubricants	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13, 17, 18	4	NA	ES108
16	Use as Functional	3	NA	NA	1, 2, 3, 4,	7	NA	ES241

	Fluids				8a, 8b, 9			
17	Use as Functional Fluids	22	NA	NA	1, 2, 3, 8a, 9, 20	9b	NA	ES243
18	Use in heat transfer and hydraulic fluids	21	NA	16, 17	NA	9b	NA	ES266
19	Use in laboratories	3	NA	NA	15	2, 4	NA	ES116
20	Use in laboratories	22	NA	NA	15	8a	NA	ES118
21	Use in metal working fluids / rolling oils	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 17	4	NA	ES111
22	Use in metal working fluids / rolling oils	22	NA	NA	1, 2, 3, 5, 8a, 8b, 9, 10, 11, 13, 17	8a	NA	ES128
23	Use in de-icing and anti-icing applications	22	NA	NA	1, 2, 8a, 8b, 11	8d	NA	ES87
24	Use in de-icing and anti-icing applications	21	NA	4	NA	8d	NA	ES101
25	Use as water treatment chemicals	3	NA	NA	1, 2, 3, 4, 8a, 8b, 13	3	NA	ES120
26	Use in Oil and Gas field drilling and production operations	3	NA	NA	1, 2, 3, 4, 8a, 8b	4	NA	ES9888
27	Use as a process chemical	3	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 13, 14, 15	4	NA	ES143
28	Other consumer uses	21	NA	28, 39	NA	8a, 8d	NA	ES9886
29	Polymer production use in foams, in coatings, in adhesives, in sealants.	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 14, 15	6c	NA	ES37

1. Short title of Exposure Scenario 1: Manufacture of substance		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure 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 PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC1: Manufacture of substances	
Activity	Manufacture of substance or use as process chemical or extracting agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.	
2.1 Contributing scenario controlling environmental exposure for: ERC1		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	1
	Maximum daily site tonnage (kg/day):	86773 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,01 %
	initial release prior to RMM	
	Emission or Release Factor: Water	1 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0,01 %
	initial release prior to RMM Regional only	

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	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC8b)
	Exposed skin areas	Two hands 960 cm² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC2, PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 1.1v1 has been used to evaluate the exposure for the environment

Workers

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR

PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2	---	Worker - inhalative, long-term - local and systemic.	12,92mg/m³	0,37
PROC2	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC8b, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4, PROC8b	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

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	
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) PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)	
Activity	Use as an intermediate (not related to Strictly Controlled Conditions). Includes incidental exposures during recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
2.1 Contributing scenario controlling environmental exposure for: ERC6a		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,015
	Maximum daily site tonnage (kg/day):	50000 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,002 %
	initial release prior to RMM	
	Emission or Release Factor: Water	1 %
	initial release prior to RMM	
	Emission or Release	0,1 %

	Factor: Soil	
	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC8b, PROC9)
	Exposed skin areas	Two hands 960 cm² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 6.1a.v1 has been used to evaluate the exposure for the environment

Workers

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC8b, PROC9, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Please note that modified version has been used (see exposure estimates).
For scaling see: http://www.ecetoc.org/tra

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 3: Distribution of substance		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure 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) PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC1: Manufacture of substances	
Activity	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, distribution and associated laboratory activities.	
2.1 Contributing scenario controlling environmental exposure for: ERC1		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	6667 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,001 %
	initial release prior to RMM	
	Emission or Release Factor: Water	0,001 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0,001 %

	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	240 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC8b, PROC9)
	Exposed skin areas	Two hands 960 cm² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 1.1b.v1 has been used to evaluate the exposure for the environment

Workers

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR

PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC8b, PROC9, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 4: 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	
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 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) PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC2: Formulation of preparations	
Activity	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.	
2.1 Contributing scenario controlling environmental exposure for: ERC2		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,03
	Maximum daily site tonnage (kg/day):	100000 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,5 %
	initial release prior to RMM	
	Emission or Release	0,5 %

	Factor: Water	
	initial release prior to RMM	
	Emission or Release Factor: Soil	0,01 %
	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	240 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC14)
	Exposed skin areas	Two hands 960 cm² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	
	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC5)	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 2.2.v1 has been used to evaluate the exposure for the environment

Workers

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC8b, PROC9, PROC14	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC14	---	Worker - dermal, long-term - systemic	3,43mg/kg bw/day	0,03
PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 5: Polymer production		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure 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 PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC6: Calendering operations 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) PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC6c: Industrial use of monomers for manufacture of thermoplastics	
2.1 Contributing scenario controlling environmental exposure for: ERC6c		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,015
	Maximum daily site tonnage (kg/day):	50000 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,2 %
	initial release prior to RMM	
	Emission or Release Factor: Water	1 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0,01 %

	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	240 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC5, PROC8b, PROC9)
	Exposed skin areas	Two hands 960 cm² (PROC6, PROC8a)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC5)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC6)	
	If no LEV: Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 4.20 v1 has been used to evaluate the exposure for the environment

Workers

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2, PROC5	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC5, PROC6, PROC8b, PROC9, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC6	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 6: Production of rigid foam		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC32: Polymer preparations and compounds	
Environmental Release Categories	ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix	
2.1 Contributing scenario controlling environmental exposure for: ERC8f		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5 %.
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data.Other information	Local freshwater dilution factor:: 10
	Other data.Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	15 %
	initial release prior to RMM	
	Emission or Release Factor: Water	1 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0,5 %
	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
2.2 Contributing scenario controlling consumer exposure for: PC32		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5 %.

	Physical Form (at time of use)	liquid
Amount used	Amount used per event	0,825 kg
Frequency and duration of use	Exposure duration	30 min
Human factors not influenced by risk management	Exposed skin areas	Hands and forearms. 1900 cm^2
Other given operational conditions affecting consumers exposure	Indoor use.	
	Room size	57,5 m3
	Temperature	25 ℃
	Ventilation rate per hour	1,5
	Covers use under typical household ventilation.	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model.

Consumers

ConsExpo 4.1

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC32	---	consumer inhalation, long term - systemic	0,06mg/m^3	0,009
PC32	---	consumer dermal, long term - systemic	0,007mg/kg bw/day	0,008

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

1. Short title of Exposure Scenario 7: Uses in coatings		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure 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 PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying 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 PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles	
Activity	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.	
2.1 Contributing scenario controlling environmental exposure for: ERC4		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	1
	Maximum daily site tonnage (kg/day):	39945 kg
Frequency and duration of use	Continuous exposure	220 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	98 %
	initial release prior to RMM	
	Emission or Release	2 %

	Factor: Water	
	initial release prior to RMM	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM Regional only	
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	Treat air emission to provide a typical removal efficiency of (%): (Efficiency: 95 %)
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Wet scrubber for elimination of volatile components from waste gases, or, Filtration aids
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
Amount used		600 mL/min (PROC7)
	Regular inspection and maintenance of equipment and machines.(PROC7)	
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC7)
	Frequency of use	240 days/year(except PROC7)
	Exposure duration per day	< 6 h(Critical for: PROC7)
	Frequency of use	4 - 5 days/week(Critical for: PROC7)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC5, PROC8b, PROC13)
	Exposed skin areas	Whole body (PROC7)
	Exposed skin areas	Two hands 960 cm² (PROC8a, PROC10)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.Room size	1000 m3(PROC7)

Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)
	Provide extraction ventilation at points where emissions occur. (Efficiency: 50 %)(PROC7)
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that the task is not carried out overhead. Regular inspection and maintenance of equipment and machines. Clean equipment and the work area every day.(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC5)
	If no LEV: Wear respiratory protection(PROC8a)
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC7, PROC10, PROC13)
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC7)

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. CEPE spERC 4.nb.v1 has been used to evaluate the exposure for the environment

Workers

PROC7 StoffenManager (inhalation exposure)

PROC7 RISKOFDERM.

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC13, PROC15 ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2, PROC5, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC5, PROC8b, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4, PROC8b	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06

PROC7	---	Worker - inhalative, long-term - local and systemic.	9,79mg/m³	0,28
PROC7	---	Worker - dermal, long-term - systemic	54,6mg/m3	0,52
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m³	0,74
PROC10	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03

The exposure estimate represents the 75th percentile of the exposure distibution. PROC7

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra with exception for PROC7
Please note that modified version has been used (see exposure estimates).
Scaling for PROC7 (dermal) http://www.tno.nl and search for "riskofderm"
Scaling for PROC7 (inhalation) https://www.stoffenmanager.nl/default.aspx

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 8: Use in coatings/adhesives/sealants/foams/polymer processing		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
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 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) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available	
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems	
Activity	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and film formation) and equipment cleaning, maintenance and associated laboratory activities.	
2.1 Contributing scenario controlling environmental exposure for: ERC8d		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10

	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	98 %
	initial release prior to RMM	
	Emission or Release Factor: Water	2 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM Regional only	
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	Treat air emission to provide a typical removal efficiency of (%): (Efficiency: 95 %)
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Wet scrubber for elimination of volatile components from waste gases, or, Filtration aids
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
Amount used		50 mL/min (PROC11)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC11, PROC19)
	Exposure duration per day	< 150 min(Critical for: PROC11)
	Exposure duration per day	< 15 min(Critical for: PROC19)
	Frequency of use	< 240 days/year(except PROC11)
	Frequency of use	4 - 5 days/week(Critical for: PROC11)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14)
	Exposed skin areas	Two hands 960 cm² (PROC8a, PROC10)

	Exposed skin areas	Hands and forearms. 1980 cm² (PROC19)
	Exposed skin areas	Whole body (PROC11)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.Room size	1000 m3(PROC11)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 80 %)(PROC8a, PROC10)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC11)	
Organisational measures to prevent /limit releases, dispersion and exposure	Regular inspection and maintenance of equipment and machines. Ensure that the task is not carried out by more than one worker. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Clean equipment and the work area every day. Ensure that the task is not carried out overhead.(PROC11)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a, PROC10)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC10, PROC11, PROC13, PROC14, PROC19)	
	Wear respiratory protection. (Efficiency: 40 %)(PROC11)	
	In case no respiratory protection is used, a LEV with adequate effectiveness is required.(PROC11)	
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC11)	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. CEPE spERC 8a.n.v1 has been used to evaluate the exposure for the environment

Workers

PROC11 StoffenManager (inhalation exposure)

PROC11 RISKOFDERM.

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC19 ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003

PROC2, PROC8a, PROC10, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14	---	Worker - inhalative, long-term - local and systemic.	25,88mg/m³	0,74
PROC4, PROC8b	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC5, PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,01
PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,35
PROC10	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03
PROC11	---	Worker - inhalative, long-term - local and systemic.	14,05mg/m³	0,4
PROC11	---	Worker - dermal, long-term - systemic	53,75mg/kg bw/day	0,51
PROC14	---	Worker - dermal, long-term - systemic	3,43mg/kg bw/day	0,03
PROC19	---	Worker - inhalative, long-term - local and systemic.	6,47mg/m³	0,18
PROC19	---	Worker - dermal, long-term - systemic	14,14mg/kg bw/day	0,13

The exposure estimate represents the 75th percentile of the exposure distibution. PROC11

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra with exception for PROC11
Please note that modified version has been used (see exposure estimates).

Scaling for PROC11 (dermal) http://www.tno.nl and search for "riskofderm"
Scaling for PROC11 (inhalation) https://www.stoffenmanager.nl/default.as

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 9: Uses in coatings		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC9a: Coatings and paints, thinners, paint removers PC15: Non-metal-surface treatment products PC18: Ink and toners PC31: Polishes and wax blends	
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems	
Activity	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning.	
2.1 Contributing scenario controlling environmental exposure for: ERC8d		
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data.Other information	Local freshwater dilution factor:: 10
	Other data.Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	98 %
	initial release prior to RMM	
	Emission or Release Factor: Water	2 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM	
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	Treat air emission to provide a typical removal efficiency of (%): (Efficiency: 95 %)
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
2.2 Contributing scenario controlling consumer exposure for: PC9a: Waterborne wall paint, PC15:		

Waterborne wall paint		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5 %.
	Physical Form (at time of use)	liquid
Amount used		1,25 kg
Frequency and duration of use	Application duration	120 min
	Non spray applications	
	Exposure duration per day	132 min
	Frequency of use	1 days/year
Human factors not influenced by risk management	Exposed skin areas	Hands and forearms. 1900 cm²
Other given operational conditions affecting consumers exposure	Indoor use.	
	Room size	20 m3
	Temperature	25 ℃
	Ventilation rate per hour	0,6
	Mass transfer rate	0,331 m/min
	Release area	10 m²
	Release duration	7200 sec
2.3 Contributing scenario controlling consumer exposure for: PC9a: Aerosol spray can, PC15: Aerosol spray can		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5 %.
	Physical Form (at time of use)	liquid
Frequency and duration of use	Spray Duration	15 min
	Exposure duration per day	15 min
	Frequency of use	2 days/year
Human factors not influenced by risk management	Exposed skin areas	Hands and forearms. 1900 cm²
Other given operational conditions affecting consumers exposure	Indoor use.	
	Room size	34 m3
	Temperature	25 ℃
	Ventilation rate per hour	1,5
	Release duration	900 sec

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Ensure spraying away from persons.
2.4 Contributing scenario controlling consumer exposure for: PC18: Refilling of toners		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5 %.
	Physical Form (at time of use)	liquid
Amount used		0,05 kg (PC18)
Frequency and duration of use	Application duration	0,3 min
	Exposure duration per day	0,75 min
	Frequency of use	104 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 215 cm²
Other given operational conditions affecting consumers exposure	Indoor use.	
	Temperature	25 °C
	Ventilation rate per hour	0,5
	Release area	20 cm²
	Mass transfer rate	0,331 m/min
2.5 Contributing scenario controlling consumer exposure for: PC18: Printing Process		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5 %.
	Physical Form (at time of use)	liquid
Amount used		0,016 kg
Frequency and duration of use	Application duration	600 min
	Exposure duration per day	600 min
	Frequency of use	365 days/year
Other given operational conditions affecting consumers exposure	Indoor use.	
	Room size	25 m3
	Temperature	25 °C
	Ventilation rate per hour	0,6
2.6 Contributing scenario controlling consumer exposure for: PC31: Polishes, wax / cream (floor, furniture, shoes)		

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 2,5%
	Physical Form (at time of use)	liquid
Amount used	Amount used per event	0,55 kg
Frequency and duration of use	Application duration	900 min
	Non spray applications	
	Exposure duration per day	240 min
	Frequency of use	1 days/year
Human factors not influenced by risk management	Exposed skin areas	Palms of both hands 430 cm²
Other given operational conditions affecting consumers exposure	Indoor use.	
	Room size	58 m3
	Temperature	25 °C
	Ventilation rate per hour	0,5
	Release area	22 m²
	Mass transfer rate	4740 m/min
	Release duration	7200 sec

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. CEPE spERC 8a.n.v1 has been used to evaluate the exposure for the environment

Consumers

ConsExpo 4.1

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC9a: Waterborne wall paint, PC15: Waterborne wall paint	---	Consumer-inhalative, long-term - local and systemic.	0,72mg/m³	0,1
PC9a: Waterborne wall paint, PC15: Waterborne wall paint	---	consumer dermal, long term - systemic	2,77mg/kg bw/day	0,05
PC9a: Aerosol	---	Consumer-inhalative,	0,26mg/m³	0,04

spray can, PC15: Aerosol spray can		long-term - local and systemic.		
PC9a: Aerosol spray can, PC15: Aerosol spray can	---	consumer dermal, long term - systemic	1,15mg/kg bw/day	0,02
PC9a: Aerosol spray can, PC15: Aerosol spray can	---	consumer oral, long term - systemic	0,13mg/kg bw/day	< 1
PC18: Refilling of toners	---	Consumer-inhalative, long-term - local and systemic.	---	< 1
PC18: Refilling of toners	---	consumer dermal, long term - systemic	0,008mg/kg bw/day	0,0002
PC18: Printing Process	---	Consumer-inhalative, long-term - local and systemic.	1,29mg/m³	0,18
PC31: Polishes, wax / cream	---	Consumer-inhalative, long-term - local and systemic.	3,93mg/m3	0,56
PC31: Polishes, wax / cream	---	consumer dermal, long term - systemic	2,12mg/kg bw/day	0,04

Relevant for section 2.5: Dermal exposure is not considered to be relevant.

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
The ConsExpo model has been used to estimate consumer exposures unless otherwise indicated.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

1. Short title of Exposure Scenario 10: Use in adhesives and sealants		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC1: Adhesives, sealants	
Environmental Release Categories	ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix	
2.1 Contributing scenario controlling environmental exposure for: ERC8c		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 0,075%
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data.Other information	Local freshwater dilution factor:: 10
	Other data.Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	15 %
	initial release prior to RMM	
	Emission or Release Factor: Water	1 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM	Regional only
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	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
2.2 Contributing scenario controlling consumer exposure for: PC1		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 0,075%

	Physical Form (at time of use)	liquid
Amount used		9 kg
Frequency and duration of use	Application duration	75 min
	Exposure duration	75 min
	Frequency of use	2 hours/year
Human factors not influenced by risk management	Exposed skin areas	Fingers of one hand 110 cm²
Other given operational conditions affecting consumers exposure	Indoor use.	
	Room size	58 m3
	Temperature	25 ℃
	Ventilation rate per hour	0,5
	Covers use under typical household ventilation.	
	Mass transfer rate	4740 m/min
	Release area	4 m²
	Release duration	4500 sec

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model.

Consumers

ConsExpo 4.1

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC1	---	Consumer-inhalative, long-term - local and systemic.	4,1mg/m³	0,59
PC1	---	consumer dermal, long term - systemic	0,26mg/kg bw/day	0,005

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
The ConsExpo model has been used to estimate consumer exposures unless otherwise indicated.

1. Short title of Exposure Scenario 11: Use in Cleaning Agents		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure 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 PROC7: Industrial spraying 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 PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring	
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles	
Activity	Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.	
2.1 Contributing scenario controlling environmental exposure for: ERC4		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,000011
	Maximum daily site tonnage (kg/day):	50 kg
Frequency and duration of use	Continuous exposure	220 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	initial release prior to RMM	
	Emission or Release Factor: Water	100 %
	initial release prior to RMM	

	Emission or Release Factor: Soil	0 %
	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
Amount used		600 mL/min (PROC7)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC7)
	Exposure duration per day	< 6 h(Critical for: PROC7)
	Frequency of use	< 240 days/year(except PROC7)
	Frequency of use	4 - 5 days/week(Critical for: PROC7)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC8b, PROC13)
	Exposed skin areas	Whole body (PROC7)
	Exposed skin areas	Two hands 960 cm² (PROC8a, PROC10)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.Room size	1000 m3(PROC7)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 50 %)(PROC7)	
	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that the task is not carried out overhead. Ensure control measures are regularly inspected and maintained.	

	Clean equipment and the work area every day.(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC7)
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC7, PROC10, PROC13)
	If no LEV: Wear respiratory protection(PROC8a)

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. AISE spERC 4.1 has been used to evaluate the exposure for the environment

Workers

PROC7 StoffenManager (inhalation exposure)

PROC7 RISKOFDERM.

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC13 ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC8b	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4, PROC8b	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC7	---	Worker - inhalative, long-term - local and systemic.	9,79mg/m³	0,28
PROC7	---	Worker - dermal, long-term - systemic	54,6mg/m3	0,52
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m³	0,74
PROC10	---	Worker - dermal, long-	2,74mg/kg bw/day	0,03

		term - systemic		

The exposure estimate represents the 75th percentile of the exposure distibution. PROC7

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
For scaling see: http://www.ecetoc.org/tra with exception for PROC7
Please note that modified version has been used (see exposure estimates).
Scaling for PROC7 (dermal) http://www.tno.nl and search for "riskofderm"
Scaling for PROC7 (inhalation) https://www.stoffenmanager.nl/default.aspx
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 12: Use in Cleaning Agents		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
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 PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems	
Activity	Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand).	
2.1 Contributing scenario controlling environmental exposure for: ERC8a		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,00075
	Maximum daily site tonnage (kg/day):	1580 kg
Frequency and duration of use	Continuous exposure	365 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	initial release prior to RMM	
	Emission or Release Factor: Water	100 %
	initial release prior to RMM	
	Emission or Release	0 %

	Factor: Soil	
	initial release prior to RMM Regional only	
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	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
Amount used		0,05 L/min (PROC11)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC11)
	Exposure duration per day	< 150 min(Critical for: PROC11)
	Frequency of use	4 - 5 days/week(Critical for: PROC11)
	Frequency of use	< 240 days/year(except PROC11)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC8b, PROC13)
	Exposed skin areas	Two hands 960 cm² (PROC8a, PROC10)
	Exposed skin areas	Whole body (PROC11)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.Room size	1000 m3(PROC11)
Technical conditions and measures to control dispersion from source towards the worker	Provide local exhaust ventilation (LEV). (Efficiency: 80 %)(PROC8a, PROC10)	
	Provide extract ventilation to points where emissions occur.(PROC11)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is not carried out by more than one worker. Ensure that the task is not carried out overhead. Ensure control measures are regularly inspected and maintained. Clean equipment and the work area every day.(PROC11)	
Conditions and measures related to personal protection, hygiene	If no LEV: Wear respiratory protection(PROC8a, PROC10)	

and health evaluation	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC10, PROC11, PROC13)
	If no LEV: Wear respiratory protection. (Efficiency: 40 %)(PROC11)
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC11)

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. AISE spERC 8a.1 has been used to evaluate the exposure for the environment

Workers

PROC11 StoffenManager (inhalation exposure)

PROC11 RISKOFDERM.

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC13 ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a, PROC10	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC8b	---	Worker - inhalative, long-term - local and systemic.	25,88mg/m³	0,74
PROC4, PROC8b	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03
PROC11	---	Worker - inhalative, long-term - local and systemic.	14,05mg/m³	0,4
PROC11	---	Worker - dermal, long-term - systemic	53,75mg/kg bw/day	0,51
PROC13	---	Worker - inhalative, long-	25,88mg/m³	0,74

		term - local and systemic.		

The exposure estimate represents the 75th percentile of the exposure distibution. PROC11

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra with exception for PROC11
Please note that modified version has been used (see exposure estimates).
Scaling for PROC11 (dermal) http://www.tno.nl and search for "riskofderm"
Scaling for PROC11 (inhalation) https://www.stoffenmanager.nl/default.as

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 13: Use in Cleaning Agents		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC35: Washing and cleaning products (including solvent based products)	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems	
Activity	Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products.	
2.1 Contributing scenario controlling environmental exposure for: ERC8a		
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,00075
	Maximum daily site tonnage (kg/day):	1580 kg
Frequency and duration of use	Continuous exposure	365 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data.Other information	Local freshwater dilution factor:: 10
	Other data.Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	initial release prior to RMM	
	Emission or Release Factor: Water	100 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM Regional only	
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	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
2.2 Contributing scenario controlling consumer exposure for: PC35: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)		
Product characteristics	Concentration of the Substance in	Concentration of substance in product : 0% - 20%

	Mixture/Article	
	Physical Form (at time of use)	liquid
Amount used	Amount used per event	0,5 kg
Frequency and duration of use	Application duration	0,3 min
	Exposure duration per day	0,75 min
	Frequency of use	104 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 215 cm²
Other given operational conditions affecting consumers exposure	Indoor use.	
	Room size	1 m3
	Temperature	25 °C
	Ventilation rate per hour	0,5
	Covers use under typical household ventilation.	
	Release area	20 cm²
	Mass transfer rate	4740 m/min
2.3 Contributing scenario controlling consumer exposure for: PC35: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 4%
	Physical Form (at time of use)	liquid
Amount used	Amount used per event	0,4 kg
Frequency and duration of use	Application duration	20 min
	Exposure duration per day	240 min
	Frequency of use	104 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 215 cm²
Other given operational conditions affecting consumers exposure	Indoor use.	
	Room size	58 m3
	Temperature	25 °C
	Ventilation rate per hour	0,5
	Covers use under typical household ventilation.	
	Release area	10 m²
	Mass transfer rate	4740 m/min

2.4 Contributing scenario controlling consumer exposure for: PC35: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5 %.
	Physical Form (at time of use)	liquid
Frequency and duration of use	Application duration	0,41 min
	Exposure duration per day	60 min
	Frequency of use	365 days/year
Human factors not influenced by risk management	Exposed skin areas	Hands and forearms. 1900 cm^2
Other given operational conditions affecting consumers exposure	Indoor use.	
	Room size	15 m3
	Temperature	25 ℃
	Ventilation rate per hour	2,5
	Covers use under typical household ventilation.	
	Release duration	2,6 sec
	Mass generation rate	0,8 g/sec
	Airborne fraction	0,2
	Weight fraction non-volatile	0,05
	Density non-volatile	1,8 g/cm^3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Ensure spraying away from persons.	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. AISE SPERC 8a.1.a.v1 has been used to evaluate the exposure for the environment

Consumers

ConsExpo 4.1

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC35: Cleaners, liquids	See section 2.2	Consumer-inhalative, long-term - local and systemic.	0,01mg/m^3	0,001

PC35: Cleaners, liquids	See section 2.2	consumer dermal, long term - systemic	0,03mg/kg bw/day	0,0006
PC35: Cleaners, liquids	See section 2.3	Consumer-inhalative, long-term - local and systemic.	0,61mg/m³	0,09
PC35: Cleaners, liquids	See section 2.3	consumer dermal, long term - systemic	11,7mg/kg bw/day	0,22
PC35: Cleaners, trigger sprays	---	Consumer-inhalative, long-term - local and systemic.	---	< 1
PC35: Cleaners, trigger sprays	---	consumer dermal, long term - systemic	0,01mg/kg bw/day	0,0002
PC35: Cleaners, trigger sprays	---	consumer oral, long term - systemic	---	< 1

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
The ConsExpo model has been used to estimate consumer exposures unless otherwise indicated.

1. Short title of Exposure Scenario 14: Use in agrochemicals		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure 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) PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring	
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems	
Activity	Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal.	
2.1 Contributing scenario controlling environmental exposure for: ERC8d		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	100 %
	initial release prior to RMM	
	Emission or Release Factor: Water	0 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM Regional only	

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	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC4, PROC8a, PROC8b, PROC9, PROC11, PROC13		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
Amount used		0,05 L/min (PROC11)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC11)
	Exposure duration per day	< 150 min(Critical for: PROC11)
	Frequency of use	< 240 days/year(except PROC11)
	Frequency of use	4 - 5 days/week(Critical for: PROC11)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC8b, PROC9, PROC13)
	Exposed skin areas	Two hands 960 cm² (PROC8a)
	Exposed skin areas	Whole body (PROC11)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.Room size	1000 m3(PROC11)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 80 %)(PROC8a)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC11)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is not carried out by more than one worker. Ensure that the task is not carried out overhead. Clean equipment and the work area every day. Ensure control measures are regularly inspected and maintained.(PROC11)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	
	Wear respiratory protection. (Efficiency: 40 %)(PROC11)	
	In case no respiratory protection is used, a LEV with adequate effectiveness is	

required.(PROC11)
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC11, PROC13)
Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC11)

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ECPA spERC 8d.2.v1 has been used to evaluate the exposure for the environment

Workers

PROC11 StoffenManager (inhalation exposure)

PROC11 RISKOFDERM.

PROC1, PROC2, PROC4, PROC8a, PROC8b, PROC9, PROC13 ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC4, PROC8b, PROC9, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,88mg/m³	0,74
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC11	---	Worker - inhalative, long-term - local and systemic.	14,05mg/m³	0,4
PROC11	---	Worker - dermal, long-term - systemic	53,75mg/kg bw/day	0,51

The exposure estimate represents the 75th percentile of the exposure distibution. PROC11

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra with exception for PROC11
Please note that modified version has been used (see exposure estimates).
Scaling for PROC11 (dermal) http://www.tno.nl and search for "riskofderm"
Scaling for PROC11 (inhalation) https://www.stoffenmanager.nl/default.as

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 15: Use as lubricants		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure 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 PROC7: Industrial spraying 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) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC17: Lubrication at high energy conditions and in partly open process PROC18: Greasing at high energy conditions	
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles	
Activity	Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.	
2.1 Contributing scenario controlling environmental exposure for: ERC4		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,0001
	Maximum daily site tonnage (kg/day):	5000 kg
Frequency and duration of use	Continuous exposure	20 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,03 %
	initial release prior to RMM	
	Emission or Release Factor: Water	0,1 %

	initial release prior to RMM	
	Emission or Release Factor: Soil	0,1 %
	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
Amount used		600 mL/min (PROC7)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC7)
	Exposure duration per day	< 6 h(Critical for: PROC7)
	Frequency of use	< 240 days/year(except PROC7)
	Frequency of use	4 - 5 days/week(Critical for: PROC7)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC8b, PROC9, PROC13)
	Exposed skin areas	Whole body (PROC7)
	Exposed skin areas	Two hands 960 cm² (PROC8a, PROC10, PROC17, PROC18)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.Room size	1000 m3(PROC7)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 50 %)(PROC7)	
	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a, PROC17, PROC18)	
Organisational measures to prevent /limit releases, dispersion	Ensure that the task is not carried out overhead. Ensure that the task is being carried out outside the breathing zone of a worker	

and exposure	(distance head-product greater than 1m). Clean equipment and the work area every day. Ensure control measures are regularly inspected and maintained.(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC7)
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC7, PROC10, PROC13, PROC17, PROC18)
	If no LEV: Wear respiratory protection(PROC8a)

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 4.6a.v1 has been used to evaluate the exposure for the environment

Workers

PROC7 StoffenManager (inhalation exposure)

PROC7 RISKOFDERM.

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18 ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a, PROC17, PROC18	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC8b, PROC9	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC7	---	Worker - inhalative, long-term - local and systemic.	9,79mg/m³	0,28
PROC7	---	Worker - dermal, long-	54,6mg/kg bw/day	0,52

		term - systemic		
PROC8a, PROC18	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m³	0,74
PROC10, PROC17	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03

The exposure estimate represents the 75th percentile of the exposure distibution. PROC7

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra
Please note that modified version has been used (see exposure estimates).
Scaling for PROC7 (dermal) http://www.tno.nl and search for "riskofderm"
Scaling for PROC7 (inhalation) https://www.stoffenmanager.nl/default.aspx

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 16: Use as Functional Fluids		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure 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	ERC7: Industrial use of substances in closed systems	
Activity	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.	
2.1 Contributing scenario controlling environmental exposure for: ERC7		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,00001
	Maximum daily site tonnage (kg/day):	500 kg
Frequency and duration of use	Continuous exposure	20 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,1 %
	initial release prior to RMM	
	Emission or Release Factor: Water	0,1 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0,1 %
	initial release prior to RMM Regional only	

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	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC8b, PROC9)
	Exposed skin areas	Two hands 960 cm² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 7.13a.v1 has been used to evaluate the exposure for the environment

Workers

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-	0,03mg/m3	0,0007

		term - local and systemic.		
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC8b, PROC9	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 17: Use as Functional Fluids		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
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) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems	
Environmental Release Categories	ERC9b: Wide dispersive outdoor use of substances in closed systems	
Activity	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers.	
2.1 Contributing scenario controlling environmental exposure for: ERC9b		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	5 %
	initial release prior to RMM	
	Emission or Release Factor: Water	5 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	5 %
	initial release prior to RMM	Regional only
Technical conditions and measures at process level	Air	No air emission controls required; required removal

(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		efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC9, PROC20

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC9, PROC20)
	Exposed skin areas	Two hands 960 cm² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 80 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model.

Workers

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007

PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a, PROC20	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC2	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC9	---	Worker - inhalative, long-term - local and systemic.	25,88mg/m³	0,74
PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC20	---	Worker - dermal, long-term - systemic	1,71mg/kg bw/day	0,02

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 18: Use in heat transfer and hydraulic fluids		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC16: Heat transfer fluids PC17: Hydraulic fluids	
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 : 0% - 30%
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Continuous release
Environment factors not influenced by risk management	Other data.Other information	Local freshwater dilution factor:: 10
	Other data.Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	5 %
	initial release prior to RMM	
	Emission or Release Factor: Water	5 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	5 %
	initial release prior to RMM	Regional only
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	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
2.2 Contributing scenario controlling consumer exposure for: PC16, PC17		
Product characteristics	Concentration of the Substance in	Concentration of substance in product : 0% - 30%

	Mixture/Article	
	Physical Form (at time of use)	Liquid, low fugacity
Frequency and duration of use	Exposure duration per day	< 15 min
Human factors not influenced by risk management	Exposed skin areas	Two hands 960 cm²
Other given operational conditions affecting consumers exposure	Indoor use.	
	Assumes activities are at ambient temperature.	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model.

Consumers

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC16, PC17	---	Consumer-inhalative, long-term - local and systemic.	1,93mg/m3	0,28
PC16, PC17	---	consumer dermal, long term - systemic	4,11mg/kg bw/day	0,08

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

1. Short title of Exposure Scenario 19: Use in laboratories		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC2: Formulation of preparations ERC4: Industrial use of processing aids in processes and products, not becoming part of articles	
Activity	Use of the substance within laboratory settings, including material transfers and equipment cleaning..	
2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC4		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,0005
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	50 %
	initial release prior to RMM	
	Emission or Release Factor: Water	50 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC15)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model.

Workers

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 20: Use in laboratories		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Process categories	PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems	
Activity	Use of small quantities within laboratory settings, including material transfers and equipment cleaning.	
2.1 Contributing scenario controlling environmental exposure for: ERC8a		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,0005
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	50 %
	initial release prior to RMM	
	Emission or Release Factor: Water	50 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC15		

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC15)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 8.17.v1 has been used to evaluate the exposure for the environment

Workers

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 21: Use in metal working fluids / rolling oils		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure 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 PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying 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) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC17: Lubrication at high energy conditions and in partly open process	
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles	
Activity	Covers the use in formulated MWFs (MWFs)/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.	
2.1 Contributing scenario controlling environmental exposure for: ERC4		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,0001
	Maximum daily site tonnage (kg/day):	5000 kg
Frequency and duration of use	Continuous exposure	20 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,0003 %
	initial release prior to RMM	

	Emission or Release Factor: Water	0,1 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
Amount used		0,6 L/min (PROC7)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC7)
	Exposure duration per day	< 6 h(Critical for: PROC7)
	Frequency of use	< 240 days/year(except PROC7)
	Frequency of use	4 - 5 days/week(Critical for: PROC7)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC13)
	Exposed skin areas	Two hands 960 cm² (PROC8a, PROC10, PROC17)
	Exposed skin areas	Whole body (PROC7)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.Room size	1000 m3(PROC7)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 50 %)(PROC7)	
	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a, PROC17)	
Organisational measures to	Ensure that the task is being carried out outside the breathing zone of a worker	

prevent /limit releases, dispersion and exposure	(distance head-product greater than 1m). Ensure that the task is not carried out overhead. Clean equipment and the work area every day. Ensure control measures are regularly inspected and maintained.(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC7, PROC10, PROC13, PROC17)
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC7)
	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC5)

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 4.7a.v1 has been used to evaluate the exposure for the environment

Workers

PROC1, PROC2, PROC3, PROC8a Used ECETOC TRA model.

PROC7 StoffenManager (inhalation exposure)

PROC7 RISKOFDERM. PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2, PROC5, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC5, PROC8b, PROC9	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC7	---	Worker - inhalative, long-term - local and systemic.	9,79mg/m³	0,28

PROC7	---	Worker - dermal, long-term - systemic	54,6mg/kg bw/day	0,52
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m³	0,74
PROC10, PROC17	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03
PROC17	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07

The exposure estimate represents the 75th percentile of the exposure distibution. PROC7

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra with exception for PROC7
Please note that modified version has been used (see exposure estimates).
Scaling for PROC7 (dermal) http://www.tno.nl and search for "riskofderm"
Scaling for PROC7 (inhalation) https://www.stoffenmanager.nl/default.aspx

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 22: Use in metal working fluids / rolling oils		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
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) 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) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC17: Lubrication at high energy conditions and in partly open process	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems	
Activity	Covers the use in formulated MWFs (MWFs) including transfer operations, open and contained cutting/machining activities, automated and manual application of corrosion protections, draining and working on contaminated/reject articles, and disposal of waste oils.	
2.1 Contributing scenario controlling environmental exposure for: ERC8a		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,0005
	Maximum daily site tonnage (kg/day):	1370 kg
Frequency and duration of use	Continuous exposure	365 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	1,5 %
	initial release prior to RMM	
	Emission or Release Factor: Water	5 %

	initial release prior to RMM	
	Emission or Release Factor: Soil	5 %
	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
Amount used		0,05 L/min (PROC11)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC11)
	Exposure duration per day	< 150 min(Critical for: PROC11)
	Frequency of use	< 240 days/year(except PROC11)
	Frequency of use	4 - 5 days/week(Critical for: PROC11)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC5, PROC8b, PROC9, PROC13)
	Exposed skin areas	Two hands 960 cm² (PROC8a, PROC10, PROC17)
	Exposed skin areas	Whole body (PROC11)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.Room size	1000 m3(PROC11)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 80 %)(PROC8a, PROC10)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC11)	
	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC17)	
Organisational measures to	Ensure that the task is not carried out by more than one worker.	

prevent /limit releases, dispersion and exposure	Ensure that the task is not carried out overhead. Clean equipment and the work area every day. Ensure control measures are regularly inspected and maintained.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a, PROC10, PROC17)
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC10, PROC11, PROC13, PROC17)
	Wear respiratory protection. (Efficiency: 40 %)(PROC11)
	In case no respiratory protection is used, a LEV with adequate effectiveness is required.(PROC11)
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC11)

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 8.7c.v1 has been used to evaluate the exposure for the environment

Workers

PROC11 StoffenManager (inhalation exposure)

PROC11 RISKOFDERM.

PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17 ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a, PROC10, PROC17	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC5, PROC8b, PROC9, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,88mg/m³	0,74
PROC5, PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,01
PROC8b,	---	Worker - dermal, long-	6,86mg/kg bw/day	0,06

PROC9		term - systemic		
PROC10, PROC17	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03
PROC11	---	Worker - inhalative, long-term - local and systemic.	14,05mg/m³	0,4
PROC11	---	Worker - dermal, long-term - systemic	53,75mg/kg bw/day	0,51

The exposure estimate represents the 75th percentile of the exposure distibution. PROC11

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra with exception for PROC11
Please note that modified version has been used (see exposure estimates).
Scaling for PROC11 (dermal) http://www.tno.nl and search for "riskofderm"
Scaling for PROC11 (inhalation) https://www.stoffenmanager.nl/default.as

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 23: Use in de-icing and anti-icing applications		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure 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 PROC11: Non industrial spraying	
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems	
Activity	Ice prevention and de-icing of vehicles, aircraft and other equipment by spraying.	
2.1 Contributing scenario controlling environmental exposure for: ERC8d		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	95 %
	initial release prior to RMM	
	Emission or Release Factor: Water	1 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	4 %
	initial release prior to RMM	
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and	Air	Treat air emission to provide a typical removal efficiency of (%): (Efficiency: 0 %)
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)

releases to soil Organizational measures to prevent/limit release from the site	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC8a, PROC8b, PROC11

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
Amount used		0,05 L/min (PROC11)
	The parameter is relevant for dermal exposure estimates only.(PROC11)	
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC11)
	Exposure duration per day	< 150 min(PROC11)
	Frequency of use	< 240 days/year(except PROC11)
	Frequency of use	4 - 5 days/week(PROC11)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC8b)
	Exposed skin areas	Two hands 960 cm² (PROC8a)
	Exposed skin areas	Whole body (PROC11)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.Room size	1000 m3(PROC11)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 80 %)(PROC8a)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC11)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is not carried out by more than one worker. Ensure that the task is not carried out overhead. Clean equipment and the work area every day. Ensure control measures are regularly inspected and maintained.(PROC11)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC11)	
	Wear respiratory protection. In case no respiratory protection is used, a LEV with adequate effectiveness is required. (Efficiency: 40 %)(PROC11)	
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC11)	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 8.14a.v1 has been used to evaluate the exposure for the environment

Workers

PROC11 StoffenManager (inhalation exposure)
PROC11 RISKOFDERM.
PROC1, PROC2, PROC8a, PROC8b ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC2	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC8b	---	Worker - inhalative, long-term - local and systemic.	25,88mg/m³	0,74
PROC8b	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC11	---	Worker - inhalative, long-term - local and systemic.	14,05mg/m³	0,4
PROC11	---	Worker - dermal, long-term - systemic	53,75mg/kg bw/day	0,51

The exposure estimate represents the 75th percentile of the exposure distibution. PROC11

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

For scaling see: http://www.ecetoc.org/tra with exception for PROC11
Please note that modified version has been used (see exposure estimates).
Scaling for PROC11 (dermal) http://www.tno.nl and search for "riskofderm"
Scaling for PROC11 (inhalation) https://www.stoffenmanager.nl/default.as

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 24: Use in de-icing and anti-icing applications		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC4: Anti-freeze and de-icing products	
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems	
Activity	De-icing of vehicles and similar equipment by spraying.	
2.1 Contributing scenario controlling environmental exposure for: ERC8d		
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data.Other information	Local freshwater dilution factor:: 10
	Other data.Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	95 %
	initial release prior to RMM	
	Emission or Release Factor: Water	1 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	4 %
	initial release prior to RMM	
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	Treat air emission to provide a typical removal efficiency of (%): (Efficiency: 0 %)
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
2.2 Contributing scenario controlling consumer exposure for: PC4: De-icer		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid

Amount used		0,29 g
	Non spray applications	
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	365 days/year
	Frequency of use	42 sec
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 215 cm²
	Exposed skin areas	Hands and forearms. 1900 cm²
Other given operational conditions affecting consumers exposure	Indoor use.	
	Room size	58 m3
	Temperature	25 °C
	Ventilation rate per hour	0,5
	Covers use under typical household ventilation.	
	Release duration	42 sec
	Mass generation rate	0,78 g/sec
	Airborne fraction	1,0
	Weight fraction non-volatile	1,0
	Density non-volatile	1,8 g/cm³
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Ensure spraying away from persons.
2.3 Contributing scenario controlling consumer exposure for: PC4: Antifreezing agent		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
Frequency and duration of use	Exposure duration	< 15 min
Human factors not influenced by risk management	Exposed skin areas	Two hands 960 cm²
Other given operational conditions affecting consumers exposure	Indoor use.	
	Temperature	25 °C

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC SpERC 8.14b.v1 has been used to evaluate the exposure for the environment

Consumers

ConsExpo 4.1
ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
---	Spraying	Consumer-inhalative, long-term - local and systemic.	0,0006mg/m³	---
---	Spraying	consumer dermal, long term - systemic	0,5mg/kg bw/day	---
---	Spraying	consumer oral, long term - systemic	0,005mg/kg bw/day	---
---	cleaning	consumer dermal, long term - systemic	4,46mg/kg bw/day	---
---	---	Worker - inhalative, long-term - local and systemic.	1,93mg/m³	0,28
---	---	Worker - dermal, long-term - systemic	4,11mg/kg bw/day	0,08

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

1. Short title of Exposure Scenario 25: Use as water treatment chemicals		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure 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 PROC13: Treatment of articles by dipping and pouring	
Environmental Release Categories	ERC3: Formulation in materials	
Activity	Covers the use of the substance for the treatment of water at industrial facilities in open and closed systems	
2.1 Contributing scenario controlling environmental exposure for: ERC3		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,00003
	Maximum daily site tonnage (kg/day):	100 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	5 %
	initial release prior to RMM	
	Emission or Release Factor: Water	95 %
	initial release prior to RMM	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM	Regional only
Technical conditions and measures at process level	Air	No air emission controls required; required removal

(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		efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC8b, PROC13)
	Exposed skin areas	Two hands 960 cm² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC13)	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 3.22a.v1 has been used to evaluate the exposure for the environment

Workers

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-	0,03mg/m3	0,0007

		term - local and systemic.		
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC8b	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4, PROC8b	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m³	0,74

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 26: Use in Oil and Gas field drilling and production operations		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure 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	
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles	
Activity	Oil field well drilling and production operations (including drilling muds and well cleaning) including material transfers, on-site formulation, well head operations, shaker room activities and related maintenance.	
2.1 Contributing scenario controlling environmental exposure for: ERC4		
No exposure assessment presented for the environment.		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	< 0,5 kPa
	standard temperature and pressure	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Assumes use at not more than 20℃ above ambient temp erature, unless stated differently.	
Technical conditions and measures to control dispersion from source towards the worker	Use drum pumps or carefully pour from container.(PROC8b)	
	Operation of solids filtering equipment Elevated temperature	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC4)
	Cleaning of solids filtering equipment	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8a)
	Treatment and disposal of filtered solids	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance.(PROC8a)

	Storage	Store substance within a closed system.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Filling / preparation of equipment from drums or containers	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC8b)
	Drilling mud (re-)formulation	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC3)
	Drill floor operations	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC4)
	Cleaning of solids filtering equipment	Wear suitable gloves tested to EN374.(PROC8a)
	Treatment and disposal of filtered solids	Wear suitable gloves tested to EN374.(PROC3)
	Process sampling	Wear suitable gloves tested to EN374.(PROC3)
	Pouring from small containers	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC8a)
	Equipment cleaning and maintenance	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC8a)
	General exposures (open systems)	Wear suitable gloves tested to EN374.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Environment
No exposure assessment presented for the environment.
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 27: Use as a process chemical		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure 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 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) PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles	
2.1 Contributing scenario controlling environmental exposure for: ERC4		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,015
	Maximum daily site tonnage (kg/day):	50000 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	2 %
	initial release prior to RMM	
	Emission or Release Factor: Water	0 %
	initial release prior to RMM	

	Emission or Release Factor: Soil	0,001 %
	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14)
	Exposed skin areas	Two hands 960 cm² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC5, PROC13)	
	If no LEV: Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 4.21a.v1 has been used to evaluate the exposure for the environment

Workers

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2, PROC5, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC5, PROC8b, PROC9, PROC14, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m³	0,74
PROC14	---	Worker - dermal, long-term - systemic	3,43mg/kg bw/day	0,03

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

1. Short title of Exposure Scenario 28: Other consumer uses	
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC28: Perfumes, fragrances PC39: Cosmetics, personal care products
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems
Activity	Consumer uses e.g. as a carrier in cosmetics/personal care products, perfumes and fragrances. Note: For cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation.

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

No exposure assessment presented for the environment.

2.2 Contributing scenario controlling consumer exposure for: PC28, PC39

Consumer uses e.g. as a carrier in cosmetics/personal care products, perfumes and fragrances. Note: For cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

No exposure assessment presented for human health

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

No specific advice available

1. Short title of Exposure Scenario 29: Polymer production use in foams, in coatings, in adhesives, in sealants.	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure 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 PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying 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) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC6c: Industrial use of monomers for manufacture of thermoplastics

2.1 Contributing scenario controlling environmental exposure for: ERC6c		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,015
	Maximum daily site tonnage (kg/day):	50000 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor:: 10
	Other data. Other information	Local marine water dilution factor:: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,2 %
	initial release prior to RMM	
	Emission or Release	1 %

	Factor: Water	
	initial release prior to RMM	
	Emission or Release Factor: Soil	0,01 %
	initial release prior to RMM Regional only	
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	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
Amount used		0,6 L/min (PROC7)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC7)
	Exposure duration per day	< 6 h(Critical for: PROC7)
	Frequency of use	< 240 days/year(except PROC7)
	Frequency of use	4 - 5 days/week(Critical for: PROC7)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm² (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm² (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14)
	Exposed skin areas	Whole body (PROC7)
	Exposed skin areas	Two hands 960 cm² (PROC8a, PROC10)
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes activities are at ambient temperature.Room size	1000 m3(PROC7)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
	Provide extraction ventilation at points where emissions occur. (Efficiency: 50 %)(PROC7)	
Organisational measures to	Ensure that the task is being carried out outside the breathing zone of a worker	

prevent /limit releases, dispersion and exposure	(distance head-product greater than 1m). Ensure that the task is not carried out overhead. Clean equipment and the work area every day. Ensure control measures are regularly inspected and maintained.(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)
	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC5)
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC7, PROC10, PROC13)
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC7)

3. Exposure estimation and reference to its source

Environment

Used ECETOC TRA model. ESVOC spERC 4.20 v1 has been used to evaluate the exposure for the environment

Workers

PROC7 StoffenManager (inhalation exposure)

PROC7 RISKOFDERM.

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15 ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2, PROC5, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC5, PROC8b, PROC9, PROC14, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC7	---	Worker - inhalative, long-	9,79mg/m³	0,28

		term - local and systemic.		
PROC7	---	Worker - dermal, long-term - systemic	54,6mg/m3	0,52
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m³	0,74
PROC10	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03
PROC14	---	Worker - dermal, long-term - systemic	3,43mg/kg bw/day	0,03

The exposure estimate represents the 75th percentile of the exposure distibution. PROC7

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

Environment
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.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
For scaling see: http://www.ecetoc.org/tra with exception for PROC7
Please note that modified version has been used (see exposure estimates).
Scaling for PROC7 (dermal) http://www.tno.nl and search for "riskofderm"
Scaling for PROC7 (inhalation) https://www.stoffenmanager.nl/default.aspx

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

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