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

1.1. Produktidentifikator

Chemischer Name : Terpentin .

* Art der Produktes : UVCB-Substanz .

Reach Registrierungnummer : 01-2119553060-53

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 und Zubereitungen, welche die Kriterien für eine der folgenden in Anhang I der Verordnung (EG) Nr. 1272/20083 aufgeführten Gefahrenklassen oder -kategorien erfüllen: (a) Gefahrenklassen 2.1-2.4, 2.6, 2.7, 2.8 Typen A und B, 2.9, 2.10, 2.12, 2.13 Kategorien 1 und 2, 2.14 Kategorien 1 und 2, 2.15 Typen A-F, (b) Gefahrenklassen 3.1 - 3.6, 3.7 infolge Beeinträchtigung der Sexualfunktion und Fruchtbarkeit sowie der Entwicklung, 3.8 ausgenommen narkotisierende Wirkungen, 3.9 und 3.10, (c) Gefahrenklasse 4.1, (d) Gefahrenklasse 5.1).
Nicht für die Verwendung in Aerosolpackungen für Unterhaltungs- und Dekorationszwecke (gemäß Anhang XVII der Verordnung (EG) Nr. 1907/2006) (40. Stoffe, die als entzündbare Gase der Kategorien 1 oder 2, als entzündbare Flüssigkeiten der Kategorien 1, 2 oder 3, als entzündbare Feststoffe der Kategorie 1 oder 2, als Stoffe und Gemische, die in Berührung mit Wasser entzündbare Gase entwickeln, der Kategorien 1, 2 oder 3, als pyrophore Flüssigkeiten der Kategorie 1 oder als pyrophore Feststoffe der Kategorie 1 eingestuft wurden, und zwar unabhängig davon, ob sie in Anhang VI Teil 3 dieser Verordnung aufgeführt sind).

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 Verordnung (EG) Nr. 1272/2008

Entzündbare Flüssigkeiten - Kategorie 3 - Achtung (Flam. Liq. 3; H226)
Akute Toxizität, oral - Kategorie 4 - Achtung (Acute Tox. 4, oral; H302)
Aspirationsgefahr - Kategorie 1 - Gefahr (Asp. Tox. 1; H304)
Akute Toxizität, dermal - Kategorie 4 - Achtung (Acute Tox. 4, dermal; H312)
Reizung der Haut - Kategorie 2 - Achtung (Skin Irrit. 2; H315)
Sensibilisierung der Haut - Kategorie 1 - Achtung (Skin Sens. 1; H317)

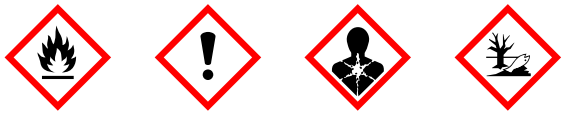
ABSCHNITT 2. Mögliche Gefahren (Fortsetzung)

Augenreizung - Kategorie 2 - Achtung (Eye Irrit. 2; H319)
Akute Toxizität, inhalativ - Kategorie 4 - Achtung (Acute Tox. 4, inhalation; H332)
Gewässergefährdend - chronisch gewässergefährdend - Kategorie 2 (Aquatic Chronic 2; H411)

2.2. Kennzeichnungselemente

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

- Gefährliches Bestandteil(en) : Terpentin
- Gefahren Piktogramm(e)



- Signalwort : Gefahr
- Gefahrenhinweise : H226 - Flüssigkeit und Dampf entzündbar. H302 - Gesundheitsschädlich bei Verschlucken. H304 - Kann bei Verschlucken und Eindringen in die Atemwege tödlich sein. H312 - Gesundheitsschädlich bei Hautkontakt. H315 - Verursacht Hautreizungen. H317 - Kann allergische Hautreaktionen verursachen. H319 - Verursacht schwere Augenreizung. H332 - Gesundheitsschädlich bei Einatmen. H411 - Giftig für Wasserorganismen, Langzeitwirkung.
- Sicherheitshinweise
  - Prävention : P260 - Staub/Rauch/Gas/Nebel/Dampf/Aerosol nicht einatmen. P280 - Schutzhandschuhe/Schutzkleidung/Augenschutz/Gesichtsschutz tragen.
  - Reaktion : P301+P310+P331 - BEI VERSCHLUCKEN: Sofort GIFTINFORMATIONSZENTRUM/Arzt/…/anrufen. KEIN Erbrechen herbeiführen. P302+P352 - BEI KONTAKT MIT DER HAUT : Mit viel Wasser und Seife waschen. P333+P313 - Bei Hautreizung oder -ausschlag: Ärztlichen Rat einholen/ärztliche Hilfe hinzuziehen.
  - Hinweise zur Entsorgung : P501 - Diesen Produkt und seinen Behälter der Problemabfallentsorgung zuführen.

2.3. Sonstige Gefahren

* Physikalishe/chemische Gefahren : Der Dampf vermischt sich gut mit Luft.
Kann Peroxyde bilden.
Kann elektrostatische Entladungen erzeugen.

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

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

Gefahren für die Sicherheit : Beim Flammpunkt oder darüber, können vorhandene Dämpfe im Freien brennen oder in geschlossenen Behältern explodieren, wenn sie mit Luft vermischt, oder mit einer Zündquelle in Berührung gebracht werden.

ABSCHNITT 3. Zusammensetzung/Angaben zu Bestandteilen

3.2. Gemische

	Name Komponent(en)		Gew. %	CAS nr	EINECS nr	Index nr	Reach nr	EINSTUFUNG
*	Terpentin	:	> 99 %	8006-64-2	232-350-7	650-002-00-6	01-2119553060-53	Flam. Liq. 3; H226 Acute Tox. 4 (oral); H302 Asp. Tox. 1; H304 Acute Tox. 4 (skin); H312 Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 Acute Tox. 4 (inhal); H332 Aquatic Chronic 2; H411

ABSCHNITT 3. Zusammensetzung/Angaben zu Bestandteilen (Fortsetzung)

*

Der vollständige Text von die (EU)H-Hinweise is im Abschnitt 16.
Meldepflichtig(e) gefährlich(e) Bestandteil(e) die in UVCB- und/oder multi-constituent Substanzen enthalten sind und die Einstufungskriterien und/oder eine Expositionsgrenze erfüllen Terpentin

ABSCHNITT 4. Erste-Hilfe-Maßnahmen

4.1. Beschreibung der Erste-Hilfe-Maßnahmen

Allgemein : Beim Zweifel oder andauernden Symptomen, immer 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.
Patient sofort nach Krankenhaus brengen.

- Hautkontakt : Verunreinigte Kleidung ablegen.
Haut sofort 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.
Während der Transport; Augen fortwährend ausspülen oder tröpfeln.

* - Verschlucken : KEIN ERBRECHEN HERBEIFÜHREN. Der Mund spülen mit Wasser.
Sofort GIFTINFORMATIONSZENTRUM oder Arzt anrufen.

4.2. Wichtigste akute oder verzögert auftretende Symptome und Wirkungen

Siehe Abschnitt 11.

4.3. Hinweise auf ärztliche Soforthilfe und Spezialbehandlung

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

ABSCHNITT 5. Maßnahmen zur Brandbekämpfung

5.1. Löschmittel

Löschmittel

- Geeignete : Löschpulver , 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

ABSCHNITT 6. Maßnahmen bei unbeabsichtigter Freisetzung (Fortsetzung)

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.
Ev. letzte Rückstände mit Seifenlösung oder Wasser weggespülen.
Spülwasser auffangen. .

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 !
Einatmung der Dämpfe und Berührung mit Augen, Haut und Kleider vermeiden.
Empfohlene Personenschutzausrüstung tragen. (Siehe Abschnitt 8)
Bei der Arbeit nicht essen, trinken oder rauchen.
Waschen Sie Ihre Hände, vorher und nachher, das Sie mit dem Produkt bearbeitet haben.
Notvorrichtungen für Augenspülungen und Duschen für Erste-Hilfe- Maßnahmen bei der Behandlung von Erfrierungsverletzungen sollten dort, wo eine potentielle Exposition eintreten kann, in unmittelbarer Nähe verfügbar sein.

7.2. Bedingungen zur sicheren Lagerung unter Berücksichtigung von Unverträglichkeiten

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

* Feuer- und Explosionsprävention : Alle Zündquelle (offenes Feuer, Funken, rauchen, ...) entfernen.
Bei einer Temperatur gleich an oder höher als das Flammpunkt, kann die Mischung Luft-Produkt eine leicht entzündliche und explosive Mischung werden.
Keine Druckluft verwenden zum Bewegen oder Transferieren des Inhaltes von Lagertanks/ Transportfässern der diesen Material enthalten.
Besondere Vorsicht walten lassen, um statische Entladung zu vermeiden.
Explosionssichere Ausrüstung benutzen.
Ausreichend erden.

Geeignetes Verpakkungsmaterial : Beschichteter Stahl .

* Nicht geeignetes Verpakkungsmaterial : Gummi , Synthetische stoffen .

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 : Terpentin : Grenzwert (BE) : 20 ppm (2014)

DNELs :
- Terpentin : Arbeiter, akut - lokale Effekte, dermal : 161 µg/cm²
- Terpentin : Arbeiter, akut - systemische Effekte, dermal : 25 mg/kg Kg/Tag
- Terpentin : Arbeiter, langzeit - systemische Effekte, einatmen : 5,98 mg/m²
- Terpentin : Verbraucher, akut - lokale Effekte, dermal : 81 µg/cm³
- Terpentin : Verbraucher, langzeit - systemische Effekte, einatmen : 1,06 mg/m²
- Terpentin : Verbraucher, langzeit - systemische Effekte, oral : 0,31 mg/kg Kg/Tag

PNECs :
- Terpentin : Süßwasser : 8,8 µg/l
- Terpentin : Salzwasser : 0,88 µg/l
- Terpentin : Süßwassersediment : 2,27 mg/kg
- Terpentin : Salzwassersediment : 0,227 mg/kg
- Terpentin : Boden : 0,45 mg/kg
- Terpentin : Wasserreinigungsinstallation : 6,6 mg/l
- Terpentin : Oral : 1,35 mg/kg

8.2. Begrenzung und Überwachung der Exposition

Technische Massnahmen : Ventilation , Lokale Absaugung .

Persönliche Schutzmittel

- 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 : Nitrilgummi
- Dicke : Es liegen keine Angaben vor
- Durchbruchszeit : Es liegen keine Angaben vor .

- 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)	: Flüssigkeit .
	Aussicht/Farbe	: Klar , Farblos .
	Geruch	: Harzigen Geruch .
	Geruchsschwelle	: Es liegen keine Angaben vor.
	pH-Wert	: Nicht anwendbar.
*	Schmelz-/Gefrierpunkt	: -60 °C
*	Siedepunkt/Siedestrecke (1013 hPa)	: 154 - 170 °C
*	Flammpunkt	: 34 °C
	Verdampfungsgeschwindigkeit	: Es liegen keine Angaben vor.
	Explosionsgrenzen in Luft	: 0,8 - 6,0 Vol.%
*	Dampfdruck (20°C)	: 5,2 kPa
	Dampfdichte	: 4,69
*	Relativer Dampfdichte (Luft=1)	: Es liegen keine Angaben vor.
*	Relative Dichte der gesättigten Mischung Dampf/Luft (Luft=1)	: 1,02

ABSCHNITT 9. Physikalische und chemische Eigenschaften (Fortsetzung)

*	Die relative Dichte (Wasser=1)	: 0,9
*	Schüttdichte	: 0,600 g/ ml
*	Löslichkeit in Wasser	: 0,03 g/ 100ml
*	Log P Oktanol/Wasser (20°C)	: 4,49
*	Zuendtemperatur	: 270 °C
	Minimum Entzündungsenergie	: Es liegen keine Angaben vor.
	Zersetzungstemperatur	: Es liegen keine Angaben vor.
*	Viskosität (25°C)	: 1,5 mPas (Dynamisch)
	Explosive Eigenschaften	: Keine chemischen Gruppen mit explosive Eigenschaften zugeordnet .
	Oxidationseigenschaften	: Keine chemischen Gruppen mit oxidierenden Eigenschaften zugeordnet .

9.2. Sonstige Angaben

*	Spezifishe Leitung	: 22 pS/m
*	% Flüchtige Bestandteile (in Gewicht)	: > 99

ABSCHNITT 10. Stabilität und Reaktivität

10.1. Reaktivität

Reaktivität : Reagiert heftig mit Oxidationsmitteln.

10.2. Chemische Stabilität

Stabilität : Da sich dieses Öl beim Aufbewahren, Ozonisieren und Verharzen der Familie verschlechtert, sollte es nicht lange vor der Verwendung aufbewahrt werden. .

10.3. Möglichkeit gefährlicher Reaktionen

* Gefährliche Reaktionen : Reagiert heftig mit: . Chlor Calciumhypochlorit , Chromsäure , Zinn II chlorid , Hexachloromelamin und trichloromelamin .

10.4. Zu vermeidenden Bedingungen

Zu vermeidenden Zuständen : Hochtemperatur .

10.5. Unverträgliche Materialien

Nicht in Verbindung bringen mit : Oxidationsmittel , Calciumhypochlorit , Chlor , Chromsäure , Zinn II chlorid , Hexachloromelamin und trichloromelamin .

10.6. Gefährliche Zersetzungsprodukte

Gefährliche Zersetzungsprodukte : Kohlstoffoxide .

ABSCHNITT 11. Toxikologische Angaben

11.1. Angaben zu toxikologischen Wirkungen

Akute Toxizität

* - Einatmen : Gesundheitsschädlich bei Einatmen.
Einatmen der Dämpfe/Nebel kann Atemnot verursachen. (Lungeödem.)
Das Produkt kann auf zentral Nervensystem einwirken.
Symptome umfassen: Schmerzlicher Kehle , Hust , Atemnot , Kopfschmerzen , Schwindligkeit , Übelkeit , Schmerzhafte Brust , Benommenheit .
• Terpentin : LC50 (Ratte, Inhalation, 4 St) : 13,7 mg/l (Luft; OECD-Leitsatz 403)

* - Hautkontakt : Gesundheitsschädlich bei Hautkontakt. Das Produkt wird aufgenommen durch die Haut.
Symptome umfassen: Rötung , Schmerzen .
• Terpentin : LD50 (Kaninchen, Dermal) : > 2000 mg/kg (OECD-Leitsatz 402)

ABSCHNITT 11. Toxikologische Angaben (Fortsetzung)

*	- Nahrungsaufnahme	: Gesundheitsschädlich bei Verschlucken. Nach Verschlucken der Flüssigkeit, können einzige Drupfel in Lunge kommen (Aspiration), wass Lungentzündung verursachen kann. Symptome umfassen: Schmerzlicher Kehle , Hust , Bauchschmerzen , Magenschmerzen , Muskelschwachheit , Krämpfe , Benommenheit , Bewustlosigkeit . • Terpentin : LD50 (Ratte, Oral) : > 500 mg/kg (OECD-Leitsatz 423)
*	Atz-/Reizwirkung auf die Haut	: Verursacht Hautreizungen. Beim andauernden und häufigen Kontakt können Überempfindliche Reaktionen entstehen. Intensiver Hautkontakt kann Überempfindliches Ekzem verursachen.
	Schwere Augenschädigung/-reizung	: Verursacht schwere Augenreizung.
*	Aspirationsgefahr	: Kann bei Verschlucken und Eindringen in die Atemwege tödlich sein. Die Symptome von Lungenoedeem offenbaren sich meistens nur nach einigen Stunden und werden verstärkt durch physike Anstrengungen
	Sensibilisierung der Atemwege/Haut	: Kann allergische Hautreaktionen verursachen.
	Karzinogenität	: Nicht als karcinogen klassifiziert .
	Mutagenität	: Nicht als mutagen klassifiziert .
	Reproduktionstoxizität	: Nicht für Reproduktionstoxizität klassifiziert .
	Spezifische Zielorgan-Toxizität - einmaliger Exposition	: Beim Menschen : Nicht für Organtoxizität klassifiziert . Bei Tieren : Keine Effekten bekannt.
	Spezifische Zielorgan-Toxizität - wiederholter Exposition	: Beim Menschen : Nicht für Organtoxizität klassifiziert . Bei Tieren : Kann Schäden an Nieren und Blase hervorrufen.

ABSCHNITT 12. Umweltbezogene Angaben

12.1. Toxizität

*	Ekotoxizität	: • Terpentin : LC50 (Fisch, 96 St) : 29 mg/l (Danio rerio) (OECD-Leitsatz 203) • Terpentin : CE50 (Alge, 72 St) : 17,1 mg/l (Desmodesmus subspicatus) (OECD-Leitsatz 201) • Terpentin : CE50 (Daphnia magna, 48 St) : 8,8 mg/l (OECD-Leitsatz 202) • Terpentin : NOEC (Alge) : 10 mg/ml

12.2. Persistenz und Abbaubarkeit

	Persistenz und Abbaubarkeit	: • Terpentin : Persistenz und Abbaubarkeit : Leicht biologisch abbaubar .

12.3. Bioakkumulationspotenzial

	Bioakkumulation	: • Terpentin : Bioakkumulation : Bioakkumulation ist möglich.

12.4. Mobilität im Boden

*	Mobilität	: • Terpentin : Mobilität : Geringe Mobilität in den meisten Böden.

12.5. Ergebnisse der PBT- und vPvB-Beurteilung

	Ergebnisse	: • Terpentin : 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 : 1299

14.2. Ordnungsgemäße UN-Versandbezeichnung

*	ADR/RID-Name	: UN 1299 Terpentin, 3, III, (D/E)
	ADN-Name	: UN 1299 Terpentin , 3, III
	IMDG-Name	: UN 1299 Turpentine , 3, III, (34°C), MARINE POLLUTANT
*	IATA-Name	: UN 1299 Turpentine , 3, III

14.3. Transportgefahrenklassen

Klasse : 3

14.4. Verpackungsgruppe

Verpackungstyp : III

14.5. Umweltgefahren

Umweltgefährlich : Ja

Meeresschadstoff : Ja

14.6. Besondere Vorsichtsmaßnahmen für den Verwender

Gefahrandeutung : 30

Gefahrsymbol(e) : 3

EmS-N° : F-E , S-E

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

Schiffstyp : Es liegen keine Angaben vor.

Verschmutzungskategorie : Es liegen keine Angaben vor.

ABSCHNITT 15. Rechtsvorschriften

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

NFPA-N° : 1-3-0

Einschlägigen EU Vorschrift(en) : Richtlinie 96/82/EG des Rates vom 9. Dezember 1996 zur Beherrschung der Gefahren bei schweren Unfällen mit gefährlichen Stoffen
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

ABSCHNITT 15. Rechtsvorschriften (Fortsetzung)

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
Entscheidung 2001/118/EG der Kommission vom 16. Januar 2001 zur Änderung der Entscheidung 2000/532/EG über ein Abfallverzeichnis
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
Verordnung (EG) Nr. 1272/2008 des Europäischen Parlaments und des Rates vom 16. Dezember 2008 über die Einstufung, Kennzeichnung und Verpackung von Stoffen und Gemischen, zur Änderung und Aufhebung der Richtlinien 67/548/EWG und 1999/45/EG und zur Änderung der Verordnung (EG) Nr. 1907/2006
Verordnung (EU) Nr. 453/2010 der Kommission vom 20. Mai 2010 zur Änderung der Verordnung (EG) Nr. 1907/2006 des Europäischen Parlaments und des Rates zur Registrierung, Bewertung, Zulassung und Beschränkung chemischer Stoffe (Reach)

* Nationalen Vorschriften

- Belgien

* - Deutschland : WGK : Es liegen keine Angaben vor.

* - Niederlande : Wasserbeschwerlichkeit : A
Sanierungsanspannung : 3

15.2. Stoffsicherheitsbeurteilung

* Eine Stoffsicherheitsbeurteilung wurde aus der Produkt durchgeführt.

ABSCHNITT 16. Sonstige Angaben

* Dieses Sicherheitsdatenblatt ist aufgestellt worden gemäss der Verordnung (EG) Nr. 1907/2006 und den Aktuellen Ausschreibungen.

Dieses Sicherheitsblatt ist ausschliesslich bestimmt für industriel/professionel Gebrauch.

* Änderung hinsichtlich voriger Revision.

* Änderungen : Allgemeine Revision .

* 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

(EU)H-Hinweis(e) : H226 - Flüssigkeit und Dampf entzündbar.
H302 - Gesundheitsschädlich bei Verschlucken.
H304 - Kann bei Verschlucken und Eindringen in die Atemwege tödlich sein.
H312 - Gesundheitsschädlich bei Hautkontakt.
H315 - Verursacht Hautreizungen.
H317 - Kann allergische Hautreaktionen verursachen.
H319 - Verursacht schwere Augenreizung.
H332 - Gesundheitsschädlich bei Einatmen.
H411 - Giftig für Wasserorganismen, Langzeitwirkung.

* Klassifizierungsverfahren : Flam Liq. 3; H226 - Basierend auf Versuchsdaten
Acute Tox. 4, oral; H302 - Berechnungsmethode
Asp. Tox. 1; H304 - Additivitätmethode

ABSCHNITT 16. Sonstige Angaben (Fortsetzung)

Acute Tox. 4, dermal; H312 - Berechnungsmethode
Skin Irrit. 2; H315 - Additivitätmethode
Skin Senz. 1; H317 - Additivitätmethode
Eye Irrit. 2; H319 - Additivitätmethode
Aquatic Chronic 2; H411 - Berechnungsmethode

* Liste der Abkürzungen und Akronyme : Acute Tox. 4, oral : Akute Toxizität, oral - Kategorie 4
Acute Tox. 4, dermal : Akute Toxizität, dermal - Kategorie 4
Acute Tox. 4, inhalation : Akute Toxizität, inhalativ - 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
Aquatic Chronic 2 : Gewässergefährdend - chronisch gewässergefährdend - Kategorie 2
Asp. Tox. 1 : Aspirationsgefahr - Kategorie 1
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
Eye Irrit. 2 : Augenreizung - Kategorie 2
Flam. Liq. 3 : Entzündbare Flüssigkeiten - Kategorie 3
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
M-Faktor : ein Multiplikationsfaktor die wird auf die Konzentration eines als akut gewässergefährdend (Aquatic Acute 1; H400 oder Aquatic Chronic 1; H410) eingestuften Stoffes angewandt und wird verwendet, damit anhand der Summierungsmethode die Einstufung eines Gemisches, in dem der Stoff vorhanden ist, vorgenommen werden kann
NFPA (National Fire Protection Association) oder Gefahrendiamant
NOEC (No Observed Effect Concentration) : Konzentration ohne beobachtbare schädliche Wirkung
NVIC : National Vergiftungen Information Zentrum
OECD (Organisation for Economic Cooperation and Development) : Organisation für wirtschaftliche Zusammenarbeit und Entwicklung
PBT : persistente, bioakkumulierbar und toxisch
PNEC (Predicted No Effect Concentration) : Konzentration unter die Exposition gegenüber
einem Stoff ohne Wirkung
RCP (Reciproke Calculation Procedure)
REACH : Registrierung, Bewertung, Zulassung und Beschränkung von Chemikalien
RID (Règlement concernant le transport International ferroviaire des marchandises Dangereuses) : internationalen Beförderung gefährlicher Güter im Schienenverkehr
SCL (Specific Concentration Limits) : spezifische Konzentrationsgrenzwerte
Skin Irrit. 2 : Reizung der Haut - Kategorie 2
SZW-Liste : Liste krebserzeugender Substanzen und Vorgänge als Zielen in Artikel 4.11 des Erlass über Arbeitsbedingungen
SZW-Liste : Nicht-einschräkende Liste gifter Reproduktionssubstanzen auf die Aufzeichnungspflicht zusätzlich als auf Artikel 4.2a abgezielt Anwendung findet,

ABSCHNITT 16. Sonstige Angaben (Fortsetzung)

zweter Absatz des Erlass über Arbeitsbedingungen
GGM (Gewichteter Gleitender Mittelwert) : die durchschnittliche Exposition über einen bestimmten Zeitraum
UVCB (substance of Unknown or Variable composition, Complex reaction product or Biological material) : Stoffe mit unbekannter oder variabler Zusammensetzung, komplexe Reaktionsprodukt oder biologisches Material
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, 8b, 15	1	NA	ES12578
2	Use as an intermediate	3	8, 9	NA	1, 2, 3, 4, 8b, 15	6a	NA	ES12592
3	Distribution of substance	3	NA	NA	1, 3, 4, 5, 8a, 8b, 9, 15	2	NA	ES12612
4	Formulation & (re)packing of substances and mixtures	3	NA	NA	1, 2, 3, 4, 5, 8b, 15	2	NA	ES12604
5	Formulation of coatings and adhesives	3	10	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 15	2	NA	ES12718
6	Use in coatings	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 10, 13, 15	4	NA	ES12722
7	Use in coatings	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15, 19	8a, 8d	NA	ES12859
8	Formulation of adhesives and sealants	3	10	NA	1, 2, 3, 4, 5, 8b, 9, 14, 15	2	NA	ES12884
9	Use in adhesives and sealants	3	NA	NA	1, 2, 3, 4, 5, 7, 8b, 10, 13, 15	5	NA	ES12886
10	Use in adhesives and sealants	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15	8c, 8f	NA	ES12890
11	Use in coatings	21	NA	9a, 9b, 9c, 18	NA	8a, 8d	NA	ES12898
12	Use in adhesives and sealants	21	NA	1	NA	8c, 8f	NA	ES12934
13	Formulation of solvents	3	10	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15	2	NA	ES12869
14	Use as a solvent	3	NA	NA	1, 2, 3, 4, 5, 7, 8b, 10, 13, 15	4, 7	NA	ES12871
15	Use as a solvent	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15	8a, 8d, 9a, 9b	NA	ES12880

16	Use as a solvent	21	NA	15	NA	8a, 8d, 9a, 9b	NA	ES12930
17	Use as a chemical stripper	3	NA	NA	8a, 8b, 21, 24	4	NA	ES12865
18	Use as a chemical stripper	22	NA	NA	8a, 8b, 21, 24	8a, 8d	NA	ES12867
19	Use as a chemical stripper	21	NA	9a	NA	8a, 8d	NA	ES12921
20	Use in the compounding of fragrances	3	10	NA	1, 3, 5, 8a, 8b, 9, 15	2	NA	ES12624
21	Formulation of fragrances	3	10	NA	1, 2, 3, 5, 8a, 8b, 9, 13, 14, 15	2	NA	ES12627
22	Use of fragrances	3	NA	NA	1, 2, 4, 5, 7, 8a, 8b, 10, 15, 19	4	NA	ES12676
23	Use of fragrances	22	NA	NA	1, 2, 4, 5, 8a, 8b, 10, 11, 15, 19	8a, 8d, 10b, 11b	NA	ES12714
24	Use of fragrances	21	NA	1, 3, 8, 9a, 9b, 9c, 13, 18, 28, 31, 34, 35, 39	NA	8a, 8d, 10b, 11b	0, 31, 34, 35	ES12896

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: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises 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 the substance or use as a process chemical or extraction 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		
Substance is complex UVCB, Non-hydrophobic. , Readily biodegradable.		
Amount used	Amounts used in the EU (tonnes/year)	5500
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	5500
	Fraction of regional tonnage used locally:	1
	Maximum daily site tonnage (kg/day):	15068
	Annual site tonnage	5500
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	365

	Emission or Release Factor: Air	0,05
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,06
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,0001
	initial release prior to RMM, .	
	Emission or Release Factor: Air	0,05
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Water	4,8 .10-6
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Soil	1,0 .10-6
	based on initial default values with subsequent RMM, .	
	Indoor use Process with efficient use of raw materials. Volatile compounds subject to air emission controls. Application of the STP sludge on agricultural soil	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
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		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Biological treatment (Water ERC1)
	Degradation efficiency	76 % (Water ERC1)
	Type of Sewage Treatment Plant	Biological treatment (Water, Sludge Treatment ERC1)
	Degradation efficiency	60 % (Water, Sludge Treatment ERC1)

	Sludge Treatment	Sludge treatment e.g. thermal sludge reduction (Water, Sludge Treatment ERC1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Hazardous waste incineration (Air, Water ERC1)
	Disposal methods	(Efficiency: > 90 %) (Air, Water ERC1)
	Waste treatment	Hazardous waste incineration (Soil ERC1)
	Disposal methods	(Efficiency: > 99 %) (Soil ERC1)
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8b, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	Batch process Continuous process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure containment of the emission source Avoid carrying out operation for more than 15 minutes.(PROC2, PROC3)
	Batch process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC4)
	Bulk transfers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Product sampling	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Drum and small package filling Semi-bulk packaging	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Disposal of wastes Equipment cleaning and maintenance	Limit the substance content in the product to 1 %. Drain down system prior to equipment break-in or maintenance. Avoid carrying out operation for more than 15 minutes. Ensure operation is undertaken outdoors.(PROC8b)
	Disposal of wastes	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors.(PROC3, PROC4)
	Laboratory activities	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Batch process With sample collection	Wear protective gloves. Use suitable eye protection.(PROC4)
	Bulk transfers	Use suitable eye protection.(PROC8b)
	Product sampling	Avoid carrying out operation for more than 15 minutes. Use suitable eye protection. Wear chemically resistant gloves.(PROC8b)
	Drum and small package filling Semi-bulk packaging	Wear chemically resistant gloves. Use suitable eye protection.

3. Exposure estimation and reference to its source

Environment

ERC1: Environmental exposure estimation is based on Ecetoc TRA model v2.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC1	---	---	Msafe	210241kg/day	---

Workers

Worker exposure has been evaluated using ECETOC TRA V2.0. Advanced REACH Tool (ART model).

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 2: Use as an intermediate	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC15: Use as laboratory reagent
Environmental Release Categories	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)
Activity	Chemical synthesis.

2.1 Contributing scenario controlling environmental exposure for: ERC6a

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.

Amount used	Amounts used in the EU (tonnes/year)	5200
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	5200
	Fraction of regional tonnage used locally:	1
	Maximum daily site tonnage (kg/day):	14247
	Annual site tonnage	5200
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	365

	Emission or Release Factor: Air	0,05
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,02
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,001
	initial release prior to RMM, .	
	Emission or Release Factor: Air	0,05
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Water	1,92 .10-5
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Soil	1,0 .10-5
	based on initial default values with subsequent RMM, .	
	Indoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Biological treatment
	Degradation efficiency	76 %
	Type of Sewage Treatment Plant	Biological treatment (Sludge Treatment ERC6a)
	Degradation efficiency	60 % (Sludge Treatment ERC6a)
	Sludge Treatment	Sludge treatment e.g. thermal sludge reduction (Sludge Treatment ERC6a)

Conditions and measures related to external treatment of waste for disposal	Waste treatment	Hazardous waste incineration (ERC6a)
	Disposal methods	(Efficiency: > 90 %) (ERC6a)
	Waste treatment	Hazardous waste incineration (ERC6a)
	Disposal methods	(Efficiency: > 99 %) (ERC6a)
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8b, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	Batch process Continuous process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure containment of the emission source Avoid carrying out operation for more than 15 minutes.(PROC2, PROC3)
	Batch process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC4)
	Bulk transfers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Product sampling	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15

		minutes.(PROC8b)
	Disposal of wastes Equipment cleaning and maintenance	Limit the substance content in the product to 1 %. Drain down system prior to equipment break-in or maintenance. Avoid carrying out operation for more than 15 minutes. Ensure operation is undertaken outdoors.(PROC8b)
	Disposal of wastes	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors.(PROC3, PROC4)
	Laboratory activities	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Batch process With sample collection	Wear protective gloves. Use suitable eye protection.(PROC4)
	Bulk transfers	Use suitable eye protection.(PROC8b)
	Product sampling	Avoid carrying out operation for more than 15 minutes. Use suitable eye protection. Wear chemically resistant gloves.(PROC8b)

3. Exposure estimation and reference to its source

Environment

ERC6a: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC6a	---	---	Msafe	88569kg/day	---
ERC6a	---	Fresh water	exposure estimate	0,000606mg/L	0,0688
ERC6a	---	Fresh water sediment	exposure estimate	0,156mg/kg dry weight (d.w.)	0,0689
ERC6a	---	Marine water	exposure estimate	0,0000593mg/L	0,0673
ERC6a	---	Marine sediment	exposure estimate	0,0153mg/kg dry weight (d.w.)	0,0674
ERC6a	---	Sewage treatment plant (STP)	exposure estimate	0,00523mg/L	0,000792
ERC6a	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708

ERC6a	---	Agricultural soil	exposure estimate	0,0294mg/kg dry weight (d.w.)	0,161
ERC6a	---	Air	exposure estimate	0,198mg/m³	---

Workers

PROC2, PROC3, PROC4, PROC8b, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)
PROC1, PROC2, PROC3, PROC4, PROC8b, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01ppm	0,0947
PROC1, PROC3	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,0215
PROC2, PROC3	---	Worker - inhalative, long-term	4,20ppm	0,702
PROC2	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,0861
PROC4	---	Worker - inhalative, long-term	4,90ppm	0,819
PROC4	---	Worker - dermal, short-term - local	0,50mg/cm2	0,431
PROC8b	---	Worker - inhalative, long-term	0,7ppm	0,663
PROC8b	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,621
PROC15	---	Worker - inhalative, long-term	2,80ppm	0,468
PROC15	---	Worker - dermal, short-term - local	0,025mg/cm2	0,155

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

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: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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) PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC2: Formulation of preparations	
Activity	Transport and Distribution	
2.1 Contributing scenario controlling environmental exposure for: ERC2		
Substance is complex UVCB, Non-hydrophobic. , Readily biodegradable.		
Amount used	Amounts used in the EU (tonnes/year)	800
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	800
	Fraction of regional tonnage used locally:	1
	Maximum daily site tonnage (kg/day):	2192
	Annual site tonnage	800
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational	Continuous release	

conditions affecting environmental exposure	Number of emission days per year	365
	Emission or Release Factor: Air	0,025
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,02
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,0001
	initial release prior to RMM, .	
	Emission or Release Factor: Air	0,025
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Water	1,92 .10-5
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Soil	1,0 .10-4
	based on initial default values with subsequent RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
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		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Biological treatment
	Degradation efficiency	76 %
	Type of Sewage Treatment Plant	Biological treatment (Sludge Treatment ERC2)
	Degradation efficiency	60 % (Sludge Treatment ERC2)

	Sludge Treatment	Sludge treatment e.g. thermal sludge reduction (Sludge Treatment ERC2)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Hazardous waste incineration (ERC2)
	Disposal methods	(Efficiency: > 90 %) (ERC2)
	Waste treatment	Hazardous waste incineration (ERC2)
	Disposal methods	(Efficiency: > 99 %) (ERC2)
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC1)
	Disposal of wastes	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3, PROC4)
	Process sampling	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC3, PROC8b)
	Mixing operations (open systems)	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC5)
	Transfer from/pouring from containers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8a)
	Bulk transfers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

		Avoid carrying out operation for more than 1 hour.(PROC8b)
	Bulk transfers Closed systems	Clear transfer lines prior to de-coupling. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 1 hour.(PROC8b)
	Bulk transfers Open systems	Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 4 hours.(PROC8b)
	Equipment cleaning and maintenance	Limit the substance content in the product to 5 %. Drain down system prior to equipment break-in or maintenance. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC8b)
	Drum/batch transfers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC8b)
	Disposal of wastes	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes. Limit the substance content in the product to 1 %.(PROC8b)
	Drum and small package filling	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC9)
	Laboratory activities	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Process sampling	Use suitable eye protection and gloves.(PROC3, PROC8b)
	Mixing operations (open systems)	Wear chemically resistant gloves. Use suitable eye protection.(PROC5)
	Transfer from/pouring from containers	Use suitable eye protection. Wear chemically resistant gloves.(PROC8a)
	Bulk transfers	Use suitable eye protection. Wear chemically resistant gloves.(PROC8b)
	Bulk transfers Closed systems	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Bulk transfers Open systems	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Equipment cleaning and	Wear chemically resistant gloves.

maintenance	Use suitable eye protection.(PROC8b)
Drum/batch transfers	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
Drum and small package filling	Wear chemically resistant gloves. Use suitable eye protection.(PROC9)

3. Exposure estimation and reference to its source

Environment

ERC2: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2	---	---	Msafe	99958kg/day	---
ERC2	---	Fresh water	exposure estimate	0,000165mg/L	0,0188
ERC2	---	Fresh water sediment	exposure estimate	0,0427mg/kg dry weight (d.w.)	0,0188
ERC2	---	Marine water	exposure estimate	0,0000152mg/L	0,0173
ERC2	---	Marine sediment	exposure estimate	0,00393mg/kg dry weight (d.w.)	0,0173
ERC2	---	Sewage treatment plant (STP)	exposure estimate	0,000804mg/L	0,000122
ERC2	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC2	---	Agricultural soil	exposure estimate	0,00325mg/kg dry weight (d.w.)	0,0219
ERC2	---	Air	exposure estimate	0,0153	---

Workers

PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,007ppm	0,00663
PROC1, PROC3	---	Worker - dermal, short-	0,0250mg/cm2	0,155

		term - local		
PROC3, PROC4	---	Worker - inhalative, long-term	4,20ppm	0,702
PROC4	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC5, PROC9	---	Worker - inhalative, long-term	2,2ppm	0,368
PROC5, PROC8a, PROC8b, PROC9	---	Worker - dermal, short-term - local	0,0999ppm	0,621
PROC15, PROC8a	---	Worker - inhalative, long-term	2,8ppm	0,468
PROC15	---	Worker - dermal, short-term - local	0,025mg/cm2	0,155
PROC8b	---	Worker - inhalative, long-term	2,0ppm	0,334

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

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: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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) PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities 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

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.

Amount used	Amounts used in the EU (tonnes/year)	800
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	800
	Fraction of regional tonnage used locally:	1
	Maximum daily site tonnage (kg/day):	2192
	Annual site tonnage	800
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational	Continuous release	

conditions affecting environmental exposure	Number of emission days per year	365
	Emission or Release Factor: Air	0,025
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,02
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,0001
	initial release prior to RMM, .	
	Emission or Release Factor: Air	0,025
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Water	1,92 .10-5
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Soil	1,0 .10-4
	based on initial default values with subsequent RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
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		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Biological treatment (Water ERC2)
	Degradation efficiency	76 % (Water ERC2)
	Type of Sewage Treatment Plant	Biological treatment (Water, Sludge Treatment ERC2)
	Degradation efficiency	60 % (Water, Sludge Treatment ERC2)

	Sludge Treatment	Sludge treatment e.g. thermal sludge reduction (Water, Sludge Treatment ERC2)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Hazardous waste incineration (Air, Water ERC2)
	Disposal methods	(Efficiency: > 90 %) (Air, Water ERC2)
	Waste treatment	Hazardous waste incineration (Soil ERC2)
	Disposal methods	(Efficiency: > 99 %) (Soil ERC2)
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	Disposal of wastes	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3, PROC4)
	Mixing operations (open systems)	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC5)
	Bulk transfers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Product sampling	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Drum and small package filling Semi-bulk packaging	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Provide a good standard of general ventilation (not

		less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes. Limit the substance content in the product to 1 %.(PROC8b)
	Disposal of wastes Equipment cleaning and maintenance	Limit the substance content in the product to 1 %. Drain down system prior to equipment break-in or maintenance. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Transfer from/pouring from containers With sample collection Non-dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC8b)
	Laboratory activities	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Mixing operations (open systems)	Wear chemically resistant gloves. Use suitable eye protection.(PROC5)
	Bulk transfers	Use suitable eye protection. Wear chemically resistant gloves.(PROC8b)
	Product sampling	Use suitable eye protection. Wear chemically resistant gloves.(PROC8b)
	Drum and small package filling Semi-bulk packaging	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Transfer from/pouring from containers With sample collection Non-dedicated facility	Use suitable eye protection and gloves.(PROC8b)

3. Exposure estimation and reference to its source

Environment

ERC2: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2	---	---	Msafe	99958kg/day	---
ERC2	---	Fresh water	exposure estimate	0,000165mg/L	0,0188
ERC2	---	Fresh water sediment	exposure estimate	0,0427mg/kg dry weight	0,0188

				(d.w.)	
ERC2	---	Marine water	exposure estimate	0,0000152mg/L	0,0173
ERC2	---	Marine sediment	exposure estimate	0,00393mg/kg dry weight (d.w.)	0,0173
ERC2	---	Sewage treatment plant (STP)	exposure estimate	0,000804mg/L	0,000122
ERC2	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC2	---	Agricultural soil	exposure estimate	0,00325mg/kg dry weight (d.w.)	0,0219
ERC2	---	Air	exposure estimate	0,0153	---

Workers

PROC2, PROC3, PROC4, PROC5, PROC8b, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01ppm	0,0947
PROC1, PROC3	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,155
PROC2, PROC3, PROC4	---	Worker - inhalative, long-term	4,20ppm	0,702
PROC2, PROC4, PROC5, PROC8b	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,621
PROC5	---	Worker - inhalative, long-term	1,1ppm	0,184
PROC8b	---	Worker - inhalative, long-term	5,3ppm	0,886
PROC15	---	Worker - inhalative, long-term	2,8ppm	0,468
PROC15	---	Worker - dermal, short-term - local	0,025mg/cm2	0,155

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 5: Formulation of coatings and adhesives	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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) PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations

2.1 Contributing scenario controlling environmental exposure for: ERC2

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, CEPE spERC 2.1a.v1 has been used to evaluate the exposure for the environment.
, CEPE spERC 2.1b.v1 has been used to evaluate the exposure for the environment.
, CEPE spERC 2.2a. v1 has been used to evaluate the exposure for the environment.
, For more information on spERC from the Coatings & Inks sector, please visit the website: www.cepe.org.

Amount used	Amounts used in the EU (tonnes/year)	780
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	100 (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	Regional use tonnage (tons/year):	90 (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Fraction of regional tonnage used locally:	1 (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	Maximum daily site	444 (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)

	tonnage (kg/day):	
	Maximum daily site tonnage (kg/day):	400 (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Annual site tonnage	100 (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	Annual site tonnage	90 (CEPE 2.1b.v1, CEPE 2.2a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	225
	Emission or Release Factor: Air	0,006 (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	initial release prior to RMM, . (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)	
	Emission or Release Factor: Air	0,004 (CEPE 2.1b.v1)
	initial release prior to RMM, . (CEPE 2.1b.v1)	
	Emission or Release Factor: Air	0,00009 (CEPE 2.1b.v1, CEPE 2.2a.v1)
	initial release prior to RMM, . (CEPE 2.1b.v1, CEPE 2.2a.v1)	
	Emission or Release Factor: Air	0,005 (CEPE 2.1b.v1, CEPE 2.2a.v1)
	initial release prior to RMM, . (CEPE 2.1b.v1, CEPE 2.2a.v1)	
	Emission or Release Factor: Soil	0
	initial release prior to RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
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		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	Degradation efficiency	96,2 % (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE

		2.2a.v1)
	Percentage removed from waste water	98 % (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Degradation efficiency	96,2 % (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Percentage removed from waste water	95 % (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Degradation efficiency	96,2 % (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Percentage removed from waste water	99 % (CEPE 2.1b.v1, CEPE 2.2a.v1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	Continuous process With sample collection	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC2)
	Mixing operations Batch process With sample collection	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or

		extract ventilation.(PROC3)
	Batch process With sample collection	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC3)
	Mixing operations (open systems) Batch process With sample collection	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC4, PROC5)
	Material transfers Non-dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC8a)
	Material transfers Dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC8b)
	Equipment cleaning and maintenance	Drain or remove substance from equipment prior to break-in or maintenance. Limit the substance content in the product to 5 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8a)
	Disposal of wastes	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Limit the substance content in the product to 1 %. Avoid carrying out operation for more than 15 minutes.(PROC8a)
	Drum and small package filling	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC9)
	Laboratory activities	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Material transfers Non-dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC8a)
	Material transfers Dedicated facility	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)

3. Exposure estimation and reference to its source

Environment

CEPE SPERC 2.1a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
CEPE SPERC 2.1a.v1	---	---	Msafe	44317kg/day	---
CEPE SPERC 2.1a.v1	---	Fresh water	exposure estimate	0,0000881mg/L	0,01
CEPE SPERC 2.1a.v1	---	Fresh water sediment	exposure estimate	0,0228mg/kg dry weight (d.w.)	0,01
CEPE SPERC 2.1a.v1	---	Marine water	exposure estimate	0,0000074mg/L	0,00847
CEPE SPERC 2.1a.v1	---	Marine sediment	exposure estimate	0,00193mg/kg dry weight (d.w.)	0,00848
CEPE SPERC 2.1a.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,001mg/L	< 0,001
CEPE SPERC 2.1a.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
CEPE SPERC 2.1a.v1	---	Agricultural soil	exposure estimate	0,0000418mg/kg dry weight (d.w.)	0,000093
CEPE SPERC 2.1a.v1	---	Air	exposure estimate	0,000525	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC8b, PROC9, PROC15: ECETOC TRA model v2

PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01ppm	0,0947
PROC1, PROC3	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,155
PROC2, PROC3	---	Worker - inhalative, long-term	1,4ppm	0,234
PROC2	---	Worker - dermal, short-	0,00999mg/cm2	0,0621

		term - local		
PROC4	---	Worker - inhalative, long-term	2,8ppm	0,468
PROC4, PROC8b, PROC9	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC5, PROC9	---	Worker - inhalative, long-term	3,3ppm	0,552
PROC8b, PROC8a	---	Worker - inhalative, long-term	4,30ppm	0,719
PROC8b	---	Worker - dermal, short-term - local	0,00999mg/cm2	0,0621
PROC15	---	Worker - inhalative, long-term	1,0ppm	0,167
PROC15	---	Worker - dermal, short-term - local	0,0025mg/cm2	0,0155

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 6: Use in coatings

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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

2.1 Contributing scenario controlling environmental exposure for: ERC4

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, CEPE SPERC 4.na.v1.
, CEPE SPERC 4.nb.v1.
, ESVOC spERC 4.3a.v1 has been used to evaluate the exposure for the environment.
, For more information on spERC from the Coatings & Inks sector, please visit the website: www.cepe.org.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	300
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	100 (CEPE 4.1a.v1, CEPE 4.1b.v1, ESVOC 4.3a.v1)
	Fraction of regional tonnage used locally:	1 (ESVOC 4.3a.v1, CEPE 4.1a.v1, CEPE 4.1b.v1)
	Maximum daily site tonnage (kg/day):	455 (CEPE 4.1a.v1, CEPE 4.1b.v1)

	Maximum daily site tonnage (kg/day):	333 (ESVOC 4.3a.v1)
	Annual site tonnage	100 (CEPE 4.1a.v1, CEPE 4.1b.v1, ESVOC 4.3a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release(CEPE 4.1a.v1, CEPE 4.1b.v1)	
	Number of emission days per year	220 (CEPE 4.1a.v1, CEPE 4.1b.v1)
	Continuous release(ESVOC 4.3a.v1)	
	Number of emission days per year	300 (ESVOC 4.3a.v1)
	Emission or Release Factor: Air	0,8 (CEPE 4.1a.v1)
	initial release prior to RMM, . (CEPE 4.1a.v1)	
	Emission or Release Factor: Air	0,98 (CEPE 4.1b.v1)
	initial release prior to RMM, . (CEPE 4.1b.v1)	
	Emission or Release Factor: Air	0,098 (ESVOC 4.3a.v1)
	initial release prior to RMM, . (ESVOC 4.3a.v1)	
	Emission or Release Factor: Water	0,002 (CEPE 4.1a.v1, CEPE 4.1b.v1)
	initial release prior to RMM, . (CEPE 4.1a.v1, CEPE 4.1b.v1)	
	Emission or Release Factor: Water	0,0007 (ESVOC 4.3a.v1)
	initial release prior to RMM, . (ESVOC 4.3a.v1)	
	Emission or Release Factor: Soil	0
	initial release prior to RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
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		

Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (only CEPE 4.1b.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (only CEPE 4.1b.v1)
	Degradation efficiency	96,2 % (only CEPE 4.1b.v1)
	Percentage removed from waste water	95 % (only CEPE 4.1b.v1)
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (only CEPE 4.1b.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (only CEPE 4.1b.v1)
	Degradation efficiency	96,2 % (only CEPE 4.1b.v1)
	Percentage removed from waste water	99 % (only CEPE 4.1b.v1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

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 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Limit the substance content in the product to 10 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure material transfers are under containment or extract ventilation.

	Ensure samples are obtained under containment or extract ventilation.(PROC1)
Storage	Limit the substance content in the product to 10 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC1, PROC2)
Preparation of material for application	Limit the substance content in the product to 25 %. Handle substance within a closed system. Store substance within a closed system. Provide extract ventilation to points where emissions occur.(PROC3)
Preparation of material for application	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation. Limit the substance content in the product to 10 %.(PROC5)
Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	Limit the substance content in the product to 25 %. Handle substance within a closed system. Store substance within a closed system. Provide extraction ventilation at points where emissions occur.(PROC2)
Bulk open loading Transfer from/pouring from containers	Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings.(PROC3)
Spraying (automatic/robotic)	Limit the substance content in the product to 25 %. Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC7)
Roller, spreader, flow application	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC10)
Equipment cleaning and maintenance	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC8a)
Disposal of wastes Storage	Limit the substance content in the product to 10 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8a)

	Laboratory activities	Limit the substance content in the product to 25 %. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.(PROC15)
	Film formation - air drying	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC2, PROC4)
	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC8b)
Conditions and measures related to personal protection, hygiene and health evaluation	Bulk transfers	Wear chemically resistant gloves. Use suitable eye protection.(PROC1)
	Preparation of material for application	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC5)
	Spraying (automatic/robotic)	Wear chemically resistant gloves. Use suitable eye protection. Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC7)
	Equipment cleaning and maintenance	Wear chemically resistant gloves. Use suitable eye protection.(PROC8a)
	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC8b)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 4.3a.v1: Environmental exposure estimation is based on Ecetoc TRA model v2.

ESVOC SPERC 4.3a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 4.3a.v1	---	---	Msafe	3107kg/day	---
ESVOC SPERC 4.3a.v1	---	Fresh water	exposure estimate	0,000532mg/L	0,0605
ESVOC SPERC 4.3a.v1	---	Fresh water sediment	exposure estimate	0,137mg/kg dry weight (d.w.)	0,0605
ESVOC SPERC 4.3a.v1	---	Marine water	exposure estimate	0,0000519mg/L	0,0589
ESVOC SPERC 4.3a.v1	---	Marine sediment	exposure estimate	0,0134mg/kg dry weight (d.w.)	0,059
ESVOC SPERC 4.3a.v1	---	Sewage treatment plant (STP)	exposure estimate	0,00446mg/L	0,000675
ESVOC SPERC 4.3a.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 4.3a.v1	---	Agricultural soil	exposure estimate	0,0116mg/kg dry weight (d.w.)	0,107
ESVOC SPERC 4.3a.v1	---	Air	exposure estimate	0,00753	---

Workers

PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	1,5ppm	0,251
PROC1, PROC2, PROC8a, PROC10	---	Worker - dermal, short-term - local	0,06mg/cm2	0,373
PROC2, PROC15	---	Worker - inhalative, long-term	0,6ppm	0,568
PROC3	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC4	---	Worker - inhalative, long-	0,023ppm	0,00385

		term		
PROC4	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC5, PROC7, PROC8a, PROC10	---	Worker - inhalative, long-term	2,7ppm	0,452
PROC5	---	Worker - dermal, short-term - local	0,12mg/cm2	0,745
PROC7	---	Worker - dermal, short-term - local	0,0941mg/cm2	0,582
PROC8b	---	Worker - inhalative, long-term	0,9ppm	0,853
PROC8b	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC15	---	Worker - dermal, short-term - local	0,00150mg/cm2	0,00932

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 7: Use in coatings	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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 PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
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

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, CEPE spERC 8a.n.v1 has been used to evaluate the exposure for the environment.
, For more information on spERC from the Coatings & Inks sector, please visit the website: www.cepe.org.
, ESVOC spERC 8.3b.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	110
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	1 (CEPE 8a.n.v1)
	Regional use tonnage (tons/year):	10 (ESVOC 8.3b.v1)
	Fraction of regional tonnage used locally:	0,002 (CEPE 8a.n.v1)

	Fraction of regional tonnage used locally:	0,0005 (ESVOC 8.3b.v1)
	Maximum daily site tonnage (kg/day):	0,0055 (CEPE 8a.n.v1)
	Maximum daily site tonnage (kg/day):	0,0137 (ESVOC 8.3b.v1)
	Annual site tonnage	0,002 (CEPE 8a.n.v1)
	Annual site tonnage	0,005 (ESVOC 8.3b.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	0,98 (CEPE 8a.n.v1, ESVOC 8.3b.v1)
	initial release prior to RMM, . (CEPE 8a.n.v1, ESVOC 8.3b.v1)	
	Emission or Release Factor: Water	0,02 (CEPE 8a.n.v1)
	initial release prior to RMM, . (CEPE 8a.n.v1)	
	Emission or Release Factor: Water	0,01 (ESVOC 8.3b.v1)
	initial release prior to RMM, . (ESVOC 8.3b.v1)	
	Emission or Release Factor: Soil	0,01 (ESVOC 8.3b.v1)
	initial release prior to RMM, . (ESVOC 8.3b.v1)	
	Indoor or outdoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant (ESVOC 8.3b.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (ESVOC 8.3b.v1)
	Degradation efficiency	96,2 % (ESVOC 8.3b.v1)

	Percentage removed from waste water	96,2 % (ESVOC 8.3b.v1)
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (CEPE 8a.n.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (CEPE 8a.n.v1)
	Degradation efficiency	96,2 % (CEPE 8a.n.v1)
	Percentage removed from waste water	95 % (CEPE 8a.n.v1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Limit the substance content in the product to 10 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC1)
	Storage	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC1, PROC2)
	Preparation of material for application	Limit the substance content in the product to 25 %. Handle substance within a closed system. Store substance within a closed system.(PROC3)
	Preparation of material for application	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation. Limit the substance content in the product to 10

	%.(PROC5)
Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	Limit the substance content in the product to 25 %. Handle substance within a closed system. Store substance within a closed system. Provide extraction ventilation at points where emissions occur.(PROC2)
Bulk open loading Transfer from/pouring from containers	Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings.(PROC3)
Ad hoc manual application via trigger sprays, dipping, etc.	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur. Avoid carrying out operation for more than 15 minutes. Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC13)
Roller, spreader, flow application	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC10)
Equipment cleaning and maintenance	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC8a)
Disposal of wastes Storage	Limit the substance content in the product to 10 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8a)
Laboratory activities	Limit the substance content in the product to 25 %. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.(PROC15)
Film formation - air drying	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC2, PROC4)
Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure material transfers are under containment or

	within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC8b)
	Spraying/ fogging by manual application	Limit the substance content in the product to 10 %. Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC11)
	Hand application - fingerpaints, pastels, adhesives	Limit the substance content in the product to 10 %.(PROC19)
Conditions and measures related to personal protection, hygiene and health evaluation	Bulk transfers	Use suitable eye protection. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC1)
	Preparation of material for application	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC5)
	Equipment cleaning and maintenance	Wear chemically resistant gloves. Use suitable eye protection.(PROC8a)
	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC8b)
	Spraying/ fogging by manual application	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC11)
	Hand application - fingerpaints, pastels, adhesives	Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection.(PROC19)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 8.3b.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 8.3b.v1	---	---	Msafe	1,35kg/day	---
ESVOC SPERC 8.3b.v1	---	Fresh water	exposure estimate	0,0000892mg/L	0,0101
ESVOC SPERC 8.3b.v1	---	Fresh water sediment	exposure estimate	0,0230mg/kg dry weight (d.w.)	0,0101
ESVOC SPERC 8.3b.v1	---	Marine water	exposure estimate	0,0000754mg/L	0,00857
ESVOC SPERC 8.3b.v1	---	Marine sediment	exposure estimate	0,00195mg/kg dry weight (d.w.)	0,00858
ESVOC SPERC 8.3b.v1	---	Sewage treatment plant (STP)	exposure estimate	0,0000026mg/L	< 0,001
ESVOC SPERC 8.3b.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 8.3b.v1	---	Agricultural soil	exposure estimate	0,0000104mg/kg dry weight (d.w.)	0,000071
ESVOC SPERC 8.3b.v1	---	Air	exposure estimate	0,0000743	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,006ppm	0,00568
PROC1, PROC3, PROC15	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC2, PROC8a	---	Worker - inhalative, long-term	1,50ppm	0,251
PROC2, PROC5, PROC8a,	---	Worker - dermal, short-term - local	0,006mg/cm2	0,0373

PROC10				
PROC3, PROC13	---	Worker - inhalative, long-term	2,80ppm	0,468
PROC4, PROC8b, PROC13	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC4, PROC5, PROC10, PROC11	---	Worker - inhalative, long-term	2,70ppm	0,0452
PROC8a, PROC10, PROC11, PROC15	---	Worker - inhalative, long-term	0,7ppm	0,663
PROC8b	---	Worker - inhalative, long-term	0,30ppm	0,284
PROC11	---	Worker - dermal, short-term - local	0,0941mg/cm2	0,582
PROC15	---	Worker - inhalative, long-term	1,0ppm	0,167
PROC19	---	Worker - inhalative, long-term	1,20ppm	0,201
PROC19	---	Worker - dermal, short-term - local	0,124mg/cm2	0,769

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 8: Formulation of adhesives and sealants	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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) 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, pelletisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations

2.1 Contributing scenario controlling environmental exposure for: ERC2

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, FEICA spERC 2.1b.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 2.1c.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 2.2a.v1 has been used to evaluate the exposure for the environment.
, For more information on FEICA spERC from the Adhesives & Sealants sector, please visit the website: www.feica.eu.

Amount used	Amounts used in the EU (tonnes/year)	600
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	200 (FEICA 2.1c.v1, FEICA 2.1b.v1, FEICA 2.2a.v1)
	Fraction of regional tonnage used locally:	1 (FEICA 2.1c.v1, FEICA 2.1b.v1, FEICA 2.2a.v1)
	Maximum daily site tonnage (kg/day):	909 (FEICA 2.1b.v1)
	Maximum daily site	1364,909 ton(s)/year (FEICA 2.1c.v1, FEICA

	tonnage:	2.2a.v1)
	Annual site tonnage	200 (FEICA 2.1c.v1, FEICA 2.1b.v1, FEICA 2.2a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	220
	Emission or Release Factor: Air	0,006 (FEICA 2.1c.v1, FEICA 2.1b.v1)
	initial release prior to RMM, . (FEICA 2.1c.v1, FEICA 2.1b.v1)	
	Emission or Release Factor: Air	0,004 (FEICA 2.2a.v1)
	initial release prior to RMM, . (FEICA 2.2a.v1)	
	Indoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant (FEICA 2.1b.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (FEICA 2.1b.v1)
	Degradation efficiency	96,2 % (FEICA 2.1b.v1)
	Percentage removed from waste water	98 % (FEICA 2.1b.v1)
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (FEICA 2.1c.v1, FEICA 2.2a.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (FEICA 2.1c.v1, FEICA 2.2a.v1)
	Degradation efficiency	96,2 % (FEICA 2.1c.v1, FEICA 2.2a.v1)
	Percentage removed from waste water	95 % (FEICA 2.1c.v1, FEICA 2.2a.v1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC14, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems	Handle substance within a closed system. Store substance within a closed system. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC1)
	Formulation Continuous process With sample collection	Provide extract ventilation to points where emissions occur.(PROC2)
	Mixing operations Batch process With sample collection	Provide extract ventilation to points where emissions occur.(PROC3)
	Formulation Batch process With sample collection	Provide extract ventilation to points where emissions occur.(PROC3)
	Mixing operations (open systems) Batch process With sample collection	Provide extract ventilation to points where emissions occur.(PROC4, PROC5)
	Bulk transfers Dedicated facility	Provide extract ventilation to material transfer points and other openings.(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Small package filling	Limit the substance content in the product to 25 %. Provide extract ventilation to points where emissions occur.(PROC9)
	Production or preparation	Provide extract ventilation to points where

	or articles by tabletting, compression, extrusion or pelletisation	emissions occur. Limit the substance content in the product to 25 %.(PROC14)
	Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.(PROC15)
	Disposal of wastes	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.(PROC3)
Conditions and measures related to personal protection, hygiene and health evaluation	Formulation Continuous process With sample collection	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC2)
	Mixing operations Batch process With sample collection	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC3)
	Formulation Batch process With sample collection	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC3)
	Mixing operations (open systems) Batch process With sample collection	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC4, PROC5)
	Bulk transfers Dedicated facility	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC8b)
	Small package filling	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC9)
	Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC14)

3. Exposure estimation and reference to its source

Environment

FEICA SPERC 2.1b.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
FEICA SPERC 2.1b.v1	---	---	Msafe	90647kg/day	---
FEICA SPERC 2.1b.v1	---	Fresh water	exposure estimate	0,0000881mg/L	0,01
FEICA SPERC 2.1b.v1	---	Fresh water sediment	exposure estimate	0,0228mg/kg dry weight (d.w.)	0,01

FEICA SPERC 2.1b.v1	---	Marine water	exposure estimate	0,0000074mg/L	0,00847
FEICA SPERC 2.1b.v1	---	Marine sediment	exposure estimate	0,00193mg/kg dry weight (d.w.)	0,00848
FEICA SPERC 2.1b.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,001mg/L	< 0,001
FEICA SPERC 2.1b.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
FEICA SPERC 2.1b.v1	---	Agricultural soil	exposure estimate	0,0000799mg/kg dry weight (d.w.)	0,000178
FEICA SPERC 2.1b.v1	---	Air	exposure estimate	0,000982	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC15: ECETOC TRA model v2

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC14, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2	---	Worker - inhalative, long-term - systemic	0,01ppm	0,00947
PROC1, PROC3, PROC15	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,155
PROC2	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,621
PROC3	---	Worker - inhalative, long-term	0,250ppm	0,237
PROC4	---	Worker - inhalative, long-term	0,2ppm	0,189
PROC4, PROC8b	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC5	---	Worker - inhalative, long-term	0,5ppm	0,474
PROC5	---	Worker - dermal, short-term - local	0,005mg/cm2	0,0311
PROC8b	---	Worker - inhalative, long-term	0,350ppm	0,332
PROC9, PROC14	---	Worker - inhalative, long-term	0,30ppm	0,284
PROC9	---	Worker - dermal, short-	0,03mg/cm2	0,186

		term - local		
PROC14	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC15	---	Worker - inhalative, long-term	1,50ppm	0,0251

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 9: Use in adhesives and sealants	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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 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	ERC5: Industrial use resulting in inclusion into or onto a matrix

2.1 Contributing scenario controlling environmental exposure for: ERC5

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, FEICA spERC 5.1a.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 5.1b.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 5.2a.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 5.2b.v1 has been used to evaluate the exposure for the environment.
, For more information on FEICA spERC from the Adhesives & Sealants sector, please visit the website: www.feica.eu.

Amount used	Amounts used in the EU (tonnes/year)	800
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	200 (FEICA 5.1a.v1, FEICA 5.1b.v1, FEICA 5.2a.v1, FEICA 5.2b.v1)
	Fraction of regional tonnage used locally:	0,11 (FEICA 5.1a.v1)
	Fraction of regional tonnage used locally:	0,88 (FEICA 5.1b.v1)
	Fraction of regional tonnage used locally:	0,66 (FEICA 5.2a.v1)
	Fraction of regional	1 (FEICA 5.2b.v1)

	tonnage used locally:	
	Maximum daily site tonnage (kg/day):	100 (FEICA 5.1a.v1)
	Maximum daily site tonnage (kg/day):	800 (FEICA 5.1b.v1)
	Maximum daily site tonnage (kg/day):	600 (FEICA 5.2a.v1)
	Maximum daily site tonnage (kg/day):	909 (FEICA 5.2b.v1)
	Annual site tonnage	22 (FEICA 5.1a.v1)
	Annual site tonnage	176 (FEICA 5.1b.v1)
	Annual site tonnage	132 (FEICA 5.2a.v1)
	Annual site tonnage	200 (FEICA 5.2b.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	220
	Emission or Release Factor: Air	0,009 (FEICA 5.1b.v1)
	initial release prior to RMM, . (FEICA 5.1b.v1)	
	Emission or Release Factor: Air	0,017 (FEICA 5.1b.v1)
	initial release prior to RMM, . (FEICA 5.1b.v1)	
	Emission or Release Factor: Air	0,2 (FEICA 5.2a.v1, FEICA 5.2b.v1)
	initial release prior to RMM, . (FEICA 5.2a.v1, FEICA 5.2b.v1)	
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
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		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage	2.000 m3/d

	treatment plant effluent	
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (FEICA 5.2a.v1, FEICA 5.2b.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (FEICA 5.2a.v1, FEICA 5.2b.v1)
	Degradation efficiency	96,2 % (FEICA 5.2a.v1, FEICA 5.2b.v1)
	Percentage removed from waste water	80 % (FEICA 5.2a.v1, FEICA 5.2b.v1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8b, PROC10, PROC13, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems	Handle substance within a closed system. Store substance within a closed system. Limit the substance content in the product to 25 %.(PROC1)
	Continuous process Closed systems	Provide extract ventilation to points where emissions occur. Limit the substance content in the product to 25 %.(PROC2)
	Mixing operations Batch process	Provide extract ventilation to points where emissions occur. Limit the substance content in the product to 25 %.(PROC3)
	Batch process	Provide extract ventilation to points where emissions occur. Limit the substance content in the product to 25

		%.(PROC3)
	Mixing operations (open systems) Batch process	Provide extract ventilation to points where emissions occur. Limit the substance content in the product to 25 %.(PROC4, PROC5)
	Spraying	Limit the substance content in the product to 25 %. Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC7)
	Material transfers Dedicated facility	Provide extract ventilation to material transfer points and other openings. Limit the substance content in the product to 25 %.(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Roller, spreader, flow application	Provide extract ventilation to points where emissions occur. Limit the substance content in the product to 25 %.(PROC10)
	Dipping, immersion and pouring	Limit the substance content in the product to 25 %. Provide extract ventilation to points where emissions occur.(PROC13)
	Laboratory activities	Limit the substance content in the product to 25 %. Handle in a fume cupboard or under extract ventilation.(PROC15)
	Disposal of wastes	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.(PROC3)
Conditions and measures related to personal protection, hygiene and health evaluation	Mixing operations Batch process	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC3)
	Batch process	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC3)
	Mixing operations (open systems) Batch process	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC4, PROC5)
	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC7)
	Material transfers Dedicated facility	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC8b)

Roller, spreader, flow application	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC10)
Dipping, immersion and pouring	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC13)
Laboratory activities	Wear chemically resistant gloves. Use suitable eye protection.(PROC15)

3. Exposure estimation and reference to its source

Environment

FEICA SPERC 5.1a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
FEICA SPERC 5.1a.v1	---	---	Msafe	90647kg/day	---
FEICA SPERC 5.1a.v1	---	Fresh water	exposure estimate	0,0000881mg/L	0,01
FEICA SPERC 5.1a.v1	---	Fresh water sediment	exposure estimate	0,0228mg/kg dry weight (d.w.)	0,01
FEICA SPERC 5.1a.v1	---	Marine water	exposure estimate	0,0000074mg/L	0,00847
FEICA SPERC 5.1a.v1	---	Marine sediment	exposure estimate	0,00193mg/kg dry weight (d.w.)	0,00848
FEICA SPERC 5.1a.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,001mg/L	< 0,001
FEICA SPERC 5.1a.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
FEICA SPERC 5.1a.v1	---	Agricultural soil	exposure estimate	0,000118mg/kg dry weight (d.w.)	0,000262
FEICA SPERC 5.1a.v1	---	Air	exposure estimate	0,00144	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8b, PROC10, PROC13, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8b, PROC10, PROC13, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR

PROC1	---	Worker - inhalative, long-term - systemic	0,006ppm	0,00568
PROC1	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC2, PROC15	---	Worker - inhalative, long-term	0,6ppm	0,568
PROC2	---	Worker - dermal, short-term - local	0,006mg/cm2	0,0373
PROC4	---	Worker - inhalative, long-term	0,2ppm	0,189
PROC3	---	Worker - inhalative, long-term	0,150ppm	0,142
PROC3	---	Worker - dermal, short-term - local	0,00150mg/cm2	0,00932
PROC4	---	Worker - inhalative, long-term	0,120ppm	0,114
PROC4, PROC8b, PROC13	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC5	---	Worker - inhalative, long-term	0,3ppm	0,284
PROC5	---	Worker - dermal, short-term - local	0,003mg/cm2	0,0186
PROC7	---	Worker - inhalative, long-term	0,750ppm	0,710
PROC7	---	Worker - dermal, short-term - local	0,0941mg/cm2	0,582
PROC8b	---	Worker - inhalative, long-term	0,09ppm	0,0853
PROC10, PROC13	---	Worker - inhalative, long-term	0,30ppm	0,284
PROC10	---	Worker - dermal, short-term - local	0,06mg/cm2	0,373
PROC13	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC15	---	Worker - dermal, short-term - local	0,0003mg/cm2	0,00186

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.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 10: Use in adhesives and sealants	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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 PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent
Environmental Release Categories	ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8f

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, FEICA spERC 8c.1a.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8c.1b.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8c.2a.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8c.2b.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8f.1.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8f.2.v1 has been used to evaluate the exposure for the environment.
, For more information on FEICA spERC from the Adhesives & Sealants sector, please visit the website: www.feica.eu.

Amount used	Amounts used in the EU (tonnes/year)	1200
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	20 (FEICA 8c.2b.v1, FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	Fraction of regional tonnage used locally:	0,002 (FEICA 8c.2b.v1, FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)

	Maximum daily site tonnage (kg/day):	0,1096 (FEICA 8c.2b.v1, FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	Annual site tonnage	0,04 (FEICA 8c.2b.v1, FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	0,98 (FEICA 8c.2b.v1, FEICA 8f.2.v1, FEICA 8c.2a.v1)
	initial release prior to RMM, . (FEICA 8c.2b.v1, FEICA 8f.2.v1, FEICA 8c.2a.v1)	
	Emission or Release Factor: Water	0,01 (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	initial release prior to RMM, . (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)	
	Indoor or outdoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems	Handle substance within a closed system. Store substance within a closed system. Limit the substance content in the product to 25 %.(PROC1)
	Continuous process Closed systems	Limit the substance content in the product to 25 %. Handle in a fume cupboard or under extract ventilation.(PROC2)
	Mixing operations Batch process	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Batch process	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Mixing operations (open systems) Batch process	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC4, PROC5)
	Spraying	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC11)
	Material transfers Dedicated facility	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Equipment cleaning and maintenance	Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes. Limit the substance content in the product to 25 %.(PROC8b)
	Roller, spreader, flow application	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC10)
	Dipping, immersion and	Limit the substance content in the product to 25 %.

	pouring	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC13)
	Laboratory activities	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC15)
	Material transfers Non-dedicated facility	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8a)
	Equipment cleaning and maintenance Non-dedicated facility	Limit the substance content in the product to 25 %. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.(PROC8a)
Conditions and measures related to personal protection, hygiene and health evaluation	Batch process	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC3)
	Mixing operations (open systems) Batch process	Wear chemically resistant gloves. Use suitable eye protection.(PROC4, PROC5)
	Spraying	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC11)
	Material transfers Dedicated facility	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Equipment cleaning and maintenance	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Roller, spreader, flow application	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC10)
	Dipping, immersion and pouring	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC13)
	Material transfers Non-dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC8a)
	Equipment cleaning and maintenance Non-dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC8a)

3. Exposure estimation and reference to its source

Environment

FEICA SPERC 8f.1.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
FEICA SPERC 8f.1.v1	---	---	Msafe	10,55kg/day	---
FEICA SPERC 8f.1.v1	---	Fresh water	exposure estimate	0,0000913mg/L	0,0104
FEICA SPERC 8f.1.v1	---	Fresh water sediment	exposure estimate	0,0236mg/kg dry weight (d.w.)	0,0104
FEICA SPERC 8f.1.v1	---	Marine water	exposure estimate	0,0000078mg/L	0,00883
FEICA SPERC 8f.1.v1	---	Marine sediment	exposure estimate	0,00201mg/kg dry weight (d.w.)	0,00884
FEICA SPERC 8f.1.v1	---	Sewage treatment plant (STP)	exposure estimate	0,0000314mg/L	0,000005
FEICA SPERC 8f.1.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
FEICA SPERC 8f.1.v1	---	Agricultural soil	exposure estimate	0,0000810mg/kg dry weight (d.w.)	0,000755
FEICA SPERC 8f.1.v1	---	Air	exposure estimate	0,0000722	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term	0,006ppm	0,00568
PROC1, PROC3	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC2, PROC3	---	Worker - inhalative, long-term	0,110ppm	0,0184
PROC2, PROC5, PROC8a, PROC8b, PROC10, PROC13	---	Worker - dermal, short-term - local	0,06mg/cm2	0,373

PROC4	---	Worker - inhalative, long-term	0,210ppm	0,0351
PROC4	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC5	---	Worker - inhalative, long-term	0,760mg/cm2	0,127
PROC8a, PROC8b	---	Worker - inhalative, long-term	2,20ppm	0,368
PROC10	---	Worker - inhalative, long-term	0,910mg/cm2	0,152
PROC11	---	Worker - inhalative, long-term	0,210ppm	0,351
PROC11	---	Worker - dermal, short-term - local	0,0941mg/cm2	0,582
PROC13	---	Worker - inhalative, long-term	0,650ppm	0,109
PROC15	---	Worker - inhalative, long-term	1,0mg/cm2	0,167
PROC15	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 11: Use in coatings	
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC9a: Coatings and paints, thinners, paint removers PC9b: Fillers, putties, plasters, modelling clay PC9c: Finger paints PC18: Ink and toners
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	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: ERC8a, ERC8d

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 8.3c.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20 %.
Amount used	Amounts used in the EU (tonnes/year)	100
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	10
	Fraction of regional tonnage used locally:	0,0005
	Maximum daily site tonnage (kg/day):	0,0137
	Annual site tonnage	0,005
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365

	Emission or Release Factor: Air	0,985
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,01
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,005
	initial release prior to RMM, .	
	Indoor or outdoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling consumer exposure for: PC9a: Solvent rich, high solid, water borne paint

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	744 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	6 days/year

	Exposure duration per event	2,20 h
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428,75 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.3 Contributing scenario controlling consumer exposure for: PC9a: Aerosol spray can		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	215 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	2 days/year
	Exposure duration per event	0,3 h
Other given operational conditions affecting consumers exposure	Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.4 Contributing scenario controlling consumer exposure for: PC9a: Removers (paint-, glue-, wall paper-, sealant-remover)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	491 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	3 days/year
	Exposure duration per event	2,0 h

Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,50 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.5 Contributing scenario controlling consumer exposure for: PC9b: Fillers and putty		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	85 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	12 days/year
	Exposure duration per event	4,0 h
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 35,70 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.6 Contributing scenario controlling consumer exposure for: PC9b: Plasters and floor equalizers		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,1%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	13800 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	12 days/year
	Exposure duration per event	2,0 h
Human factors not influenced by	Exposed skin area	Covers skin contact area up to 857,50 cm²

risk management		
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.7 Contributing scenario controlling consumer exposure for: PC9b: Modelling clay		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	1 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	365 days/year
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 254,40 cm²
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.8 Contributing scenario controlling consumer exposure for: PC9c: Finger paints		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 0,2%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	1,35 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	365 days/year
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 254,40 cm²
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.9 Contributing scenario controlling consumer exposure for: PC18		
Product characteristics	Concentration of the Substance in	Concentration of substance in product: 0% - 0,25%

	Mixture/Article	
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	40 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	365 days/year
	Exposure duration per event	2,20 h
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 71,40 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 8.3c.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 8.3c.v1	---	Fresh water	exposure estimate	0,0000892mg/L	0,0101
ESVOC SPERC 8.3c.v1	---	Fresh water sediment	exposure estimate	0,0230mg/kg dry weight (d.w.)	0,0101
ESVOC SPERC 8.3c.v1	---	Marine water	exposure estimate	0,0000075mg/L	0,00857
ESVOC SPERC 8.3c.v1	---	Marine sediment	exposure estimate	0,00195mg/kg dry weight (d.w.)	0,00858
ESVOC SPERC 8.3c.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,0001mg/L	< 0,0001
ESVOC SPERC 8.3c.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 8.3c.v1	---	Agricultural soil	exposure estimate	0,0000104mg/kg dry weight (d.w.)	0,000071

ESVOC SPERC 8.3c.v1	---	Air	exposure estimate	0,0000743	---

Consumers

ECETOC TRA consumer v3.

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 12: 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 ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix
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: ERC8c, ERC8f

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, FEICA spERC 8c.1a.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8c.1b.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8c.2a.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8c.2b.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8f.1.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8f.2.v1 has been used to evaluate the exposure for the environment.
, For more information on FEICA spERC from the Adhesives & Sealants sector, please visit the website: www.feica.eu.

Amount used	Amounts used in the EU (tonnes/year)	1200
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	20 (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	Fraction of regional tonnage used locally:	0,002 (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	Maximum daily site tonnage (kg/day):	0,1096 (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	Annual site tonnage	0,04 (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365

	Emission or Release Factor: Air	0,98 (FEICA 8c.2b.v1, FEICA 8f.2.v1, FEICA 8c.2a.v1)
	initial release prior to RMM, . (FEICA 8c.2b.v1, FEICA 8f.2.v1, FEICA 8c.2a.v1)	
	Emission or Release Factor: Water	0,01 (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	initial release prior to RMM, . (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)	
	Emission or Release Factor: Soil	0
	initial release prior to RMM, .	
	Indoor or outdoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling consumer exposure for: PC1		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	15000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	1 days/year

	Exposure duration per event	6,0 h
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428,80 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	

3. Exposure estimation and reference to its source

Environment

FEICA SPERC 8c.1a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
FEICA SPERC 8c.1a.v1	---	Fresh water	exposure estimate	0,000913mg/L	0,0104
FEICA SPERC 8c.1a.v1	---	Fresh water sediment	exposure estimate	0,0236mg/kg dry weight (d.w.)	0,0104
FEICA SPERC 8c.1a.v1	---	Marine water	exposure estimate	0,0000075mg/L	0,00854
FEICA SPERC 8c.1a.v1	---	Marine sediment	exposure estimate	0,0201mg/kg dry weight (d.w.)	0,00883
FEICA SPERC 8c.1a.v1	---	Sewage treatment plant (STP)	exposure estimate	0,0000314mg/L	0,000005
FEICA SPERC 8c.1a.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
FEICA SPERC 8c.1a.v1	---	Agricultural soil	exposure estimate	0,0000810mg/kg dry weight (d.w.)	0,000755
FEICA SPERC 8c.1a.v1	---	Air	exposure estimate	0,0000722	---

Consumers

PC1: ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC1	---	Consumer - inhalative,	0,291ppm	0,411

		long-term - systemic		

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 13: Formulation of solvents	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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, pelletisation 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

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 2.2.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.3a.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	200
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	200

	Fraction of regional tonnage used locally:	1
	Maximum daily site tonnage (kg/day):	667
	Annual site tonnage	200
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	300
	Emission or Release Factor: Air	0,01
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,0002
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,0001
	initial release prior to RMM, .	
	Indoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national

		regulations.
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 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	Formulation Continuous process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC2)
	Mixing operations Batch process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Mixing operations Batch processes at elevated temperatures With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Mixing operations (open systems) Batch process With sample collection	Provide extract ventilation to points where emissions occur.(PROC4)
	Bulk transfers Non-dedicated facility	Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 1 hour.(PROC8a)
	Bulk transfers Dedicated facility	Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 1 hour.(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Disposal of wastes	Limit the substance content in the product to 1 %.

		Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.(PROC8a)
	Small package filling	Fill containers/cans at dedicated filling points supplied with local extract ventilation.(PROC9)
	Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Provide extract ventilation to points where emissions occur.(PROC14)
	Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Bulk transfers Non-dedicated facility	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC8a)
	Equipment cleaning and maintenance	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC14)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 2.2.v1: ECETOC TRA model v2

ERC2: Environmental exposure estimation is based on Ecetoc TRA model v2.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2	---	---	Msafe	10966kg/day	---
ESVOC SPERC 2.2.v1	---	Fresh water	exposure estimate	0,000342mg/L	0,0389
ESVOC SPERC 2.2.v1	---	Fresh water sediment	exposure estimate	0,0883mg/kg dry weight (d.w.)	0,0389
ESVOC SPERC 2.2.v1	---	Marine water	exposure estimate	0,0000328mg/L	0,0373
ESVOC SPERC 2.2.v1	---	Marine sediment	exposure estimate	0,00848mg/kg dry weight (d.w.)	0,0374
ESVOC SPERC 2.2.v1	---	Sewage treatment plant (STP)	exposure estimate	0,00255mg/L	0,000386
ESVOC SPERC 2.2.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708

ESVOC SPERC 2.2.v1	---	Agricultural soil	exposure estimate	0,00638mg/kg dry weight (d.w.)	0,0608
ESVOC SPERC 2.2.v1	---	Air	exposure estimate	0,00159	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01ppm	0,00947
PROC1	---	Worker - dermal, short-term - local	250mg/cm2	0,155
PROC2	---	Worker - inhalative, long-term	1,10ppm	0,284
PROC2, PROC8b	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,621
PROC3	---	Worker - inhalative, long-term	5,20ppm	0,860
PROC3, PROC14	---	Worker - dermal, short-term - local	0,025mg/cm2	0,155
PROC4, PROC5	---	Worker - inhalative, long-term	2,50ppm	0,418
PROC4, PROC5, PROC9	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC8a	---	Worker - inhalative, long-term	4,4ppm	0,740
PROC8a	---	Worker - dermal, short-term - local	0,00999mg/cm2	0,0621
PROC8b	---	Worker - inhalative, long-term	0,70ppm	0,663
PROC9	---	Worker - inhalative, long-term	1,10ppm	0,719
PROC14	---	Worker - inhalative, long-term	0,5ppm	0,474
PROC15	---	Worker - inhalative, long-term	4,60ppm	0,0686
PROC15	---	Worker - dermal, short-term - local	0,00250mg/cm2	0,0155

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 14: Use as a solvent	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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 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 ERC7: Industrial use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC7

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 4.3a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.4a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.5a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.7a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.9.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.10a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.6a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.19a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.20a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.21a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.23.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 7.12a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 7.13a.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	2208,7
	Fraction of EU tonnage	1

	used in region:	
	Regional use tonnage (tons/year):	200 (ESVOC 4.4a.v1, ESVOC 4.3a.v1, ESVOC 4.6a.v1, ESVOC 4.7a.v1, ESVOC 4.9.v1, ESVOC 4.10a.v1, ESVOC 7.12a.v1, ESVOC 7.13a.v1, ESVOC 4.19.v1, ESVOC 4.20.v1, ESVOC 4.21a.v1)
	Regional use tonnage (tons/year):	8 (ESVOC 4.5a.v1)
	Regional use tonnage (tons/year):	0,7 (ESVOC 4.23.v1)
	Fraction of regional tonnage used locally:	1 (ESVOC 4.3a.v1, ESVOC 4.5a.v1, ESVOC 4.9.v1, ESVOC 4.10a.v1, ESVOC 7.12a.v1, ESVOC 4.19.v1, ESVOC 4.20.v1, ESVOC 4.21a.v1)
	Fraction of regional tonnage used locally:	0,5 (ESVOC 4.4a.v1, ESVOC 4.6a.v1, ESVOC 4.7a.v1)
	Fraction of regional tonnage used locally:	0,09 (ESVOC 4.23.v1)
	Fraction of regional tonnage used locally:	0,005 (ESVOC 7.13a.v1)
	Maximum daily site tonnage (kg/day):	666,7 (ESVOC 4.3a.v1, ESVOC 4.9.v1, ESVOC 7.12a.v1, ESVOC 4.19.v1, ESVOC 4.20.v1, ESVOC 4.21a.v1)
	Maximum daily site tonnage (kg/day):	5000 (ESVOC 4.4a.v1, ESVOC 4.6a.v1, ESVOC 4.7a.v1)
	Maximum daily site tonnage (kg/day):	2000 (ESVOC 4.10a.v1)
	Maximum daily site tonnage (kg/day):	4 (ESVOC 4.23.v1)
	Maximum daily site tonnage (kg/day):	50 (ESVOC 7.13a.v1)
	Annual site tonnage	200 (ESVOC 4.3a.v1, ESVOC 4.9.v1, ESVOC 4.10a.v1, ESVOC 7.12a.v1, ESVOC 4.19.v1, ESVOC 4.20.v1, ESVOC 4.21a.v1)
	Annual site tonnage	100 (ESVOC 4.4a.v1, ESVOC 4.6a.v1, ESVOC 4.7a.v1)
	Annual site tonnage	8 (ESVOC 4.5a.v1)
	Annual site tonnage	1 (ESVOC 7.13a.v1)
	Annual site tonnage	0,1 (ESVOC 4.23.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100

Other given operational conditions affecting environmental exposure	Continuous release(ESVOC 4.3a.v1, ESVOC 4.9.v1, ESVOC 7.12a.v1, ESVOC 4.19.v1, ESVOC 4.20.v1, ESVOC 4.21a.v1)	
	Number of emission days per year	300 (ESVOC 4.3a.v1, ESVOC 4.9.v1, ESVOC 7.12a.v1, ESVOC 4.19.v1, ESVOC 4.20.v1, ESVOC 4.21a.v1)
	Continuous release(ESVOC 4.4a.v1, ESVOC 4.6a.v1, ESVOC 4.7a.v1, ESVOC 7.13a.v1, ESVOC 4.23.v1)	
	Number of emission days per year	20 (ESVOC 4.4a.v1, ESVOC 4.6a.v1, ESVOC 4.7a.v1, ESVOC 7.13a.v1, ESVOC 4.23.v1)
	Continuous release(ESVOC 4.10a.v1)	
	Number of emission days per year	100 (ESVOC 4.10a.v1)
	Continuous release(ESVOC 4.5a.v1)	
	Number of emission days per year	30 (ESVOC 4.5a.v1)
	Emission or Release Factor: Air	0,098 (ESVOC 4.3a.v1)
	initial release prior to RMM, . (ESVOC 4.3a.v1)	
	Emission or Release Factor: Air	0,3 (ESVOC 4.4a.v1)
	initial release prior to RMM, . (ESVOC 4.4a.v1)	
	Emission or Release Factor: Air	0,005 (ESVOC 4.5a.v1)
	initial release prior to RMM, . (ESVOC 4.5a.v1)	
	Emission or Release Factor: Air	0,0015 (ESVOC 4.6a.v1)
	initial release prior to RMM, . (ESVOC 4.6a.v1)	
	Emission or Release Factor: Air	0,006 (ESVOC 4.7a.v1)
	initial release prior to RMM, . (ESVOC 4.7a.v1)	
	Emission or Release Factor: Air	1 (ESVOC 4.9.v1)
	initial release prior to RMM, . (ESVOC 4.9.v1)	
	Emission or Release Factor: Air	0,2 (ESVOC 4.10a.v1)
	initial release prior to RMM, . (ESVOC 4.10a.v1)	
	Emission or Release Factor: Air	0,01 (ESVOC 4.19.v1)
	initial release prior to RMM, . (ESVOC 4.19.v1)	
	Emission or Release Factor: Air	0,002 (ESVOC 4.20.v1)
	initial release prior to RMM, . (ESVOC 4.20.v1)	

Emission or Release Factor: Air	0,05 (ESVOC 4.21a.v1, ESVOC 4.23.v1)
initial release prior to RMM, . (ESVOC 4.21a.v1, ESVOC 4.23.v1)	
Emission or Release Factor: Air	0,00025 (ESVOC 7.12a.v1)
initial release prior to RMM, . (ESVOC 7.12a.v1)	
Emission or Release Factor: Air	0,005 (ESVOC 7.13a.v1)
initial release prior to RMM, . (ESVOC 7.13a.v1)	
Emission or Release Factor: Water	0,0007 (ESVOC 4.3a.v1)
initial release prior to RMM, . (ESVOC 4.3a.v1)	
Emission or Release Factor: Water	0,3 .10-4 (ESVOC 4.4a.v1, ESVOC 4.10a.v1, ESVOC 7.13a.v1)
initial release prior to RMM, . (ESVOC 4.4a.v1, ESVOC 4.10a.v1, ESVOC 7.13a.v1)	
Emission or Release Factor: Water	0,00003 (ESVOC 4.6a.v1, ESVOC 4.7a.v1, ESVOC 4.9.v1)
initial release prior to RMM, . (ESVOC 4.6a.v1, ESVOC 4.7a.v1, ESVOC 4.9.v1)	
Emission or Release Factor: Water	0,0003 (ESVOC 4.19.v1, ESVOC 4.20.v1)
initial release prior to RMM, . (ESVOC 4.19.v1, ESVOC 4.20.v1)	
Emission or Release Factor: Water	0,07 (ESVOC 4.5a.v1)
initial release prior to RMM, . (ESVOC 4.5a.v1)	
Emission or Release Factor: Water	0,05 (ESVOC 4.23.v1)
initial release prior to RMM, . (ESVOC 4.23.v1)	
Emission or Release Factor: Water	0,00001 (ESVOC 9.12b.v1)
initial release prior to RMM, . (ESVOC 9.12b.v1)	
Emission or Release Factor: Water	0,001 (ESVOC 4.6a.v1, ESVOC 7.13a.v1)
initial release prior to RMM, . (ESVOC 4.6a.v1, ESVOC 7.13a.v1)	
Emission or Release Factor: Water	0,05 (ESVOC 4.23.v1)
initial release prior to RMM, . (ESVOC 4.23.v1)	
Emission or Release Factor: Water	0,00001 (ESVOC 4.21a.v1)
initial release prior to RMM, . (ESVOC 4.21a.v1)	
Emission or Release Factor: Water	0,0001 (ESVOC 4.19.v1, ESVOC 4.20.v1)

	initial release prior to RMM, . (ESVOC 4.19.v1, ESVOC 4.20.v1)	
	Indoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8b, PROC10, PROC13, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	General exposures (closed systems) Continuous process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC2)
	Mixing operations Batch process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Batch process	Provide extract ventilation to points where

		emissions occur.(PROC4)
	Mixing operations (open systems) Batch process	Provide extract ventilation to points where emissions occur.(PROC4, PROC5)
	Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC7)
	Material transfers Dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Roller, spreader, flow application	Provide extract ventilation to material transfer points and other openings.(PROC10)
	Dipping, immersion and pouring	Provide extract ventilation to points where emissions occur.(PROC13)
	Laboratory activities	Handle in a fume cupboard or under extract ventilation.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better. Wear chemically resistant gloves. Use suitable eye protection.(PROC7)
	Material transfers Dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection.(PROC8b)
	Roller, spreader, flow application	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC10)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 4.4a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 4.4a.v1	---	---	Msafe	376588kg/day	---
ESVOC SPERC 4.4a.v1	---	Fresh water	exposure estimate	0,000117mg/L	0,0133

ESVOC SPERC 4.4a.v1	---	Fresh water sediment	exposure estimate	0,0301mg/kg dry weight (d.w.)	0,0133
ESVOC SPERC 4.4a.v1	---	Marine water	exposure estimate	0,0000103mg/L	0,0117
ESVOC SPERC 4.4a.v1	---	Marine sediment	exposure estimate	0,00266mg/kg dry weight (d.w.)	0,0117
ESVOC SPERC 4.4a.v1	---	Sewage treatment plant (STP)	exposure estimate	0,000287mg/L	0,000043
ESVOC SPERC 4.4a.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 4.4a.v1	---	Agricultural soil	exposure estimate	0,00261mg/kg dry weight (d.w.)	0,0111
ESVOC SPERC 4.4a.v1	---	Air	exposure estimate	0,00229	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC7, PROC8b, PROC10, PROC13, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8b, PROC10, PROC13, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01ppm	0,00947
PROC1, PROC3, PROC15	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,155
PROC2	---	Worker - inhalative, long-term	1,70ppm	0,284
PROC2	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,621
PROC3, PROC7	---	Worker - inhalative, long-term	5,20ppm	0,860
PROC4	---	Worker - inhalative, long-term	2,50ppm	0,418
PROC4, PROC8b	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC5, PROC13	---	Worker - dermal, short-term - local	0,005mg/cm2	0,0311
PROC7	---	Worker - dermal, short-term - local	0,0313ppm	0,194

PROC8b	---	Worker - inhalative, long-term	0,350ppm	0,332
PROC10	---	Worker - inhalative, long-term	0,56ppm	0,0936
PROC10	---	Worker - dermal, short-term - local	9,99mg/cm2	0,621
PROC13	---	Worker - inhalative, long-term	0,290ppm	0,0485
PROC15	---	Worker - inhalative, long-term	4,60ppm	0,0686

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 15: Use as a solvent	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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 PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent
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 ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 8.17.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.21b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.3b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.4b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.6c.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.7c.v1 has been used to evaluate the exposure for the environment.
, ESVOC SpERC 8.23a.v1.
, ESVOC SPERC 9.7b.v1.
, ESVOC SPERC 9.24a.v1.
, ESVOC SPERC 9.24b.v1.
, ESVOC spERC 8.10b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.11a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 9.6b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 9.12b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 9.13b.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	3000
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	20 (ESVOC 8.3b.v1, ESVOC 8.4b.v1, ESVOC 9.6b.v1, ESVOC 8.6c.v1, ESVOC 9.7b.v1, ESVOC 8.7c.v1, ESVOC 8.23a.v1, ESVOC 8.10b.v1, ESVOC 8.11a.v1, ESVOC 9.12b.v1, ESVOC 9.13b.v1, ESVOC 8.17.v1, ESVOC 8.21b.v1, ESVOC 9.24a.v1, ESVOC 9.24b.v1)
	Fraction of regional tonnage used locally:	0,0005 (ESVOC 8.3b.v1, ESVOC 8.4b.v1, ESVOC 9.6b.v1, ESVOC 8.6c.v1, ESVOC 9.7b.v1, ESVOC 8.7c.v1, ESVOC 8.23a.v1, ESVOC 8.10b.v1, ESVOC 9.12b.v1, ESVOC 9.13b.v1, ESVOC 8.17.v1, ESVOC 8.21b.v1, ESVOC 9.24b.v1)
	Fraction of regional tonnage used locally:	0,002 (ESVOC 8.11a.v1)
	Fraction of regional tonnage used locally:	1 (ESVOC 9.24a.v1)
	Maximum daily site tonnage (kg/day):	0,0274 (ESVOC 8.23a.v1, ESVOC 8.3b.v1, ESVOC 8.4b.v1, ESVOC 9.6b.v1, ESVOC 8.6c.v1, ESVOC 9.7b.v1, ESVOC 8.7c.v1, ESVOC 8.10b.v1, ESVOC 9.12b.v1, ESVOC 9.13b.v1, ESVOC 8.17.v1, ESVOC 8.21b.v1, ESVOC 9.24b.v1)
	Maximum daily site tonnage (kg/day):	0,1096 (ESVOC 8.11a.v1)
	Maximum daily site tonnage (kg/day):	66,67 (ESVOC 9.24a.v1)
	Annual site tonnage	0,01 (ESVOC 8.3b.v1, ESVOC 8.4b.v1, ESVOC 9.6b.v1, ESVOC 8.6c.v1, ESVOC 9.7b.v1, ESVOC 8.7c.v1, ESVOC 8.23a.v1, ESVOC 8.10b.v1, ESVOC 9.12b.v1, ESVOC 9.13b.v1, ESVOC 8.17.v1, ESVOC 8.21b.v1, ESVOC 9.24b.v1)
	Annual site tonnage	0,04 (ESVOC 8.11a.v1)
	Annual site tonnage	20 (ESVOC 9.24a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days	365

per year	
Wide dispersive use(ESVOC 9.24a.v1)	
Number of emission days per year	300 (ESVOC 9.24a.v1)
Emission or Release Factor: Air	0,5 (ESVOC 8.17.v1)
initial release prior to RMM, . (ESVOC 8.17.v1)	
Emission or Release Factor: Air	0,02 (ESVOC 8.4b.v1)
initial release prior to RMM, . (ESVOC 8.4b.v1)	
Emission or Release Factor: Air	0,98 (ESVOC 8.3b.v1, ESVOC 8.21b.v1)
initial release prior to RMM, . (ESVOC 8.3b.v1, ESVOC 8.21b.v1)	
Emission or Release Factor: Air	0,15 (ESVOC 8.6c.v1, ESVOC 8.7c.v1)
Emission or Release Factor: Air	1 (ESVOC 8.23a.v1)
Emission or Release Factor: Air	0,95 (ESVOC 8.10b.v1)
Emission or Release Factor: Air	0,9 (ESVOC 8.11a.v1)
Emission or Release Factor: Air	0,01 (ESVOC 9.6b.v1)
Emission or Release Factor: Air	0,05 (ESVOC 9.7b.v1)
Emission or Release Factor: Air	0,001 (ESVOC 9.12b.v1, ESVOC 9.24a.v1)
Emission or Release Factor: Air	0,05 (ESVOC 9.13b.v1)
Emission or Release Factor: Air	0,005 (ESVOC 9.24b.v1)
Emission or Release Factor: Water	0,5 (ESVOC 8.17.v1)
Emission or Release Factor: Water	0,01 (ESVOC 8.3b.v1, ESVOC 9.6b.v1, ESVOC 8.11a.v1, ESVOC 8.21b.v1)
Emission or Release Factor: Water	0,05 (ESVOC 8.6c.v1, ESVOC 8.7c.v1)
Emission or Release Factor: Water	0,025 (ESVOC 9.7b.v1, ESVOC 8.23a.v1, ESVOC 8.10b.v1)
Emission or Release Factor: Water	0,00001 (ESVOC 9.12b.v1)
Emission or Release Factor: Soil	0,01 (ESVOC 8.3b.v1, ESVOC 9.6b.v1, ESVOC 8.21b.v1)

	Emission or Release Factor: Soil	0,05 (ESVOC 8.6c.v1, ESVOC 8.7c.v1)
	Emission or Release Factor: Soil	0,09 (ESVOC 8.11a.v1)
	Emission or Release Factor: Soil	0,025 (ESVOC 9.13b.v1, ESVOC 8.10b.v1)
	Emission or Release Factor: Soil	0,00001 (ESVOC 9.12b.v1)
	Indoor or outdoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion	General exposures	Handle substance within a closed system.

from source towards the worker	Closed systems	Store substance within a closed system.(PROC1)
	General exposures (closed systems) Continuous process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC2)
	Mixing operations Batch process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Batch process	Provide extract ventilation to points where emissions occur.(PROC4)
	Mixing operations (open systems) Batch process	Provide extract ventilation to points where emissions occur.(PROC4, PROC5)
	Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Limit the substance content in the product to 10 %.(PROC11)
	Material transfers Dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Roller, spreader, flow application	Provide extract ventilation to points where emissions occur. Ensure operation is undertaken outdoors.(PROC10)
	Dipping, immersion and pouring	Provide extract ventilation to points where emissions occur. Ensure operation is undertaken outdoors.(PROC13)
	Laboratory activities	Handle in a fume cupboard or under extract ventilation.(PROC15)
	Material transfers Non-dedicated facility	Provide extract ventilation to material transfer points and other openings.(PROC8a)
	Equipment cleaning and maintenance Non-dedicated facility	Drain or remove substance from equipment prior to break-in or maintenance. Limit the substance content in the product to 5 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes. Ensure operation is undertaken outdoors.(PROC8a)
Conditions and measures related to personal protection, hygiene and health evaluation	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection.

	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC11)
Material transfers Dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection.(PROC8b)
Roller, spreader, flow application	Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection. Wear chemically resistant gloves.(PROC10)
Dipping, immersion and pouring	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC13)
Material transfers Non-dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC8a)
Equipment cleaning and maintenance Non-dedicated facility	Wear chemically resistant gloves. Use suitable eye protection. Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC8a)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 9.24a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 9.24a.v1	---	---	Msafe	6638kg/day	---
ESVOC SPERC 9.24a.v1	---	Fresh water	exposure estimate	0,0000883mg/L	0,01
ESVOC SPERC 9.24a.v1	---	Fresh water sediment	exposure estimate	0,0228mg/kg dry weight (d.w.)	0,01
ESVOC SPERC 9.24a.v1	---	Marine water	exposure estimate	0,0000746mg/L	0,00848
ESVOC SPERC 9.24a.v1	---	Marine sediment	exposure estimate	0,00193mg/kg dry weight (d.w.)	0,00849
ESVOC SPERC 9.24a.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,0001mg/L	< 0,0001
ESVOC SPERC 9.24a.v1	---	Indirect exposure to humans via the	exposure estimate	---	0,000708

		environment			
ESVOC SPERC 9.24a.v1	---	Agricultural soil	exposure estimate	0,000004mg/kg dry weight (d.w.)	0,000009
ESVOC SPERC 9.24a.v1	---	Air	exposure estimate	0,0000739	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term	0,01ppm	0,00947
PROC1, PROC3	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,155
PROC2	---	Worker - inhalative, long-term	1,70ppm	0,284
PROC2	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,621
PROC3	---	Worker - inhalative, long-term	5,20ppm	0,860
PROC4	---	Worker - inhalative, long-term	0,350ppm	0,0590
PROC4, PROC8a, PROC8b, PROC13	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC5	---	Worker - inhalative, long-term	3,40ppm	0,569
PROC5	---	Worker - dermal, short-term - local	0,005mg/cm2	0,0311
PROC8a, PROC11, PROC15	---	Worker - inhalative, long-term	4,10ppm	0,686
PROC8b	---	Worker - inhalative, long-term	3,50ppm	0,332
PROC10	---	Worker - inhalative, long-term	3,10ppm	0,518
PROC10	---	Worker - dermal, short-term - local	0,02mg/cm2	0,124

PROC11	---	Worker - dermal, short-term - local	0,0313mg/cm2	0,194
PROC13	---	Worker - inhalative, long-term	0,290ppm	0,0452
PROC15	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,0155

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 16: Use as a solvent	
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC15: Non-metal-surface treatment 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 ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems
Activity	Use as process solvent or extraction agent. Includes 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: ERC8a, ERC8d, ERC9a, ERC9b

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 8.3c.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.4b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.6e.v1 has been used to evaluate the exposure for the environment.
, ESVOC SpERC 8.23b.v1.
, ESVOC spERC 8.16.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 9.6d.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 9.12c.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 9.13c.v1 has been used to evaluate the exposure for the environment.
, ESVOC SPERC 9.24c.v1.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	1800
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	20 (ESVOC 8.3c.v1, ESVOC 8.4c.v1, ESVOC 9.6d.v1, ESVOC 8.6e.v1, ESVOC 8.23b.v1, ESVOC 9.12c.v1, ESVOC 9.13c.v1, ESVOC 8.16.v1, ESVOC 9.24c.v1)
	Fraction of regional tonnage used locally:	0,0005 (ESVOC 8.3c.v1, ESVOC 8.4c.v1, ESVOC 9.6d.v1, ESVOC 8.6e.v1, ESVOC 8.23b.v1, ESVOC 9.13c.v1, ESVOC 8.16.v1, ESVOC 9.12c.v1, ESVOC 9.24c.v1)
	Maximum daily site tonnage (kg/day):	0,00274 (ESVOC 8.3c.v1, ESVOC 8.4c.v1, ESVOC 8.6e.v1, ESVOC 8.23b.v1, ESVOC 8.16.v1, ESVOC 9.6d.v1, ESVOC 9.12c.v1, ESVOC 9.13c.v1, ESVOC 9.24c.v1)
	Annual site tonnage	0,01 (ESVOC 8.3c.v1, ESVOC 8.4c.v1, ESVOC 8.6e.v1, ESVOC 8.23b.v1, ESVOC 9.6d.v1,

		ESVOC 9.12c.v1, ESVOC 8.16.v1, ESVOC 9.13c.v1, ESVOC 9.24c.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	0,95 (ESVOC 8.4c.v1, ESVOC 8.16.v1)
	initial release prior to RMM, . (ESVOC 8.4c.v1, ESVOC 8.16.v1)	
	Emission or Release Factor: Air	0,98 (ESVOC 8.3c.v1)
	initial release prior to RMM, . (ESVOC 8.3c.v1)	
	Emission or Release Factor: Air	0,15 (ESVOC 8.6e.v1)
	initial release prior to RMM, . (ESVOC 8.6e.v1)	
	Emission or Release Factor: Air	1 (ESVOC 8.23b.v1)
	initial release prior to RMM, . (ESVOC 8.23b.v1)	
	Emission or Release Factor: Air	0,01 (ESVOC 9.6d.v1)
	initial release prior to RMM, . (ESVOC 9.6d.v1)	
	Emission or Release Factor: Air	0,0001 (ESVOC 9.12c.v1)
	initial release prior to RMM, . (ESVOC 9.12c.v1)	
	Emission or Release Factor: Air	0,05 (ESVOC 9.13c.v1)
	initial release prior to RMM, . (ESVOC 9.13c.v1)	
	Emission or Release Factor: Air	0,005 (ESVOC 9.24c.v1)
	initial release prior to RMM, . (ESVOC 9.24c.v1)	
	Emission or Release Factor: Water	0,025 (ESVOC 8.4c.v1, ESVOC 8.16.v1, ESVOC 9.13c.v1)
	initial release prior to RMM, . (ESVOC 8.4c.v1, ESVOC 8.16.v1, ESVOC 9.13c.v1)	
	Emission or Release Factor: Water	0,01 (ESVOC 8.3c.v1, ESVOC 9.6d.v1)
	initial release prior to RMM, . (ESVOC 8.3c.v1, ESVOC 9.6d.v1)	
	Emission or Release	0,05 (ESVOC 8.6e.v1)

	Factor: Water	
	initial release prior to RMM, . (ESVOC 8.6e.v1)	
	Emission or Release Factor: Water	0,00001 (ESVOC 9.12c.v1)
	initial release prior to RMM, . (ESVOC 9.12c.v1)	
	Emission or Release Factor: Soil	0,025 (ESVOC 8.4c.v1, ESVOC 9.13c.v1, ESVOC 8.16.v1)
	initial release prior to RMM, . (ESVOC 8.4c.v1, ESVOC 9.13c.v1, ESVOC 8.16.v1)	
	Emission or Release Factor: Soil	0,005 (ESVOC 8.3c.v1)
	initial release prior to RMM, . (ESVOC 8.3c.v1)	
	Emission or Release Factor: Soil	0,05 (ESVOC 8.6e.v1)
	initial release prior to RMM, . (ESVOC 8.6e.v1)	
	Emission or Release Factor: Soil	0,01 (ESVOC 9.6d.v1)
	initial release prior to RMM, . (ESVOC 9.6d.v1)	
	Emission or Release Factor: Soil	0,00001 (ESVOC 9.12c.v1)
	initial release prior to RMM, . (ESVOC 9.12c.v1)	
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
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		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling consumer exposure for: PC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	1000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	1 days/year
	Exposure duration per event	2,20 h
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,50 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 8.3c.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 8.3c.v1	---	Fresh water	exposure estimate	0,0000888mg/L	0,0101
ESVOC SPERC 8.3c.v1	---	Fresh water sediment	exposure estimate	0,0229mg/kg dry weight (d.w.)	0,0101
ESVOC SPERC 8.3c.v1	---	Marine water	exposure estimate	0,0000075mg/L	0,00854
ESVOC SPERC 8.3c.v1	---	Marine sediment	exposure estimate	0,00195mg/kg dry weight (d.w.)	0,00855
ESVOC SPERC 8.3c.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,0001mg/L	< 0,0001

ESVOC SPERC 8.3c.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 8.3c.v1	---	Agricultural soil	exposure estimate	0,0000168mg/kg dry weight (d.w.)	0,000133
ESVOC SPERC 8.3c.v1	---	Air	exposure estimate	0,0000739	---

Consumers

PC15: ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC15	---	Consumer - inhalative, long-term - systemic	0,0174ppm	0,0112
PC15	---	consumer dermal, acute - local	0,0211mg/cm2	0,914

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 17: Use as a chemical stripper	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	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 PROC21: Low energy manipulation of substances bound in materials and/ or articles PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles
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

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, CEPE SPERC 4.na.v1.
, CEPE SPERC 4.nb.v1.
, ESVOC spERC 4.3a.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.
, For more information on spERC from the Coatings & Inks sector, please visit the website: www.cepe.org.

Amount used	Amounts used in the EU (tonnes/year)	300
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	100 (CEPE 4.1a.v1, CEPE 8a.n.v1, ESVOC 4.3a.v1)
	Fraction of regional tonnage used locally:	1 (CEPE 4.1a.v1, CEPE 8a.n.v1, ESVOC 4.3a.v1)
	Maximum daily site tonnage (kg/day):	455 (CEPE 4.1a.v1, CEPE 8a.n.v1)
	Maximum daily site tonnage (kg/day):	333,3 (ESVOC 4.3a.v1)
	Annual site tonnage	100 (CEPE 4.1a.v1, CEPE 8a.n.v1, ESVOC 4.3a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100

Other given operational conditions affecting environmental exposure	Continuous release(CEPE 4.1a.v1, CEPE 4.1b.v1)	
	Number of emission days per year	220 (CEPE 4.1a.v1, CEPE 4.1b.v1)
	Continuous release(ESVOC 4.3a.v1)	
	Number of emission days per year	300 (ESVOC 4.3a.v1)
	Emission or Release Factor: Air	0,8 (CEPE 4.1a.v1)
	initial release prior to RMM, . (CEPE 4.1a.v1)	
	Emission or Release Factor: Air	0,98 (CEPE 8a.n.v1)
	initial release prior to RMM, . (CEPE 8a.n.v1)	
	Emission or Release Factor: Air	0,098 (ESVOC 4.3a.v1)
	initial release prior to RMM, . (ESVOC 4.3a.v1)	
	Emission or Release Factor: Water	0,02 (CEPE 4.1a.v1, CEPE 8a.n.v1)
	initial release prior to RMM, . (CEPE 4.1a.v1, CEPE 8a.n.v1)	
	Emission or Release Factor: Water	0,0007 (ESVOC 4.3a.v1)
	initial release prior to RMM, . (ESVOC 4.3a.v1)	
	Emission or Release Factor: Soil	0
	initial release prior to RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
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		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (only CEPE 4.1a.v1)

	Flow rate of sewage treatment plant effluent	2.000 m3/d (only CEPE 4.1a.v1)
	Degradation efficiency	96,2 % (only CEPE 4.1a.v1)
	Percentage removed from waste water	99 % (only CEPE 4.1a.v1)
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (only CEPE 4.1b.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (only CEPE 4.1b.v1)
	Degradation efficiency	96,2 % (only CEPE 4.1b.v1)
	Percentage removed from waste water	95 % (only CEPE 4.1b.v1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b, PROC21, PROC24		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	Disposal of wastes Transfer of process wastes to storage containers	Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8a, PROC8b)
	Preparation of material for application (emitted dust)	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC21)
	Operation and lubrication of high energy open equipment (emitted dust)	Limit the substance content in the product to 25 %. Provide extract ventilation to points where emissions occur.(PROC24)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 4.3a.v1: Environmental exposure estimation is based on Ecetoc TRA model v2.
ESVOC SPERC 4.3a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 4.3a.v1	---	---	Msafe	3107kg/day	---
ESVOC SPERC 4.3a.v1	---	Fresh water	exposure estimate	0,000532mg/L	0,0605
ESVOC SPERC 4.3a.v1	---	Fresh water sediment	exposure estimate	0,137mg/kg dry weight (d.w.)	0,0605
ESVOC SPERC 4.3a.v1	---	Marine water	exposure estimate	0,0000519mg/L	0,0589
ESVOC SPERC 4.3a.v1	---	Marine sediment	exposure estimate	0,0134mg/kg dry weight (d.w.)	0,059
ESVOC SPERC 4.3a.v1	---	Sewage treatment plant (STP)	exposure estimate	0,00446mg/L	0,000675
ESVOC SPERC 4.3a.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 4.3a.v1	---	Agricultural soil	exposure estimate	0,0116mg/kg dry weight (d.w.)	0,107
ESVOC SPERC 4.3a.v1	---	Air	exposure estimate	0,00753	---

Workers

PROC8b, PROC21, PROC24: Advanced REACH Tool (ART model) (inhalative exposure)
PROC8a, PROC8b, PROC21, PROC24: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC8a	---	Worker - inhalative, long-term - systemic	0,09ppm	0,0151
PROC8b	---	Worker - inhalative, long-term	0,09ppm	0,0853
PROC21	---	Worker - dermal, short-term - local	0,0124mg/cm2	0,0769
PROC8b	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC8a	---	Worker - dermal, short-	0,06mg/cm2	0,373

		term - local		
PROC21	---	Worker - inhalative, long-term	0,6ppm	0,568
PROC24	---	Worker - inhalative, long-term	2,20ppm	0,368
PROC24	---	Worker - dermal, short-term - local	0,0124mg/cm2	0,0769

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 18: Use as a chemical stripper	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	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 PROC21: Low energy manipulation of substances bound in materials and/ or articles PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles
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

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 8.3b.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	100
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	10
	Fraction of regional tonnage used locally:	0,0005
	Maximum daily site tonnage (kg/day):	0,0137
	Annual site tonnage	0,005
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	0,98
	initial release prior to RMM, .	

	Emission or Release Factor: Water	0,01
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,01
	initial release prior to RMM, .	
	Indoor or outdoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b, PROC21, PROC24		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	

Technical conditions and measures to control dispersion from source towards the worker	Disposal of wastes Transfer of process wastes to storage containers	Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8a, PROC8b)
	Preparation of material for application Low energy spreading using hand held tools	Limit the substance content in the product to 10 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC21)
	Preparation of material for application Operation and lubrication of high energy open equipment (emitted dust)	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur. Avoid carrying out operation for more than 15 minutes.(PROC24)
Conditions and measures related to personal protection, hygiene and health evaluation	Preparation of material for application Low energy spreading using hand held tools	Use suitable eye protection. Wear chemically resistant gloves.(PROC21)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 8.3b.v1: Environmental exposure estimation is based on Ecetoc TRA model v2.

ESVOC SPERC 8.3b.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 8.3b.v1	---	---	Msafe	1,4kg/day	---
ESVOC SPERC 8.3b.v1	---	Fresh water	exposure estimate	0,0000892mg/L	0,0101
ESVOC SPERC 8.3b.v1	---	Fresh water sediment	exposure estimate	0,0230mg/kg dry weight (d.w.)	0,0101
ESVOC SPERC 8.3b.v1	---	Marine water	exposure estimate	0,0000754mg/L	0,00857
ESVOC SPERC 8.3b.v1	---	Marine sediment	exposure estimate	0,00195mg/kg dry weight (d.w.)	0,00858
ESVOC SPERC 8.3b.v1	---	Sewage treatment plant (STP)	exposure estimate	0,0000026mg/L	< 0,001
ESVOC SPERC 8.3b.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC	---	Agricultural soil	exposure	0,0000104mg/	0,000071

8.3b.v1			estimate	kg dry weight (d.w.)	
ESVOC SPERC 8.3b.v1	---	Air	exposure estimate	0,0000743	---

Workers

PROC8a, PROC8b, PROC21, PROC24: Advanced REACH Tool (ART model) (inhalative exposure)
PROC8a, PROC8b, PROC21, PROC24: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC8a	---	Worker - inhalative, long-term	0,09ppm	0,0151
PROC8a	---	Worker - dermal, short-term - local	0,06mg/cm2	0,373
PROC8b	---	Worker - inhalative, long-term	0,3ppm	0,284
PROC8b	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC21	---	Worker - inhalative, long-term	0,660ppm	0,110
PROC21	---	Worker - dermal, short-term - local	0,0124mg/cm2	0,0769
PROC24	---	Worker - inhalative, long-term	2,20ppm	0,368
PROC24	---	Worker - dermal, short-term - local	0,0247mg/cm2	0,154

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 19: Use as a chemical stripper	
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC9a: Coatings and paints, thinners, paint removers
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

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 8.3c.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20 %.
Amount used	Amounts used in the EU (tonnes/year)	100
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	10
	Fraction of regional tonnage used locally:	0,0005
	Maximum daily site tonnage (kg/day):	0,0137
	Annual site tonnage	0,005
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	0,985
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,01
	initial release prior to RMM, .	
	Emission or Release	0,005

	Factor: Soil	
	initial release prior to RMM, .	
	Indoor or outdoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling consumer exposure for: PC9a		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	3750 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	2 days/year
	Exposure duration per event	2,20 h
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,50 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g.	No specific risk management measure identified beyond those operational	

behavioural advice, personal protection and hygiene)	conditions stated.

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 8.3c.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 8.3c.v1	---	Fresh water	exposure estimate	0,0000892mg/L	0,0101
ESVOC SPERC 8.3c.v1	---	Fresh water sediment	exposure estimate	0,0230mg/kg dry weight (d.w.)	0,0101
ESVOC SPERC 8.3c.v1	---	Marine water	exposure estimate	0,0000075mg/L	0,00857
ESVOC SPERC 8.3c.v1	---	Marine sediment	exposure estimate	0,00195mg/kg dry weight (d.w.)	0,00858
ESVOC SPERC 8.3c.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,0001mg/L	< 0,0001
ESVOC SPERC 8.3c.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 8.3c.v1	---	Agricultural soil	exposure estimate	0,0000104mg/kg dry weight (d.w.)	0,000071
ESVOC SPERC 8.3c.v1	---	Air	exposure estimate	0,0000743	---

Consumers

PC9a: ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC9a	---	consumer dermal, acute - local	0,0194mg/cm2	0,914
PC9a	---	Consumer - inhalative, long-term - systemic	0,120ppm	0,0837

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 20: Use in the compounding of fragrances	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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) PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations
Activity	Transport and Distribution, This use is exempted from registration according to Art.2 (5)(6) of the REACH regulation (EC) No 1907/2006. Therefore the conditions and measures described in this Exposure Scenario are only intended for a technical function of the substance

2.1 Contributing scenario controlling environmental exposure for: ERC2

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.

Amount used	Amounts used in the EU (tonnes/year)	80
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	80
	Fraction of regional tonnage used locally:	0,15
	Maximum daily site tonnage (kg/day):	48
	Annual site tonnage	12
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10

	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	250
	Emission or Release Factor: Air	0,025
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,02
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,0001
	initial release prior to RMM, .	
	Emission or Release Factor: Air	0,025
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Water	0,001
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Soil	0,0001
	based on initial default values with subsequent RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
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		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.

	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	Material transfers Batch process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.(PROC3)
	Mixing operations Batch process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.(PROC3)
	Filling/ preparation of equipment from drums or containers. Batch process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.(PROC5)
	Mixing operations (open systems) Batch process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.(PROC5)
	Transfer from/pouring from containers With sample collection Non-dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC8a)
	Transfer from/pouring from containers With sample collection Dedicated facility	Avoid carrying out operation for more than 1 hour. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Process sampling	Limit the substance content in the product to 25 %. Fill containers/cans at dedicated filling points supplied with local extract ventilation. Avoid carrying out operation for more than 1

		hour.(PROC8b)
	Equipment cleaning and maintenance	Limit the substance content in the product to 5 %. Drain down system prior to equipment break-in or maintenance. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC8b)
	Equipment cleaning and maintenance	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Limit the substance content in the product to 5 %. Drain down system prior to equipment opening or maintenance.(PROC8b)
	Drum and small package filling	Avoid carrying out operation for more than 1 hour. Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings.(PROC9)
	Laboratory activities	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour. Limit the substance content in the product to 25 %.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Process sampling	Use suitable eye protection and gloves.(PROC3)
	Filling/ preparation of equipment from drums or containers. Batch process	Use suitable eye protection. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC5)
	Mixing operations (open systems) Batch process	Use suitable eye protection. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC5)
	Transfer from/pouring from containers With sample collection Non-dedicated facility	Use suitable eye protection. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC8a)
	Transfer from/pouring from containers With sample collection Dedicated facility	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Process sampling	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Drum and small package filling	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC9)

3. Exposure estimation and reference to its source

Environment

ERC2: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2	---	---	Msafe	375kg/day	---
ERC2	---	Fresh water	exposure estimate	0,000849mg/L	0,0965
ERC2	---	Fresh water sediment	exposure estimate	0,219mg/kg dry weight (d.w.)	0,0966
ERC2	---	Marine water	exposure estimate	0,0000836mg/L	0,095
ERC2	---	Marine sediment	exposure estimate	0,0216mg/kg dry weight (d.w.)	0,0951
ERC2	---	Sewage treatment plant (STP)	exposure estimate	0,00764mg/L	0,00116
ERC2	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC2	---	Agricultural soil	exposure estimate	0,0189mg/kg dry weight (d.w.)	0,182
ERC2	---	Air	exposure estimate	0,00197	---

Workers

PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01ppm	0,00947
PROC1, PROC3	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,155
PROC3	---	Worker - inhalative, long-term	4,20ppm	0,702
PROC8a, PROC8b	---	Worker - inhalative, long-term	1,80ppm	0,301
PROC5	---	Worker - inhalative, long-term	1,1ppm	0,184

PROC5, PROC8a, PROC8b	---	Worker - dermal, short-term - local	0,0999ppm	0,621
PROC15	---	Worker - inhalative, long-term	8,40ppm	0,796
PROC15	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC9	---	Worker - inhalative, long-term	0,6ppm	0,568
PROC9	---	Worker - dermal, short-term - local	0,06mg/cm2	0,0373

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 21: Formulation of fragrances	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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, pelletisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations
Activity	This use is exempted from registration according to Art.2 (5)(6) of the REACH regulation (EC) No 1907/2006. Therefore the conditions and measures described in this Exposure Scenario are only intended for a technical function of the substance

2.1 Contributing scenario controlling environmental exposure for: ERC2

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, COLIPA SpERC 2.1.b.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.c.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.d.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.e.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.f.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.g.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.i.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.j.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.3.b.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.3.c.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.2.b.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.2.c.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.b.v1 has been used to evaluate the exposure for the environment.

, AISE spERC 2.1.c.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.e.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.f.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.k.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.l.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.h.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.i.v1 has been used to evaluate the exposure for the environment.
, For more information on COLIPA spERC from the cosmetic sector, please visit the website: www.cosmeticseurope.eu.
, For more information on AISE spERC from the Detergents, Cleaning & Maintenance sector, please visit the website: www.aise.eu.

Amount used	Amounts used in the EU (tonnes/year)	2000
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	100 (AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1, AISE 2.1.h.v1, AISE 2.1.i.v1, AISE 2.1.k.v1, AISE 2.1.l.v1, COLIPA 2.1.b.v1, COLIPA 2.1.c.v1, COLIPA 2.1.d.v1, COLIPA 2.1.e.v1, COLIPA 2.1.f.v1, COLIPA 2.1.g.v1, COLIPA 2.1.h.v1, COLIPA 2.1.j.v1, COLIPA 2.2.b.v1, COLIPA 2.2.c.v1, COLIPA 2.3.b.v1, COLIPA 2.3.c.v1, COLIPA 2.1.i.v1)
	Fraction of regional tonnage used locally:	1 (AISE 2.1.b.v1, AISE 2.1.e.v1, AISE 2.1.h.v1, AISE 2.1.k.v1, COLIPA 2.1.b.v1, COLIPA 2.1.d.v1, COLIPA 2.1.f.v1, COLIPA 2.2.b.v1, COLIPA 2.3.b.v1, COLIPA 2.1.i.v1)
	Fraction of regional tonnage used locally:	0,0220 (COLIPA 2.1.c.v1, COLIPA 2.1.e.v1, COLIPA 2.1.g.v1, COLIPA 2.1.j.v1, COLIPA 2.2.c.v1, COLIPA 2.3.c.v1)
	Fraction of regional tonnage used locally:	0,020 (AISE 2.1.c.v1, AISE 2.1.f.v1, AISE 2.1.i.v1, AISE 2.1.l.v1)
	Maximum daily site tonnage (kg/day):	10 (COLIPA 2.1.c.v1, COLIPA 2.1.e.v1, COLIPA 2.1.g.v1, COLIPA 2.1.j.v1, COLIPA 2.2.c.v1, COLIPA 2.3.b.v1, COLIPA 2.3.c.v1, AISE 2.1.c.v1, AISE 2.1.f.v1, AISE 2.1.i.v1, AISE 2.1.l.v1)
	Maximum daily site tonnage (kg/day):	454,55 (COLIPA 2.1.b.v1, COLIPA 2.1.i.v1)
	Maximum daily site tonnage (kg/day):	455 (COLIPA 2.1.d.v1, COLIPA 2.1.f.v1, COLIPA 2.2.b.v1, COLIPA 2.3.b.v1, AISE 2.1.b.v1, AISE 2.1.e.v1, AISE 2.1.h.v1, AISE 2.1.k.v1)
	Annual site tonnage	100 (COLIPA 2.1.b.v1, COLIPA 2.1.d.v1, COLIPA 2.1.e.v1, COLIPA 2.2.b.v1, COLIPA 2.3.b.v1, AISE 2.1.b.v1, AISE 2.1.e.v1, AISE 2.1.h.v1, AISE

		2.1.k.v1, COLIPA 2.1.i.v1)
	Annual site tonnage	2,2 (COLIPA 2.1.c.v1, COLIPA 2.1.e.v1, COLIPA 2.1.g.v1, COLIPA 2.1.j.v1, COLIPA 2.2.c.v1)
	Annual site tonnage	0,2 (COLIPA 2.3.c.v1, AISE 2.1.c.v1, AISE 2.1.f.v1, AISE 2.1.i.v1, AISE 2.1.l.v1)
Frequency and duration of use	Continuous exposure	Continuous release
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release(AISE 2.1.b.v1, AISE 2.1.e.v1, AISE 2.1.h.v1, COLIPA 2.1.b.v1, COLIPA 2.1.c.v1, COLIPA 2.1.d.v1, COLIPA 2.1.e.v1, COLIPA 2.1.f.v1, COLIPA 2.1.g.v1, COLIPA 2.1.j.v1, COLIPA 2.2.b.v1, COLIPA 2.2.c.v1, COLIPA 2.3.b.v1, COLIPA 2.1.i.v1)	
	Number of emission days per year	220 (AISE 2.1.b.v1, AISE 2.1.e.v1, AISE 2.1.h.v1, COLIPA 2.1.b.v1, COLIPA 2.1.c.v1, COLIPA 2.1.d.v1, COLIPA 2.1.e.v1, COLIPA 2.1.f.v1, COLIPA 2.1.g.v1, COLIPA 2.1.j.v1, COLIPA 2.2.b.v1, COLIPA 2.2.c.v1, COLIPA 2.3.b.v1, COLIPA 2.1.i.v1)
	Continuous release(AISE 2.1.c.v1, AISE 2.1.f.v1, AISE 2.1.i.v1, AISE 2.1.l.v1, COLIPA 2.3.c.v1)	
	Number of emission days per year	20 (AISE 2.1.c.v1, AISE 2.1.f.v1, AISE 2.1.i.v1, AISE 2.1.l.v1, COLIPA 2.3.c.v1)
	Emission or Release Factor: Air	0,0002 (AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1)
	initial release prior to RMM, . (AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1)	
	Emission or Release Factor: Water	0,002 (COLIPA 2.1.b.v1, COLIPA 2.3.c.v1, AISE 2.1.c.v1, AISE 2.1.i.v1, AISE 2.1.k.v1)
	initial release prior to RMM, . (COLIPA 2.1.b.v1, COLIPA 2.3.c.v1, AISE 2.1.c.v1, AISE 2.1.i.v1, AISE 2.1.k.v1)	
	Emission or Release Factor: Water	0,004 (AISE 2.1.l.v1, COLIPA 2.1.c.v1)
	based on initial default values with subsequent RMM, . (AISE 2.1.l.v1, COLIPA 2.1.c.v1)	
	Emission or Release Factor: Water	0,03 (COLIPA 2.1.e.v1)
	Emission or Release Factor: Water	0,015 (COLIPA 2.1.d.v1)
	based on initial default values with subsequent RMM, . (COLIPA 2.1.d.v1)	
	Emission or Release Factor: Water	0,01 (COLIPA 2.1.f.v1)

	based on initial default values with subsequent RMM, . (COLIPA 2.1.f.v1)	
	Emission or Release Factor: Water	0,02 (COLIPA 2.1.g.v1, COLIPA 2.1.i.v1)
	initial release prior to RMM, . (COLIPA 2.1.g.v1, COLIPA 2.1.i.v1)	
	Emission or Release Factor: Water	0,04 (COLIPA 2.1.j.v1)
	Emission or Release Factor: Water	0,001 (AISE 2.1.b.v1, AISE 2.1.h.v1, COLIPA 2.3.b.v1)
	Emission or Release Factor: Water	0,0002 (AISE 2.1.f.v1)
	Emission or Release Factor: Water	0,0001 (AISE 2.1.e.v1)
	Indoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Domestic sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Domestic sewage treatment plant (only AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (only AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1)
	Degradation efficiency	99 % (only AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1)
	Percentage removed from waste water	99 % (only AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1)
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, 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 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system. Limit the substance content in the product to 25 %.(PROC1)
	Initial factory fill of equipment Continuous process With sample collection	Avoid carrying out operation for more than 4 hours. Limit the substance content in the product to 25 %. Provide extract ventilation to points where emissions occur.(PROC2, PROC9)
	Material transfers With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours. Limit the substance content in the product to 25 %.(PROC1, PROC2, PROC3)
	Mixing operations Continuous process With sample collection	Avoid carrying out operation for more than 4 hours. Limit the substance content in the product to 25 %. Provide extract ventilation to points where emissions occur.(PROC3)
	Mixing operations	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours. Limit the substance content in the product to 25 %.(PROC4)
	Mixing operations (open systems) Batch process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Limit the substance content in the product to 25 %. Avoid carrying out operation for more than 4 hours.(PROC5)
	Filling/ preparation of equipment from drums or containers. Batch process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Limit the substance content in the product to 25 %. Avoid carrying out operation for more than 4 hours.(PROC5)
	Transfer from/pouring from containers	Limit the substance content in the product to 25 %. Avoid carrying out operation for more than 1 hour.

With sample collection Non-dedicated facility	Provide extract ventilation to material transfer points and other openings.(PROC8a)
Transfer from/pouring from containers With sample collection Dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour. Limit the substance content in the product to 25 %.(PROC8b)
Equipment cleaning and maintenance	Limit the substance content in the product to 5 %. Provide extract ventilation to points where emissions occur. Avoid carrying out operation for more than 1 hour.(PROC8b)
Drum and small package filling Non-dedicated facility	Avoid carrying out operation for more than 1 hour. Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings.(PROC9, PROC8a)
Drum and small package filling Dedicated facility	Limit the substance content in the product to 1 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 4 hours.(PROC9, PROC8b)
Small package filling	Limit the substance content in the product to 1 %. Fill containers/cans at dedicated filling points supplied with local extract ventilation.(PROC9)
Drum and small package filling Bulk transfers Dedicated facility	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC9, PROC8b)
Small package filling	Limit the substance content in the product to 1 %. Fill containers/cans at dedicated filling points supplied with local extract ventilation.(PROC9)
Dipping, immersion and pouring	Limit the substance content in the product to 1 %. Provide extract ventilation to points where emissions occur.(PROC13)
Production of articles by dipping and pouring	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC13)
Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC14)
Process sampling	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not

		less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC8b)
	Laboratory activities	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Mixing operations (open systems) Batch process	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC5)
	Filling/ preparation of equipment from drums or containers.	Wear chemically resistant gloves. Use suitable eye protection.(PROC5)
	Transfer from/pouring from containers With sample collection Non-dedicated facility	Wear chemically resistant gloves. Use suitable eye protection.(PROC8a)
	Transfer from/pouring from containers With sample collection Dedicated facility	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Drum and small package filling Non-dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC9, PROC8a)
	Drum and small package filling Bulk transfers Dedicated facility	Wear chemically resistant gloves. Use suitable eye protection.(PROC9, PROC8b)

3. Exposure estimation and reference to its source

Environment

AISE SPERC 2.1.b.v1, COLIPA SPERC 2.1.b.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
COLIPA SPERC 2.1.b.v1	---	---	Msafe	1102kg/day	---
COLIPA SPERC 2.1.b.v1	---	Fresh water	exposure estimate	0,00182mg/L	0,207
COLIPA SPERC 2.1.b.v1	---	Fresh water sediment	exposure estimate	0,470mg/kg dry weight (d.w.)	0,207
COLIPA SPERC 2.1.b.v1	---	Marine water	exposure estimate	0,000180mg/L	0,205

COLIPA SPERC 2.1.b.v1	---	Sewage treatment plant (STP)	exposure estimate	0,0174mg/L	0,00263
COLIPA SPERC 2.1.b.v1	---	Marine sediment	exposure estimate	0,0466mg/kg dry weight (d.w.)	0,205
COLIPA SPERC 2.1.b.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
COLIPA SPERC 2.1.b.v1	---	Agricultural soil	exposure estimate	0,0426mg/kg dry weight (d.w.)	0,413
COLIPA SPERC 2.1.b.v1	---	Air	exposure estimate	0,00197	---
AISE SPERC 2.1.b.v1	---	Fresh water	exposure estimate	0,000953mg/L	0,108
AISE SPERC 2.1.b.v1	---	Fresh water sediment	exposure estimate	0,246mg/kg dry weight (d.w.)	0,108
AISE SPERC 2.1.b.v1	---	Marine water	exposure estimate	0,0000940mg/L	0,107
AISE SPERC 2.1.b.v1	---	Marine sediment	exposure estimate	0,0243mg/kg dry weight (d.w.)	0,107
AISE SPERC 2.1.b.v1	---	Sewage treatment plant (STP)	exposure estimate	0,00868mg/L	0,00132
AISE SPERC 2.1.b.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000704
AISE SPERC 2.1.b.v1	---	Agricultural soil	exposure estimate	0,0213mg/kg dry weight (d.w.)	0,206
AISE SPERC 2.1.b.v1	---	Air	exposure estimate	0,000105	---

Workers

PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14: ECETOC TRA model v2

PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,006ppm	0,00568
PROC1	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0799

PROC2, PROC3	---	Worker - inhalative, long-term	3,1ppm	0,518
PROC2, PROC8b	---	Worker - dermal, short-term - local	0,06mg/cm2	0,319
PROC3	---	Worker - dermal, short-term - local	0,0129mg/cm2	0,0799
PROC5	---	Worker - inhalative, long-term	3,3ppm	0,552
PROC5	---	Worker - dermal, short-term - local	0,12mg/cm2	0,639
PROC8a	---	Worker - inhalative, long-term	5,0ppm	0,836
PROC8a, PROC13	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,532
PROC9	---	Worker - dermal, short-term - local	0,05mg/cm2	0,266
PROC8b	---	Worker - inhalative, long-term	5,3ppm	0,886
PROC9	---	Worker - inhalative, long-term	0,7ppm	0,663
PROC13	---	Worker - inhalative, long-term	4,7ppm	0,786
PROC14	---	Worker - inhalative, long-term	0,5ppm	0,474
PROC14	---	Worker - dermal, short-term - local	0,025mg/cm2	0,133
PROC15	---	Worker - inhalative, long-term	0,140ppm	0,133
---	---	Worker - dermal, short-term - local	0,00250mg/cm2	0,0133

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 22: Use of fragrances

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) 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 PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Activity	Manufacture of the substance or use as a process chemical or extraction 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., This use is exempted from registration according to Art.2 (5)(6) of the REACH regulation (EC) No 1907/2006. Therefore the conditions and measures described in this Exposure Scenario are only intended for a technical function of the substance

2.1 Contributing scenario controlling environmental exposure for: ERC4

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, AISE spERC 4.1.v1 has been used to evaluate the exposure for the environment.
, For more information on AISE spERC from the Detergents, Cleaning & Maintenance sector, please visit the website: www.aise.eu.

Amount used	Amounts used in the EU (tonnes/year)	100
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	100
	Fraction of regional tonnage used locally:	0,01
	Maximum daily site tonnage (kg/day):	23

	Annual site tonnage	1
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	220
	Emission or Release Factor: Air	0
	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, .	
	Indoor use Process with efficient use of raw materials. Volatile compounds subject to air emission controls. Application of the STP sludge on agricultural soil	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
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		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Disposal methods	(Efficiency: > 90 %) (Waste water treatment ERC4)
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
	Recovery Methods	External recovery and recycling of waste should

		comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC15, PROC19		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Limit the substance content in the product to 1 %. Handle substance within a closed system. Store substance within a closed system.(PROC1, PROC2)
	Continuous process With sample collection	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC2)
	Material transfers Non-dedicated facility	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 1 hour.(PROC4, PROC8a)
	Semi-automatic process	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors.(PROC4)
	Mixing operations (open systems)	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC4)
	Spraying	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC7)
	Material transfers Non-dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Limit the substance content in the product to 1 %. Avoid carrying out operation for more than 15 minutes. Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC8a)

	Material transfers	Limit the substance content in the product to 1 %. Avoid carrying out operation for more than 1 hour. Ensure operation is undertaken outdoors.(PROC8a)
	Material transfers Dedicated facility	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Mixing operations Mixing operations (open systems) Batch process	Provide extract ventilation to points where emissions occur. Limit the substance content in the product to 1 %.(PROC3, PROC5)
	Rolling, Brushing	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.(PROC10)
	Batch process	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC10)
	Laboratory activities	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Mixing operations (open systems)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC4)
	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better. Wear chemically resistant gloves. Use suitable eye protection.(PROC7)
	Rolling, Brushing	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC10)

3. Exposure estimation and reference to its source

Environment

ERC4: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC4	---	---	Msafe	210241kg/day	---
ERC4	---	Fresh water	exposure estimate	0,000954mg/L	0,108

ERC4	---	Fresh water sediment	exposure estimate	0,246mg/kg dry weight (d.w.)	0,109
ERC4	---	Marine water	exposure estimate	0,0000940mg/L	0,107
ERC4	---	Marine sediment	exposure estimate	0,0243mg/kg dry weight (d.w.)	0,107
ERC4	---	Sewage treatment plant (STP)	exposure estimate	0,00868mg/L	0,00132
ERC4	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC4	---	Agricultural soil	exposure estimate	0,0213mg/kg dry weight (d.w.)	0,206
ERC4	---	Air	exposure estimate	0,000112	---

Workers

PROC1, PROC2, PROC4, PROC5, PROC7, PROC8a, PROC10, PROC14, PROC15, PROC19: ECETOC TRA model v2

PROC2, PROC4, PROC5, PROC7, PROC8a, PROC10, PROC13, PROC14, PROC15, PROC19: Advanced REACH Tool (ART model) (inhalative exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,001ppm	0,000947
PROC1, PROC15	---	Worker - dermal, short-term - local	0,0025mg/cm2	0,0155
PROC2	---	Worker - inhalative, long-term	0,07ppm	0,0663
PROC2	---	Worker - dermal, short-term - local	0,00999mg/cm2	0,062
PROC4	---	Worker - inhalative, long-term	1,2ppm	0,21
PROC4	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC7	---	Worker - inhalative, long-term	5,2ppm	0,87
PROC7	---	Worker - dermal, short-term - local	0,0625ppm	0,388
PROC8a, PROC15	---	Worker - inhalative, long-term	0,7ppm	0,663

PROC8a	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,62
PROC10	---	Worker - inhalative, long-term	0,3ppm	0,284
PROC10	---	Worker - dermal, short-term - local	0,04mg/cm2	0,248
PROC13	---	Worker - inhalative, long-term	4,7ppm	0,786
PROC14	---	Worker - inhalative, long-term	0,5ppm	0,474
PROC14	---	Worker - dermal, short-term - local	0,025mg/cm2	0,133
PROC15	---	Worker - inhalative, long-term	0,140ppm	0,133
---	---	Worker - dermal, short-term - local	0,00250mg/cm2	0,0133
PROC5	---	Worker - inhalative, long-term	0,67ppm	0,112
PROC5	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,62
PROC19	---	Worker - inhalative, long-term	2,2ppm	0,368
PROC19	---	Worker - dermal, short-term - local	0,103mg/cm2	0,640

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 23: Use of fragrances	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities 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 PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
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 ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) ERC11b: Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)
Activity	This use is exempted from registration according to Art.2 (5)(6) of the REACH regulation (EC) No 1907/2006. Therefore the conditions and measures described in this Exposure Scenario are only intended for a technical function of the substance

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC10b, ERC11b

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, COLIPA SpERC 8a.1.a.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 8a.1.c.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 8a.1.b.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 8a.1.b.v1 has been used to evaluate the exposure for the environment.
, AISE SPERC 8a.1.a.v1 has been used to evaluate the exposure for the environment.
, AISE SPERC 8a.1.c.v1 has been used to evaluate the exposure for the environment.
, For more information on COLIPA spERC from the cosmetic sector, please visit the website: www.cosmeticseurope.eu.
, For more information on AISE spERC from the Detergents, Cleaning & Maintenance sector, please visit the website: www.aise.eu.

Amount used	Amounts used in the EU (tonnes/year)	900

	Fraction of EU tonnage used in region:	0,053 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Fraction of EU tonnage used in region:	0,04 (AISE 8a.1.a.v1, AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Fraction of EU tonnage used in region:	0,1 (ERC8d, ERC10b, ERC11b)
	Regional use tonnage (tons/year):	5,3 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Regional use tonnage (tons/year):	4 (AISE 8a.1.b.v1, AISE 8a.1.c.v1, AISE 8a.1.a.v1)
	Regional use tonnage (tons/year):	10 (ERC10b, ERC11b, ERC8d)
	Fraction of regional tonnage used locally:	0,00075 (AISE 8a.1.a.v1, AISE 8a.1.b.v1, AISE 8a.1.c.v1, COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Fraction of regional tonnage used locally:	0,002 (ERC8d, ERC10b, ERC11b)
	Maximum daily site tonnage (kg/day):	0,0109 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Maximum daily site tonnage (kg/day):	0,0041 (AISE 8a.1.a.v1)
	Maximum daily site tonnage (kg/day):	0,0082 (ERC8d, AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Maximum daily site tonnage (kg/day):	0,0548 (ERC10b, ERC11b)
	Annual site tonnage	0,003975 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Annual site tonnage	0,0015 (AISE 8a.1.a.v1)
	Annual site tonnage	0,003 (AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Annual site tonnage	0,03 (ERC8d)
	Annual site tonnage	0,02 (ERC10b, ERC11b)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	1 (AISE 8a.1.c.v1, ERC8d, ERC10b, ERC11b, COLIPA 8a.1.b.v1)
	initial release prior to RMM, . (AISE 8a.1.c.v1, ERC8d, ERC10b, ERC11b, COLIPA 8a.1.b.v1)	

	Emission or Release Factor: Water	1 (ERC8d, ERC10b, ERC11b, AISE 8a.1.a.v1, AISE 8a.1.b.v1, COLIPA 8a.1.a.v1, COLIPA 8a.1.c.v1)
	initial release prior to RMM, . (ERC8d, ERC10b, ERC11b, AISE 8a.1.a.v1, AISE 8a.1.b.v1, COLIPA 8a.1.a.v1, COLIPA 8a.1.c.v1)	
	Emission or Release Factor: Soil	0,2 (ERC8d)
	initial release prior to RMM, . (ERC8d)	
	Emission or Release Factor: Soil	1 (ERC10b)
	initial release prior to RMM, . (ERC10b)	
	Indoor or outdoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC15, PROC19		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	

Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Limit the substance content in the product to 1 %. Handle substance within a closed system. Store substance within a closed system.(PROC1, PROC2)
	Material transfers Semi-automatic process Non-dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Limit the substance content in the product to 1 %. Avoid carrying out operation for more than 1 hour.(PROC8a)
	Material transfers Manual Non-dedicated facility	Limit the substance content in the product to 1 %. Avoid carrying out operation for more than 1 hour. Provide extract ventilation to material transfer points and other openings.(PROC8a)
	Continuous process	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC2)
	Semi-automatic process Use in closed batch process (synthesis or formulation)	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors.(PROC4)
	Material transfers Non-dedicated facility	Limit the substance content in the product to 1 %. Avoid carrying out operation for more than 1 hour. Provide extract ventilation to material transfer points and other openings.(PROC4, PROC8a)
	Surfaces Non-dedicated facility	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.(PROC10, PROC8a)
	Spraying	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors.(PROC11)
	Material transfers Dedicated facility	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Surfaces Cleaning	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC10)
	Rolling, Brushing	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4

		hours.(PROC10)
	Spraying	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC11)
	Laboratory activities	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC15)
	Mixing operations (open systems)	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC4, PROC5)
Conditions and measures related to personal protection, hygiene and health evaluation	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC11)
	Surfaces Cleaning	Wear chemically resistant gloves. Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection.(PROC10)
	Rolling, Brushing	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC10)
	Spraying	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection.(PROC11)
	Mixing operations (open systems)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC4, PROC5)

3. Exposure estimation and reference to its source

Environment

ERC8d, ERC10b, ERC11b: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC8d	---	Fresh water	exposure estimate	0,000245mg/L	0,0279
ERC8d	---	Fresh water	exposure	0,0634mg/kg	0,0279

		sediment	estimate	dry weight (d.w.)	
ERC8d	---	Marine water	exposure estimate	0,0000232mg/L	0,0263
ERC8d	---	Marine sediment	exposure estimate	0,00598mg/kg dry weight (d.w.)	0,00264
ERC8d	---	Sewage treatment plant (STP)	exposure estimate	0,00157mg/L	0,000238
ERC8d	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC8d	---	Agricultural soil	exposure estimate	0,00386mg/kg dry weight (d.w.)	0,00373
ERC8d	---	Air	exposure estimate	0,0000855	---
ERC10b, ERC11b	---	Fresh water	exposure estimate	0,000193mg/L	0,0220
ERC10b, ERC11b	---	Fresh water sediment	exposure estimate	0,0499mg/kg dry weight (d.w.)	0,020
ERC10b, ERC11b	---	Marine water	exposure estimate	0,0000179mg/L	0,0204
ERC10b, ERC11b	---	Marine sediment	exposure estimate	0,000464mg/kg dry weight (d.w.)	0,0204
ERC10b, ERC11b	---	Sewage treatment plant (STP)	exposure estimate	0,00105mg/L	0,000159
ERC10b, ERC11b	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC10b, ERC11b	---	Agricultural soil	exposure estimate	0,00257mg/kg dry weight (d.w.)	0,0249
ERC10b, ERC11b	---	Air	exposure estimate	0,0000818	---

Workers

PROC1, PROC2, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC15, PROC19: ECETOC TRA model v2

PROC1, PROC2, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC15, PROC19: Advanced REACH Tool (ART model) (inhalative exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR

PROC1	---	Worker - inhalative, long-term - systemic	0,001ppm	0,000974
PROC1	---	Worker - dermal, short-term - local	0,00250mg/cm2	0,0133
PROC2	---	Worker - inhalative, long-term	0,140ppm	0,133
PROC2	---	Worker - dermal, short-term - local	0,00999mg/cm2	0,0532
PROC5	---	Worker - inhalative, long-term	0,670ppm	0,112
PROC4	---	Worker - inhalative, long-term	1,2ppm	0,201
PROC5, PROC8a	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,532
PROC8a, PROC10, PROC11, PROC15	---	Worker - inhalative, long-term	0,7ppm	0,663
PROC8b	---	Worker - inhalative, long-term	0,350ppm	0,332
PROC8b	---	Worker - dermal, short-term - local	0,05mg/cm2	0,266
PROC10	---	Worker - dermal, short-term - local	0,04mg/cm2	0,213
PROC11	---	Worker - dermal, short-term - local	0,0781mg/cm2	0,832
PROC15	---	Worker - dermal, short-term - local	0,00250ppm	0,0133
PROC19	---	Worker - inhalative, long-term	2,20ppm	0,368
PROC19	---	Worker - dermal, short-term - local	0,103mg/cm2	0,549

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 24: Use of fragrances	
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC1: Adhesives, sealants PC3: Air care products PC8: Biocidal products (e.g. Disinfectants, pest control) PC9a: Coatings and paints, thinners, paint removers PC9b: Fillers, putties, plasters, modelling clay PC9c: Finger paints PC13: Fuels PC18: Ink and toners PC28: Perfumes, fragrances PC31: Polishes and wax blends PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids PC35: Washing and cleaning products PC39: Cosmetics, personal care products
Article categories	AC0: Other AC31: Scented clothes AC34: Scented Toys AC35: Scented paper articles
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 ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) ERC11b: Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)
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., This use is exempted from registration according to Art.2 (5)(6) of the REACH regulation (EC) No 1907/2006. Therefore the conditions and measures described in this Exposure Scenario are only intended for a technical function of the substance

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC10b, ERC11b

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, COLIPA SpERC 8a.1.a.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 8a.1.b.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 8a.1.c.v1 has been used to evaluate the exposure for the environment.
, AISE SPERC 8a.1.a.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 8a.1.b.v1 has been used to evaluate the exposure for the environment.
, AISE SPERC 8a.1.c.v1 has been used to evaluate the exposure for the environment.
, For more information on COLIPA spERC from the cosmetic sector, please visit the website: www.cosmeticseurope.eu.
, For more information on AISE spERC from the Detergents, Cleaning & Maintenance sector, please visit

the website: www.aise.eu.

Amount used	Amounts used in the EU (tonnes/year)	950
	Fraction of EU tonnage used in region:	0,053 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Fraction of EU tonnage used in region:	0,04 (AISE 8a.1.a.v1, AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Fraction of EU tonnage used in region:	0,1 (ERC8d, ERC10b, ERC11b)
	Regional use tonnage (tons/year):	5,3 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Regional use tonnage (tons/year):	4 (AISE 8a.1.a.v1, AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Regional use tonnage (tons/year):	10 (ERC8d, ERC10b, ERC11b)
	Fraction of regional tonnage used locally:	0,00075
	Maximum daily site tonnage (kg/day):	0,0109 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Maximum daily site tonnage (kg/day):	0,0082 (AISE 8a.1.a.v1, AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Maximum daily site tonnage (kg/day):	0,0548 (ERC8d, ERC10b, ERC11b)
	Annual site tonnage	0,004 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Annual site tonnage	0,003 (AISE 8a.1.a.v1, AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Annual site tonnage	0,02 (ERC8d, ERC10b, ERC11b)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	1 (AISE 8a.1.c.v1, COLIPA 8a.1.b.v1, ERC8d, ERC10b, ERC11b)
	initial release prior to RMM, . (AISE 8a.1.c.v1, COLIPA 8a.1.b.v1, ERC8d, ERC10b, ERC11b)	
	Emission or Release Factor: Water	1 (COLIPA 8a.1.a.v1, COLIPA 8a.1.c.v1, AISE 8a.1.a.v1, AISE 8a.1.b.v1, ERC8d, ERC10b,

		ERC11b)
	initial release prior to RMM, . (COLIPA 8a.1.a.v1, COLIPA 8a.1.c.v1, AISE 8a.1.a.v1, AISE 8a.1.b.v1, ERC8d, ERC10b, ERC11b)	
	Emission or Release Factor: Soil	1 (ERC10b)
	initial release prior to RMM, . (ERC10b)	
	Emission or Release Factor: Soil	0,2 (ERC8d)
	initial release prior to RMM, . (ERC8d)	
	Indoor or outdoor use	
Technical conditions and measures at process level 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	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling consumer exposure for: PC1, PC3, PC8, PC9a, PC9b, PC9c, PC13, PC18, PC28, PC31, PC34, PC35, PC39		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Frequency and duration of use	Frequency of use	365 days/year
Conditions and measures related to protection of consumer (e.g.	No specific risk management measure identified beyond those operational conditions stated.	

behavioural advice, personal protection and hygiene)	

3. Exposure estimation and reference to its source

Environment

ERC8d: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC8d	---	Fresh water	exposure estimate	0,000245mg/L	0,0279
ERC8d	---	Fresh water sediment	exposure estimate	0,0634mg/kg dry weight (d.w.)	0,0279
ERC8d	---	Marine water	exposure estimate	0,0000232mg/L	0,0263
ERC8d	---	Marine sediment	exposure estimate	0,00598mg/kg dry weight (d.w.)	0,0264
ERC8d	---	Sewage treatment plant (STP)	exposure estimate	0,00157mg/L	0,000238
ERC8d	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC8d	---	Agricultural soil	exposure estimate	0,00386mg/kg dry weight (d.w.)	0,0373
ERC8d	---	Air	exposure estimate	0,0000855	---

Consumers

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
---	worst-case	Consumer combined exposure	0,15mg/kg bw/day	---

ECETOC TRA consumer v3.

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.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in

combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

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