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Sicherheitsdatenblatt gemäß Verordnung (EG) Nr. 1907/2006, Anhang II (zuletzt geändert durch Verordnung (EU) 2020/878)

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Neutralalkohol aus kontrolliert biologischem Anbau, vergällt mit 9 % Milchsäure

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ABSCHNITT 1: Bezeichnung des Stoffs beziehungsweise des Gemischs und des Unternehmens

1.1 Produktidentifikator

Neutralalkohol aus kontrolliert biologischem Anbau, vergällt mit 9 % Milchsäure

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

Relevante identifizierte Verwendungen des Stoffs oder Gemischs:

Lösemittel

Rohstoff

Industrielle Verwendung

Verwendungen, von denen abgeraten wird:

Zur Zeit liegen keine Informationen hierzu vor.

1.3 Einzelheiten zum Lieferanten, der das Sicherheitsdatenblatt bereitstellt

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E-Mail-Adresse der sachkundigen Person: info@chemical-check.de, k.schnurbusch@chemical-check.de - bitte NICHT zur Abforderung von Sicherheitsdatenblättern benutzen.

1.4 Notrufnummer

Notfallinformationsdienste / öffentliche Beratungsstelle:

Notrufnummer der Gesellschaft:

+49 (0) 700 / 24 112 112 (AHC)

+1 872 5888271 (AHC)

ABSCHNITT 2: Mögliche Gefahren

2.1 Einstufung des Stoffs oder Gemischs

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

| Gefahrenklasse | Gefahrenkategorie | Gefahrenhinweis |
|-----------------------|--------------------------|--|
| Flam. Liq. | 2 | H225-Flüssigkeit und Dampf leicht entzündbar. |
| Eye Dam. | 1 | H318-Verursacht schwere Augenschäden. |
| Skin Corr. | 1C | H314-Verursacht schwere Verätzungen der Haut und schwere Augenschäden. |

2.2 Kennzeichnungselemente

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



Gefahr

H225-Flüssigkeit und Dampf leicht entzündbar. H314-Verursacht schwere Verätzungen der Haut und schwere Augenschäden.

P210-Von Hitze, heißen Oberflächen, Funken, offenen Flammen sowie anderen Zündquellenarten fernhalten. Nicht rauchen. P233-Behälter dicht verschlossen halten. P241-Explosionssgeschützte elektrische Geräte, Lüftungsanlagen, Beleuchtungsanlagen und Arbeitsgeräte verwenden. P243-Maßnahmen gegen elektrostatische Entladungen treffen. P260-Dampf oder Aerosol nicht einatmen. P280-Schutzhandschuhe / Schutzkleidung / Augenschutz / Gesichtsschutz tragen.
 P301+P330+P331-BEI VERSCHLUCKEN: Mund ausspülen. KEIN Erbrechen herbeiführen. P303+P361+P353-BEI BERÜHRUNG MIT DER HAUT (oder dem Haar): Alle kontaminierten Kleidungsstücke sofort ausziehen. Haut mit Wasser abwaschen oder duschen. P305+P351+P338-BEI KONTAKT MIT DEN AUGEN: Einige Minuten lang behutsam mit Wasser spülen. Eventuell vorhandene Kontaktlinsen nach Möglichkeit entfernen. Weiter spülen. P310-Sofort GIFTINFORMATIONSZENTRUM / Arzt anrufen. P403+P235-An einem gut belüfteten Ort aufbewahren. Kühl halten.

EUH071-Wirkt ätzend auf die Atemwege.

L-(+)-Milchsäure

2.3 Sonstige Gefahren

Das Gemisch enthält keinen vPvB-Stoff (vPvB = very persistent, very bioaccumulative) bzw. fällt nicht unter den Anhang XIII der Verordnung (EG) 1907/2006 (< 0,1 %).

Das Gemisch enthält keinen PBT-Stoff (PBT = persistent, bioaccumulative, toxic) bzw. fällt nicht unter den Anhang XIII der Verordnung (EG) 1907/2006 (< 0,1 %).

Das Gemisch enthält keinen Stoff mit endokrinschädlichen Eigenschaften (< 0,1 %).

Gefährliche Dämpfe, schwerer als Luft.

Durch Verteilung in Bodennähe ist eine Rückzündung an entfernten Zündquellen möglich.

ABSCHNITT 3: Zusammensetzung/Angaben zu Bestandteilen

3.1 Stoffe

n.a.

3.2 Gemische

| | |
|---|--|
| Ethanol | |
| Registrierungsnr. (REACH) | 01-2119457610-43-XXXX |
| Index | 603-002-00-5 |
| EINECS, ELINCS, NLP, REACH-IT List-No. | 200-578-6 |
| CAS | 64-17-5 |
| % Bereich | 80-<100 |
| Einstufung gemäß der Verordnung (EG) Nr. 1272/2008 (CLP), M-Faktoren | Flam. Liq. 2, H225 Eye Irrit. 2, H319 |
| Spezifische Konzentrationsgrenzen und ATE | Eye Irrit. 2, H319: >=50 % |

| | |
|----------------------------------|-----------------------|
| L-(+)-Milchsäure | |
| Registrierungsnr. (REACH) | 01-2119474164-39-XXXX |
| Index | 607-743-00-5 |

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| | |
|---|---|
| EINECS, ELINCS, NLP, REACH-IT List-No. | 201-196-2 |
| CAS | 79-33-4 |
| % Bereich | 5-<10 |
| Einstufung gemäß der Verordnung (EG) Nr. 1272/2008 (CLP), M-Faktoren | EUH071 Skin Corr. 1C, H314 Eye Dam. 1, H318 |

Text der H-Sätze und Einstufungs-Kürzel (GHS/CLP) siehe Abschnitt 16.

Die in diesem Abschnitt genannten Stoffe sind mit ihrer tatsächlichen, zutreffenden Einstufung genannt!

Das bedeutet bei Stoffen, welche in Anhang VI Tabelle 3.1 der Verordnung (EG) Nr. 1272/2008 (CLP-Verordnung) gelistet sind, wurden alle evtl. dort genannten Anmerkungen für die hier genannte Einstufung berücksichtigt.

Die Addition hier aufgeführter höchster Konzentrationen kann eine Klassifizierung ergeben. Nur wenn diese Klassifizierung in Abschnitt 2 aufgeführt ist, trifft sie zu. In allen anderen Fällen liegt die Gesamtkonzentration unterhalb der Einstufung.

ABSCHNITT 4: Erste-Hilfe-Maßnahmen

4.1 Beschreibung der Erste-Hilfe-Maßnahmen

Ersthelfer auf Selbstschutz achten!

Nie einer ohnmächtigen Person etwas durch den Mund einflößen!

Einatmen

Person aus Gefahrenbereich entfernen.

Person Frischluft zuführen und je nach Symptomatik Arzt konsultieren.

Bei Bewußtlosigkeit in stabile Seitenlage bringen und ärztlichen Rat einholen.

Atemstillstand - Gerätebeatmung notwendig.

Hautkontakt

Mit viel Wasser und Seife gründlich waschen, verunreinigte, getränkte Kleidungsstücke unverzüglich entfernen, bei Hautreizung (Rötung etc.), Arzt konsultieren.

Augenkontakt

Kontaktlinsen entfernen.

Mit viel Wasser mehrere Min. gründlich spülen, sofort Arzt rufen, Datenblatt bereithalten.

Unverletztes Auge schützen.

Augenärztliche Nachkontrolle.

Verschlucken

Mund gründlich mit Wasser spülen.

Kein Erbrechen herbeiführen, viel Wasser zu trinken geben, sofort Arzt aufsuchen.

4.2 Wichtigste akute und verzögert auftretende Symptome und Wirkungen

Falls zutreffend sind verzögert auftretende Symptome und Wirkungen in Abschnitt 11. zu finden bzw. bei den Aufnahmewegen unter Abschnitt 4.1.

Es können auftreten:

Reizung der Augen

Schädigung der Hornhaut.

Verätzungen von Haut sowie Schleimhäuten möglich.

Einatmen:

Reizung der Nasen- und Rachenschleimhäute

Verschlucken größerer Mengen:

Übelkeit

Erbrechen

Leberschäden

Nach Resorption:

Schwindel

Narkotisierende Wirkung.

Atemlähmung kann auftreten.

Bewußtlosigkeit

Erfahrungen am Menschen:

Überhöhter Alkoholkonsum während der Schwangerschaft induziert das Fötus-Alkoholsyndrom (verringertes Geburtsgewicht, physische und mentale Störungen).

Es gibt keinen Hinweis, daß dieses Syndrom auch durch dermale oder inhalative Aufnahme verursacht wird.

In bestimmten Fällen kann es vorkommen, dass die Vergiftungssymptome erst nach längerer Zeit/nach mehreren Stunden auftreten.

4.3 Hinweise auf ärztliche Soforthilfe oder Spezialbehandlung

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Antidot:

Keine bekannt

Hinweise für den Arzt:

Symptomatische Behandlung.

Bei Lungenreizung Erstbehandlung mit Dexamethason-Dosieraerosol.

ABSCHNITT 5: Maßnahmen zur Brandbekämpfung

5.1 Löschmittel

Geeignete Löschmittel

CO₂

Löschpulver

Wassersprühstrahl

Alkoholbeständiger Schaum

Aerosol/Gas ggf. mit Wasser niederschlagen.

Ungeeignete Löschmittel

Wasservollstrahl

5.2 Besondere vom Stoff oder Gemisch ausgehende Gefahren

Im Brandfall können sich bilden:

Kohlenoxide

Giftige Gase

Bildung explosionsgefährlicher/leichtentzündlicher Dampf/Luftgemische möglich.

5.3 Hinweise für die Brandbekämpfung

Persönliche Schutzausrüstung siehe Abschnitt 8.

Explosions- und Brandgase nicht einatmen.

Umluftunabhängiges Atemschutzgerät.

Je nach Brandgröße

Ggf. Vollschutz.

Gefährdete Behälter mit Wasser kühlen.

Kontaminiertes Löschwasser entsprechend den behördlichen Vorschriften entsorgen.

ABSCHNITT 6: Maßnahmen bei unbeabsichtigter Freisetzung

6.1 Personenbezogene Vorsichtsmaßnahmen, Schutzausrüstungen und in Notfällen anzuwendende Verfahren

6.1.1 Nicht für Notfälle geschultes Personal

Bei Verschütten oder unbeabsichtigter Freisetzung, zur Verhinderung der Kontamination, persönliche Schutzausrüstung aus Abschnitt 8 tragen.

Ausreichende Belüftung sicherstellen, Zündquellen entfernen.

Bei festen bzw. pulverförmigen Produkten eine Staubentwicklung vermeiden.

Möglichst die Gefahrenzone verlassen, ggf. vorhandene Notfallpläne anwenden.

Für ausreichende Belüftung sorgen.

Augen- und Hautkontakt sowie Inhalation vermeiden.

Zündquellen entfernen, nicht rauchen.

Ggf. Rutschgefahr beachten.

6.1.2 Einsatzkräfte

Geeignete Schutzausrüstung sowie Materialangaben siehe Abschnitt 8.

6.2 Umweltschutzmaßnahmen

Bei Entweichung größerer Mengen eindämmen.

Undichtigkeit beseitigen, wenn gefahrlos möglich.

Eindringen in das Oberflächen- sowie Grundwasser als auch in den Boden vermeiden.

Nicht in die Kanalisation gelangen lassen.

Bei unfallbedingtem Einleiten in die Kanalisation, zuständige Behörden informieren.

Explosionsgefahr.

6.3 Methoden und Material für Rückhaltung und Reinigung

Mit flüssigkeitsbindendem Material (z.B. Universalbindemittel, Sand, Kieselgur) aufnehmen und gemäß Abschnitt 13 entsorgen.

Keine brennbaren Stoffe verwenden.

Aufgenommenes Gut in verschließbaren Behälter füllen.

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Restmenge mit viel Wasser spülen.

6.4 Verweis auf andere Abschnitte

Siehe Abschnitt 13. sowie persönliche Schutzausrüstung siehe Abschnitt 8.

ABSCHNITT 7: Handhabung und Lagerung

Zusätzlich zu den in diesem Abschnitt enthaltenen Angaben finden sich auch in Abschnitt 8 und 6.1 relevante Angaben.

7.1 Schutzmaßnahmen zur sicheren Handhabung

7.1.1 Allgemeine Empfehlungen

Für gute Raumlüftung sorgen.

Einatmen der Dämpfe vermeiden.

Augen- und Hautkontakt vermeiden.

Zündquellen fernhalten - Nicht rauchen.

Maßnahmen gegen elektrostatische Aufladung treffen.

Elektrische Betriebsmittel müssen für die Temperaturklasse T 2 geeignet sein (Deutschland).

Explosionsgeschützte Geräte verwenden.

Nicht auf heißen Oberflächen anwenden.

Essen, Trinken, Rauchen sowie Aufbewahren von Lebensmitteln im Arbeitsraum verboten.

Hinweise auf dem Etikett sowie Gebrauchsanweisung beachten.

Arbeitsverfahren gemäß Betriebsanweisung anwenden.

7.1.2 Hinweise zu allgemeinen Hygienemaßnahmen am Arbeitsplatz

Die allgemeinen Hygienemaßnahmen im Umgang mit Chemikalien sind anzuwenden.

Vor den Pausen und bei Arbeitsende Hände waschen.

Von Nahrungsmitteln, Getränken und Futtermitteln fernhalten.

Vor dem Betreten von Bereichen, in denen gegessen wird, kontaminierte Kleidung und Schutzausrüstungen ablegen.

7.2 Bedingungen zur sicheren Lagerung unter Berücksichtigung von Unverträglichkeiten

Für Unbefugte unzugänglich aufbewahren.

Produkt nur in Originalverpackungen und geschlossen lagern.

Produkt nicht in Durchgängen und Treppenaufgängen lagern.

Nicht zusammen mit brandfördernden oder selbstentzündlichen Stoffen lagern.

Besondere Lagerbedingungen beachten.

Vorrichtungen erden.

Lösungsmittelbeständiger Fußboden

Vor Sonneneinstrahlung sowie Wärmeeinwirkung schützen.

An gut belüftetem Ort lagern.

Ungeeignete Behälter:

Aluminium

Ungeeignetes Material:

Verschiedene Kunststoffe

Gummi

Lagerklasse siehe Abschnitt 15.

7.3 Spezifische Endanwendungen

Zur Zeit liegen keine Informationen hierzu vor.

Handlungsanleitung zur guten Arbeitspraxis, sowie Empfehlungen für die Gefährdungsermittlung, beachten.

Gefahrstoffinformationssysteme, z.B. der Berufsgenossenschaften, der chemischen Industrie oder verschiedene Branchen, je nach Anwendung, heranziehen (Baustoffe, Holz, Chemie, Labor, Leder, Metall).

ABSCHNITT 8: Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstungen

8.1 Zu überwachende Parameter

| Chem. Bezeichnung | Ethanol | |
|---------------------------------------|--|-----|
| AGW: 200 ppm (380 mg/m ³) | Spb.-Üf.: 4(II) | --- |
| Überwachungsmethoden: | <ul style="list-style-type: none"> - Draeger - Alcohol 25/a Ethanol (81 01 631) - Compur - KITA-104 SA (549 210) - DFG (D) (Lösungsmittelgemische), Methode Nr. 6 DFG (E) (Solvent mixtures) - 2013, 2002 - EU project BC/CEN/ENTR/000/2002-16 card 63-2 (2004) | |

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- DFG Meth. Nr. 2 (D) (Lösungsmittelgemische) - 2013 - EU project BC/CEN/ENTR/000/2002-16 card 63-2 (2004)
- DFG Meth. Nr. 3 (D) (Lösungsmittelgemische) - 2013 - EU project BC/CEN/ENTR/000/2002-16 card 63-2 (2004)
- NIOSH 1400 (ALCOHOLS I) - 1994
- NIOSH 2549 (VOLATILE ORGANIC COMPOUNDS (SCREENING)) - 1996
- OSHA 5001 (Organic Vapor Sampling Group 2 (OVSG-2)) - 2019

BGW: ---

Sonstige Angaben: DFG, Y

| Ethanol | | | | | | |
|-------------------------|---|-------------------------------|------------|------|------------------|-----------|
| Anwendungsgebiet | Expositionsweg / Umweltkompartiment | Auswirkung auf die Gesundheit | Deskriptor | Wert | Einheit | Bemerkung |
| | Umwelt - Süßwasser | | PNEC | 0,96 | mg/l | |
| | Umwelt - Meerwasser | | PNEC | 0,79 | mg/l | |
| | Umwelt - Wasser, sporadische (intermittierende) Freisetzung | | PNEC | 2,75 | mg/l | |
| | Umwelt - Abwasserbehandlungsanlage | | PNEC | 580 | mg/l | |
| | Umwelt - Sediment, Süßwasser | | PNEC | 3,6 | mg/kg dry weight | |
| | Umwelt - Boden | | PNEC | 0,63 | mg/kg dry weight | |
| | Umwelt - oral (Futter) | | PNEC | 0,38 | g/kg feed | |
| | Umwelt - Sediment, Meerwasser | | PNEC | 2,9 | mg/kg dry weight | |
| Verbraucher | Mensch - dermal | Kurzzeit, lokale Effekte | DNEL | 950 | mg/m3 | |
| Verbraucher | Mensch - Inhalation | Langzeit, systemische Effekte | DNEL | 114 | mg/m3 | |
| Verbraucher | Mensch - oral | Langzeit, systemische Effekte | DNEL | 87 | mg/kg | |
| Verbraucher | Mensch - dermal | Langzeit, systemische Effekte | DNEL | 206 | mg/kg bw/d | |
| Verbraucher | Mensch - Inhalation | Kurzzeit, lokale Effekte | DNEL | 950 | mg/m3 | |
| Arbeiter / Arbeitnehmer | Mensch - dermal | Langzeit, systemische Effekte | DNEL | 343 | mg/kg bw/d | |
| Arbeiter / Arbeitnehmer | Mensch - Inhalation | Langzeit, systemische Effekte | DNEL | 950 | mg/m3 | |
| Arbeiter / Arbeitnehmer | Mensch - Inhalation | Kurzzeit, lokale Effekte | DNEL | 1900 | mg/m3 | |

| L-(+)-Milchsäure | | | | | | |
|--------------------------|-------------------------------------|-------------------------------|------------|------|--------------|-----------|
| Anwendungsgebiet | Expositionsweg / Umweltkompartiment | Auswirkung auf die Gesundheit | Deskriptor | Wert | Einheit | Bemerkung |
| | Umwelt - Abwasserbehandlungsanlage | | PNEC | 10 | mg/l | |
| | Umwelt - Süßwasser | | PNEC | 1,3 | mg/l | |
| Verbraucher | Mensch - Inhalation | Kurzzeit, lokale Effekte | DNEL | 296 | mg/m3 | |
| Verbraucher | Mensch - oral | Kurzzeit, systemische Effekte | DNEL | 35,4 | mg/kg bw/day | |
| Industriell / Gewerblich | Mensch - Inhalation | Kurzzeit, lokale Effekte | DNEL | 592 | mg/kg | |

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- Deutschland | AGW = Arbeitsplatzgrenzwerte (Technische Regeln für Gefahrstoffe Nr. 900 - TRGS 900): E = Einatembare Fraktion, A = Alveolengängige Fraktion.

(EU) = Richtlinie 91/322/EWG, 98/24/EG, 2000/39/EG, 2004/37/EG, 2006/15/EG, 2009/161/EU, 2017/164/EU oder 2019/1831/EU. (8) = Einatembare Fraktion (2004/37/EG, 2017/164/EU). (9) = Alveolengängige Fraktion (2004/37/EG, 2017/164/EU). (11) = Einatembare Fraktion (2004/37/EG). (12) = Einatembare Fraktion. Alveolengängige Fraktion in den Mitgliedstaaten, die am Tag des Inkrafttretens dieser Richtlinie ein Biomonitoringsystem mit einem biologischen Grenzwert von maximal 0,002 mg Cd/g Creatinin im Urin umsetzen (2004/37/EG).

** = Der Grenzwert für diesen Stoff wurde durch die TRGS 900 (Deutschland) vom Januar 2006 aufgehoben mit dem Ziel der Überarbeitung. |

| Spb.-Üf. = Spitzenbegrenzung - Überschreitungsfaktor (1 bis 8) und Kategorie (I, II) für Kurzzeitwerte (Technische Regeln für Gefahrstoffe Nr. 900 - TRGS 900): "=" = Momentanwert. Kategorie (I) = Stoffe bei denen die lokale Wirkung grenzwertbestimmend ist oder atemwegssensibilisierende Stoffe, (II) = Resorptiv wirksame Stoffe. E = Einatembare Fraktion, A = Alveolengängige Fraktion. (EU) = Richtlinie 91/322/EWG, 98/24/EG, 2000/39/EG, 2004/37/EG, 2006/15/EG, 2009/161/EU, 2017/164/EU oder 2019/1831/EU. (8) = Einatembare Fraktion (2004/37/EG, 2017/164/EU). (9) = Alveolengängige Fraktion (2004/37/EG, 2017/164/EU). (10) = Grenzwert für die Kurzzeitexposition für einen Bezugszeitraum von einer Minute (2017/164/EU).

** = Der Grenzwert für diesen Stoff wurde durch die TRGS 900 (Deutschland) vom Januar 2006 aufgehoben mit dem Ziel der Überarbeitung. |

| BGW = Biologische Grenzwerte (Technische Regeln für Gefahrstoffe Nr. 903 - TRGS 903): Untersuchungsmaterial: B = Vollblut, BE = Erythrozytenfraktion des Vollblutes, P/S = Plasma/Serum, U = Urin.

Probennahmezeitpunkt: a) keine Beschränkung im Fließgleichgewicht, b) Expositionsende, bzw. Schichtende, c) am Schichtende, bei Langzeitexposition nach mehreren vorangegangenen Schichten, d) vor nachfolgender Schicht, e) nach Expositionsende: Stunden, f) nach mindestens 3 Monaten Exposition, g) unmittelbar nach Exposition, h) am Schichtende, bei Langzeitexposition nach mehreren vorangegangenen Schichten; Bestimmung individueller Vor-Expositionswerte als Bezugswerte, i) am Schichtende am Ende der Arbeitswoche nach mindestens 2-wöchiger Exposition.

(EU) = Richtlinie 98/24/EG oder 2004/37/EG oder SCOEL (Biological Limit Value - BLV, Recommendation from the Scientific Committee on Occupational Exposure Limits (SCOEL)) |

| Sonstige Angaben (Technische Regeln für Gefahrstoffe Nr. 900 - TRGS 900): H = hautresorptiv. X = krebserzeugender Stoff der Kat. 1A oder 1B oder krebserzeugende Tätigkeit oder Verfahren nach § 2 Absatz 3 Nr. 4 der Gefahrstoffverordnung - es ist zusätzlich § 10 GefStoffV zu beachten. Y = Ein Risiko der Fruchtschädigung braucht bei Einhaltung von AGW u. BGW nicht befürchtet zu werden. Z = Ein Risiko der Fruchtschädigung kann auch bei Einhaltung des AGW und des BGW nicht ausgeschlossen werden (s. Nr 2.7 TRGS 900). Sa = Atemwegssensibilisierend. Sh = Hautsensibilisierend. Sah = Atemwegs- und hautsensibilisierend. DFG = Deutsche Forschungsgemeinschaft (MAK-Kommission). AGS = Ausschuss für Gefahrstoffe. (10) = Der Arbeitsplatzgrenzwert bezieht sich auf den Elementgehalt des entsprechenden Metalls. (11) = Summe aus Dampf und Aerosolen. (TRGS 905) = Verzeichnis krebserzeugender, keimzellmutagener oder reproduktionstoxischer Stoffe (Technische Regeln für Gefahrstoffe Nr. 905): Im Anhang VI Teil 3 der CLP-VO nicht genannte oder vom AGS davon abweichend eingestufte Stoffe mit K = Krebserzeugend, M = Keimzellmutagen, RF = Reproduktionstoxisch - Fruchtbarkeitsgefährdend (kann Fruchtbarkeit beeinträchtigen), RE = Reproduktionstoxisch - Entwicklungsschädigend (Kann das Kind im Mutterleib schädigen), 1A/1B/2 = Kategorien nach Anhang I der CLP-Verordnung.

(TRGS 907) = Verzeichnis sensibilisierender Stoffe und von Tätigkeiten mit sensibilisierenden Stoffen (Technische Regeln für Gefahrstoffe Nr. 907): Sa = Atemwegssensibilisierend. Sh = Hautsensibilisierend. Sah = Atemwegs- und hautsensibilisierend. (EU) = Richtlinie 91/322/EWG, 98/24/EG, 2000/39/EG, 2004/37/EG, 2006/15/EG, 2009/161/EU, 2017/164/EU, 2019/1831/EU oder 2024/869/EU:

(13) = Der Stoff kann zu einer Sensibilisierung der Haut und der Atemwege führen (Richtlinie 98/24/EG, 2004/37/EG), (14) = Der Stoff kann zu einer Sensibilisierung der Haut führen (Richtlinie 2004/37/EG), (15) = Deutliche Erhöhung der Gesamtbelastung des Körpers durch dermale Exposition möglich.

** = Der Grenzwert für diesen Stoff wurde durch die TRGS 900 (Deutschland) vom Januar 2006 aufgehoben mit dem Ziel der Überarbeitung. |

8.2 Begrenzung und Überwachung der Exposition

8.2.1 Geeignete technische Steuerungseinrichtungen

Für gute Lüftung sorgen. Dies kann durch lokale Absaugung oder allgemeine Abluft erreicht werden.

Falls dies nicht ausreicht, um die Konzentration unter den Arbeitsplatzgrenzwerten (AGW) zu halten, ist ein geeigneter Atemschutz zu tragen.

Gilt nur, wenn hier Expositionsgrenzwerte aufgeführt sind.

Geeignete Beurteilungsmethoden zur Überprüfung der Wirksamkeit der getroffenen Schutzmaßnahmen umfassen messtechnische und nichtmesstechnische Ermittlungsmethoden.

Solche werden beschrieben durch z.B. EN 14042, TRGS 402 (Deutschland).

EN 14042 "Arbeitsplatzatmosphäre. Leitfaden für die Anwendung und den Einsatz von Verfahren und Geräten zur Ermittlung chemischer und biologischer Arbeitsstoffe".

TRGS 402 (Deutschland) "Ermitteln und Beurteilen der Gefährdungen bei Tätigkeiten mit Gefahrstoffen - Inhalative Exposition".

8.2.2 Individuelle Schutzmaßnahmen, zum Beispiel persönliche Schutzausrüstung

Die allgemeinen Hygienemaßnahmen im Umgang mit Chemikalien sind anzuwenden.

Vor den Pausen und bei Arbeitsende Hände waschen.

Von Nahrungsmitteln, Getränken und Futtermitteln fernhalten.

Vor dem Betreten von Bereichen, in denen gegessen wird, kontaminierte Kleidung und Schutzausrüstungen ablegen.

Augen-/Gesichtsschutz:

Schutzbrille dichtschießend mit Seitenschildern (EN 166).

Hautschutz - Handschutz:

Chemikalienbeständige Schutzhandschuhe (EN ISO 374).

Empfehlenswert

Bei Kurzzeitkontakt:

Schutzhandschuhe aus Chloropren (EN ISO 374).

Mindestschichtstärke in mm:

0,5

Permeationszeit (Durchbruchzeit) in Minuten:

>= 120

Bei längerem Kontakt:

Schutzhandschuhe aus Butylkautschuk (EN ISO 374).

Mindestschichtstärke in mm:

0,5

Schutzhandschuhe aus Fluorkautschuk (EN ISO 374).

Mindestschichtstärke in mm:

0,4

Permeationszeit (Durchbruchzeit) in Minuten:

>= 480

Handschutzcreme empfehlenswert.

Die ermittelten Durchbruchzeiten gemäß EN 16523-1 wurden nicht unter Praxisbedingungen durchgeführt.

Es wird eine maximale Tragezeit, die 50% der Durchbruchzeit entspricht, empfohlen.

Hautschutz - Sonstige Schutzmaßnahmen:

Arbeitsschutzkleidung (z.B. Sicherheitsschuhe EN ISO 20345, langärmelige Arbeitskleidung).

Je nach Arbeitsgang.

Arbeitsschutzkleidung, antistatisch (EN 1149)

Naturfaser oder hitzebeständige Synthetikfaser

Atemschutz:

Bei Überschreitung des Arbeitsplatzgrenzwertes.

Atemschutzmaske Filter A (EN 14387), Kennfarbe braun

Tragezeitbegrenzungen für Atemschutzgeräte beachten.

Thermische Gefahren:

Nicht zutreffend

Zusatzinformation zum Handschutz - Es wurden keine Tests durchgeführt.

Die Auswahl wurde bei Gemischen nach bestem Wissen und über die Informationen der Inhaltsstoffe ausgewählt.

Die Auswahl wurde bei Stoffen von den Angaben der Handschuhhersteller abgeleitet.

Die endgültige Auswahl des Handschuhmaterials muss unter Beachtung der Durchbruchzeiten, Permeationsraten und der Degradation erfolgen.

Die Auswahl eines geeigneten Handschuhs ist nicht nur vom Material, sondern auch von weiteren Qualitätsmerkmalen abhängig und von Hersteller zu Hersteller unterschiedlich.

Bei Gemischen ist die Beständigkeit von Handschuhmaterialien nicht vorausberechenbar und muss deshalb vor dem Einsatz überprüft werden.

Die genaue Durchbruchzeit des Handschuhmaterials ist beim Schutzhandschuhhersteller zu erfahren und einzuhalten.

8.2.3 Begrenzung und Überwachung der Umweltexposition

Zur Zeit liegen keine Informationen hierzu vor.

9.1 Angaben zu den grundlegenden physikalischen und chemischen Eigenschaften

| | |
|---|--|
| Aggregatzustand: | Flüssig |
| Farbe: | Farblos |
| Geruch: | Alkoholisch |
| Schmelzpunkt/Gefrierpunkt: | -114,5 °C (Ethanol) |
| Siedepunkt oder Siedebeginn und Siedebereich: | 78,3 °C (Ethanol) |
| Entzündbarkeit: | Entzündlich |
| Untere Explosionsgrenze: | 3,5 Vol-% (Ethanol) |
| Obere Explosionsgrenze: | 15 Vol-% (Ethanol) |
| Flammpunkt: | 12 °C (closed cup, Ethanol) |
| Zündtemperatur: | 425 °C (DIN 51794, Ethanol) |
| Zersetzungstemperatur: | Es liegen keine Informationen zu diesem Parameter vor. |
| pH-Wert: | 7 (1 %, 20°C, Ethanol) |
| Kinematische Viskosität: | 1,2 mPas (20°C, Dynamische Viskosität Ethanol) |
| Löslichkeit: | Löslich |
| Verteilungskoeffizient n-Oktanol/Wasser (log-Wert): | -0,31 (Literaturangaben Ethanol) |
| Dampfdruck: | 59 hPa (20°C, Ethanol) |
| Dichte und/oder relative Dichte: | 0,8075 g/ml (20°C, Ethanol) |
| Relative Dampfdichte: | 1,6 (Ethanol) |
| Partikeleigenschaften: | Gilt nicht für Flüssigkeiten. |

9.2 Sonstige Angaben

| | |
|--|--|
| Explosive Stoffe/Gemische und Erzeugnisse mit Explosivstoff: | Bildung explosionsgefährlicher/leichtentzündlicher Dampf/Luftgemische möglich. Produkt ist nicht explosionsgefährlich. |
| Oxidierende Flüssigkeiten: | Nein |

ABSCHNITT 10: Stabilität und Reaktivität

10.1 Reaktivität

Das Produkt wurde nicht geprüft.

10.2 Chemische Stabilität

Bei sachgerechter Lagerung und Handhabung stabil.

10.3 Möglichkeit gefährlicher Reaktionen

Keine gefährlichen Reaktionen bekannt.

10.4 Zu vermeidende Bedingungen

Siehe auch Abschnitt 7.

Erhitzung, offene Flammen, Zündquellen

Elektrostatische Aufladung

10.5 Unverträgliche Materialien

Siehe auch Abschnitt 7.

Erdalkalimetalle

Alkalimetalle

Oxidationsmittel

Peroxide

Phosphoroxide

Stickoxide

Perchlorate

Chromoxide

Wasserstoffperoxid

Salpetersäure

Schwefelsäure

Säurechloride

10.6 Gefährliche Zersetzungsprodukte

Siehe auch Abschnitt 5.2.

Keine Zersetzung bei bestimmungsgemäßer Verwendung.

ABSCHNITT 11: Toxikologische Angaben

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Neutralalkohol aus kontrolliert biologischem Anbau, vergällt mit 9 % Milchsäure

11.1. Angaben zu den Gefahrenklassen im Sinne der Verordnung (EG) Nr. 1272/2008

Eventuell weitere Informationen über gesundheitliche Auswirkungen siehe Abschnitt 2.1 (Einstufung).

| Neutralalkohol aus kontrolliert biologischem Anbau, vergällt mit 9 % Milchsäure | | | | | | |
|---|----------|------|---------|------------|-------------|-----------|
| Toxizität / Wirkung | Endpunkt | Wert | Einheit | Organismus | Prüfmethode | Bemerkung |
| Akute Toxizität, oral: | | | | | | k.D.v. |
| Akute Toxizität, dermal: | | | | | | k.D.v. |
| Akute Toxizität, inhalativ: | | | | | | k.D.v. |
| Ätz-/Reizwirkung auf die Haut: | | | | | | k.D.v. |
| Schwere Augenschädigung/-reizung: | | | | | | k.D.v. |
| Sensibilisierung der Atemwege/Haut: | | | | | | k.D.v. |
| Keimzellmutagenität: | | | | | | k.D.v. |
| Karzinogenität: | | | | | | k.D.v. |
| Reproduktionstoxizität: | | | | | | k.D.v. |
| Spezifische Zielorgan-Toxizität - einmalige Exposition (STOT-SE): | | | | | | k.D.v. |
| Spezifische Zielorgan-Toxizität - wiederholte Exposition (STOT-RE): | | | | | | k.D.v. |
| Aspirationsgefahr: | | | | | | k.D.v. |
| Symptome: | | | | | | k.D.v. |

| Ethanol | | | | | | |
|-------------------------------------|----------|----------|---------|------------------------|---|--------------------|
| Toxizität / Wirkung | Endpunkt | Wert | Einheit | Organismus | Prüfmethode | Bemerkung |
| Akute Toxizität, oral: | LD50 | 10470 | mg/kg | Ratte | OECD 401 (Acute Oral Toxicity) | |
| Akute Toxizität, dermal: | LD50 | >2000 | mg/kg | Kaninchen | OECD 402 (Acute Dermal Toxicity) | |
| Akute Toxizität, inhalativ: | LC50 | 51-124,7 | mg/l/4h | Ratte | OECD 403 (Acute Inhalation Toxicity) | Dämpfe |
| Ätz-/Reizwirkung auf die Haut: | | | | Kaninchen | OECD 404 (Acute Dermal Irritation/Corrosion) | Nicht reizend |
| Schwere Augenschädigung/-reizung: | | | | Kaninchen | OECD 405 (Acute Eye Irritation/Corrosion) | Eye Irrit. 2 |
| Sensibilisierung der Atemwege/Haut: | | | | Maus | OECD 429 (Skin Sensitisation - Local Lymph Node Assay) | Nein (Hautkontakt) |
| Keimzellmutagenität: | | | | Salmonella typhimurium | OECD 471 (Bacterial Reverse Mutation Test) | Negativ |
| Keimzellmutagenität: | | | | Maus | OECD 476 (In Vitro Mammalian Cell Gene Mutation Test) | Negativ |
| Keimzellmutagenität: | | | | | OECD 473 (In Vitro Mammalian Chromosome Aberration Test) | Negativ |
| Keimzellmutagenität: | | | | | OECD 475 (Mammalian Bone Marrow Chromosome Aberration Test) | Negativ |
| Karzinogenität: | NOAEL | >3000 | mg/kg | Ratte | OECD 451 (Carcinogenicity Studies) | 24 mon |

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| | | | | | | |
|---|-------|------|------------|-------|--|--|
| Reproduktionstoxizität: | NOAEL | 5200 | mg/kg bw/d | Ratte | OECD 416 (Two-generation Reproduction Toxicity Study) | |
| Spezifische Zielorgan-Toxizität - wiederholte Exposition (STOT-RE): | NOAL | >20 | mg/l | Ratte | OECD 403 (Acute Inhalation Toxicity) | Männchen |
| Spezifische Zielorgan-Toxizität - wiederholte Exposition (STOT-RE): | NOAEL | 1730 | mg/kg/d | Ratte | OECD 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents) | Weibchen |
| Symptome: | | | | | | Atemnot, Benommenheit, Bewußtlosigkeit , Blutdruckabfall, Erbrechen, Husten, Kopfschmerzen, Rausch, Schläfrigkeit, Schleimhautreizung, Schwindel, Übelkeit |

L-(+)-Milchsäure

| Toxizität / Wirkung | Endpunkt | Wert | Einheit | Organismus | Prüfmethode | Bemerkung |
|--------------------------------|----------|-----------|---------|------------|--------------------------------------|--|
| Akute Toxizität, oral: | LD50 | 3543-4936 | mg/kg | Ratte | OECD 401 (Acute Oral Toxicity) | |
| Akute Toxizität, dermal: | LD50 | >2000 | mg/kg | Kaninchen | | |
| Akute Toxizität, inhalativ: | LC50 | >7,94 | mg/l/4h | Ratte | OECD 403 (Acute Inhalation Toxicity) | Aerosol |
| Ätz-/Reizwirkung auf die Haut: | | | | Kaninchen | | Skin Corr. 1C |
| Aspirationsgefahr: | | | | | | Nein |
| Symptome: | | | | | | Acidose, Bauchschmerzen, Durchfall, Erbrechen, Hornhauttrübung, Husten, Schleimhautreizung |

11.2. Angaben über sonstige Gefahren

Neutralalkohol aus kontrolliert biologischem Anbau, vergällt mit 9 % Milchsäure

| Toxizität / Wirkung | Endpunkt | Wert | Einheit | Organismus | Prüfmethode | Bemerkung |
|-----------------------------------|----------|------|---------|------------|-------------|--|
| Endokrinschädliche Eigenschaften: | | | | | | Gilt nicht für Gemische. |
| Sonstige Angaben: | | | | | | Keine sonstigen, einschlägigen Angaben über schädliche Wirkungen auf die Gesundheit vorhanden. |

Ethanol

| Toxizität / Wirkung | Endpunkt | Wert | Einheit | Organismus | Prüfmethode | Bemerkung |
|---------------------|----------|------|---------|------------|-------------|-----------|
|---------------------|----------|------|---------|------------|-------------|-----------|

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| | | | | | | | |
|-------------------|--|--|--|--|--|--|--|
| Sonstige Angaben: | | | | | | | Überhöhter Alkoholkonsum während der Schwangerschaft induziert das Fötus-Alkoholsyndrom (verringertes Geburtsgewicht, physische und mentale Störungen)., Es gibt keinen Hinweis, daß dieses Syndrom auch durch dermale oder inhalative Aufnahme verursacht wird., Erfahrungen am Menschen. |
|-------------------|--|--|--|--|--|--|--|

ABSCHNITT 12: Umweltbezogene Angaben

Eventuell weitere Informationen über Umweltauswirkungen siehe Abschnitt 2.1 (Einstufung).

Neutralalkohol aus kontrolliert biologischem Anbau, vergällt mit 9 % Milchsäure

| Toxizität / Wirkung | Endpunkt | Zeit | Wert | Einheit | Organismus | Prüfmethode | Bemerkung |
|---|----------|------|------|---------|------------|-------------|--|
| 12.1. Toxizität, Fische: | | | | | | | k.D.v. |
| 12.1. Toxizität, Daphnien: | | | | | | | k.D.v. |
| 12.1. Toxizität, Algen: | | | | | | | k.D.v. |
| 12.2. Persistenz und Abbaubarkeit: | | | | | | | k.D.v. |
| 12.3. Bioakkumulationspotenzial: | | | | | | | k.D.v. |
| 12.4. Mobilität im Boden: | | | | | | | k.D.v. |
| 12.5. Ergebnisse der PBT- und vPvB-Beurteilung: | | | | | | | k.D.v. |
| 12.6. Endokrinschädliche Eigenschaften: | | | | | | | Gilt nicht für Gemische. |
| 12.7. Andere schädliche Wirkungen: | | | | | | | Keine Angaben über andere schädliche Wirkungen für die Umwelt vorhanden. |
| Sonstige Angaben: | | | | | | | Gemäß der Rezeptur keine AOX enthalten. |

Ethanol

| Toxizität / Wirkung | Endpunkt | Zeit | Wert | Einheit | Organismus | Prüfmethode | Bemerkung |
|---------------------|----------|------|------|---------|------------|-------------|-----------|
|---------------------|----------|------|------|---------|------------|-------------|-----------|

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| | | | | | | | |
|---|-----------|------|-------------------|------|---------------------|--|--|
| 12.1. Toxizität, Fische: | LC50 | 96h | 13000 | mg/l | Oncorhynchus mykiss | OECD 203 (Fish, Acute Toxicity Test) | |
| 12.1. Toxizität, Fische: | NOEC/NOEL | 120h | 250 | mg/l | Brachydanio rerio | OECD 212 (Fish, Short-term Toxicity Test on Embryo and Sac-fry Stages) | |
| 12.1. Toxizität, Daphnien: | EC50 | 48h | 5414 | mg/l | Daphnia magna | OECD 202 (Daphnia sp. Acute Immobilisation Test) | |
| 12.1. Toxizität, Daphnien: | NOEC/NOEL | 10d | 9,6 | mg/l | Ceriodaphnia spec. | | Literaturangabe n |
| 12.1. Toxizität, Algen: | EC50 | 72h | 275 | mg/l | Chlorella vulgaris | OECD 201 (Alga, Growth Inhibition Test) | |
| 12.2. Persistenz und Abbaubarkeit: | | 28d | 97 | % | activated sludge | OECD 301 B (Ready Biodegradability - Co2 Evolution Test) | Leicht biologisch abbaubar |
| 12.3. Bioakkumulationspotential: | Log Pow | | (-0,35) - (-0,32) | | | | Eine Bioakkumulation ist nicht zu erwarten (LogPow < 1). |
| 12.3. Bioakkumulationspotential: | BCF | | 0,66 - 3,2 | | | | |
| 12.4. Mobilität im Boden: | H (Henry) | | 0,000138 | | | | |
| 12.4. Mobilität im Boden: | Koc | | 1,0 | | | | Hochestimated |
| 12.5. Ergebnisse der PBT- und vPvB-Beurteilung: | | | | | | | Kein PBT-Stoff, Kein vPvB-Stoff |
| Bakterientoxizität: | IC50 | 3h | >1000 | mg/l | activated sludge | OECD 209 (Activated Sludge, Respiration Inhibition Test (Carbon and Ammonium Oxidation)) | Analogieschluss |
| Sonstige Organismen: | NOEC/NOEL | | 280 | mg/l | Lemna gibba | OECD 201 (Alga, Growth Inhibition Test) | |
| Sonstige Angaben: | COD | | 1,9 | g/g | | | |
| Sonstige Angaben: | BOD5 | | 1 | g/g | | | |

L-(+)-Milchsäure

| Toxizität / Wirkung | Endpunkt | Zeit | Wert | Einheit | Organismus | Prüfmethode | Bemerkung |
|--------------------------|----------|------|------|---------|---------------------|-------------|-----------|
| 12.1. Toxizität, Fische: | LC50 | 96h | 130 | mg/l | Lepomis macrochirus | | |
| 12.1. Toxizität, Fische: | LC50 | 96h | 320 | mg/l | Brachydanio rerio | | |

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| | | | | | | | |
|---|-----------|-----|--------|------|---------------------------------|--|---------------------------------|
| 12.1. Toxizität, Daphnien: | EC50 | 48h | 130 | mg/l | Daphnia magna | OECD 202 (Daphnia sp. Acute Immobilisation Test) | |
| 12.1. Toxizität, Algen: | ErC50 | 72h | 3500 | mg/l | Pseudokirchneriella subcapitata | | |
| 12.1. Toxizität, Algen: | NOEC/NOEL | | >=1000 | mg/l | | | |
| 12.2. Persistenz und Abbaubarkeit: | | | >60 | % | | OECD 301 D (Ready Biodegradability - Closed Bottle Test) | Leicht biologisch abbaubar |
| 12.3. Bioakkumulationspotential: | Log Pow | | -0,62 | | | | Nicht zu erwarten |
| 12.5. Ergebnisse der PBT- und vPvB-Beurteilung: | | | | | | | Kein PBT-Stoff, Kein vPvB-Stoff |
| Wasserlöslichkeit: | | | | | | | Löslich |

ABSCHNITT 13: Hinweise zur Entsorgung

13.1 Verfahren zur Abfallbehandlung Für den Stoff / Gemisch / Restmengen

Abfallschlüssel-Nr. EG:

Die genannten Abfallschlüssel sind Empfehlungen aufgrund der voraussichtlichen Verwendung dieses Produktes.

Aufgrund der speziellen Verwendung und Entsorgungsgegebenheiten beim Verwender können unter Umständen auch andere Abfallschlüssel zugeordnet werden. (2014/955/EU)

07 01 04 andere organische Lösemittel, Waschflüssigkeiten und Mutterlaugen

14 06 03 andere Lösemittel und Lösemittelgemische

16 05 08 gebrauchte organische Chemikalien, die aus gefährlichen Stoffen bestehen oder solche enthalten

Empfehlung:

Von der Entsorgung über das Abwasser ist abzuraten.

Örtlich behördliche Vorschriften beachten.

Stofflicher Verwertung zuführen.

Zum Beispiel geeignete Verbrennungsanlage.

Für verunreinigtes Verpackungsmaterial

Örtlich behördliche Vorschriften beachten.

Behälter vollständig entleeren.

Nicht kontaminierte Verpackungen können wiederverwendet werden.

Nicht reinigungsfähige Verpackungen sind wie der Stoff zu entsorgen.

Ungereinigte Behälter nicht durchlöchern, zerschneiden oder schweißen.

Rückstände können eine Explosionsgefahr darstellen.

Empfohlenes Reinigungsmittel:

Wasser

ABSCHNITT 14: Angaben zum Transport

Allgemeine Angaben

Straßen- / Schienentransport (GGVSEB/ADR/RID)

14.1. UN-Nummer oder ID-Nummer: 2924

14.2. Ordnungsgemäße UN-Versandbezeichnung:

UN 2924 ENTZÜNDBARER FLÜSSIGER STOFF, ÄTZEND, N.A.G. (ETHANOL, MILCHSÄURE)

14.3. Transportgefahrenklassen: 3(8)

14.4. Verpackungsgruppe: II

14.5. Umweltgefahren: Nicht zutreffend

Tunnelbeschränkungscode: D/E



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Klassifizierungscode: FC
 LQ: 1 L
 Beförderungskategorie: 2
Beförderung mit Seeschiffen (GGVSee/IMDG-Code)
 14.1. UN-Nummer oder ID-Nummer: 2924
 14.2. Ordnungsgemäße UN-Versandbezeichnung:
 UN 2924 FLAMMABLE LIQUID, CORROSIVE, N.O.S. (ETHANOL, LACTIC ACID)
 14.3. Transportgefahrenklassen: 3(8)
 14.4. Verpackungsgruppe: II
 14.5. Umweltgefahren: Nicht zutreffend
 Meeresschadstoff (Marine Pollutant): Nicht zutreffend
 EmS: F-E, S-C



Beförderung mit Flugzeugen (IATA)

14.1. UN-Nummer oder ID-Nummer: 2924
 14.2. Ordnungsgemäße UN-Versandbezeichnung:
 UN 2924 Flammable liquid, corrosive, n.o.s. (ETHANOL, LACTIC ACID)
 14.3. Transportgefahrenklassen: 3(8)
 14.4. Verpackungsgruppe: II
 14.5. Umweltgefahren: Nicht zutreffend



14.6. Besondere Vorsichtsmaßnahmen für den Verwender

Mit der Beförderung gefährlicher Güter beschäftigte Personen müssen unterwiesen sein. Vorschriften für die Sicherung sind von allen an der Beförderung beteiligten Personen zu beachten. Vorkehrungen zur Vermeidung von Schadensfällen sind zu treffen.

14.7. Massengutbeförderung auf dem Seeweg gemäß IMO-Instrumenten

Die Fracht erfolgt nicht als Massengut sondern als Stückgut, daher nicht zutreffend. Mindermengenregelungen werden hier nicht beachtet. Gefahrennummer sowie Verpackungscodierung auf Anfrage. Sondervorschriften (special provisions) beachten.

ABSCHNITT 15: Rechtsvorschriften

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

Beschränkungen beachten:

Nationale Verordnungen/Gesetze zum Jugendarbeitsschutz beachten (insb. die nationale Implementierung der Richtlinie 94/33/EG)! Berufsgenossenschaftliche/arbeitsmedizinische Vorschriften beachten.

Richtlinie 2012/18/EU ("Seveso-III"), Anhang I, Teil 1 - Folgende Kategorien treffen für dieses Produkt zu (u.U. sind weitere zu berücksichtigen je nach Lagerung, Handhabung etc.):

| Gefahrenkategorien | Anmerkungen zu Anhang I | Mengenschwelle (in Tonnen) für gefährliche Stoffe gemäß Artikel 3 Absatz 10 für die Anwendung von - Anforderungen an Betriebe der unteren Klasse | Mengenschwelle (in Tonnen) für gefährliche Stoffe gemäß Artikel 3 Absatz 10 für die Anwendung von - Anforderungen an Betriebe der oberen Klasse |
|--------------------|-------------------------|--|---|
| P5c | | 5000 | 50000 |

Für die Zuordnung der Kategorien und Mengenschwellen sind immer die Anmerkungen zu Anhang I der Richtlinie 2012/18/EU zu beachten, insb. die in den Tabellen hier genannten und die Anm. 1 - 6.

Richtlinie 2010/75/EU (VOC): 84 %

Wassergefährdungsklasse (Deutschland): 1

Störfallverordnung beachten.

Technische Anleitung zur Reinhaltung der Luft - TA Luft:
 Kapitel 5.2.5 - Organische Stoffe (nicht staubförmige org. Stoffe, allgemein, keiner Klasse zugeordnet) :

75,00 - 100,00 %

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Jugendarbeitsschutzgesetz - JArbSchG beachten (Deutschland).

Arbeitsplatzgrenzwerte/Biologische Grenzwerte siehe Abschnitt 8.

Die TRGS 401 (Deutschland) "Gefährdung durch Hautkontakt - Ermittlung, Beurteilung, Maßnahmen" beachten.

Lagerklasse nach TRGS 510:

3 Entzündbare Flüssigkeiten oder desensibilisierte explosive Flüssigkeiten

Nationale Vorgaben/Verordnung über Sicherheit und Gesundheitsschutz bei Verwendung von Arbeitsmitteln sind anzuwenden.

15.2 Stoffsicherheitsbeurteilung

Eine Stoffsicherheitsbeurteilung ist für Gemische nicht vorgesehen.

Eine Stoffsicherheitsbeurteilung wurde für nachfolgende(n)

Stoff(e) durchgeführt:

Ethanol

ABSCHNITT 16: Sonstige Angaben

Überarbeitete Abschnitte:

3, 7, 8, 15

M 017

Schulung der Mitarbeiter im Umgang mit Gefahrgütern erforderlich.

Diese Angaben beziehen sich auf das Produkt im Anlieferzustand.

Einweisung/Schulung der Mitarbeiter für den Umgang mit Gefahrstoffen erforderlich.

Einstufung und verwendete Verfahren zur Ableitung der Einstufung des Gemisches gemäß der Verordnung (EG) 1272/2008 (CLP):

| Einstufung gemäß Verordnung (EG) Nr. 1272/2008 (CLP) | Verwendete Bewertungsmethode |
|--|--|
| Flam. Liq. 2, H225 | Einstufung aufgrund von Testdaten. |
| Eye Dam. 1, H318 | Einstufung gemäß Berechnungsverfahren. |
| Skin Corr. 1C, H314 | Einstufung gemäß Berechnungsverfahren. |

Nachfolgende Sätze stellen die ausgeschriebenen H-Sätze, Gefahrenklasse-Code (GHS/CLP) der Ingredienten dar.

H314 Verursacht schwere Verätzungen der Haut und schwere Augenschäden.

H225 Flüssigkeit und Dampf leicht entzündbar.

H318 Verursacht schwere Augenschäden.

H319 Verursacht schwere Augenreizung.

EUH071 Wirkt ätzend auf die Atemwege.

Flam. Liq. — Entzündbare Flüssigkeiten

Eye Dam. — Schwere Augenschädigung

Skin Corr. — Ätzwirkung auf die Haut

Eye Irrit. — Augenreizung

Wichtige Literatur und Datenquellen:

Verordnung (EG) Nr. 1907/2006 (REACH) und Verordnung (EG) Nr. 1272/2008 (CLP) in der jeweils gültigen Fassung.

Leitlinien zur Erstellung von Sicherheitsdatenblättern in der gültigen Fassung (ECHA).

Leitlinien zur Kennzeichnung und Verpackung gemäß Verordnung (EG) Nr. 1272/2008 (CLP) in der gültigen Fassung (ECHA).

Sicherheitsdatenblätter der Inhaltsstoffe.

ECHA-homepage - Informationen über Chemikalien.

GESTIS-Stoffdatenbank (Deutschland).

Umweltbundesamt "Rigoletto" Informationsseite Wassergefährdende Stoffe (Deutschland).

EU-Arbeitsplatzgrenzwerte Richtlinien 91/322/EWG, 2000/39/EG, 2006/15/EG, 2009/161/EU, (EU) 2017/164, (EU) 2019/1831 in der jeweils gültigen Fassung.

Nationale Arbeitsplatzgrenzwerte-Listen der jeweiligen Länder in der jeweils gültigen Fassung.

Vorschriften zum Transport gefährlicher Güter im Straßen-, Schienen-, See- und Luftverkehr (ADR, RID, IMDG, IATA) in der jeweils gültigen Fassung.

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Eventuell in diesem Dokument verwendete Abkürzungen und Akronyme:

ADR Accord européen relatif au transport international des marchandises Dangereuses par Route (= Europäisches Übereinkommen über die internationale Beförderung gefährlicher Güter auf der Straße)
alkoholbest. alkoholbeständig
allg. Allgemein
Anm. Anmerkung
AOX Adsorbierbare organische Halogenverbindungen
Art., Art.-Nr. Artikelnummer
ASTM ASTM International (American Society for Testing and Materials)
ATE Acute Toxicity Estimate (= Schätzwert der akuten Toxizität)
BAFU Bundesamt für Umwelt (Schweiz)
BAM Bundesanstalt für Materialforschung und -prüfung
BAuA Bundesanstalt für Arbeitsschutz und Arbeitsmedizin
BCF Bioconcentration factor (= Biokonzentrationsfaktor)
Bem. Bemerkung
BG Berufsgenossenschaft
BG BAU Berufsgenossenschaft der Bauwirtschaft (Deutschland)
BSEF The International Bromine Council
bzw. beziehungsweise
ca. zirka / circa
CAS Chemical Abstracts Service
ChemRRV Chemikalien-Risikoreduktions-Verordnung (Schweiz)
CLP Classification, Labelling and Packaging (VERORDNUNG (EG) Nr. 1272/2008 über die Einstufung, Kennzeichnung und Verpackung von Stoffen und Gemischen)
CMR carcinogen, mutagen, reproduktionstoxisch (krebserzeugend, erbgutverändernd, fortpflanzungsgefährdend)
DMEL Derived Minimum Effect Level (= abgeleiteter Minimaler-Effekt-Grenzwert)
DNEL Derived No Effect Level (= abgeleiteter Nicht-Effekt-Grenzwert)
DOC Dissolved organic carbon (= Gelöster organischer Kohlenstoff)
EbCx, EyCx, EbLx (x = 10, 50) Effect Concentration/Level of x % on reduction of the biomass (algae, plants) (= Konzentration/Dosis mit einer Wirkung von x % auf die Reduktion der Biomasse (Algen, Pflanzen))
ECHA European Chemicals Agency (= Europäische Chemikalienagentur)
ECx, ELx (x = 0, 3, 5, 10, 20, 50, 80, 100) Effect Concentration/Level for x % effect (= Konzentration/Dosis mit einer Wirkung von x %)
EG Europäische Gemeinschaft
EINECS European Inventory of Existing Commercial Chemical Substances
ELINCS European List of Notified Chemical Substances
EN Europäischen Normen
EPA United States Environmental Protection Agency (United States of America)
ErCx, E_μCx, ErLx (x = 10, 50) Effect concentration/Level of x % on inhibition of the growth rate (algae, plants) (= Konzentration mit einer Wirkung von x % auf die Hemmung der Wachstumsrate (Algen, Pflanzen))
etc., usw. et cetera, und so weiter
EU Europäische Union
EVAL Ethylen-Vinylalkohol-Copolymer
EWG Europäische Wirtschaftsgemeinschaft
Fax. Faxnummer
gem. gemäß
ggf. gegebenenfalls
GGVSEB Gefahrgutverordnung Straße, Eisenbahn und Binnenschifffahrt (Deutschland)
GGVSee Gefahrgutverordnung See (Verordnung über die Beförderung gefährlicher Güter mit Seeschiffen, Deutschland)
GHS Globally Harmonized System of Classification and Labelling of Chemicals (= Global Harmonisiertes System zur Einstufung und Kennzeichnung von Chemikalien)
GISBAU Gefahrstoff-Informationssystem der BG Bau - Berufsgenossenschaft der Bauwirtschaft (Deutschland)
GisChem Gefahrstoffinformationssystem Chemikalien der BG RCI - Berufsgenossenschaft Rohstoffe und chemische Industrie und der BGHM - Berufsgenossenschaft Holz und Metall (Deutschland)
GWP Global warming potential (= Treibhauspotenzial)
IARC International Agency for Research on Cancer (= Internationale Agentur für Krebsforschung)
IATA International Air Transport Association (= Internationale Flug-Transport-Vereinigung)
IBC (Code) International Bulk Chemical (Code)

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IMDG-Code International Maritime Code for Dangerous Goods (= Gefährliche Güter im internationalen Seeschiffsverkehr)
inkl. inklusive, einschließlich
IUCRID International Uniform Chemical Information Database
IUPAC International Union for Pure Applied Chemistry (= Internationale Union für reine und angewandte Chemie)
k.D.v. keine Daten vorhanden
KFZ, Kfz Kraftfahrzeug
Koc Adsorptionskoeffizient des organischen Kohlenstoffs im Boden
Konz. Konzentration
Kow Octanol/Wasser-Verteilungskoeffizient
LC50 Lethal Concentration to 50 % of a test population (= Für 50 % einer Prüfpopulation tödliche Konzentration)
LD50 Lethal Dose to 50% of a test population (Median Lethal Dose) (= Für 50 % einer Prüfpopulation tödliche Dosis (mediane letale Dosis))
LGK Lagerklasse
LOEC, LOEL Lowest Observed Effect Concentration/Level (niedrigste Konzentration/Dosis mit beobachteter Wirkung)
Log Koc Logarithmus des Adsorptionskoeffizienten des organischen Kohlenstoffs im Boden
Log Kow, Log Pow Logarithmus des Octanol/Wasser-Verteilungskoeffizienten
LQ Limited Quantities (= begrenzte Mengen)
LRV Luftreinhalte-Verordnung (Schweiz)
LVA Listen über den Verkehr mit Abfällen (Schweiz)
MARPOL Internationale Übereinkommen zur Verhütung der Meeresverschmutzung durch Schiffe
mg/kg bw mg/kg body weight (= mg/kg Körpergewicht)
mg/kg bw/d, mg/kg bw/day mg/kg body weight/day (= mg/kg Körpergewicht/Tag)
mg/kg dw mg/kg dry weight (= mg/kg Trockengewicht)
mg/kg feed mg/kg Futter
mg/kg wwt mg/kg wet weight (= mg/kg Feuchtmasse)
Min., min. Minute(n) oder mindestens oder Minimum
n.a. nicht anwendbar
n.g. nicht geprüft
n.v. nicht verfügbar
NIOSH National Institute for Occupational Safety and Health (= Nationales Institut für Arbeitssicherheit und Gesundheit (USA))
NLP No-longer-Polymer (= Nicht-mehr-Polymer)
NOEC, NOEL No Observed Effect Concentration/Level (= Konzentration/Dosis ohne beobachtete Wirkung)
OECD Organisation for Economic Co-operation and Development (= Organisation für wirtschaftliche Zusammenarbeit und Entwicklung)
org. organisch
OSHA Occupational Safety and Health Administration (= Arbeitssicherheit-und Gesundheitsbehörde (USA))
PBT persistent, bioaccumulative and toxic (= persistent, bioakkumulierbar und toxisch)
PE Polyethylen
PNEC Predicted No Effect Concentration (= abgeschätzte Nicht-Effekt-Konzentration)
Pt. Punkt
PVC Polyvinylchlorid
REACH Registration, Evaluation, Authorisation and Restriction of Chemicals (VERORDNUNG (EG) Nr. 1907/2006 zur Registrierung, Bewertung, Zulassung und Beschränkung chemischer Stoffe)
REACH-IT List-No. 6/7/8/9xx-xxx-x No. is automatically assigned, e.g. to pre-registrations without a CAS No. or other numerical identifier. List Numbers do not have any legal significance, rather they are purely technical identifiers for processing a submission via REACH-IT. (= 6/7/8/9xx-xxx-x Nr. wird automatisch vergeben, z.B. auf Vorregistrierungen ohne CAS-Nr. oder andere numerische Kennung. Listennummern haben keine rechtliche Bedeutung, sondern sind rein technische Identifikatoren für die Bearbeitung einer Einreichung über REACH-IT.)
resp. respektive
RID Règlement concernant le transport International ferroviaire de marchandises Dangereuses (= Regelung zur internationalen Beförderung gefährlicher Güter im Schienenverkehr)
SVHC Substances of Very High Concern (= besonders besorgniserregende Substanzen)
Tel. Telefon
TOC Total organic carbon (= Gesamter organischer Kohlenstoff)
TRGS Technische Regeln für Gefahrstoffe
UVEK Eidgenössisches Department für Umwelt, Verkehr, Energie und Kommunikation (Schweiz)
UN RTDG United Nations Recommendations on the Transport of Dangerous Goods (die Empfehlungen der Vereinten Nationen für die Beförderung gefährlicher Güter)
UV Ultraviolett
VbF Verordnung über brennbare Flüssigkeiten (Österreichische Verordnung)
VeVA Verordnung über den Verkehr mit Abfällen (Schweiz)
VOC Volatile organic compounds (= flüchtige organische Verbindungen)

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vPvB very persistent and very bioaccumulative (= sehr persistent und sehr bioakkumulierbar)

WBF Eidgenössisches Department für Wirtschaft, Bildung und Forschung (Schweiz)

WGK Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen - AwSV (Deutsche Verordnung)

WGK1 schwach wassergefährdend

WGK2 deutlich wassergefährdend

WGK3 stark wassergefährdend

z. Zt. zur Zeit

z.B. zum Beispiel

Die hier gemachten Angaben sollen das Produkt im Hinblick auf die erforderlichen Sicherheitsvorkehrungen beschreiben, sie dienen nicht dazu bestimmte Eigenschaften zuzusichern und basieren auf dem heutigen Stand unserer Kenntnisse. Haftung ausgeschlossen.

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Ethanol

(CH₃-CH₂-OH)

CAS: 64-17-5

Exposure Scenarios for Safety Data Sheets

CSR Variant 1- Manufacturer, fermentation, all uses

| | | |
|--|---|---|
| Title: Exposure Scenario for Industrial manufacturing of Ethanol, or use as intermediate or process chemical | | |
| Ethanol REACH Association reference no. ES1 | | |
| Systematic title based on use descriptor | SU3, SU8, SU9 PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b ERC1, ERC4, ERC6A | |
| Processes, tasks, activities covered | Covers the industrial manufacture of Ethanol at controlled manufacturing plants in continuous and batch processes. Includes recycling/ recovery, material transfers, filling, storage, maintenance and loading, sampling and use as an intermediate or process chemical. | |
| Assessment Method | Ecetoc TRA integrated model version 2, EUSES v.2. | |
| 1. Exposure Scenario | | |
| 1.1 Operational conditions and risk management measures | | |
| <p>Process categories: Continuous process in high integrity contained systems with little potential for exposure (sampling via closed loop system) and continuous process not specifically aimed at minimizing emissions. Occasional exposure possible through e.g. maintenance and sampling. Sampling, loading, filling, storage and transfer under controlled conditions at the manufacturing site is also included.</p> <p>Environmental release categories: Manufacture, and industrial use as intermediate or process chemical of organic substances using continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions.</p> <p>Number of sites using the substance: Substance widely used.</p> | | |
| 1.2 Control of workers exposure | | |
| Product characteristic (including package design affecting exposure) | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| | Vapour pressure of substance | 5,73 kPa |
| Amounts used | n.a. in tier1 TRA model | |
| Frequency and duration of use/exposure | Frequency of exposure (weekly) | > 4 Days/week |
| | Frequency of exposure (annual) | 240 Days/year |
| | Duration of exposure | > 4 Hours/day |
| Human factors not influenced by risk management | Potentially exposed body parts | Two hands face side only (automated processes/PROC1, 2) Two hands (transfer, filling, etc./PROC8a,b) |
| | Exposed skin surface | 480 cm ² (automated processes/PROC1, 2, 3,4) 960 cm ² (transfer, filling, etc./PROC8a,b) |
| Other given operational conditions affecting workers exposure | Assumes a good basic standard of occupational hygiene is implemented. | |
| | Setting (indoor/outdoor) | Outdoor |
| Technical conditions and measures at process level (source) to prevent release | No specific technical prevention measures required for process in high integrity contained systems with little potential for exposure or with only occasional minor exposure through e.g. maintenance and sampling. | |
| Technical conditions and measures to control dispersion from source towards the worker | Ventilation | None required |
| | Efficiency rate | 95 % |
| Organisational measures to prevent /limit releases, dispersion and exposure | Handle substances within a predominantly closed system. Ensure material transfers are under containment or extract ventilation. No specific organizational measures required for processes in high integrity contained systems with little potential for exposure or with only occasional minor exposure through e.g. maintenance and sampling. Provide extract ventilation to points | |

| | | |
|---|--|---|
| | where emissions occur. Wear suitable gloves tested to EN374 during the activities where skin contact is possible. | |
| Conditions and measures related to personal protection, hygiene and health evaluation | PPE: Respiratory Protection | Not required for normal operations |
| 1.3 Control of environmental exposure | | |
| Product characteristics | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| Amounts used | Daily at point source | n.a. |
| | Annually at point source | 400,000 t/year (maximum plant size, worst case) |
| | Annually total | 4,600,000 t/year total market |
| Frequency and duration of use | Pattern of release | Continuous 350 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m3/day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoor and/or outdoor |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Technical conditions and measures at process level (source) to prevent release | Keep containers tightly closed. Store in a bounded area. Do not discharge into sewers or drains. Use appropriate emission abatement equipment from LEV systems if required by local legislation. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations | |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | Apply technical measures aiming at reducing releases to air (containment by preference or catalytic or thermal gas oxidation) | Efficacy >70% (for ethanol) |
| | Apply technical measures aiming at reduction and cleaning of waste water (WWTP /local STP (e.g. biological treatment)) | Efficacy >87% (for ethanol) |
| Organizational measures to prevent/limit release from site | Do not release wastewater directly into environment | Wastewater release into local or municipal STP. |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | >= 2000 m ³ /day |
| | Degradation efficacy | 90% (for ethanol) |
| | Sludge treatment | Disposal or recovery |
| Conditions and measures related to treatment of waste | Hazardous waste incineration or dispose for use in recycled fuels | |

2. Exposure estimation

Workers exposure estimation is calculated with Ecetoc TRA model v2.. Below given exposure estimates are based on the PROC with the highest exposure levels in this scenario (PROC8a).

| Workers exposure | Exposure estimate | DNEL | Comment |
|--------------------------------------|-------------------|-----------|---|
| Inhalation (mg/m³) | 96.04 | 950 (OEL) | PROC 8a results in the highest exposure in this exposure scenario |
| Dermal (mg/kg/day) | 13.71 | 343 | |
| Combined (mg/kg/day) | 27.43 | 343 | |

Environmental exposure estimation is calculated with EUSES 2.0 model. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the local and/or municipal STP under evaluated conditions.

| | | | |
|---|---|---------------------------------------|----------------|
| Release times per year (day/year) | 350 | Local release to air (kg/day) | 226.0 |
| Fraction used at main local source | 0.086 | Local release to waste water (kg/day) | 11.3 |
| Amount used locally (kg/day) | 0 | Local release to soil (kg/day) | 0 |
| Environmental exposure | PEC | PNEC | Comment |
| In STP / untreated wastewater(mg/l) | 5.65 | 580 | - |
| In local freshwater (mg/l) | 0.0000264 | 0.96 | - |
| In local soil | 0.00119 (mg/kg) | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0.00000224 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2 and EUSES v2.0 respectively.

If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:

PECcorrected = PECcalculated * (local emission fraction) * (local WWTP flow rate fraction) * (local river flow rate fraction) * (local STP efficiency fraction)

Example for calculating your local freshwater PEC:

Corrected local freshwater PEC = $0,0000264 * (\text{your local emission [kg/day]} / 350) * (2000 / \text{your local WWTP flow rate [m3/day]}) * (18000 / \text{your local river flow rate [m3/day]}) * ((1 - \text{your local WWTP efficiency})/0.1)$

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

| Title: Exposure Scenario for Industrial distribution of Ethanol | | |
|---|--|--|
| Ethanol REACH Association reference no. ES2 | | |
| Systematic title based on use descriptor | SU3, SU8, SU9 PROC8a, PROC8b, PROC9 ERC2 | |
| Processes, tasks, activities covered | Covers transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated and dedicated facilities, loading (including marine vessel/barge, rail/road car and IBC loading), storage, and repacking (including drums and small packs) of substance, including its distribution. Intended for e.g. traders, distributors, transporters, etc. | |
| Assessment Method | Ecetoc TRA integrated model version 2 | |
| 1. Exposure Scenario | | |
| 1.1 Operational conditions and risk management measures | | |
| Process categories: Sampling, loading, filling, transfer, drumming, bagging in non-dedicated facilities. Exposure related to vapour, aerosols or spillage, and cleaning of equipment to be expected. Environmental release category: Mixing, blending, diluting, transferring, filling, drumming and distributing activities of substances in all types of drumming, distribution and trading industry. Also includes drumming, filling and distribution activities in formulating industries, such as paints and do-it-yourself products, pigment pastes, fuels, household products (cleaning products), cosmetics, lubricants etc. | | |
| Number of sites using the substance: Substance widely used. | | |
| 1.2 Control of workers exposure | | |
| Product characteristic (including package design affecting exposure) | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| | Vapour pressure of substance | 5,73 kPa |
| Amounts used | n.a. in tier1 TRA model | |
| Frequency and duration of use/exposure | Frequency of exposure (weekly) | > 4 Days/week |
| | Frequency of exposure (annual) | 240 Days/year |
| | Duration of exposure | > 4 Hours/day |
| Human factors not influenced by risk management | Potentially exposed body parts | Two hands |
| | Exposed skin surface | 960 cm ² |
| Other given operational conditions affecting workers exposure | Assumes a good basic standard of occupational hygiene is implemented. | |
| | Setting (indoor/outdoor) | Outdoor or in ventilated (open) spaces |
| Technical conditions and measures at process level (source) to prevent release | No specific technical prevention measures required | |
| Technical conditions and measures to control dispersion from source towards the worker | Outdoors | No specific measures identified. |
| | If indoors | Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). Ensure material transfers are under containment or extract ventilation. Provide good ventilation to points where emissions occur. |
| Organisational measures to prevent /limit releases, dispersion and exposure | No specific measures identified. | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable gloves tested to EN374 during the activities where skin contact is possible. | |
| 1.3 Control of environmental exposure | | |
| Product characteristics | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| Amounts used | Daily at point source | n.a. |
| | Annually at point source | 75,000 t/year (worst case scenario, at point source) |
| | Annually total | 3,800,000 t/year total market |
| Frequency and duration of use | Pattern of release | 300 days per year |
| Environment factors not influenced by | Flow rate of receiving surface water | 18,000m ³ /day (default) |

| | | |
|--|--|---|
| risk management | | |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Outdoor |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Technical conditions and measures at process level (source) to prevent release | Keep containers tightly closed. Store in a bounded area. Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations | |
| Organizational measures to prevent/limit release from site | Do not release wastewater directly into environment | Wastewater release into local or municipal STP. |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | >2000 m ³ /day |
| | Degradation efficacy | >90% (for ethanol) |
| | Sludge treatment | Disposal or recovery |
| Conditions and measures related to treatment of waste | Hazardous waste incineration or dispose for use in recycled fuels | |

2. Exposure estimation

Workers exposure estimation is calculated with Ecetoc TRA model v2.. Below given exposure estimates are based on the PROC with the highest exposure levels in this scenario (PROC8a).

| Workers exposure | Exposure estimate | DNEL | Comment |
|---------------------------------|-------------------|-----------|---|
| Inhalation (mg/m ³) | 96.04 | 950 (OEL) | PROC 8a results in the highest exposure in this exposure scenario |
| Dermal (mg/kd/day) | 13.71 | 343 | |
| Combined (mg/kg/day) | 27.43 | 343 | |

Environmental exposure estimation is based on Ecetoc TRA model v2 including the data from TGD A&B tables (MC-1b, IC-2, UC-48, fraction main source 0,1) and based on the worst-case scenario with point-source production volume of 15,000 tpa. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade for 90% in the local and/or municipal STP under evaluated conditions.

| | | | |
|--|---|---------------------------------------|---------|
| Release times per year (day/year) | 300 | Local release to air (kg/day) | 50 |
| Fraction used at main local source | 0.1 | Local release to waste water (kg/day) | 15 |
| Amount used locally (kg/day) | 5000 | Local release to soil (kg/day) | 1 |
| Environmental exposure | PEC | PNEC | Comment |
| In STP / untreated wastewater(mg/l) | 4.66 | 580 | - |
| In local freshwater (mg/l) | 0,52 | 0,96 | - |
| In local soil | 0.007 (mg/kg) | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0515 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2 and EUSES v2.0 respectively.

If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:

$PEC_{corrected} = PEC_{calculated} * (local\ emission\ fraction) * (local\ WWTP\ flow\ rate\ fraction) * (local\ river\ flow\ rate\ fraction) * (local\ STP\ efficiency\ fraction)$

Example for calculating your local freshwater PEC:

Corrected freshwater PEC = 0,104 * (your local emission [kg/day] / 15) * (2000 / your local WWTP flow rate [m3/day]) * (18000 / your local river flow rate [m3/day]) * ((1 - your local WWTP efficiency)/0.1)

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

| Title: Exposure Scenario for Industrial formulation and (re)packing of Ethanol, and its mixtures | | |
|--|--|---|
| Ethanol REACH Association reference no. ES3 | | |
| Systematic title based on use descriptor | SU3, SU10 PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC14 ERC 2 | |
| Processes, tasks, activities covered | Covers industrial formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, large and small scale packing, maintenance. Includes formulation of fuels containing ethanol. | |
| Assessment Method | Ecetoc TRA integrated model version 2, EUSES v.2. | |
| 1. Exposure Scenario | | |
| 1.1 Operational conditions and risk management measures | | |
| <p>Process category: Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage. Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated and dedicated facilities with possible exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment.</p> <p>Environmental release category: Manufacture of organic and inorganic substances in chemical, petrochemical, primary metals and minerals industry including intermediates, monomers using continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions</p> <p>Number of sites using the substance: Substance widely used.</p> | | |
| 1.2 Control of workers exposure | | |
| Product characteristic (including package design affecting exposure) | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| | Vapour pressure of substance | 5,73 kPa |
| Amounts used | n.a. in tier1 TRA model | |
| Frequency and duration of use/exposure | Frequency of exposure (weekly) | > 4 Days/week |
| | Frequency of exposure (annual) | 240 Days/year |
| | Duration of exposure | > 4 Hours/day |
| Human factors not influenced by risk management | Potentially exposed body parts | Two hands face side only (automated processes/PROC3) Two hands (transfer, filling, etc./PROC8a,b) |
| | Exposed skin surface | 480 cm ² (automated processes/PROC3) 960 cm ² (transfer, filling, etc./PROC8a,b) |
| Other given operational conditions affecting workers exposure | Assumes a good basic standard of occupational hygiene is implemented. | |
| | Setting (indoor/outdoor) | Indoors |
| Technical conditions and measures at process level (source) to prevent release | No specific measures identified. | |
| Technical conditions and measures to control dispersion from source towards the worker | Ensure material transfers are under containment or extract ventilation. Provide good ventilation to points where emissions occur. Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). | |
| Organisational measures to prevent /limit releases, dispersion and exposure | No specific measures identified. | |
| Conditions and measures related to personal protection, hygiene and health evaluation | No specific measures required. Wear suitable gloves tested to EN374 during the activities where excessive skin contact is possible. | |
| 1.3 Control of environmental exposure | | |
| Product characteristics | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| Amounts used | Daily at point source | n.a. |
| | Annually at point source | 280,000 t/year (maximum at point source in worst case) |
| | Annually total | 3,800,000 t/year |

| | | |
|---|---|--|
| Frequency and duration of use | Pattern of release | Continuous 300 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m ³ /day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoor |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Technical conditions and measures at process level (source) to prevent release | Keep containers tightly closed. Store in a bounded area. Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations. Formulation activity is assumed to be a predominantly enclosed process. | |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment)) | Efficacy >90% |
| Organizational measures to prevent/limit release from site | Do not release wastewater directly into environment | Wastewater release into municipal STP. |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | >2000 m ³ /day |
| | Degradation efficacy | 90% (for ethanol) |
| | Sludge treatment | Disposal or recovery |
| Conditions and measures related to treatment of waste | Hazardous waste incineration or dispose for use in recycled fuels | |

2. Exposure estimation

Workers exposure estimation is calculated with Ecetoc TRA model v2.. Below given exposure estimates are based on the PROC with the highest exposure levels in this scenario (PROC8a).

| Workers exposure | Exposure estimate | DNEL | Comment |
|---------------------------------|-------------------|------|---|
| Inhalation (mg/m ³) | 96.04 | 950 | PROC 8a results in the highest exposure in this exposure scenario |
| Dermal (mg/kg/day) | 13.71 | 343 | |
| Combined (mg/kg/day) | 27.43 | 343 | |

Environmental exposure estimation is based on Ecetoc TRA model v2 including the data from TGD A&B tables (MC-1b, IC-9, UC-27, fraction main source 0,1) and based on the worst-case scenario.

Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the local and/or municipal STP under evaluated conditions.

| | | | |
|---|---|---------------------------------------|----------------|
| Release times per year (day/year) | 300 | Local release to air (kg/day) | 469 |
| Fraction used at main local source | 0.1 | Local release to waste water (kg/day) | 28 |
| Amount used locally (kg/day) | 93.333 | Local release to soil (kg/day) | 9 |
| Environmental exposure | PEC | PNEC | Comment |
| In STP / untreated wastewater(mg/l) | 1.73 | 580 | - |
| In local freshwater (mg/l) | 0,185 | 0,96 | - |
| In local soil | 0,0117 (mg/kg) | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0186 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.

If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:

$PEC_{corrected} = PEC_{calculated} * (\text{local emission fraction}) * (\text{local WWTP flow rate fraction}) * (\text{local river flow rate fraction}) * (\text{local STP efficiency fraction})$

Example for calculating your local freshwater PEC:

$Corrected\ local\ freshwater\ PEC = 0,185 * (\text{your local emission [kg/day]} / 28) * (2000 / \text{your local WWTP flow rate [m}^3\text{/day]}) * (18000 / \text{your local river flow rate [m}^3\text{/day]}) * ((1 - \text{your local WWTP efficiency})/0.1)$

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

Title: Exposure Scenario for Industrial use of Ethanol in non-spray applications

Ethanol REACH Association reference no. ES4

| | |
|---|--|
| Systematic title based on use descriptor | SU3 PROC10, PROC13 ERC4 |
| Processes, tasks, activities covered | Covers industrial (end) use of ethanol as such or in preparations in non-spray application (e.g. as processing aid, cleaning agent, solvent or ingredient in coatings). Indoor roller application, brushing and treatment of surfaces, treatment of articles by dipping/ pouring/ immersing/ soaking, etc. |
| Assessment Method | Ecetoc TRA integrated model version 2 |

1. Exposure Scenario

1.1 Operational conditions and risk management measures

Process category: Low energy spreading of e.g. coatings. Including cleaning of surfaces. Substance can be inhaled as vapours, skin contact can occur through droplets, splashes, working with wipes and handling of treated surfaces. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dyeing, plating,). Substance is applied to a surface by low energy techniques such as dipping the article into a bath or pouring a preparation onto a surface. Use of substances at small-scale laboratory (< 1 l or 1 kg). Covers also the use of the substance as fuel sources (including additives) where limited exposure to the product in its unburned form is expected.

Environmental release category: Industrial use of processing aids in a batch process, not becoming part of an article using dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions. For example, solvents used in chemical reactions or the 'use' of solvents during the application of paints, lubricants in metal working fluids, anti-set off agents in polymer moulding/casting.

Number of sites using the substance: Substance widely used.

1.2 Control of workers exposure

| | | |
|---|---|--|
| Product characteristic (including package design affecting exposure) | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| | Vapour pressure of substance | 5,73 kPa |
| Amounts used | n.a. in tier1 TRA model | |
| Frequency and duration of use/exposure | Frequency of exposure (weekly) | > 4 Days/week |
| | Frequency of exposure (annual) | 240 Days/year |
| | Duration of exposure | > 4 Hours/day |
| Human factors not influenced by risk management | Potentially exposed body parts | Two hands, face side only (PROC13) Two hands (PROC10) |
| | Exposed skin surface | 480 cm ² (PROC13) 960 cm ² (PROC10) |
| Other given operational conditions affecting workers exposure | Assumes a good basic standard of occupational hygiene is implemented. | |
| | Setting (indoor/outdoor) | Indoors and outdoors |
| Technical conditions and measures at process level (source) to prevent release | No specific measures identified. | |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour) when working indoors. Ensure material transfers are under containment or extract ventilation. Provide good ventilation to points where emissions occur. | |
| Organisational measures to prevent /limit releases, dispersion and exposure | No specific measures identified. | |
| Conditions and measures related to personal protection, hygiene and health evaluation | No specific PPE measures required. Wear suitable gloves tested to EN374 during the activities where prolonged or frequent skin contact is possible. | |

1.3 Control of environmental exposure

| | | |
|--------------------------------------|---------------------------------------|--------------------------------------|
| Product characteristics | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| Amounts used | Daily at point source | n.a. |
| | Annually to the region | 2,750 t/year (general) |
| | Annually total | 27,500 t/year (general) total market |
| Frequency and duration of use | Pattern of release | 300 days per year |

| | | |
|---|--|--|
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m ³ /day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoors and outdoors |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Technical conditions and measures at process level (source) to prevent release | Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations. | |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment)) | Efficacy >70% |
| Organizational measures to prevent/limit release from site | Do not release wastewater directly into environment | Wastewater release into municipal STP. |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | >2000 m ³ /day |
| | Degradation efficacy | 90% (for ethanol) |
| | Sludge treatment | Disposal or recovery |
| Conditions and measures related to treatment of waste | Hazardous waste incineration or dispose for use in recycled fuels | |

2. Exposure estimation

Workers exposure estimation is calculated with Ectoc TRA model v2.. Below given exposure estimates are based on the PROC with the highest exposure levels in this scenario (PROC8a).

| Workers exposure | Exposure estimate | DNEL | Comment |
|--------------------------------------|-------------------|------|---|
| Inhalation (mg/m³) | 96.04 | 950 | PROC 10 results in the highest exposure in this exposure scenario |
| Dermal (mg/kg/day) | 27.43 | 343 | |
| Combined (mg/kg/day) | 41.15 | 343 | |

Environmental exposure estimation is based on Ectoc TRA model v2 including the data from TGD A&B tables (MC-1b, IC-14, UC-48, fraction main source 0,1 using local STP and MC-1c, IC-9, UC-27 fraction main source 0,1 using local STP). Below values are those related to processes with the highest risk characterization ratio (related to industrial use of coatings, inks and adhesives). All other activities covered in this exposure scenario result in lower environmental exposure estimates.

Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the local and/or municipal STP under evaluated conditions.

| | | | |
|---|---|---------------------------------------|----------------|
| Release times per year (day/year) | 300 | Local release to air (kg/day) | 367 |
| Fraction used at main local source | 0.1 | Local release to waste water (kg/day) | 5 |
| Amount used locally (kg/day) | 458 | Local release to soil (kg/day) | 1 |
| Environmental exposure | PEC | PNEC | Comment |
| In STP / untreated wastewater(mg/l) | 0.285 | 580 | - |
| In local freshwater (mg/l) | 0,039 | 0,96 | - |
| In local soil | 0.0091 (mg/kg) | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0039 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ectoc TRA integrated tool version 2.

If the local environmental emission conditions deviate significantly from the used default values, please use the below algorithm to estimate the correct local emissions and RCRs:

$PEC_{corrected} = PEC_{calculated} * (\text{local emission fraction}) * (\text{local WWTP flow rate fraction}) * (\text{local river flow rate fraction}) * (\text{local STP efficiency fraction})$

Example for calculating your local freshwater PEC:

$Corrected\ freshwater\ PEC = 0,039 * (\text{your local emission [kg/day]} / 5) * (2000 / \text{your local WWTP flow rate [m}^3/\text{day]}) * (18000 / \text{your local river flow rate [m}^3/\text{day]}) * ((1 - \text{your local WWTP efficiency})/0.1)$

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

Title: Exposure Scenario for Industrial use of Ethanol in spray applications

Ethanol REACH Association reference no. ES5

| | |
|--|---|
| Systematic title based on use descriptor | SU3 PROC7 ERC4 |
| Processes, tasks, activities covered | Covers industrial (end) use of ethanol as such or in preparations by spraying (e.g. as processing aid, cleaning agent, solvent or ingredient in coatings). Indoor painting, application of coatings, adhesives, polishes/cleaners, air-care products and other mixtures containing Ethanol by automated spraying techniques in factories or comparable industrial settings. |
| Assessment Method | Ecetoc TRA integrated model version 2 |

1. Exposure Scenario

1.1 Operational conditions and risk management measures

Process category: Industrial-spraying (air dispersive techniques). Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls.
 Environmental release category: Industrial use of processing aids in a batch process, not becoming part of an article using dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions.
 Number of sites using the substance: Substance widely used.

1.2 Control of workers exposure

| | | |
|--|--|------------------------|
| Product characteristic (including package design affecting exposure) | Physical state | liquid |
| | Concentration of substance in product | Up to 25 % |
| | Vapour pressure of substance | 5,73 kPa |
| Amounts used | n.a. in tier1 TRA model | |
| Frequency and duration of use/exposure | Frequency of exposure (weekly) | > 4 Days/week |
| | Frequency of exposure (annual) | 240 Days/year |
| | Duration of exposure | > 4 Hours/day |
| Human factors not influenced by risk management | Potentially exposed body parts | Two hands and forearms |
| | Exposed skin surface | 1500 cm ² |
| Other given operational conditions affecting workers exposure | Assumes a good basic standard of occupational hygiene is implemented. | |
| | Setting (indoor/outdoor) | Indoors |
| Technical conditions and measures at process level (source) to prevent release | No specific measures identified. | |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour) when working indoors. Ensure material transfers are under containment or extract ventilation. Provide good ventilation to points where emissions occur. | |
| Organisational measures to prevent /limit releases, dispersion and exposure | No specific measures identified. | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Avoid excessive and frequent skin contact as much as possible. Wear suitable gloves tested to EN374 during the activities where excessive or frequent skin contact is possible. Wear a respirator conforming to EN140 with Type A filter or better if vented booth with laminar flow is not available. | |

1.3 Control of environmental exposure

| | | |
|---|---------------------------------------|--------------------------------------|
| Product characteristics | Physical state | liquid |
| | Concentration of substance in product | Up to 25 % |
| Amounts used | Daily at point source | n.a. |
| | Annually to the region | 2,750 t/year (maximum in worst case) |
| | Annually total | 27,500 t/year total market |
| Frequency and duration of use | Pattern of release | Continuous 300 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m ³ /day (default) |

| | | |
|--|--|--|
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoors and outdoors |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Technical conditions and measures at process level (source) to prevent release | Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations. | |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment)) | Efficacy >70% |
| Organizational measures to prevent/limit release from site | Do not release wastewater directly into environment | Wastewater release into municipal STP. |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | >2000 m ³ /day |
| | Degradation efficacy | 90% (for ethanol) |
| | Sludge treatment | Disposal or recovery |
| Conditions and measures related to treatment of waste | Hazardous waste incineration or dispose for use in recycled fuels | |

2. Exposure estimation

Workers exposure estimation is calculated with Ecetoc TRA model v2..

| Workers exposure | Exposure estimate | DNEL | Comment |
|---------------------------------|-------------------|------|---|
| Inhalation (mg/m ³) | 480.21 | 950 | Exposure estimates and RCRs given here are calculated for conditions without LEV (worst case scenario). |
| Dermal (mg/kd/day) | 42.86 | 343 | |
| Combined (mg/kg/day) | 111.46 | 343 | |

Environmental exposure estimation is based on Ecetoc TRA model v2 including the data from TGD A&B tables (MC-Ib, IC-14, UC-48, fraction main source 0,1 using local STP). Below values are those related to processes with the highest risk characterization ratio (related to industrial use of coatings, inks and adhesives). All other activities covered in this exposure scenario result in lower environmental exposure estimates.

Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by >90% in the Local and Municipal STP under evaluated conditions.

| | | | |
|--|---|---------------------------------------|----------------|
| Release times per year (day/year) | 300 | Local release to air (kg/day) | 367 |
| Fraction used at main local source | 0.1 | Local release to waste water (kg/day) | 5 |
| Amount used locally (kg/day) | 458 | Local release to soil (kg/day) | 1 |
| Environmental exposure | PEC | PNEC | Comment |
| In STP / untreated wastewater(mg/l) | 0.285 | 580 | - |
| In local freshwater (mg/l) | 0,039 | 0,96 | - |
| In local soil | 0.0091 (mg/kg) | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0039 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.

If the local environmental emission conditions deviate significantly from the used default values, please use the below algorithm to estimate the correct local emissions and RCRs:

$PEC_{corrected} = PEC_{calculated} * (\text{local emission fraction}) * (\text{local WWTP flow rate fraction}) * (\text{local river flow rate fraction}) * (\text{local STP efficiency fraction})$

Example for calculating your local freshwater PEC:

$Corrected\ freshwater\ PEC = 0,039 * (\text{your local emission [kg/day]} / 5) * (2000 / \text{your local WWTP flow rate [m3/day]}) * (18000 / \text{your local river flow rate [m3/day]}) * ((1 - \text{your local WWTP efficiency})/0.1)$

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

| Title: Exposure Scenario for Industrial use of Ethanol as fuel source | | |
|---|--|---------------------------------------|
| Ethanol REACH Association reference no. ES6a | | |
| Systematic title based on use descriptor | SU3 PROC16 ERC7 | |
| Processes, tasks, activities covered | Use as fuel or fuel additive in industrial setting. | |
| Assessment Method | Ecetoc TRA integrated model version 2 | |
| 1. Exposure Scenario | | |
| 1.1 Operational conditions and risk management measures | | |
| <p>Process category: Covers the use of material as fuel sources (including additives) where limited exposure to the product in its un-burned form is expected. Does not cover exposure as a consequence of spillage or combustion.</p> <p>Environmental release category: Industrial use of substances in closed systems. Use in closed equipment, such as the use of liquids in hydraulic systems, cooling liquids in refrigerators and lubricants in engines and di-electric fluids in electric transformers and oil in heat exchangers. No intended contact between functional fluids and products foreseen, and thus low emissions via waste water and waste air to be expected.</p> <p>Number of sites using the substance: Substance widely used.</p> | | |
| 1.2 Control of workers exposure | | |
| Product characteristic (including package design affecting exposure) | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| | Vapour pressure of substance | 5,73 kPa |
| Amounts used | n.a. in tier1 TRA model | |
| Frequency and duration of use/exposure | Frequency of exposure (weekly) | > 4 Days/week |
| | Frequency of exposure (annual) | 240 Days/year |
| | Duration of exposure | > 4 Hours/day |
| Human factors not influenced by risk management | Potentially exposed body parts | One hand, face side only |
| | Exposed skin surface | 240 cm ² |
| Other given operational conditions affecting workers exposure | Assumes a good basic standard of occupational hygiene is implemented. | |
| | Setting (indoor/outdoor) | Indoors |
| Technical conditions and measures at process level (source) to prevent release | No specific measures identified. | |
| Technical conditions and measures to control dispersion from source towards the worker | No specific measures identified | |
| Organisational measures to prevent /limit releases, dispersion and exposure | No specific measures identified. | |
| Conditions and measures related to personal protection, hygiene and health evaluation | No specific PPE measures identified. | |
| 1.3 Control of environmental exposure | | |
| Product characteristics | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| Amounts used | Daily at point source | n.a. |
| | Annually to the region | 30,000 t/year (maximum in worst case) |
| | Annually total | 300,000 t/year total market |
| Frequency and duration of use | Pattern of release | Continuous 300 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m ³ /day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoors and outdoors |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Technical conditions and measures at process level (source) to prevent release | Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations. | |
| Technical onsite conditions and measures | Apply technical measures aiming at reduction | Efficacy >70% |

| | | |
|---|--|--|
| to reduce or limit discharges, air emissions and releases to soil | and cleaning of waste water (WWTP/local STP (e.g. biological treatment)) | |
| Organizational measures to prevent/limit release from site | Do not release wastewater directly into environment | Wastewater release into municipal STP. |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | >2000 m ³ /day |
| | Degradation efficacy | 90% |
| | Sludge treatment | Disposal or recovery |
| Conditions and measures related to treatment of waste | Hazardous waste incineration or dispose for use in recycled fuels | |

2. Exposure estimation

Workers exposure estimation is calculated with Ecetoc TRA model v2..

| Workers exposure | Exposure estimate | DNEL | Comment |
|---------------------------------|-------------------|------|---------|
| Inhalation (mg/m ³) | 9.6 | 950 | - |
| Dermal (mg/kg/day) | 0.3 | 343 | |
| Combined (mg/kg/day) | 1.7 | 343 | |

Environmental exposure estimation is based on Ecetoc TRA model v2 including the data from TGD A&B tables (MC-1c, IC-9, UC-27, fraction main source 0,02 using local STP, 350 emission days per year).
Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the STP under evaluated conditions.

| | | | |
|---|---|---------------------------------------|----------------|
| Release times per year (day/year) | 350 | Local release to air (kg/day) | 9 |
| Fraction used at main local source | 0.02 | Local release to waste water (kg/day) | 1 |
| Amount used locally (kg/day) | 1714 | Local release to soil (kg/day) | 2 |
| Environmental exposure | PEC | PNEC | Comment |
| In STP / untreated wastewater(mg/l) | 0.053 | 580 | - |
| In local freshwater (mg/l) | 0,0152 | 0,96 | - |
| In local soil | 0.0006 (mg/kg) | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0016 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.

If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:

$PEC_{corrected} = PEC_{calculated} * (local\ emission\ fraction) * (local\ WWTP\ flow\ rate\ fraction) * (local\ river\ flow\ rate\ fraction) * (local\ STP\ efficiency\ fraction)$

Example for calculating your local freshwater PEC:

$Corrected\ freshwater\ PEC = 0,0152 * (your\ local\ emission\ [kg/day] / 5) * (2000 / your\ local\ WWTP\ flow\ rate\ [m^3/day]) * (18000 / your\ local\ river\ flow\ rate\ [m^3/day]) * ((1 - your\ local\ WWTP\ efficiency)/0.1)$

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

| Title: Exposure Scenario for Professional use of Ethanol as fuel source | | |
|---|---|---|
| Ethanol REACH Association reference no. ES6b | | |
| Systematic title based on use descriptor | SU22 PROC16 ERC 9a, ERC 9b | |
| Processes, tasks, activities covered | Use as fuel or fuel additive in professional setting. | |
| Assessment Method | Ecetoc TRA integrated model version 2 | |
| 1. Exposure Scenario | | |
| 1.1 Operational conditions and risk management measures | | |
| <p>Process category: Covers the use of material as fuel sources (including additives) where limited exposure to the product in its unburned form is expected. Does not cover exposure as a consequence of spillage or combustion.</p> <p>Environmental release category: Professional use of substances in closed systems. Use in closed equipment, such as the use of liquids in hydraulic systems, cooling liquids in refrigerators and lubricants in engines and dielectric fluids in electric transformers and oil in heat exchangers. No intended contact between functional fluids and products foreseen, and thus low emissions via waste water and waste air to be expected.</p> <p>Number of sites using the substance: Substance widely used.</p> | | |
| 1.2 Control of workers exposure | | |
| Product characteristic (including package design affecting exposure) | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| | Vapour pressure of substance | 5,73 kPa |
| Amounts used | n.a. in tier1 TRA model | |
| Frequency and duration of use/exposure | Frequency of exposure (weekly) | > 4 Days/week |
| | Frequency of exposure (annual) | 240 Days/year |
| | Duration of exposure | > 4 Hours/day |
| Human factors not influenced by risk management | Potentially exposed body parts | One hand, face side only |
| | Exposed skin surface | 240 cm ² |
| Other given operational conditions affecting workers exposure | Assumes a good basic standard of occupational hygiene is implemented. | |
| | Setting (indoor/outdoor) | Indoors |
| Technical conditions and measures at process level (source) to prevent release | No specific measures identified. | |
| Technical conditions and measures to control dispersion from source towards the worker | No specific measures identified | |
| Organisational measures to prevent /limit releases, dispersion and exposure | No specific measures identified. | |
| Conditions and measures related to personal protection, hygiene and health evaluation | No specific PPE measures identified. | |
| 1.3 Control of environmental exposure | | |
| Product characteristics | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| Amounts used | Daily at point source | n.a. |
| | Annually to the region | 380,000 t/year |
| | Annually total | 3,800,000 t/year total market for industrial, professional and consumer use |
| Frequency and duration of use | Pattern of release | Continuous wide dispersive: 365 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m ³ /day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoors and outdoors |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |

| | | |
|--|---|--|
| Technical conditions and measures at process level (source) to prevent release | Do not discharge into sewers or drains. | |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | Do not discharge directly into environment. Use in predominantly enclosed systems | |
| Organizational measures to prevent/limit release from site | Do not release wastewater directly into environment | Wastewater release into municipal STP. |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | >2000 m ³ /day |
| | Degradation efficacy | 90% |
| | Sludge treatment | Disposal or recovery |
| Conditions and measures related to treatment of waste | Hazardous waste incineration or dispose for use in recycled fuels | |

2. Exposure estimation

Workers exposure estimation is calculated with Ecetoc TRA model v2..

| Workers exposure | Exposure estimate | DNEL | Comment |
|---------------------------------|-------------------|------|---------|
| Inhalation (mg/m ³) | 9.6 | 950 | - |
| Dermal (mg/kd/day) | 0.3 | 343 | |
| Combined (mg/kg/day) | 1.7 | 343 | |

Environmental exposure estimation is based on Ecetoc TRA model ERC9a, and TGD-A&B table (MC-IV, IC-6, UC-27). Below values are those related to TGD A&B table calculation.

Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the STP under evaluated conditions.

| | | | |
|--|---|----------------------------------|----------------------|
| Release times per year (day/year) | 365 | Local release to air (kg/day) | n.a. wide dispersive |
| Fraction used at main local source | 0,002 | Local release to sewage (kg/day) | n.a. wide dispersive |
| Amount used locally (kg/day) | 2082 | Local release to soil (kg/day) | n.a. wide dispersive |
| Environmental exposure | PEC | PNEC | Comment |
| In STP (mg/l) | 0,065 | 580 | - |
| In local freshwater (mg/l) | 0,0240 | 0,96 | - |
| In local soil (mg/kg) | 0,0273 | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0034 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.

If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:

$PEC_{corrected} = PEC_{calculated} * (\text{local emission fraction}) * (\text{local WWTP flow rate fraction}) * (\text{local river flow rate fraction}) * (\text{local STP efficiency fraction})$

Example for calculating your local freshwater PEC:

$Corrected\ freshwater\ PEC = 0,0240 * (\text{your local emission [kg/day]} / 5) * (2000 / \text{your local WWTP flow rate [m3/day]}) * (18000 / \text{your local river flow rate [m3/day]}) * ((1 - \text{your local WWTP efficiency})/0.1)$

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

Title: Exposure Scenario for Professional use of Ethanol in non-spray applications**Ethanol REACH Association reference no. ES7**

| | |
|---|--|
| Systematic title based on use descriptor | SU22 PROC10, PROC13, PROC14, PROC19 ERC8a, ERC8d |
| Processes, tasks, activities covered | Covers professional (end) use of ethanol as such or in preparations in non-spray application (e.g. as processing aid, cleaning agent, application of coatings). Indoor roller application, brushing and treatment of surfaces. Treatment of articles by dipping and pouring. Includes stabilization of explosives. |
| Assessment Method | Ecetoc TRA integrated model version 2 |

1. Exposure Scenario**1.1 Operational conditions and risk management measures**

Process category: Low energy spreading of e.g. coatings. Including cleaning of surfaces. Substance can be inhaled as vapours, skin contact can occur through droplets, splashes, working with wipes and handling of treated surfaces. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dyeing, plating,). Substance is applied to a surface by low energy techniques such as dipping the article into a bath or pouring a preparation onto a surface. Use of substances at small-scale laboratory (< 1 l or 1 kg). Addresses also occupations and activities where intimate and intentional contact with substances occurs without any specific exposure controls other than PPE.

Environmental release category: Wide dispersive indoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the sewage system, for example, cosmetics, detergents in fabric washing, machine wash liquids and lavatory cleaners, automotive and bicycle care products (polishes, lubricants, de-icers), solvents in paints and adhesives or fragrances and aerosol propellants in air fresheners.

Number of sites using the substance: Substance widely used.

1.2 Control of workers exposure

| | | |
|---|--|---|
| Product characteristic (including package design affecting exposure) | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| | Vapour pressure of substance | 5,73 kPa |
| Amounts used | n.a. in tier1 TRA model | |
| Frequency and duration of use/exposure | Frequency of exposure (weekly) | > 4 Days/week |
| | Frequency of exposure (annual) | 240 Days/year |
| | Duration of exposure | > 4 Hours/day |
| Human factors not influenced by risk management | Potentially exposed body parts | Two hands, face side only (PROC13, 14) Two hands (PROC10) Two hands and forearms (PROC19) |
| | Exposed skin surface | 480 cm ² (PROC13, 14) 960 cm ² (PROC10) 1980 cm ² (PROC19) |
| Other given operational conditions affecting workers exposure | Assumes a good basic standard of occupational hygiene is implemented. | |
| | Setting (indoor/outdoor) | Indoors and outdoors |
| Technical conditions and measures at process level (source) to prevent release | If >4 hours/day (PROC19) | Limit the substance concentration in the product to 25% |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general or controlled ventilation. Natural ventilation is from windows and doors etc. Controlled ventilation means air is supplied or removed by a powered fan. | |
| Organisational measures to prevent /limit releases, dispersion and exposure | No specific measures identified. | |
| Conditions and measures related to personal protection, hygiene and health evaluation | If PROC 19 and concentration >25% | PPE: Wear suitable gloves tested to EN374 and avoid skin contact |

1.3 Control of environmental exposure

| | | |
|--------------------------------|---------------------------------------|-------------|
| Product characteristics | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |

| | | |
|---|---|-------------------------------------|
| Amounts used | Daily at point source | n.a. |
| | Annually at point source | n.a. (wide dispersive use) |
| | Annually total | 10,000 t/year total market |
| Frequency and duration of use | Pattern of release | Continuous 365 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m ³ /day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoors and outdoors |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Technical conditions and measures at process level (source) to prevent release | No specific measures identified. | |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | No specific measures identified. | |
| Organizational measures to prevent/limit release from site | Do not release wastewater directly into environment. Wastewater release into municipal STP. | |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | >2000 m ³ /day |
| | Degradation efficacy | 90% (for ethanol) |
| | Sludge treatment | Disposal or recovery |
| Conditions and measures related to treatment of waste | Contain and dispose of waste in accordance with environmental legislation and according to local regulations. | |

2. Exposure estimation

Workers exposure estimation is calculated with Ecetoc TRA model v2. Below given exposure estimates are based on the PROC with the highest exposure levels in this scenario (PROC19).

| Workers exposure | Exposure estimate | DNEL | Comment |
|--------------------------------------|-------------------|------|---|
| Inhalation (mg/m³) | 115,25 | 950 | PROC 19 results in the highest exposure in this exposure scenario |
| Dermal (mg/kg/day) | 84,86 | 343 | |
| Combined (mg/kg/day) | 101,32 | 343 | |

Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC 8 a, d and TGD A&B table (MC-1c, IC-6, UC-9). Below values are estimates based on the ERC approach calculation resulting in more conservative values. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the STP under evaluated conditions.

| | | | |
|---|---|---------------------------------------|----------------|
| Release times per year (day/year) | 365 | Local release to air (kg/day) | 5 |
| Fraction used at main local source | 0.1 | Local release to waste water (kg/day) | 5 |
| Amount used locally (kg/day) | 5.5 | Local release to soil (kg/day) | 1 |
| Environmental exposure | PEC | PNEC | Comment |
| In STP / untreated wastewater(mg/l) | 0.34 | 580 | - |
| In local freshwater (mg/l) | 0,045 | 0,96 | - |
| In local soil | 0.0003 (mg/kg) | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0044 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2. If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:

$PEC_{corrected} = PEC_{calculated} * (local\ emission\ fraction) * (local\ WWTP\ flow\ rate\ fraction) * (local\ river\ flow\ rate\ fraction) * (local\ STP\ efficiency\ fraction)$

Example for calculating your local freshwater PEC:

$Corrected\ local\ freshwater\ PEC = 0,045 * (your\ local\ emission\ [kg/day] / 5) * (2000 / your\ local\ WWTP\ flow\ rate\ [m^3/day]) * (18000 / your\ local\ river\ flow\ rate\ [m^3/day]) * ((1 - your\ local\ WWTP\ efficiency)/0.1)$

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

Title: Exposure Scenario for Professional use of Ethanol in spray applications

Ethanol REACH Association reference no. ES8

| | |
|---|---|
| Systematic title based on use descriptor | SU22 PROC11 ERC8a, ERC8d |
| Processes, tasks, activities covered | Professional application of paints, coatings, adhesives, cleaners and other mixtures containing ethanol by spraying. Non industrial / professional spraying of mixtures and products like paints, coatings, adhesives, polishes, cleaners, etc. |
| Assessment Method | Ecetoc TRA integrated model version 2 |

1. Exposure Scenario

1.1 Operational conditions and risk management measures

Process category: Air dispersive techniques. Spraying for surface coating, adhesives, polishes/cleaners, air care products, sandblasting. Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls;
 Environmental release category: Wide dispersive indoor and outdoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the sewage system, for example, cosmetics, detergents in fabric washing, machine wash liquids and lavatory cleaners, automotive and bicycle care products (polishes, lubricants, de-icers), solvents in paints and adhesives or fragrances and aerosol propellants in air fresheners.
 Number of sites using the substance: Substance widely used.

1.2 Control of workers exposure

| | | |
|---|---|--|
| Product characteristic (including package design affecting exposure) | Physical state | Liquid (spray aerosol) |
| | Concentration of substance in product | 5-25 % |
| | Vapour pressure of substance | 5,73 kPa |
| Amounts used | n.a. in tier1 TRA model | |
| Frequency and duration of use/exposure | Frequency of exposure (weekly) | > 4 Days/week |
| | Frequency of exposure (annual) | 300 Days/year |
| | Duration of exposure | Variable |
| Human factors not influenced by risk management | Potentially exposed body parts | Two hands and forearms |
| | Potentially exposed skin surface | 1500 cm ² |
| Other given operational conditions affecting workers exposure | Assumes a good basic standard of occupational hygiene is implemented. | |
| | Setting (indoor/outdoor) | Indoors and/or outdoors |
| Technical conditions and measures at process level (source) to prevent release | If duration of exposure > 4 hours/day | Limit the substance content in the product to 5% |
| | If duration of exposure 1-4 hours/day | Limit the substance content in the product to 25% |
| | If duration of exposure < 1 hours/day | No specific measures identified |
| Technical conditions and measures to control dispersion from source towards the worker | Substance content in the product > 25% | Provide enhanced general ventilation by mechanical means. Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour) |
| | Substance content in the product 5 - 25% | Provide a good standard of general ventilation. Natural ventilation is from windows and doors etc. Controlled ventilation means air is supplied or removed by a powered fan. |
| | Substance content in the product < 5% | No specific measures identified. |
| Organisational measures to prevent /limit releases, dispersion and exposure | Do not carry out operation for more than 1 hour when substance content in the product exceeds 25% and no enhanced mechanical ventilation (minimum efficiency 70%) is available. | |
| Conditions and measures related to personal protection, hygiene and health evaluation | PPE: Respiratory Protection with at least 90% reduction in inhaled concentration of the substance | Condition: If no enhanced ventilation available and concentration of the substance in the product > 25 % |

| | | |
|--|---|---|
| | PPE: Wear suitable gloves (chemically resistant gloves tested to EN374) during the activities where excessive skin contact is possible. | Condition: If concentration of the substance in the product > 5 % |
|--|---|---|

1.3 Control of environmental exposure

| | | |
|---|---|------------------------------|
| Product characteristics | Physical state | Liquid (sprayed) |
| | Concentration of substance in product | 5 - 25 % |
| Amounts used | Daily at point source | n.a. |
| | Annually at point source | n.a. (wide dispersive use) |
| | Annually total | 10,000 t/year total market |
| Frequency and duration of use | Pattern of release | Continuous 365 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m3/day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoors and outdoors |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Technical conditions and measures at process level (source) to prevent release | No specific measures identified. | |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | No specific measures identified. | |
| Organizational measures to prevent/limit release from site | Do not release wastewater directly into environment. Wastewater release into municipal STP. | |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | >2000 m ³ /day |
| | Degradation efficacy | 90% |
| | Sludge treatment | Disposal or recovery |
| Conditions and measures related to treatment of waste | Contain and dispose of waste in accordance with environmental legislation and according to local regulations. | |

2. Exposure estimation

Workers exposure estimation is calculated with Ecetoc TRA model v2. Below given exposure estimates are based on the PROC with the highest exposure levels in this scenario (PROC19).

| Workers exposure | Exposure estimate | DNEL | Comment |
|---------------------------------|-------------------|------|---------|
| Inhalation (mg/m ³) | 672,29 | 950 | - |
| Dermal (mg/kd/day) | 21,43 | 343 | |
| Combined (mg/kg/day) | 117,47 | 343 | |

Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a default settings and TGD A&B table (MC-1c, IC-6, UC-9). Below values are estimates based on the ERC approach calculation resulting in more conservative values. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the STP under evaluated conditions.

| | | | |
|---|---|---------------------------------------|----------------------|
| Release times per year (day/year) | 365 | Local release to air (kg/day) | n.a. wide dispersive |
| Fraction used at main local source | 0.1 | Local release to waste water (kg/day) | n.a. wide dispersive |
| Amount used locally (kg/day) | 5.5 | Local release to soil (kg/day) | n.a. wide dispersive |
| Environmental exposure | PEC | PNEC | Comment |
| In STP / untreated wastewater(mg/l) | 0.34 | 580 | - |
| In local freshwater (mg/l) | 0,045 | 0,96 | - |
| In local soil | 0.0003 (mg/kg) | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0044 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2. If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:

$PEC_{corrected} = PEC_{calculated} * (\text{local emission fraction}) * (\text{local WWTP flow rate fraction}) * (\text{local river flow rate fraction}) * (\text{local STP efficiency fraction})$

Example for calculating your local freshwater PEC:

$Corrected\ local\ freshwater\ PEC = 0,045 * (\text{your local emission [kg/day]} / 5) * (2000 / \text{your local WWTP flow rate [m3/day]}) * (18000 / \text{your local river flow rate [m3/day]}) * ((1 - \text{your local WWTP efficiency})/0.1)$

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

| | | |
|--|---|---|
| REACH | | |
| Title: Exposure Scenario for Consumer use of Ethanol as automotive fuel | | |
| Ethanol REACH Association reference no. ES9a | | |
| Systematic title based on use descriptor | SU21 PC13 ERC9a, ERC9b | |
| Processes, tasks, activities covered | Covers the consumer use of automotive fuels which contain Ethanol | |
| Assessment Method | Ecetoc TRA integrated model version 2, ConsExpo v 4.1 | |
| 1. Exposure Scenario | | |
| 1.1 Operational conditions and risk management measures | | |
| <p>Product categories: Use of ethanol as automotive (vehicle) fuel. Minor exposure to ethanol vapours is possible during filling at the filling stations or transfer from portable fuel cans. Exposure to ethanol during the actual use of fuel (running of the engine) is not expected under normally foreseeable conditions of use since the substance is combusted in the (enclosed) engine system.</p> <p>Environmental release category: Wide dispersive outdoor use by the public. Use (usually) results in minor direct release into environment through accidental spillage and evaporation during the filling.</p> <p>Number of sites using the substance: Substance widely used.</p> | | |
| 1.2 Control of consumer exposure | | |
| Substance content in the product | Can be > 25 % | |
| Amounts of product used / applied per event | Up to 100 litre | |
| Exposure/release fraction | 0,001 (Only to vapour and minor spills during the filling of the tank) | |
| Frequency and duration of use/exposure | Frequency of exposure: weekly | |
| | Duration of exposure per event: < 5 minutes (only during the filling of the tank) | |
| Setting and external conditions during use | Outdoors | |
| Technical (product related) use conditions | No specific measures required. | |
| Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer; e.g. product labelling) | No specific measures required. | |
| 1.3 Control of environmental exposure | | |
| Product characteristics | Physical state | Liquid |
| | Concentration of substance in product | Can be > 25 % |
| Amounts used | Daily at point source | n.a. |
| | Annually at point source | n.a. (wide dispersive use) |
| | Annually total | 3,800,000 t/year total market for industrial, professional and consumer use |
| Frequency and duration of use | Pattern of release | 365 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m ³ /day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Outdoor |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Conditions and measures related to municipal sewage treatment plant | No release into the wastewaters or sewage is expected from this use. Only environmental release from the consumer use of ethanol as fuel is evaporation during filling (<0,01 %, assuming that less than 10 gram of ethanol evaporates during the filling of 75 litre tank during 2-5 minutes). | |
| Conditions and measures related to disposal of waste resulting from the use of the products | No waste expected from this use. | |
| Conditions and measures related to recovery of waste resulting from the use | n.a. | |

2. Exposure estimation

Consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010) CSA (PC13, Automotive, refuelling at 100% concentration).

| Consumer exposure | Exposure estimate | DNEL | Comment |
|---------------------------------|-------------------|---------|---------|
| Dermal (mg/kg/day) | 35,00 | LTS 206 | - |
| Oral (mg/kg/day) | 0,00 | LTS 87 | - |
| Inhalation (mg/m3 for 24hr day) | 1,54 | LTS 144 | - |
| All routes systemic | - | - | - |

Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8d customized settings and total use of 3,800,000 tpa.

| | | | |
|------------------------------------|-------|---------------------------------------|----------------------|
| Release times per year (day/year) | 365 | Local release to air (kg/day) | n.a. wide dispersive |
| Fraction used at main local source | 0.002 | Local release to waste water (kg/day) | n.a. wide dispersive |
| Amount used locally (kg/day) | n.a | Local release to soil (kg/day) | n.a. wide dispersive |

| Environmental exposure | PEC | PNEC | Comment |
|---|---|-----------------|---------|
| In STP (mg/l) | 0,065 | 580 | - |
| In local freshwater (mg/l) | 0,0240 | 0,96 | - |
| In local soil (mg/kg) | 0,0273 | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0034 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

Title: Exposure Scenario for Consumer use of Ethanol as domestic fuel

Ethanol REACH Association reference no. ES9b

| | |
|--|--|
| Systematic title based on use descriptor | SU21 PC13 ERC8a, ERC8d |
| Processes, tasks, activities covered | Covers the consumer use of domestic fuel products which contain Ethanol, e.g. ethanol fuel burners, fondue sets, heaters, etc. Includes garden equipment refuelling. |
| Assessment Method | Ecetoc TRA integrated model version 2, ConsExpo v 4.1 |

1. Exposure Scenario

1.1 Operational conditions and risk management measures

Product categories: Fuels (for domestic use) like ethanol liquid/gel filling for fireplaces, fondue sets, heaters, etc. During use, minor exposure is possible during the transfer of the liquid product from the can/packaging into the holder or (burning-) device. No exposure to ethanol is expected during the actual burning of the fuel since the ethanol vapours are fully combusted.

Environmental release category: Wide dispersive indoor and outdoor use by public at large. Use (usually) results in direct release into the sewage system or environment. In this use, as domestic fuel, only expected environmental release is through evaporation during filling of the device.

Number of sites using the substance: Substance widely used.

1.2 Control of consumer exposure

| | |
|---|--|
| Substance content in the product | > 25 % |
| Amounts of product used / applied per event | Up to 1 litre |
| Potentially exposed body parts | Inside one hand: 210 cm ² |
| Frequency and duration of use/exposure | Frequency of use: weekly |
| | Duration of use: 5 minutes (Only during the filling of the device) |
| Setting and external conditions during use | Indoors and/or outdoors |
| Technical (product related) use conditions | No specific measures required. |
| Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer) | No specific measures required. |

1.3 Control of environmental exposure

| | | |
|---|---|-------------------------------------|
| Product characteristics | Physical state | Liquid |
| | Concentration of substance in product | Can be > 25 % |
| Amounts used | Daily at point source | n.a. |
| | Annually at point source | n.a. (wide dispersive use) |
| | Annually total | 10,000 t/year total market |
| Frequency and duration of use | Pattern of release | 365 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m ³ /day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoor and/or outdoor |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Conditions and measures related to municipal sewage treatment plant | No release into the wastewaters or sewage is expected from this use. Only environmental release from the consumer use of ethanol as domestic fuel is evaporation during filling of the burner device. | |
| Conditions and measures related to disposal of waste resulting from the use of the products | No waste expected from this use. | |
| Conditions and measures related to recovery of waste resulting from the use | n.a. | |

2. Exposure estimation

| Consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010) CSA (PC13, Garden equipment-liquid-refuelling at concentration 100%). | | | |
|--|---|---|----------------------|
| Consumer exposure | Exposure estimate | DNEL | Comment |
| Dermal (mg/kg/day) | 70,00 | LTS 206 | - |
| Oral (mg/kg/day) | 0,00 | LTS 87 | - |
| Inhalation (mg/m3 for 24hr day) | 0,81 | LTS 144 | - |
| All routes systemic | - | - | - |
| Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a and d settings and total use of 10.000 tpa. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by >90% in the STP under evaluated conditions. | | | |
| Release times per year (day/year) | 365 | Local release to air (kg/day) | n.a. wide dispersive |
| Fraction used at main local source | 0,002 | Local release to waste water (kg/day) | n.a. wide dispersive |
| Amount used locally (kg/day) | n.a. | Local release to soil (kg/day) | n.a. wide dispersive |
| Environmental exposure | PEC | PNEC | Comment |
| In STP (mg/l) | 0,340 | 580 | - |
| In local freshwater (mg/l) | 0,0447 | 0,96 | - |
| In local soil (mg/kg) | 0,0003 | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0044 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |
| Additional good practice advice beyond the REACH CSA | | | |
| <p>Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH</p> | | <p>Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.</p> | |

| Title: Exposure Scenario for Consumer use of Ethanol in products (<50g per event) | | | | |
|--|---|---|--|--|
| Ethanol REACH Association reference no. ES9c | | | | |
| Systematic title based on use descriptor | SU21 PC: 1, 3, 8, 12, 14, 15, 18, 23, 24, 27, 28, 30, 31, 34, 39 ERC8a, ERC8d | | | |
| Processes, tasks, activities covered | Covers the consumer use of products which contain Ethanol with amount applied in use of less than 50g per event | | | |
| Assessment Method | Ecetoc TRA integrated model version 2, ConsExpo v 4.1 | | | |
| 1. Exposure Scenario | | | | |
| 1.1 Operational conditions and risk management measures | | | | |
| Product categories: Adhesives (other than carpet and floor glue), sealants; Air care products; Artists supply and hobby preparations; Building and construction preparations; Metal-surface treatment products; Non-metal-surface treatment products; Ink and toners; Lawn and garden preparations; Leather tanning, finishing, impregnation, dye and care products; Lubricants, greases and release products; Plant protection products; Cosmetics and toiletries; Perfumes and fragrances; Photo-chemicals; Polishes and wax blends; Textile dye, finishing and impregnation products. | | | | |
| Environmental release category: Wide dispersive indoor and outdoor use. Use (usually) results in direct release into the sewage system or environment. | | | | |
| Number of sites using the substance: Substance widely used. | | | | |
| 1.2 Control of consumer exposure | | | | |
| Substance content in the product | < 1 % | 1 – 5 % | 5 – 25 % | > 25 % |
| Product characteristic (including package design affecting exposure) | PC24, PC31 | PC5, PC10, PC22, PC23, PC27, PC30, PC34 | PC1, PC8, PC14, PC15, PC18, | PC3, PC28 |
| Amounts of product used / applied per event | < 50 g | < 50 g | < 50 g | < 10 g |
| Frequency and duration of use/exposure | Frequency of use: Up to daily | | | |
| | Duration of use/application: up to 4 hours | | | |
| Setting and external conditions during use | Indoors (minimum room volume 20m ³) or outdoors | | | |
| Technical (product related) use conditions | n.a. | n.a. | n.a. | Controlled spray or release device. |
| Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer; e.g. product labelling) | No specific measures required. | No specific measures required. | No specific measures required. | Do not spray empty in small, enclosed areas. Avoid inhalation and skin contact. |
| 1.3 Control of environmental exposure | | | | |
| Product characteristics | Physical state | | Liquid | |
| | Concentration of substance in product | | Could be > 25 % | |
| Amounts used | Daily at point source | | n.a. | |
| | Annually at point source | | n.a. (wide dispersive use) | |
| | Annually total | | 10,000 t/year total market, excluding cosmetics and toiletries | |
| Frequency and duration of use | Pattern of release | | 365 days per year | |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | | 18,000m ³ /day (default) | |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | | Indoor | |
| | Processing temperature | | Ambient | |
| | Processing pressure | | Ambient | |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | | > 2000 m ³ /day | |
| | Degradation efficacy | | 90% | |
| | Sludge treatment (disposal or recovery) | | Disposal or recovery | |

| | |
|--|--------------------------------|
| Conditions and measures related to disposal of waste resulting from the use of the products | No specific measures required. |
| Conditions and measures related to recovery of waste resulting from the use | No specific measures required. |

2. Exposure estimation

Consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010) CSA (PC31 Polishes and wax blends for floor, furniture, shoes).

| Consumer exposure | Exposure estimate | DNEL | Comment |
|---------------------------------|-------------------|---------|---------|
| Dermal (mg/kg/day) | 2,87 | LTS 206 | - |
| Oral (mg/kg/day) | 0,00 | LTS 87 | - |
| Inhalation (mg/m3 for 24hr day) | 10,31 | LTS 144 | - |
| All routes systemic | - | - | - |

Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a and ERC8d default settings. Below presented estimates are based on ERC8d with total use of 10,000 tpa. This volume excludes cosmetics and toiletries use, where a 200,000 tpa total market is assumed – all emissions from this sector are assumed to be emissions to air. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to be degraded for >90% in the STP under evaluated conditions.

| | | | |
|------------------------------------|-------|---------------------------------------|----------------------|
| Release times per year (day/year) | 365 | Local release to air (kg/day) | n.a. wide dispersive |
| Fraction used at main local source | 0,002 | Local release to waste water (kg/day) | n.a. wide dispersive |
| Amount used locally (kg/day) | n.a. | Local release to soil (kg/day) | n.a. wide dispersive |

| Environmental exposure | PEC | PNEC | Comment |
|---|---|-----------------|---------|
| In STP (mg/l) | 0,340 | 580 | - |
| In local freshwater (mg/l) | 0,0447 | 0,96 | - |
| In local soil (mg/kg) | 0,0003 | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0044 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

| Title: Exposure Scenario for Consumer use of Ethanol in enclosed systems | | |
|--|---|--|
| Ethanol REACH Association reference no. ES9d | | |
| Systematic title based on use descriptor | SU21 PC16 (Heat transfer fluids), PC17 (Hydraulic fluids) ERC9a, ERC9b | |
| Processes, tasks, activities covered | Covers the consumer use of products which contain Ethanol - products in enclosed systems (with no expected exposure to ethanol during use) | |
| Assessment Method | Ecetoc TRA integrated model version 2, ConsExpo v 4.1 | |
| 1. Exposure Scenario | | |
| 1.1 Operational conditions and risk management measures | | |
| <p>Product categories: Heat transfer fluids; Hydraulic fluids and other products where ethanol is part of the enclosed system and no exposure of consumers during the use of the product is expected under normal and reasonably foreseeable conditions of use.</p> <p>Environmental release category: Indoor and outdoor use of substances by the public at large in closed systems. Use in closed equipment, such as the use of cooling liquids in refrigerators, oil-based electric heaters, hydraulic liquids in automotive suspension, lubricants in motor oil and brake fluids in automotive brake systems.</p> <p>Number of sites using the substance: Substance widely used.</p> | | |
| 1.2 Control of consumer exposure | | |
| Substance content in the product | > 25 % | |
| Product characteristic (including package design affecting exposure) | Substance is enclosed in the system and there is no consumer exposure possible under normal and reasonably foreseeable conditions of use. | |
| Amounts of product used / applied per event | n.a. substance in enclosed system | |
| Frequency and duration of use/exposure | Frequency of use: 1-5 times per year | |
| | Duration per use: divers | |
| Setting and external conditions during use | n.a. substance in enclosed system | |
| Technical (product related) use conditions | n.a. substance in enclosed system | |
| Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer; e.g. product labelling) | Do not open, break or dismantle the container during use. Do not open, break or dismantle the container before disposal. Dispose off as chemical waste. | |
| 1.3 Control of environmental exposure | | |
| Product characteristics | Physical state | Liquid |
| | Concentration of substance in product | Can be > 25 % |
| Amounts used | Daily at point source | n.a. |
| | Annually at point source | n.a. (wide dispersive use in closed systems) |
| | Annually total | 10,000 t/year total market |
| Frequency and duration of use | Pattern of release | 365 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m3/day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoor |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Conditions and measures related to municipal sewage treatment plant | No release into the wastewaters or sewage is expected from this use. Substance is used in enclosed system during its service life. | |
| Conditions and measures related to disposal of waste resulting from the use of the products | No waste expected from this use. | |
| Conditions and measures related to recovery of waste resulting from the use | n.a. | |
| 2. Exposure estimation | | |
| Consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model | | |

| (draft version MasterCSA_8April2010) CSA (Heat transfer fluid category). | | | |
|---|---|---|----------------------|
| Consumer exposure | Exposure estimate | DNEL | Comment |
| Dermal (mg/kg/day) | 0,85 | LTS 206 | - |
| Oral (mg/kg/day) | 0,00 | LTS 87 | - |
| Inhalation (mg/m ³ for 24hr day) | 0,04 | LTS 144 | - |
| All routes systemic | - | - | - |
| Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC9a and b default settings and total use of 10.000 tpa. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by >90% in the STP under evaluated conditions. | | | |
| Release times per year (day/year) | 365 | Local release to air (kg/day) | n.a. wide dispersive |
| Fraction used at main local source | 0,002 | Local release to waste water (kg/day) | n.a. wide dispersive |
| Amount used locally (kg/day) | n.a. | Local release to soil (kg/day) | n.a. wide dispersive |
| Environmental exposure | PEC | PNEC | Comment |
| In STP (mg/l) | 0,017 | 580 | - |
| In local freshwater (mg/l) | 0,0155 | 0,96 | - |
| In local soil (mg/kg) | 0,00013 | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,00145 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |
| Additional good practice advice beyond the REACH CSA | | | |
| <p>Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH</p> | | <p>Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.</p> | |

Title: Exposure Scenario for Consumer use of Ethanol in coatings and paints

Ethanol REACH Association reference no. ES9e

| | |
|--|--|
| Systematic title based on use descriptor | SU21 PC9a, PC9c ERC8a, ERC8d |
| Processes, tasks, activities covered | Covers the consumer use of coatings and paint products which contain Ethanol |
| Assessment Method | Ecetoc TRA integrated model version 2, ConsExpo v 4.1 |

1. Exposure Scenario

1.1 Operational conditions and risk management measures

Product categories: Coatings, paints, thinners and paint removers. Exposure to ethanol is possible during mixing, pouring and application (roller, brushing and spraying) of the products.
Environmental release category: Wide dispersive indoor and outdoor use of processing aids by the public at large. Use (usually) results in direct release into the sewage system or into environment.

Number of sites using the substance: Substance widely used.

1.2 Control of consumer exposure

| | |
|---|---|
| Substance content in the product | 1 – 15 % |
| Amounts of product used / applied per event | 50 – 250 gram |
| Exposed skin area | 428 cm ² (Inside hands or one hand) |
| Frequency and duration of use/exposure | Frequency of exposure: 1 – 5 times per year |
| | Duration of exposure: 20 – 60 minutes |
| Setting and external conditions during use | Indoors (room volume minimum 20 m ³) Outdoors |
| Technical (product related) use conditions | Limit the ethanol content in the product to 15%. |
| Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer; e.g. product labelling) | Do not use in small, closed and not ventilated areas. Keep the doors and windows open during use indoors. |

1.3 Control of environmental exposure

| | | |
|---|---|-------------------------------------|
| Product characteristics | Physical state | Liquid |
| | Concentration of substance in product | 1 - 15 % |
| Amounts used | Daily at point source | n.a. |
| | Annually at point source | n.a. (wide dispersive use) |
| | Annually total | 10,000 t/year total market |
| Frequency and duration of use | Pattern of release | 365 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m ³ /day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoor and/or outdoor |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | > 2000 m ³ /day |
| | Degradation efficacy | 90% |
| | Sludge treatment (disposal or recovery) | Disposal or recovery |
| Conditions and measures related to disposal of waste resulting from the use of the products | No specific measures required. | |

2. Exposure estimation

Consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010)) CSA (category waterborne latex wall paint at 15% concentration).

| Consumer exposure | Exposure estimate | DNEL | Comment |
|--|-------------------|---------|---------|
| Dermal (mg/kg/day) (on day of application) | 21.44 | n/a | - |
| Dermal (mg/kg/day) (chronic) | 0.30 | LTS 206 | - |

| | | | |
|--|---|---|----------------------|
| Oral (mg/kg/day) | 0,00 | LTS 87 | - |
| Inhalation (mg/m3 , mean event) | ~375 | 950 | - |
| Inhalation (mg/m3, chronic) | 0.50 | LTS 144 | - |
| All routes systemic | - | - | - |
| Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a and d settings and total use of 10.000 tpa. Below presented estimates are based on ERC8d with total use of 10,000 tpa. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to be degraded for >90% in the STP under evaluated conditions. | | | |
| Release times per year (day/year) | 365 | Local release to air (kg/day) | n.a. wide dispersive |
| Fraction used at main local source | 0,002 | Local release to waste water (kg/day) | n.a. wide dispersive |
| Amount used locally (kg/day) | n.a. | Local release to soil (kg/day) | n.a. wide dispersive |
| Environmental exposure | PEC | PNEC | Comment |
| In STP (mg/l) | 0,340 | 580 | - |
| In local freshwater (mg/l) | 0,0447 | 0,96 | - |
| In local soil (mg/kg) | 0,0003 | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0044 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |
| Additional good practice advice beyond the REACH CSA | | | |
| <p>Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH</p> | | <p>Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.</p> | |

| Title: Exposure Scenario for Consumer use of Ethanol in antifreeze, deicing and screenwash products | | |
|--|--|-------------------------------------|
| Ethanol REACH Association reference no. ES9f | | |
| Systematic title based on use descriptor | SU21 PC4 ERC8d | |
| Processes, tasks, activities covered | Covers the consumer use of antifreeze, deicing and screenwash products which contain Ethanol | |
| Assessment Method | Ecetoc TRA integrated model version 2, ConsExpo v 4.1 | |
| 1. Exposure Scenario | | |
| 1.1 Operational conditions and risk management measures | | |
| Product categories: Anti-freeze, de-icing and screen-wash consumer products. The exposure is possible during the activities related to transfer from the packaging, mixing and application of the product. | | |
| Environmental release category: Wide dispersive indoor and outdoor use of processing aids by the public at large. Use (usually) results in direct release into the sewage system or into environment. | | |
| Number of sites using the substance: Substance widely used. | | |
| 1.2 Control of consumer exposure | | |
| Substance content in the product | > 25 % | |
| Amounts of product used / applied per event | 1 – 50 gram | |
| Exposed skin area | 214 cm ² | |
| Frequency and duration of use/exposure | Frequency of use: weekly (up to 50 days per year) | |
| | Duration of exposure per event: < 5 minutes | |
| Setting and external conditions during use | Indoors and / or outdoors | |
| Technical (product related) use conditions | Controlled spray or dosing delivery device. | |
| Organisational consumer protection measures (e.g. recommendation and/or use instruction for consumer) | No specific measures required. | |
| 1.3 Control of environmental exposure | | |
| Product characteristics | Physical state | Liquid |
| | Concentration of substance in product | Can be > 25 % |
| Amounts used | Daily at point source | n.a. |
| | Annually at point source | n.a. (wide dispersive use) |
| | Annually total | 125,000 t/year total market |
| Frequency and duration of use | Pattern of release | 365 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m ³ /day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoor |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | > 2000 m ³ /day |
| | Degradation efficacy | 90% |
| | Sludge treatment (disposal or recovery) | Disposal or recovery |
| Conditions and measures related to disposal of waste resulting from the use of the products | No specific measures required. | |
| 2. Exposure estimation | | |
| Consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010)) CSA (PC24 Lock- de-icer with conc 50%). | | |
| Consumer exposure | Exposure estimate | DNEL |
| | | Comment |

| | | | |
|---|---|---|--|
| Dermal (mg/kg/day) | 17,87 | LTS 206 | Based on one use a day of 0.25hr / event |
| Oral (mg/kg/day) | 0,00 | LTS 87 | |
| Inhalation (mg/m3 for 24hr day) | 0,51 | LTS 144 | |
| All routes systemic | - | - | |
| Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8d and TGD A&B table (MC-IV, IC-6, UC-5) settings. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by >90% in the STP under evaluated conditions. | | | |
| Release times per year (day/year) | 365 | Local release to air (kg/day) | n.a. wide dispersive |
| Fraction used at main local source | 0,002 | Local release to waste water (kg/day) | n.a. wide dispersive |
| Amount used locally (kg/day) | n.a. | Local release to soil (kg/day) | n.a. wide dispersive |
| Environmental exposure | PEC | PNEC | Comment |
| In STP (mg/l) | 0,0011 | 580 | - |
| In local freshwater (mg/l) | 0,014 | 0,96 | - |
| In local soil (mg/kg) | 0,00013 | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0013 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |
| Additional good practice advice beyond the REACH CSA | | | |
| <p>Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH</p> | | <p>Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.</p> | |

Title: Exposure Scenario for Consumer use of Ethanol in washing and cleaning products

Ethanol REACH Association reference no. ES9g

| | |
|---|--|
| Systematic title based on use descriptor | SU21 PC35 ERC8a, ERC8d |
| Processes, tasks, activities covered | Covers the consumer use of washing and cleaning products which contain Ethanol |
| Assessment Method | Ecetoc TRA integrated model version 2, ConsExpo v 4.1 |

1. Exposure Scenario

1.1 Operational conditions and risk management measures

Product categories: Washing and cleaning products including for example, toilet/bathroom cleaners, dishwashing liquid, laundry detergent etc. The exposure is possible during the activities related to transfer from the packaging, mixing and application of the product.
 Environmental release category: Wide dispersive indoor and outdoor use of processing aids by the public at large. Use (usually) results in direct release into the sewage system or into environment.
 Number of sites using the substance: Substance widely used.

1.2 Control of consumer exposure

| | | |
|--|--|---|
| Substance content in the product | < 5% | 5 – 25 % |
| Product characteristic (including package design affecting exposure) | Laundry liquid detergents and softeners All purpose cleaners Floor and carpet cleaners | All purpose toilet and bathroom cleaners Glass cleaners Special surfaces cleaners Dish washing liquids |
| Amounts of product used / applied per event | < 250 gram per event | < 250 gram per event |
| Frequency and duration of use/exposure | Frequency: daily use | Frequency: daily use |
| | Duration of exposure: 15 minutes – 1 hour | Duration of exposure: 15 minutes – 1 hour |
| Setting and external conditions during use | Indoors or outdoors | Indoors or outdoors |
| Technical (product related) use conditions | When spray application: Controlled spray or delivery device. | When spray application: Controlled spray or delivery device. |
| Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer) | No specific measures required. | Do not spray empty in small, enclosed areas. |

1.3 Control of environmental exposure

| | | |
|--|---|----------------------------|
| Product characteristics | Physical state | liquid |
| | Concentration of substance in product | Up to 25 % |
| Amounts used | Daily at point source | n.a. |
| | Annually at point source | n.a. (wide dispersive use) |
| | Annually total | 40,000 t/year total market |
| Frequency and duration of use | Pattern of release | 365 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m3/day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoor |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | > 2000 m ³ /day |
| | Degradation efficacy | 90% |
| | Sludge treatment (disposal or recovery) | Disposal or recovery |
| Conditions and measures related to disposal of waste resulting from the use of the products | No specific measures required. | |

2. Exposure estimation

| | | | |
|---|---|--|----------------------|
| Consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010) CSA (for category all-purpose liquid cleaners with concentration of the substance at 15%) | | | |
| Consumer exposure | Exposure estimate | DNEL | Comment |
| Dermal (mg/kg/day) | 10,7 | LTS 206 | Daily use |
| Oral (mg/kg/day) | 0,00 | LTS 87 | |
| Inhalation (mg/m3 for 24hr day) | 1,73 | LTS 144 | |
| All routes systemic | - | - | |
| Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a and total volume of 40.000 tpa. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by >90% in the STP under evaluated conditions. | | | |
| Release times per year (day/year) | 365 | Local release to air (kg/day) | n.a. wide dispersive |
| Fraction used at main local source | 0,002 | Local release to waste water (kg/day) | n.a. wide dispersive |
| Amount used locally (kg/day) | n.a. | Local release to soil (kg/day) | n.a. wide dispersive |
| Environmental exposure | PEC | PNEC | Comment |
| In STP (mg/l) | 0,681 | 580 | - |
| In local freshwater (mg/l) | 0,0818 | 0,96 | - |
| In local soil (mg/kg) | 0,000451 | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,00808 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |
| Additional good practice advice beyond the REACH CSA | | | |
| Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH | | Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible. | |

Title: Exposure Scenario for Industrial and Professional use of Ethanol as laboratory agent

Ethanol REACH Association reference no. ES10

| | |
|--|--|
| Systematic title based on use descriptor | SU3, SU22 PROC15 ERC2, ERC4, ERC8a |
| Processes, tasks, activities covered | Use as small scale laboratory reagent |
| Assessment Method | Ecetoc TRA integrated model version 2 |

1. Exposure Scenario

1.1 Operational conditions and risk management measures

Process category: Use of substances at small-scale laboratory at production locations, quality control utilities etc. (< 1 l or 1 kg). Larger laboratories and R+D installations should be treated as industrial processes.

Environmental release category: Industrial use of processing aids in a batch process, not becoming part of an article using dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions.

Number of sites using the substance: Substance widely used.

1.2 Control of workers exposure

| | | |
|--|---|--------------------------|
| Product characteristic (including package design affecting exposure) | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| | Vapour pressure of substance | 5,73 kPa |
| Amounts used | n.a. in tier1 TRA model | |
| Frequency and duration of use/exposure | Frequency of exposure (weekly) | > 4 Days/week |
| | Frequency of exposure (annual) | 240 Days/year |
| | Duration of exposure | 1 - 4 Hours/day |
| Human factors not influenced by risk management | Potentially exposed body parts | One hand, face side only |
| | Exposed skin surface | 240 cm ² |
| Other given operational conditions affecting workers exposure | Assumes a good basic standard of occupational hygiene is implemented. | |
| | Setting (indoor/outdoor) | Indoor |
| Technical conditions and measures at process level (source) to prevent release | No specific measures identified. | |
| Technical conditions and measures to control dispersion from source towards the worker | No specific measures identified | |
| Organisational measures to prevent /limit releases, dispersion and exposure | No specific measures identified. | |
| Conditions and measures related to personal protection, hygiene and health evaluation | No specific PPE measures identified. | |

1.3 Control of environmental exposure

| | | |
|--|--|-------------------------------------|
| Product characteristics | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| Amounts used | Daily at point source | n.a. |
| | Annually to the region | 500 t/year |
| | Annually total | 5,000 t/year total market |
| Frequency and duration of use | Pattern of release | Continuous 300 days per year |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | 18,000m ³ /day (default) |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoor |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Technical conditions and measures at process level (source) to prevent release | No specific onsite measures identified | |

| | | |
|---|---|--|
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | No specific onsite measures identified | |
| Organizational measures to prevent/limit release from site | Do not release wastewater directly into environment | Wastewater release into municipal STP. |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | >2000 m ³ /day |
| | Degradation efficacy | 90% |
| | Sludge treatment | Disposal or recovery |
| Conditions and measures related to treatment of waste | Contain and dispose of waste in accordance with environmental legislation and according to local regulations. | |

2. Exposure estimation

Workers exposure estimation is calculated with Ecetoc TRA model v2..

| Workers exposure | Exposure estimate | DNEL | Comment |
|--------------------------------------|-------------------|------|---------|
| Inhalation (mg/m³) | 19,21 | 950 | - |
| Dermal (mg/kd/day) | 0,34 | 343 | |
| Combined (mg/kg/day) | 3,09 | 343 | |

Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC 8a for professional use and TGD A&B table (MC-Ic, IC-15, UC-48) for industrial use. Below values are estimates based on the ERC8a approach calculation resulting in more conservative values. All other settings result in lower exposure estimation values.
Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the STP under evaluated conditions.

| | | | |
|---|---|----------------------------------|---------|
| Release times per year (day/year) | 365 | Local release to air (kg/day) | 3 |
| Fraction used at main local source | 0,1 | Local release to sewage (kg/day) | 3 |
| Amount used locally (kg/day) | 2,47 | Local release to soil (kg/day) | 1 |
| Environmental exposure | PEC | PNEC | Comment |
| In STP (mg/l) | 0,170 | 580 | - |
| In local freshwater (mg/l) | 0,027 | 0,96 | - |
| In local soil (mg/kg) | 0,0002 | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0027 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.

If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:

$PEC_{corrected} = PEC_{calculated} * (\text{local emission fraction}) * (\text{local WWTP flow rate fraction}) * (\text{local river flow rate fraction}) * (\text{local STP efficiency fraction})$

Example for calculating your local freshwater PEC:

$Corrected \text{ local freshwater PEC} = 0,027 * (\text{your local emission [kg/day]} / 3) * (2000 / \text{your local WWTP flow rate [m3/day]}) * (18000 / \text{your local river flow rate [m3/day]}) * ((1 - \text{your local WWTP efficiency})/0.1)$

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

Title: Exposure Scenario for Industrial and Professional use of Ethanol as heat transfer fluid, or other functional fluid

Ethanol REACH Association reference no. ES11

| | |
|---|--|
| Systematic title based on use descriptor | SU3, SU22 PROC20 ERC7, ERC9a, ERC9b |
| Processes, tasks, activities covered | Covers use in heat and pressure transfer fluids in dispersive, professional use but closed systems |
| Assessment Method | Ecetoc TRA integrated model version 2 |

1. Exposure Scenario

1.1 Operational conditions and risk management measures

Process category: Heat and pressure transfer fluids in dispersive, professional use but closed systems.
 Environmental release categories: Industrial use of substances in closed systems. Use in closed equipment, such as the use of liquids in hydraulic systems, cooling liquids in refrigerators and lubricants in engines and dielectric fluids in electric transformers and oil in heat exchangers. No intended contact with the product produced. Indoor use of substances by the public at large or professional (small scale) use in closed systems. Use in closed equipment, such as the use of cooling liquids in refrigerators, oil-based electric heaters.
 Number of sites using the substance: Substance widely used.

1.2 Control of workers exposure

| | | |
|---|---|---------------------------|
| Product characteristic (including package design affecting exposure) | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| | Vapour pressure of substance | 5,73 kPa |
| Amounts used | n.a. in tier1 TRA model | |
| Frequency and duration of use/exposure | Frequency of exposure (weekly) | n.a. |
| | Frequency of exposure (annual) | n.a. |
| | Duration of exposure | n.a. |
| Human factors not influenced by risk management | Potentially exposed body parts | Two hands, face side only |
| | Exposed skin surface | 480 cm ² |
| Other given operational conditions affecting workers exposure | Assumes a good basic standard of occupational hygiene is implemented. | |
| | Setting (indoor/outdoor) | Indoor and outdoor |
| Technical conditions and measures at process level (source) to prevent release | Handle substance within a closed system. | |
| Technical conditions and measures to control dispersion from source towards the worker | Store substance within a closed system. | |
| Organisational measures to prevent /limit releases, dispersion and exposure | Substance in a closed system. No intended exposure to the substance. | |
| Conditions and measures related to personal protection, hygiene and health evaluation | No specific measures identified. | |

1.3 Control of environmental exposure

| | | |
|--|---|---|
| Product characteristics | Physical state | liquid |
| | Concentration of substance in product | Up to 100 % |
| Amounts used | Daily at point source | n.a. |
| | Annually to the region | 1000 t/year |
| | Annually total | 10,000 t/year total market |
| Frequency and duration of use | Pattern of release | No release into environment (closed system) |
| Environment factors not influenced by risk management | Flow rate of receiving surface water | n.a. |
| Other given operational conditions affecting environmental exposure | Processing setting (indoor/outdoor) | Indoors and outdoors |
| | Processing temperature | Ambient |
| | Processing pressure | Ambient |
| Technical conditions and measures at | No specific measures identified. Handle substance within a closed system. | |

| | | |
|--|--|---------------------------|
| process level (source) to prevent release | | |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | No specific measures identified. Store substance within a closed system. | |
| Organizational measures to prevent/limit release from site | Use in closed systems; no intended release into environment. | |
| Conditions and measures related to municipal sewage treatment plant | Size of STP | >2000 m ³ /day |
| | Degradation efficacy | 90% |
| | Sludge treatment | Disposal or recovery |
| Conditions and measures related to treatment of waste | All waste products are assumed to be collected and returned for re-processing or re-use. Contain and dispose of waste in accordance with environmental legislation and according to local regulations. | |

2. Exposure estimation

Workers exposure estimation is calculated with Ectoc TRA model v2..

| Workers exposure | Exposure estimate | DNEL | Comment |
|---------------------------------|-------------------|------|---------|
| Inhalation (mg/m ³) | 38,42 | 950 | - |
| Dermal (mg/kg/day) | 1,71 | 343 | |
| Combined (mg/kg/day) | 7,20 | 343 | |

Environmental exposure estimation is based on Ectoc TRA model v2. Below values are estimates based on the ERC9a approach calculation. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the municipal STP under evaluated conditions.

| | | | |
|---|---|----------------------------------|------------------|
| Release times per year (day/year) | 365 | Local release to air (kg/day) | ~ 0 (negligible) |
| Fraction used at main local source | 0,1 | Local release to sewage (kg/day) | ~ 0 (negligible) |
| Amount used locally (kg/day) | 5,5 | Local release to soil (kg/day) | ~ 0 (negligible) |
| Environmental exposure | PEC | PNEC | Comment |
| In STP (mg/l) | ~ 0 (negligible) | 580 | - |
| In local freshwater (mg/l) | 0,0107 | 0,96 | - |
| In local soil (mg/kg) | 0,0002 | 0,63 (mg/kgwwt) | - |
| In local marine water (mg/l) | 0,0010 | 0,79 | - |
| Total daily intake via local environment (mg/kgdw/d) | Negligible compared to daily dietary intake and endogenous formation. | | |

Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The workers exposure and environmental emissions have been evaluated using Ectoc TRA integrated tool version 2. If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:
 $PEC_{corrected} = PEC_{calculated} * (local\ emission\ fraction) * (local\ WWTP\ flow\ rate\ fraction) * (local\ river\ flow\ rate\ fraction) * (local\ STP\ efficiency\ fraction)$

Additional good practice advice beyond the REACH CSA

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH

Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.