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Neutralalkohol, entwässert, unvergällt

## Sicherheitsdatenblatt gemäß Verordnung (EG) Nr. 1907/2006, Anhang II

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

#### 1.1 Produktidentifikator

#### Neutralalkohol, entwässert, unvergällt

Ethanol  
Registrierungsnr. (ECHA): 01-2119457610-43-XXXX  
Index: 603-002-00-5  
EINECS, ELINCS, NLP: 200-578-6  
CAS: 64-17-5

#### 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:

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Giftinformationszentrum (GIZ) der Länder Rheinland-Pfalz und Hessen, Klinische Toxikologie, Universitätsklinikum, Langenbeckstr. 1, D-55131 Mainz. 24-Stunden-Notruf: +49 6131-19240, +49 6131-23 24 66 (Infoline)

##### Notrufnummer der Gesellschaft:

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### 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 Irrit.	2	H319-Verursacht schwere Augenreizung.

#### 2.2 Kennzeichnungselemente

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



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Ethanol

CAS: 64-17-5, Index:603-002-00-5 EC: 200-578-6

## Gefahr

H225-Flüssigkeit und Dampf leicht entzündbar. H319-Verursacht schwere Augenreizung.

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. P280-Schutzhandschuhe und Augen- / Gesichtsschutz tragen.

P337+P313-Bei anhaltender Augenreizung: Ärztlichen Rat einholen / ärztliche Hilfe hinzuziehen.

P403+P235-An einem gut belüfteten Ort aufbewahren. Kühl halten.

## 2.3 Sonstige Gefahren

Kein vPvB-Stoff

Kein PBT-Stoff

Bildung explosionsgefährlicher/leichtentzündlicher Dampf/Luftgemische möglich.

## ABSCHNITT 3: Zusammensetzung/Angaben zu Bestandteilen

### 3.1 Stoff

Ethanol	Stoff mit spezifischen Konz.grenzwert(en) gem. REACH-Registr.
Registrierungsnr. (REACH)	01-2119457610-43-XXXX
Index	603-002-00-5
EINECS, ELINCS, NLP	200-578-6
CAS	64-17-5
% Bereich	
Einstufung gemäß der Verordnung (EG) Nr. 1272/2008 (CLP)	Flam. Liq. 2, H225 Eye Irrit. 2, H319

### 3.2 Gemisch

n.a.

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.

## ABSCHNITT 4: Erste-Hilfe-Maßnahmen

### 4.1 Beschreibung der Erste-Hilfe-Maßnahmen



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Neutralalkohol, entwässert, unvergällt

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.

Handschutzcreme empfehlenswert.

### **Augenkontakt**

Kontaktlinsen entfernen.

Mit viel Wasser mehrere Min. gründlich spülen, falls nötig, Arzt aufsuchen.

### **Verschlucken**

Mund gründlich mit Wasser spülen.

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

Aspirationsgefahr

## **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.

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**

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**

CO<sub>2</sub>

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

Toxische Pyrolyseprodukte.

Explosionsfähige Dampf/Luft- bzw. Gas/Luft-Gemische.

Gefährliche Dämpfe, schwerer als Luft.

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

### **5.3 Hinweise für die Brandbekämpfung**

Explosions- und Brandgase nicht einatmen.

Umluftunabhängiges Atemschutzgerät.

Je nach Brandgröße

Ggf. Vollschutz.

Gefährdete Behälter mit Wasser kühlen.

Kontaminiertes Löschwasser entsprechend den behördlichen Vorschriften entsorgen.



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## ABSCHNITT 6: Maßnahmen bei unbeabsichtigter Freisetzung

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

Für ausreichende Belüftung sorgen.  
Augen- und Hautkontakt sowie Inhalation vermeiden.  
Zündquellen entfernen, nicht rauchen.  
Ggf. Rutschgefahr beachten.

### 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.  
Aufgenommenes Gut in verschließbaren Behälter füllen.  
Keine brennbaren Stoffe verwenden.  
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.  
Vorrichtungen erden.  
Lösungsmittelbeständiger Fußboden  
Ungeeignetes Material:  
Verschiedene Kunststoffe  
Gummi  
An gut belüftetem Ort lagern.



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Vor Sonneneinstrahlung sowie Wärmeeinwirkung schützen.

Besondere Lagerbedingungen beachten.

### 7.3 Spezifische Endanwendungen

Zur Zeit liegen keine Informationen hierzu vor.

## ABSCHNITT 8: Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstungen

### 8.1 Zu überwachende Parameter

Chem. Bezeichnung	Ethanol	%Bereich:
AGW: 200 ppm (380 mg/m <sup>3</sup> )	Spb.-Üf.: 4(II)	---
Überwachungsmethoden:	<ul style="list-style-type: none"> <li>- Compur - KITA-104 SA (549 210)</li> <li>- Draeger - Alcohol 25/a Ethanol (81 01 631)</li> <li>- DFG (D) (Lösungsmittelgemische), Methode Nr. 6 DFG (E) (Solvent mixtures) - 1998, 2002 - EU project BC/CEN/ENTR/000/2002-16 card 63-2 (2004)</li> <li>- BIA 7330 (Ethanol) - 1997</li> </ul>	
BGW: ---	Sonstige Angaben: DFG, Y	

AGW = Arbeitsplatzgrenzwert. E = Einatembare Fraktion, A = Alveolengängige Fraktion.

(8) = Einatembare Fraktion (2017/164/EU, 2017/2398/EU). (9) = Alveolengängige Fraktion (2017/164/EU, 2017/2398/EU). | Spb.-Üf. = Spitzenbegrenzung - Überschreitungsfaktor (1 bis 8) und Kategorie (I, II) für Kurzzeitwerte. "=" = Momentanwert. Kategorie (I) = Stoffe bei denen die lokale Wirkung grenzwertbestimmend ist oder atemwegssensibilisierende Stoffe, (II) = Resorptiv wirksame Stoffe.

(8) = Einatembare Fraktion (2017/164/EU, 2017/2398/EU). (9) = Alveolengängige Fraktion (2017/164/EU, 2017/2398/EU). (10) = Grenzwert für die Kurzzeitexposition für einen Bezugszeitraum von einer Minute (2017/164/EU). | BGW = Biologischer Grenzwert. Probennahmezeitpunkt: a) keine Beschränkung, b) Expositionsende, bzw. Schichtende, c) bei Langzeitexposition: am Schichtende nach mehreren vorangegangenen Schichten, d) vor nachfolgender Schicht, e) nach Expositionsende: Stunden, f) nach mindestens 3 Monaten Exposition, g) unmittelbar nach Exposition, h) vor der letzten Schicht einer Arbeitswoche. | Sonstige Angaben: ARW = Arbeitsplatzrichtwert, H = hautresorptiv. 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. \*\* = Der Grenzwert für diesen Stoff wurde durch die TRGS 900 (Deutschland) vom Januar 2006 aufgehoben mit dem Ziel der Überarbeitung.

TRGS 905 - Verzeichnis krebserzeugender, keimzellmutagener oder reproduktionstoxischer Stoffe (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.

### 8.2 Begrenzung und Überwachung der Exposition

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	



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	Umwelt - Sediment, Süßwasser		PNEC	3,6	mg/kg	
	Umwelt - Boden		PNEC	0,63	mg/kg dry weight	
	Umwelt - oral (Futter)		PNEC	0,72	mg/kg feed	
	Umwelt - Sediment, Meerwasser		PNEC	2,9	mg/kg dry weight	
Verbraucher	Mensch - Inhalation	Langzeit, systemische Effekte	DNEL	950	mg/m3	
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	
Arbeiter / Arbeitnehmer	Mensch - Inhalation	Kurzzeit, lokale Effekte	DNEL	1900	mg/m3	
Arbeiter / Arbeitnehmer	Mensch - Inhalation	Kurzzeit, lokale Effekte	DNEL	950	mg/m3	
Arbeiter / Arbeitnehmer	Mensch - dermal	Langzeit, systemische Effekte	DNEL	343	mg/kg bw/d	

## 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. BS EN 14042, TRGS 402 (Deutschland).

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

TRGS 402 "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:

Lösemittelbeständige Schutzhandschuhe (EN 374).

Empfehlenswert

Bei Kurzzeitkontakt:

Schutzhandschuhe aus Chloropren (EN 374).

Mindestschichtstärke in mm:

0,5

Permeationszeit (Durchbruchzeit) in Minuten:

>= 120

Bei längerem Kontakt:

Schutzhandschuhe aus Butylkautschuk (EN 374).

Mindestschichtstärke in mm:



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0,5

Schutzhandschuhe aus Fluorkautschuk (EN 374).

Mindestschichtstärke in mm:

0,4

Permeationszeit (Durchbruchzeit) in Minuten:

$\geq 480$

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 (EN1149)

Naturfaser oder hitzebeständige Synthetikfaser

Atemschutz:

Bei Überschreitung des Arbeitsplatzgrenzwertes (AGW, Deutschland) bzw. MAK (Schweiz, Österreich).

Atemschutzmaske Filter A (EN 14387), Kennfarbe braun

Tragezeitbegrenzungen für Atemschutzgeräte beachten.

Thermische Gefahren:

Falls zutreffend, sind diese bei den Einzelschutzmaßnahmen (Augen-/Gesichtsschutz, Hautschutz, Atemschutz) aufgeführt.

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.

## ABSCHNITT 9: Physikalische und chemische Eigenschaften

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

Aggregatzustand:	Flüssig
Farbe:	Farblos
Geruch:	Alkoholisch
Geruchsschwelle:	Nicht bestimmt
pH-Wert:	7,0 (1 %, 20°C)
Schmelzpunkt/Gefrierpunkt:	-114,5 °C
Siedebeginn und Siedebereich:	78,3 °C
Flammpunkt:	12 °C (closed cup)
Verdampfungsgeschwindigkeit:	Nicht bestimmt
Entzündbarkeit (fest, gasförmig):	Nicht bestimmt
Untere Explosionsgrenze:	3,5 Vol-%
Obere Explosionsgrenze:	15,0 Vol-%
Dampfdruck:	59 hPa (20°C)
Dampfdichte (Luft=1):	1,6
Dichte:	0,790-0,793 g/cm <sup>3</sup> (20°C)
Schüttdichte:	Nicht bestimmt
Löslichkeit(en):	Nicht bestimmt



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Wasserlöslichkeit:

Verteilungskoeffizient (n-Octanol/Wasser):

Selbstentzündungstemperatur:

Zersetzungstemperatur:

Viskosität:

Explosive Eigenschaften:

Oxidierende Eigenschaften:

## 9.2 Sonstige Angaben

Mischbarkeit:

Fettlöslichkeit / Lösungsmittel:

Leitfähigkeit:

Oberflächenspannung:

Lösemittelgehalt:

Löslich

-0,31 (Literaturangaben (log Pow) (exp.))

425 °C (DIN 51794, Zündtemperatur)

Nicht bestimmt

1,2 mPas (20°C)

Bildung explosionsgefährlicher/leichtentzündlicher Dampf/Luftgemische möglich. Produkt ist nicht explosionsgefährlich.

Nicht bestimmt

Nicht bestimmt

Nicht bestimmt

Nicht bestimmt

Nicht bestimmt

Nicht bestimmt

## ABSCHNITT 10: Stabilität und Reaktivität

### 10.1 Reaktivität

Siehe auch Unterabschnitt 10.2 bis 10.6.

Das Produkt wurde nicht geprüft.

### 10.2 Chemische Stabilität

Siehe auch Unterabschnitt 10.1 bis 10.6.

Bei sachgerechter Lagerung und Handhabung stabil.

### 10.3 Möglichkeit gefährlicher Reaktionen

Siehe auch Unterabschnitt 10.1 bis 10.6.

Keine Zersetzung bei bestimmungsgemäßer Verwendung.

### 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 Unterabschnitt 10.1 bis 10.5.

Siehe auch Abschnitt 5.2.

Keine Zersetzung bei bestimmungsgemäßer Verwendung.

## ABSCHNITT 11: Toxikologische Angaben

### 11.1 Angaben zu toxikologischen Wirkungen

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

#### Ethanol

Toxizität / Wirkung	Endpunkt	Wert	Einheit	Organismus	Prüfmethode	Bemerkung
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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	124,7	mg/l/4h	Ratte	OECD 403 (Acute Inhalation Toxicity)	
Ätz-/Reizwirkung auf die Haut:				Kaninchen	OECD 404 (Acute Dermal Irritation/Corrosion)	Nicht reizend
Schwere Augenschädigung/-reizung:				Kaninchen	OECD 405 (Acute Eye Irritation/Corrosion)	Reizend
Sensibilisierung der Atemwege/Haut:				Maus	OECD 429 (Skin Sensitisation - Local Lymph Node Assay)	Nein (Hautkontakt)
Keimzell-Mutagenität:				Salmonella typhimurium	OECD 471 (Bacterial Reverse Mutation Test)	Negativ
Keimzell-Mutagenität:				Maus	OECD 476 (In Vitro Mammalian Cell Gene Mutation Test)	Negativ
Keimzell-Mutagenität:					OECD 473 (In Vitro Mammalian Chromosome Aberration Test)	Negativ
Keimzell-Mutagenität:					OECD 475 (Mammalian Bone Marrow Chromosome Aberration Test)	Negativ
Karzinogenität:	NOAEL	>3000	mg/kg	Ratte	OECD 451 (Carcinogenicity Studies)	24 mon
Reproduktionstoxizität:	NOAEL	5200	mg/kg bw/d	Ratte		
Spezifische Zielorgan-Toxizität - einmalige Exposition (STOT-SE):						k.D.v.
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
Aspirationsgefahr:				Mensch		Keine Hinweise auf eine derartige Wirkung.



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Symptome:							Atemnot, Benommenheit, Bewußtlosigkeit , Blutdruckabfall, Erbrechen, Husten, Kopfschmerzen, Rausch, Schläfrigkeit, Schleimhautreizung, Schwindel, Übelkeit
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.

### ABSCHNITT 12: Umweltbezogene Angaben

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

Ethanol							
Toxizität / Wirkung	Endpunkt	Zeit	Wert	Einheit	Organismus	Prüfmethode	Bemerkung
12.1. Toxizität, Fische:							k.D.v.
12.3. Bioakkumulationspotenzial:	Log Pow		-0,32				Eine Bioakkumulation ist nicht zu erwarten (LogPow < 1).
12.3. Bioakkumulationspotenzial:	BCF		0,66 - 3,2				
12.1. Toxizität, Fische:	LC50	96h	13000	mg/l	Oncorhynchus mykiss	OECD 203 (Fish, Acute Toxicity Test)	
12.1. Toxizität, Daphnien:	LC50	48h	12340	mg/l	Daphnia magna		
12.1. Toxizität, Daphnien:	NOEC/NOEL		9,6	mg/l	Ceriodaphnia spec.		



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12.2. Persistenz und Abbaubarkeit:			97	%		OECD 301 B (Ready Biodegradability - Co2 Evolution Test)	Leicht biologisch abbaubar
12.1. Toxizität, Algen:	EC50	72h	275	mg/l	Chlorella vulgaris	OECD 201 (Alga, Growth Inhibition Test)	
12.4. Mobilität im Boden:							k.D.v.
Sonstige Organismen:	NOEC/NOEL		280	mg/l	Lemna gibba	OECD 201 (Alga, Growth Inhibition Test)	
12.6. Andere schädliche Wirkungen:							k.D.v.
12.5. Ergebnisse der PBT- und vPvB-Beurteilung:							Kein PBT-Stoff, Kein vPvB-Stoff
12.4. Mobilität im Boden:	H (Henry)		0,000138				
Bakterientoxizität:			440	mg/l			
Sonstige Angaben:	COD		1,9	g/g			
Sonstige Angaben:	BOD5		1	g/g			

## 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

14.1. UN-Nummer:

1170

### Straßen- / Schienentransport (GGVSEB/ADR/RID)

14.2. Ordnungsgemäße UN-Versandbezeichnung:





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UN 1170 ETHANOL

14.3. Transportgefahrenklassen: 3
14.4. Verpackungsgruppe: II
Klassifizierungscode: F1
LQ: 1 L
14.5. Umweltgefahren: Nicht zutreffend
Tunnelbeschränkungscode: D/E

Beförderung mit Seeschiffen (GGVSee/IMDG-Code)

14.2. Ordnungsgemäße UN-Versandbezeichnung:

ETHANOL

14.3. Transportgefahrenklassen: 3
14.4. Verpackungsgruppe: II
EmS: F-E, S-D
Meeresschadstoff (Marine Pollutant): n.a.
14.5. Umweltgefahren: Nicht zutreffend



Beförderung mit Flugzeugen (IATA)

14.2. Ordnungsgemäße UN-Versandbezeichnung:

Ethanol

14.3. Transportgefahrenklassen: 3
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 gemäß Anhang II des MARPOL-Übereinkommens und gemäß IBC-Code

Die Fracht erfolgt nicht als Massengut sondern als Stückgut, daher nicht zutreffend.
Mindermengenregelungen werden hier nicht beachtet.
Gefahrennummer sowie Verpackungs-codierung 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:
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.):

Table with 4 columns: 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

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): 100 %

Wassergefährdungsklasse (Deutschland): 1



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Jugendarbeitsschutzgesetz - JArbSchG beachten (Deutschland).

Lagerklasse nach TRGS 510: 3

Störfallverordnung beachten.

## 15.2 Stoffsicherheitsbeurteilung

Eine Stoffsicherheitsbeurteilung wurde für nachfolgende(n)

Stoff(e) durchgeführt:

Ethanol

## ABSCHNITT 16: Sonstige Angaben

Überarbeitete Abschnitte: 8

M017, M051

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.

Nachfolgende Sätze stellen die ausgeschriebenen H-Sätze, Gefahrenklasse-Code (GHS/CLP) der Ingredients (benannt in Abschnitt 2 und 3) dar.

H225 Flüssigkeit und Dampf leicht entzündbar.

H319 Verursacht schwere Augenreizung.

Flam. Liq. — Entzündbare Flüssigkeiten

Eye Irrit. — Augenreizung

## Eventuell in diesem Dokument verwendete Abkürzungen und Akronyme:

AC Article Categories (= Erzeugniskategorien)

ACGIH American Conference of Governmental Industrial Hygienists

ADR Accord européen relatif au transport international des marchandises Dangereuses par Route (= Europäisches Übereinkommen über die internationale Beförderung gefährlicher Güter auf der Straße)

AGW, Spb.-Üf. AGW = Arbeitsplatzgrenzwert, Spb.-Üf. = Spitzenbegrenzung - Überschreitungsfaktor (1 bis 8) und Kategorie (I, II) für Kurzzeitwerte (TRGS 900, Deutschland).

alkoholbest. alkoholbeständig

allg. Allgemein

Anm. Anmerkung

AOEL Acceptable Operator Exposure Level

AOX Adsorbierbare organische Halogenverbindungen

Art., Art.-Nr. Artikelnummer

ATE Acute Toxicity Estimate (= Schätzwert Akuter Toxizität) gemäß der Verordnung (EG) Nr. 1272/2008 (CLP)

BAFU Bundesamt für Umwelt (Schweiz)

BAM Bundesanstalt für Materialforschung und -prüfung

BAT Biologische Arbeitsstofftoleranzwerte (Schweiz)

BAuA Bundesanstalt für Arbeitsschutz und Arbeitsmedizin

BCF Bioconcentration factor (= Biokonzentrationsfaktor)

Bem. Bemerkung

BG Berufsgenossenschaft

BG BAU Berufsgenossenschaft der Bauwirtschaft (Deutschland)

BG RCI Berufsgenossenschaft Rohstoffe und chemische Industrie (Deutschland)

BGHM Berufsgenossenschaft Holz und Metall (Deutschland)

BGV Berufsgenossenschaftliche Vorschrift

BGW Biologischer Grenzwert (TRGS 903, Deutschland)

BGW / VLB BGW / VLB = Biologisch grenswaarde / Valeur limite biologique (Belgien)

BGW, VGÜ BGW = Biologischer Grenzwert. VGÜ = Verordnung des Bundesministers für Arbeit und Soziales über die Gesundheitsüberwachung am Arbeitsplatz (Österreich)

BHT Butylhydroxytoluol (= 2,6-Di-t-butyl-4-methyl-phenol)



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BOD	Biochemical oxygen demand (= biochemischer Sauerstoffbedarf - BSB)
BSEF	Bromine Science and Environmental Forum
bw	body weight (= Körpergewicht)
bzw.	beziehungsweise
ca.	zirka / circa
CAS	Chemical Abstracts Service
CEC	Coordinating European Council for the Development of Performance Tests for Fuels, Lubricants and Other Fluids
CESIO	Comité Européen des Agents de Surface et de leurs Intermédiaires Organiques (= Europäischer Verband für oberflächenaktive Substanzen und deren organische Zwischenprodukte)
ChemRRV	Chemikalien-Risikoreduktions-Verordnung (Schweiz)
CIPAC	Collaborative International Pesticides Analytical Council
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)
COD	Chemical oxygen demand (= chemischer Sauerstoffbedarf - CSB)
CTFA	Cosmetic, Toiletry, and Fragrance Association
DIN	Deutsches Institut für Normung
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)
DT50	Dwell Time - 50% reduction of start concentration (Verweilzeit 50% Konzentration - Als DT50-Wert wird der Zeitraum bezeichnet, in dem die Anfangskonzentration einer Substanz auf die Hälfte abnimmt.)
DVS	Deutscher Verband für Schweißen und verwandte Verfahren e.V.
dw	dry weight (= Trockengewicht)
EAK	Europäischer Abfallkatalog
ECHA	European Chemicals Agency (= Europäische Chemikalienagentur)
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)
ERC	Environmental Release Categories (= Umweltfreisetzungskategorien)
ES	Expositionsszenario
etc., usw.	et cetera, und so weiter
EU	Europäische Union
EWG	Europäische Wirtschaftsgemeinschaft
EWR	Europäischer Wirtschaftsraum
Fax.	Faxnummer
gem.	gemäß
ggf.	gegebenenfalls
GGVSE	Gefahrgutverordnung Straße und Eisenbahn (Deutschland) - Diese Verordnung wurde durch die GGVSEB abgelöst bzw. ging in dieser auf.
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)
GTN	Glycerintrinitrat
GW / VL	GW / VL = Grenswaarde voor beroepsmatige blootstelling / Valeur limite d'exposition professionnelle (Belgien)
GW-kw / VL-cd	GW-kw / VL-cd = Grenswaarde voor beroepsmatige blootstelling - Kortetijdsdwaarde / Valeur limite d'exposition professionnelle - Valeur courte durée (Belgien)
GW-M / VL-M	"GW-M / VL-M = Grenswaarde voor beroepsmatige blootstelling - ""Ceiling"" / Valeur limite d'exposition professionnelle - ""Ceiling"" (Belgien)"
GWP	Global warming potential (= Treibhauspotenzial)
HET-CAM	Hen's Egg Test - Chorionallantoic Membrane
HGWP	Halocarbon Global Warming Potential
IARC	International Agency for Research on Cancer (= Internationale Agentur für Krebsforschung)



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IATA International Air Transport Association (= Internationale Flug-Transport-Vereinigung)  
IBC Intermediate Bulk Container  
IBC (Code) International Bulk Chemical (Code)  
IC Inhibitorische Konzentration  
IMDG-Code International Maritime Code for Dangerous Goods (= Gefährliche Güter im internationalen Seeschiffsverkehr)  
inkl. inklusive, einschließlich  
IUCLID International Uniform Chemical Information Database  
k.D.v. keine Daten vorhanden  
KFZ, Kfz Kraftfahrzeug  
Konz. Konzentration  
LC Letalkonzentration  
LD letale (tödliche) Dosis einer Chemikalie  
LD50 Lethal Dose, 50% (= mittlere letale Dosis)  
LFBG Lebensmittel-, Bedarfsgegenstände- und Futtermittelgesetzbuch (Deutschland).  
LOEC Lowest Observed Effect Concentration (= Niedrigste Konzentration, bei der eine Wirkung beobachtet wird)  
LOEL Lowest Observed Effect Level (= Niedrigste Dosis, bei der eine Wirkung beobachtet wird)  
LQ Limited Quantities (= begrenzte Mengen)  
LRV Luftreinhalte-Verordnung (Schweiz)  
LVA Listen über den Verkehr mit Abfällen (Schweiz)  
MAK Maximale Arbeitsplatzkonzentrationswerte gesundheitsgefährdender Stoffe (MAK-Werte) (Schweiz)  
MAK-Kzw, TRK-Kzw MAK-Kzw = Maximale Arbeitsplatzkonzentration - Kurzzeitwert / TRK-Kzw = Technische Richtkonzentration - Kurzzeitwert (Österreich)  
MAK-Mow MAK-Mow = Maximale Arbeitsplatzkonzentration - Momentanwert (Österreich)  
MAK-Tmw, TRK-Tmw MAK-Tmw = Maximale Arbeitsplatzkonzentration - Tagesmittelwert / TRK-Tmw = Technische Richtkonzentration - Tagesmittelwert (Österreich)  
MARPOL Internationale Übereinkommen zur Verhütung der Meeresverschmutzung durch Schiffe  
Min., min. Minute(n) oder mindestens oder Minimum  
n.a. nicht anwendbar  
n.g. nicht geprüft  
n.v. nicht verfügbar  
NIOSH National Institute of Occupational Safety and Health (United States of America)  
NOAEL No Observed Adverse Effect Level (= Dosis ohne beobachtete schädigende Wirkung)  
NOEC No Observed Effect Concentration (= Tierexperimentell festgelegte höchste Konzentration, bei der keine Wirkung (schädigender Effekt) mehr nachweisbar ist)  
NOEL No Observed Effect Level (= Tierexperimentell festgelegte höchste Dosis, bei der keine Wirkung (schädigender Effekt) mehr nachweisbar ist)  
ODP Ozone Depletion Potential (= Ozonabbau Potenzial)  
OECD Organisation for Economic Co-operation and Development (= Organisation für wirtschaftliche Zusammenarbeit und Entwicklung)  
org. organisch  
PAK polyzyklischer aromatischer Kohlenwasserstoff  
PBT persistent, bioaccumulative and toxic (= persistent, bioakkumulierbar und toxisch)  
PC Chemical product category (= Produktkategorie)  
PE Polyethylen  
PNEC Predicted No Effect Concentration (= abgeschätzte Nicht-Effekt-Konzentration)  
POCP Photochemical ozone creation potential (= Photochemisches Ozonbildungspotenzial)  
PP Polypropylen  
PROC Process category (= Verfahrenskategorie)  
Pt. Punkt  
PTFE Polytetrafluorethylen  
PUR Polyurethane  
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. 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.  
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RID Règlement concernant le transport International ferroviaire de marchandises Dangereuses (= Regelung zur internationalen Beförderung gefährlicher Güter im Schienenverkehr)

SADT Self-Accelerating Decomposition Temperature (= Selbstbeschleunigende Zersetzungstemperatur)

SU Sector of use (= Verwendungssektor)

SVHC Substances of Very High Concern (= besonders besorgniserregende Substanzen)

Tel. Telefon

ThOD Theoretical oxygen demand (= Theoretischer Sauerstoffbedarf - ThSB)

TOC Total organic carbon (= Gesamter organischer Kohlenstoff)

TRG Technische Regeln Druckgase

TRGS Technische Regeln für Gefahrstoffe

TVA Technische Verordnung über Abfälle (Schweiz)

UEVK 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)

VCI Verband der Chemischen Industrie e.V.

VeVA Verordnung über den Verkehr mit Abfällen (Schweiz)

VOC Volatile organic compounds (= flüchtige organische Verbindungen)

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

WHO World Health Organization (= Weltgesundheitsorganisation)

wwt wet weight (= Feuchtmasse)

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

(CH<sub>3</sub>-CH<sub>2</sub>-OH)

CAS: 64-17-5

## Exposure Scenarios for Safety Data Sheets

## CSR Variant 1- Manufacturer, fermentation, all uses

<b>Title: Exposure Scenario for Industrial manufacturing of Ethanol, or use as intermediate or process chemical</b>		
<b>Ethanol REACH Association reference no. ES1</b>		
<b>Systematic title based on use descriptor</b>	SU3, SU8, SU9 PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b ERC1, ERC4, ERC6A	
<b>Processes, tasks, activities covered</b>	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.	
<b>Assessment Method</b>	Ecetoc TRA integrated model version 2, EUSES v.2.	
<b>1. Exposure Scenario</b>		
<b>1.1 Operational conditions and risk management measures</b>		
<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>		
<b>1.2 Control of workers exposure</b>		
<b>Product characteristic (including package design affecting exposure)</b>	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5,73 kPa
<b>Amounts used</b>	n.a. in tier1 TRA model	
<b>Frequency and duration of use/exposure</b>	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
<b>Human factors not influenced by risk management</b>	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 <sup>2</sup> (automated processes/PROC1, 2, 3,4) 960 cm <sup>2</sup> (transfer, filling, etc./PROC8a,b)
<b>Other given operational conditions affecting workers exposure</b>	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Outdoor
<b>Technical conditions and measures at process level (source) to prevent release</b>	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.	
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	Ventilation	None required
	Efficiency rate	95 %
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>	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.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	PPE: Respiratory Protection	Not required for normal operations
<b>1.3 Control of environmental exposure</b>		
<b>Product characteristics</b>	Physical state	liquid
	Concentration of substance in product	Up to 100 %
<b>Amounts used</b>	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
<b>Frequency and duration of use</b>	Pattern of release	Continuous 350 days per year
<b>Environment factors not influenced by risk management</b>	Flow rate of receiving surface water	18,000m3/day (default)
<b>Other given operational conditions affecting environmental exposure</b>	Processing setting (indoor/outdoor)	Indoor and/or outdoor
	Processing temperature	Ambient
	Processing pressure	Ambient
<b>Technical conditions and measures at process level (source) to prevent release</b>	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	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	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)
<b>Organizational measures to prevent/limit release from site</b>	Do not release wastewater directly into environment	Wastewater release into local or municipal STP.
<b>Conditions and measures related to municipal sewage treatment plant</b>	Size of STP	>= 2000 m <sup>3</sup> /day
	Degradation efficacy	90% (for ethanol)
	Sludge treatment	Disposal or recovery
<b>Conditions and measures related to treatment of waste</b>	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
<b>Inhalation (mg/m<sup>3</sup>)</b>	96.04	950 (OEL)	PROC 8a results in the highest exposure in this exposure scenario
<b>Dermal (mg/kg/day)</b>	13.71	343	
<b>Combined (mg/kg/day)</b>	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.

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

<b>Title: Exposure Scenario for Industrial distribution of Ethanol</b>		
<b>Ethanol REACH Association reference no. ES2</b>		
<b>Systematic title based on use descriptor</b>	SU3, SU8, SU9 PROC8a, PROC8b, PROC9 ERC2	
<b>Processes, tasks, activities covered</b>	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.	
<b>Assessment Method</b>	Ecetoc TRA integrated model version 2	
<b>1. Exposure Scenario</b>		
<b>1.1 Operational conditions and risk management measures</b>		
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.		
<b>1.2 Control of workers exposure</b>		
<b>Product characteristic (including package design affecting exposure)</b>	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5,73 kPa
<b>Amounts used</b>	n.a. in tier1 TRA model	
<b>Frequency and duration of use/exposure</b>	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
<b>Human factors not influenced by risk management</b>	Potentially exposed body parts	Two hands
	Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Outdoor or in ventilated (open) spaces
<b>Technical conditions and measures at process level (source) to prevent release</b>	No specific technical prevention measures required	
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	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.
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>	No specific measures identified.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	Wear suitable gloves tested to EN374 during the activities where skin contact is possible.	
<b>1.3 Control of environmental exposure</b>		
<b>Product characteristics</b>	Physical state	liquid
	Concentration of substance in product	Up to 100 %
<b>Amounts used</b>	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
<b>Frequency and duration of use</b>	Pattern of release	300 days per year
<b>Environment factors not influenced by</b>	Flow rate of receiving surface water	18,000m <sup>3</sup> /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 <sup>3</sup> /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 <sup>3</sup> )	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
<b>Environmental exposure</b>	PEC	PNEC	<b>Comment</b>
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.

<b>Title: Exposure Scenario for Industrial formulation and (re)packing of Ethanol, and its mixtures</b>		
<b>Ethanol REACH Association reference no. ES3</b>		
<b>Systematic title based on use descriptor</b>	SU3, SU10 PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC14 ERC 2	
<b>Processes, tasks, activities covered</b>	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.	
<b>Assessment Method</b>	Ecetoc TRA integrated model version 2, EUSES v.2.	
<b>1. Exposure Scenario</b>		
<b>1.1 Operational conditions and risk management measures</b>		
<p><b>Process category:</b> 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><b>Environmental release category:</b> 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>		
<b>1.2 Control of workers exposure</b>		
<b>Product characteristic (including package design affecting exposure)</b>	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5,73 kPa
<b>Amounts used</b>	n.a. in tier1 TRA model	
<b>Frequency and duration of use/exposure</b>	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
<b>Human factors not influenced by risk management</b>	Potentially exposed body parts	Two hands face side only (automated processes/PROC3) Two hands (transfer, filling, etc./PROC8a,b)
	Exposed skin surface	480 cm <sup>2</sup> (automated processes/PROC3) 960 cm <sup>2</sup> (transfer, filling, etc./PROC8a,b)
<b>Other given operational conditions affecting workers exposure</b>	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoors
<b>Technical conditions and measures at process level (source) to prevent release</b>	No specific measures identified.	
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	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).	
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>	No specific measures identified.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	No specific measures required. Wear suitable gloves tested to EN374 during the activities where excessive skin contact is possible.	
<b>1.3 Control of environmental exposure</b>		
<b>Product characteristics</b>	Physical state	liquid
	Concentration of substance in product	Up to 100 %
<b>Amounts used</b>	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

<b>Frequency and duration of use</b>	Pattern of release	Continuous 300 days per year
<b>Environment factors not influenced by risk management</b>	Flow rate of receiving surface water	18,000m <sup>3</sup> /day (default)
<b>Other given operational conditions affecting environmental exposure</b>	Processing setting (indoor/outdoor)	Indoor
	Processing temperature	Ambient
	Processing pressure	Ambient
<b>Technical conditions and measures at process level (source) to prevent release</b>	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.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment))	Efficacy >90%
<b>Organizational measures to prevent/limit release from site</b>	Do not release wastewater directly into environment	Wastewater release into municipal STP.
<b>Conditions and measures related to municipal sewage treatment plant</b>	Size of STP	>2000 m <sup>3</sup> /day
	Degradation efficacy	90% (for ethanol)
	Sludge treatment	Disposal or recovery
<b>Conditions and measures related to treatment of waste</b>	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
<b>Inhalation (mg/m<sup>3</sup>)</b>	96.04	950	PROC 8a results in the highest exposure in this exposure scenario
<b>Dermal (mg/kg/day)</b>	13.71	343	
<b>Combined (mg/kg/day)</b>	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.

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

<b>Systematic title based on use descriptor</b>	SU3 PROC10, PROC13 ERC4
<b>Processes, tasks, activities covered</b>	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.
<b>Assessment Method</b>	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**

<b>Product characteristic (including package design affecting exposure)</b>	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5,73 kPa
<b>Amounts used</b>	n.a. in tier1 TRA model	
<b>Frequency and duration of use/exposure</b>	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
<b>Human factors not influenced by risk management</b>	Potentially exposed body parts	Two hands, face side only (PROC13) Two hands (PROC10)
	Exposed skin surface	480 cm <sup>2</sup> (PROC13) 960 cm <sup>2</sup> (PROC10)
<b>Other given operational conditions affecting workers exposure</b>	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoors and outdoors
<b>Technical conditions and measures at process level (source) to prevent release</b>	No specific measures identified.	
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	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.	
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>	No specific measures identified.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	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**

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



<b>Environment factors not influenced by risk management</b>	Flow rate of receiving surface water	18,000m <sup>3</sup> /day (default)
<b>Other given operational conditions affecting environmental exposure</b>	Processing setting (indoor/outdoor)	Indoors and outdoors
	Processing temperature	Ambient
	Processing pressure	Ambient
<b>Technical conditions and measures at process level (source) to prevent release</b>	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.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment))	Efficacy >70%
<b>Organizational measures to prevent/limit release from site</b>	Do not release wastewater directly into environment	Wastewater release into municipal STP.
<b>Conditions and measures related to municipal sewage treatment plant</b>	Size of STP	>2000 m <sup>3</sup> /day
	Degradation efficacy	90% (for ethanol)
	Sludge treatment	Disposal or recovery
<b>Conditions and measures related to treatment of waste</b>	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
<b>Inhalation (mg/m<sup>3</sup>)</b>	96.04	950	PROC 10 results in the highest exposure in this exposure scenario
<b>Dermal (mg/kg/day)</b>	27.43	343	
<b>Combined (mg/kg/day)</b>	41.15	343	

**Environmental exposure estimation** is based on Ecetoc 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.

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

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

### 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**

<b>Systematic title based on use descriptor</b>	SU3 PROC7 ERC4
<b>Processes, tasks, activities covered</b>	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.
<b>Assessment Method</b>	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**

<b>Product characteristic (including package design affecting exposure)</b>	Physical state	liquid
	Concentration of substance in product	Up to 25 %
	Vapour pressure of substance	5,73 kPa
<b>Amounts used</b>	n.a. in tier1 TRA model	
<b>Frequency and duration of use/exposure</b>	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
<b>Human factors not influenced by risk management</b>	Potentially exposed body parts	Two hands and forearms
	Exposed skin surface	1500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoors
<b>Technical conditions and measures at process level (source) to prevent release</b>	No specific measures identified.	
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	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.	
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>	No specific measures identified.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	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**

<b>Product characteristics</b>	Physical state	liquid
	Concentration of substance in product	Up to 25 %
<b>Amounts used</b>	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
<b>Frequency and duration of use</b>	Pattern of release	Continuous 300 days per year
<b>Environment factors not influenced by risk management</b>	Flow rate of receiving surface water	18,000m <sup>3</sup> /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 <sup>3</sup> /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 <sup>3</sup> )	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
<b>Environmental exposure</b>	PEC	PNEC	<b>Comment</b>
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.

<b>Title: Exposure Scenario for Industrial use of Ethanol as fuel source</b>		
<b>Ethanol REACH Association reference no. ES6a</b>		
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	
<b>1. Exposure Scenario</b>		
<b>1.1 Operational conditions and risk management measures</b>		
<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>		
<b>1.2 Control of workers exposure</b>		
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 <sup>2</sup>
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.	
<b>1.3 Control of environmental exposure</b>		
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 <sup>3</sup> /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 <sup>3</sup> /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 <sup>3</sup> )	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:

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

Example for calculating your local freshwater PEC:

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

## 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.

<b>Title: Exposure Scenario for Professional use of Ethanol as fuel source</b>		
<b>Ethanol REACH Association reference no. ES6b</b>		
<b>Systematic title based on use descriptor</b>	SU22 PROC16 ERC 9a, ERC 9b	
<b>Processes, tasks, activities covered</b>	Use as fuel or fuel additive in professional setting.	
<b>Assessment Method</b>	Ecetoc TRA integrated model version 2	
<b>1. Exposure Scenario</b>		
<b>1.1 Operational conditions and risk management measures</b>		
<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>		
<b>1.2 Control of workers exposure</b>		
<b>Product characteristic (including package design affecting exposure)</b>	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5,73 kPa
<b>Amounts used</b>	n.a. in tier1 TRA model	
<b>Frequency and duration of use/exposure</b>	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
<b>Human factors not influenced by risk management</b>	Potentially exposed body parts	One hand, face side only
	Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoors
<b>Technical conditions and measures at process level (source) to prevent release</b>	No specific measures identified.	
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	No specific measures identified	
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>	No specific measures identified.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	No specific PPE measures identified.	
<b>1.3 Control of environmental exposure</b>		
<b>Product characteristics</b>	Physical state	liquid
	Concentration of substance in product	Up to 100 %
<b>Amounts used</b>	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
<b>Frequency and duration of use</b>	Pattern of release	Continuous wide dispersive: 365 days per year
<b>Environment factors not influenced by risk management</b>	Flow rate of receiving surface water	18,000m <sup>3</sup> /day (default)
<b>Other given operational conditions affecting environmental exposure</b>	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 <sup>3</sup> /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 <sup>3</sup> )	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
<b>Environmental exposure</b>	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**

<b>Systematic title based on use descriptor</b>	SU22 PROC10, PROC13, PROC14, PROC19 ERC8a, ERC8d
<b>Processes, tasks, activities covered</b>	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.
<b>Assessment Method</b>	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**

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

**1.3 Control of environmental exposure**

<b>Product characteristics</b>	Physical state	liquid
	Concentration of substance in product	Up to 100 %



<b>Amounts used</b>	Daily at point source	n.a.
	Annually at point source	n.a. (wide dispersive use)
	Annually total	10,000 t/year total market
<b>Frequency and duration of use</b>	Pattern of release	Continuous 365 days per year
<b>Environment factors not influenced by risk management</b>	Flow rate of receiving surface water	18,000m <sup>3</sup> /day (default)
<b>Other given operational conditions affecting environmental exposure</b>	Processing setting (indoor/outdoor)	Indoors and outdoors
	Processing temperature	Ambient
	Processing pressure	Ambient
<b>Technical conditions and measures at process level (source) to prevent release</b>	No specific measures identified.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	No specific measures identified.	
<b>Organizational measures to prevent/limit release from site</b>	Do not release wastewater directly into environment. Wastewater release into municipal STP.	
<b>Conditions and measures related to municipal sewage treatment plant</b>	Size of STP	>2000 m <sup>3</sup> /day
	Degradation efficacy	90% (for ethanol)
	Sludge treatment	Disposal or recovery
<b>Conditions and measures related to treatment of waste</b>	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
<b>Inhalation (mg/m<sup>3</sup>)</b>	115,25	950	PROC 19 results in the highest exposure in this exposure scenario
<b>Dermal (mg/kg/day)</b>	84,86	343	
<b>Combined (mg/kg/day)</b>	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.

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

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:

Orrected local freshwater PEC = 0,045 \* (your local emission [kg/day] / 5) \* (2000 / your local WWTP flow rate [m<sup>3</sup>/day]) \* (18000 / your local river flow rate [m<sup>3</sup>/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**

<b>Systematic title based on use descriptor</b>	SU22 PROC11 ERC8a, ERC8d
<b>Processes, tasks, activities covered</b>	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.
<b>Assessment Method</b>	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**

<b>Product characteristic (including package design affecting exposure)</b>	Physical state	Liquid (spray aerosol)
	Concentration of substance in product	5-25 %
	Vapour pressure of substance	5,73 kPa
<b>Amounts used</b>	n.a. in tier1 TRA model	
<b>Frequency and duration of use/exposure</b>	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	300 Days/year
	Duration of exposure	Variable
<b>Human factors not influenced by risk management</b>	Potentially exposed body parts	Two hands and forearms
	Potentially exposed skin surface	1500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoors and/or outdoors
<b>Technical conditions and measures at process level (source) to prevent release</b>	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
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	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.
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>	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.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	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 %
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### 1.3 Control of environmental exposure

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

<b>Release times per year (day/year)</b>	365	Local release to air (kg/day)	n.a. wide dispersive
<b>Fraction used at main local source</b>	0.1	Local release to waste water (kg/day)	n.a. wide dispersive
<b>Amount used locally (kg/day)</b>	5.5	Local release to soil (kg/day)	n.a. wide dispersive
<b>Environmental exposure</b>	PEC	PNEC	<b>Comment</b>
<b>In STP / untreated wastewater(mg/l)</b>	0.34	580	-
<b>In local freshwater (mg/l)</b>	0,045	0,96	-
<b>In local soil</b>	0.0003 (mg/kg)	0,63 (mg/kgwwt)	-
<b>In local marine water (mg/l)</b>	0,0044	0,79	-
<b>Total daily intake via local environment (mg/kgdw/d)</b>	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		
<b>Title: Exposure Scenario for Consumer use of Ethanol as automotive fuel</b>		
<b>Ethanol REACH Association reference no. ES9a</b>		
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	
<b>1. Exposure Scenario</b>		
<b>1.1 Operational conditions and risk management measures</b>		
<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>		
<b>1.2 Control of consumer exposure</b>		
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.	
<b>1.3 Control of environmental exposure</b>		
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	18,000m3/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	-
<b>Total daily intake via local environment (mg/kgdw/d)</b>	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 <sup>2</sup>
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 <sup>3</sup> /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	-
<b>Total daily intake via local environment (mg/kgdw/d)</b>	Negligible compared to daily dietary intake and endogenous formation.		
<b>Additional good practice advice beyond the REACH CSA</b>			
<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>	

<b>Title: Exposure Scenario for Consumer use of Ethanol in products (&lt;50g per event)</b>				
<b>Ethanol REACH Association reference no. ES9c</b>				
<b>Systematic title based on use descriptor</b>	SU21 PC: 1, 3, 8, 12, 14, 15, 18, 23, 24, 27, 28, 30, 31, 34, 39 ERC8a, ERC8d			
<b>Processes, tasks, activities covered</b>	Covers the consumer use of products which contain Ethanol with amount applied in use of less than 50g per event			
<b>Assessment Method</b>	Ecetoc TRA integrated model version 2, ConsExpo v 4.1			
<b>1. Exposure Scenario</b>				
<b>1.1 Operational conditions and risk management measures</b>				
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.				
<b>1.2 Control of consumer exposure</b>				
<b>Substance content in the product</b>	< 1 %	1 – 5 %	5 – 25 %	> 25 %
<b>Product characteristic (including package design affecting exposure)</b>	PC24, PC31	PC5, PC10, PC22, PC23, PC27, PC30, PC34	PC1, PC8, PC14, PC15, PC18,	PC3, PC28
<b>Amounts of product used / applied per event</b>	< 50 g	< 50 g	< 50 g	< 10 g
<b>Frequency and duration of use/exposure</b>	Frequency of use: Up to daily			
	Duration of use/application: up to 4 hours			
<b>Setting and external conditions during use</b>	Indoors (minimum room volume 20m <sup>3</sup> ) or outdoors			
<b>Technical (product related) use conditions</b>	n.a.	n.a.	n.a.	Controlled spray or release device.
<b>Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer; e.g. product labelling)</b>	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.
<b>1.3 Control of environmental exposure</b>				
<b>Product characteristics</b>	Physical state		Liquid	
	Concentration of substance in product		Could be > 25 %	
<b>Amounts used</b>	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	
<b>Frequency and duration of use</b>	Pattern of release		365 days per year	
<b>Environment factors not influenced by risk management</b>	Flow rate of receiving surface water		18,000m <sup>3</sup> /day (default)	
<b>Other given operational conditions affecting environmental exposure</b>	Processing setting (indoor/outdoor)		Indoor	
	Processing temperature		Ambient	
	Processing pressure		Ambient	
<b>Conditions and measures related to municipal sewage treatment plant</b>	Size of STP		> 2000 m <sup>3</sup> /day	
	Degradation efficacy		90%	
	Sludge treatment (disposal or recovery)		Disposal or recovery	



<b>Conditions and measures related to disposal of waste resulting from the use of the products</b>	No specific measures required.
<b>Conditions and measures related to recovery of waste resulting from the use</b>	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/m <sup>3</sup> 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
<b>Environmental exposure</b>	<b>PEC</b>	<b>PNEC</b>	<b>Comment</b>
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	-
<b>Total daily intake via local environment (mg/kgdw/d)</b>	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.

<b>Title: Exposure Scenario for Consumer use of Ethanol in enclosed systems</b>		
<b>Ethanol REACH Association reference no. ES9d</b>		
<b>Systematic title based on use descriptor</b>	SU21 PC16 (Heat transfer fluids), PC17 (Hydraulic fluids) ERC9a, ERC9b	
<b>Processes, tasks, activities covered</b>	Covers the consumer use of products which contain Ethanol - products in enclosed systems (with no expected exposure to ethanol during use)	
<b>Assessment Method</b>	Ecetoc TRA integrated model version 2, ConsExpo v 4.1	
<b>1. Exposure Scenario</b>		
<b>1.1 Operational conditions and risk management measures</b>		
<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>		
<b>1.2 Control of consumer exposure</b>		
<b>Substance content in the product</b>	> 25 %	
<b>Product characteristic (including package design affecting exposure)</b>	Substance is enclosed in the system and there is no consumer exposure possible under normal and reasonably foreseeable conditions of use.	
<b>Amounts of product used / applied per event</b>	n.a. substance in enclosed system	
<b>Frequency and duration of use/exposure</b>	Frequency of use: 1-5 times per year	
	Duration per use: divers	
<b>Setting and external conditions during use</b>	n.a. substance in enclosed system	
<b>Technical (product related) use conditions</b>	n.a. substance in enclosed system	
<b>Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer; e.g. product labelling)</b>	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.	
<b>1.3 Control of environmental exposure</b>		
<b>Product characteristics</b>	Physical state	Liquid
	Concentration of substance in product	Can be > 25 %
<b>Amounts used</b>	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
<b>Frequency and duration of use</b>	Pattern of release	365 days per year
<b>Environment factors not influenced by risk management</b>	Flow rate of receiving surface water	18,000m3/day (default)
<b>Other given operational conditions affecting environmental exposure</b>	Processing setting (indoor/outdoor)	Indoor
	Processing temperature	Ambient
	Processing pressure	Ambient
<b>Conditions and measures related to municipal sewage treatment plant</b>	No release into the wastewaters or sewage is expected from this use. Substance is used in enclosed system during its service life.	
<b>Conditions and measures related to disposal of waste resulting from the use of the products</b>	No waste expected from this use.	
<b>Conditions and measures related to recovery of waste resulting from the use</b>	n.a.	
<b>2. Exposure estimation</b>		
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 <sup>3</sup> for 24hr day)	0,04	LTS 144	-
All routes systemic	-	-	-
<b>Environmental exposure</b> 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
<b>Environmental exposure</b>	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	-
<b>Total daily intake via local environment (mg/kgdw/d)</b>	Negligible compared to daily dietary intake and endogenous formation.		
<b>Additional good practice advice beyond the REACH CSA</b>			
<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 <sup>2</sup> (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 <sup>3</sup> ) 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 <sup>3</sup> /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 <sup>3</sup> /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	-	-	-
<b>Environmental exposure</b> 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
<b>Environmental exposure</b>	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	-
<b>Total daily intake via local environment (mg/kgdw/d)</b>	Negligible compared to daily dietary intake and endogenous formation.		
<b>Additional good practice advice beyond the REACH CSA</b>			
<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 <sup>2</sup>	
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 <sup>3</sup> /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 <sup>3</sup> /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	-	-	
<b>Environmental exposure</b> 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
<b>Environmental exposure</b>	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	-
<b>Total daily intake via local environment (mg/kgdw/d)</b>	Negligible compared to daily dietary intake and endogenous formation.		
<b>Additional good practice advice beyond the REACH CSA</b>			
<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 <sup>3</sup> /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**



<b>Consumer exposure</b> 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	-	-	
<b>Environmental exposure</b> 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
<b>Environmental exposure</b>	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	-
<b>Total daily intake via local environment (mg/kgdw/d)</b>	Negligible compared to daily dietary intake and endogenous formation.		
<b>Additional good practice advice beyond the REACH CSA</b>			
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**

<b>Systematic title based on use descriptor</b>	SU3, SU22 PROC15 ERC2, ERC4, ERC8a
<b>Processes, tasks, activities covered</b>	Use as small scale laboratory reagent
<b>Assessment Method</b>	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**

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

**1.3 Control of environmental exposure**

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

<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	No specific onsite measures identified	
<b>Organizational measures to prevent/limit release from site</b>	Do not release wastewater directly into environment	Wastewater release into municipal STP.
<b>Conditions and measures related to municipal sewage treatment plant</b>	Size of STP	>2000 m <sup>3</sup> /day
	Degradation efficacy	90%
	Sludge treatment	Disposal or recovery
<b>Conditions and measures related to treatment of waste</b>	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
<b>Inhalation (mg/m<sup>3</sup>)</b>	19,21	950	-
<b>Dermal (mg/kd/day)</b>	0,34	343	
<b>Combined (mg/kg/day)</b>	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.

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

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

## 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 and Professional use of Ethanol as heat transfer fluid, or other functional fluid**

**Ethanol REACH Association reference no. ES11**

<b>Systematic title based on use descriptor</b>	SU3, SU22 PROC20 ERC7, ERC9a, ERC9b
<b>Processes, tasks, activities covered</b>	Covers use in heat and pressure transfer fluids in dispersive, professional use but closed systems
<b>Assessment Method</b>	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

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

### 1.3 Control of environmental exposure

<b>Product characteristics</b>	Physical state	liquid
	Concentration of substance in product	Up to 100 %
<b>Amounts used</b>	Daily at point source	n.a.
	Annually to the region	1000 t/year
	Annually total	10,000 t/year total market
<b>Frequency and duration of use</b>	Pattern of release	No release into environment (closed system)
<b>Environment factors not influenced by risk management</b>	Flow rate of receiving surface water	n.a.
<b>Other given operational conditions affecting environmental exposure</b>	Processing setting (indoor/outdoor)	Indoors and outdoors
	Processing temperature	Ambient
	Processing pressure	Ambient
<b>Technical conditions and measures at</b>	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 <sup>3</sup> /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 <sup>3</sup> )	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)
<b>Environmental exposure</b>	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	-
<b>Total daily intake via local environment (mg/kgdw/d)</b>	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.