Fiche de sécurité

PROCOOL

Liquide de refroidissement
pour installations de soudage

Bidon de 10lt

KSR
Rue Edouard Verdan 20
1400 Yverdon-les-Bains
www.ksrsoudage.ch
Tél. 024 447 44 00
Fax 024 447 44 05
info@ksrsoudage.ch

Produit : Liquide de refroidissement Procool

Composition :

Pourcentage	Désignation
65%	Eau déminéralisée
30%	Monopropylene glycol
5%	Alcool secondaire

Yverdon-les-Bains, le 30 janvier 2019

ConnectingChemistry

BRENNTAG

FICHE DE DONNÉES DE SÉCURITÉ conformément au Règlement (CE) No. 1907/2006

EAU DEMINERALISEE

Version 2.1 Date d'impression 31.01.2019

Date de révision 02.05.2017

RUBRIQUE 1: Identification de la substance/du mélange et de la société/l'entreprise

1.1. Identificateur de produit

Nom commercial	:	EAU DEMINERALISEE
Nom de la substance	:	eau
No.-CAS	:	7732-18-5
No.-CE	:	231-791-2

1.2. Utilisations identifiées pertinentes de la substance ou du mélange et utilisations déconseillées

Utilisation de la substance/du mélange	:	A ce jour, nous n'avons pas d'informations relatives aux usages identifiés. Ces informations seront ajoutées à cette fiche de données de sécurité dès qu'elles seront disponibles.
Utilisations déconseillées	:	Actuellement, aucune utilisation contre-indiquée n'a été identifiée

1.3. Renseignements concernant le fournisseur de la fiche de données de sécurité

Société	:	Brenntag Schweizerhall AG Elsässerstrasse 231 CH 4002 Basel
Téléphone	:	+41 (0)58 344 80 00
Téléfax	:	+41 (0)58 344 82 08
Adresse e-mail	:	doku@brenntag.ch
Personne responsable/émettrice	:	Abteilung Produktsicherheit

1.4. Numéro d'appel d'urgence

Numéro d'appel d'urgence	:	Centre Suisse d'Information Toxicologique CH-8032 ZÜRICH Tel.: +41 (0) 44 251 51 51 Numéro de cas d'urgence national: 145

RUBRIQUE 2: Identification des dangers

2.1. Classification de la substance ou du mélange

Classification selon le règlement (CE) N° 1272/2008

Le produit n'est pas classé comme dangereux conformément au Règlement (CE) No. 1272/2008.

Effets néfastes les plus importants

Santé humaine	:	Se référer à la section 11 pour les informations toxicologiques.
Dangers physico-chimiques	:	Se référer à la section 9/10 pour les informations physicochimiques.
Effets potentiels sur l'environnement	:	Se référer à la section 12 pour les informations relatives à l'environnement.

2.2. Éléments d'étiquetage

Etiquetage selon le règlement (CE) N° 1272/2008

Le produit ne nécessite pas d'étiquetage conformément au Règlement (CE) No 1272/2008.

2.3. Autres dangers

Voir section 12.5 pour les résultats de l'évaluation PBT et vPvB.
Selon les Directives CE 67/548/CEE ou 1999/45/CE, n'est pas une substance ni un mélange dangereux.
Pas de nourriture
Ne convient pas pour la consommation.

RUBRIQUE 3: Composition/informations sur les composants

3.1. Substances

Composant non dangereux

Nom Chimique	Numéro d'identification	Concentration [%]
eau	No.-CAS : 7732-18-5 No.-CE 231-791-2	100

RUBRIQUE 4: Premiers secours

4.1. Description des premiers secours

En cas d'ingestion : Après avoir avalé de grandes quantités, inciter à vomir

4.2. Principaux symptômes et effets, aigus et différés

Symptômes : Voir le chapitre 11 pour des informations plus détaillées sur les effets pour la santé et les symptômes.

Effets : Voir le chapitre 11 pour des informations plus détaillées sur les effets pour la santé et les symptômes.

4.3. Indication des éventuels soins médicaux immédiats et traitements particuliers nécessaires

Traitement : Traiter de façon symptomatique.
Pas de données supplémentaires disponibles.

RUBRIQUE 5: Mesures de lutte contre l'incendie

5.1. Moyens d'extinction

Moyens d'extinction appropriés : Exempt

Moyens d'extinction inappropriés : Pas d'information disponible.

5.2. Dangers particuliers résultant de la substance ou du mélange

Dangers spécifiques pendant la lutte contre l'incendie : Non combustible.

5.3. Conseils aux pompiers

Équipement de protection spécial pour les pompiers : En cas d'incendie, porter un appareil de protection respiratoire autonome.
Porter un équipement de protection individuel.
Adapter l´équipement de protection à la taille de l´incendie.

Conseils supplémentaires : Pas de données supplémentaires disponibles.

RUBRIQUE 6: Mesures à prendre en cas de dispersion accidentelle

6.1. Précautions individuelles, équipement de protection et procédures d'urgence

Précautions individuelles : Pas de précautions spéciales requises.

6.2. Précautions pour la protection de l'environnement

Précautions pour la protection de l'environnement : Ne pas décharger dans l'environnement.
Prévenir les autorités locales si des fuites significatives ne peuvent pas être contenues.

6.3. Méthodes et matériel de confinement et de nettoyage

Méthodes et matériel de confinement et de nettoyage : Contenir et collecter le matériel répandu à l'aide d'un matériau absorbant non combustible, (p.e. sable, terre, terre de diatomées, vermiculite) et le mettre dans un conteneur pour l'élimination conformément aux réglementations locales / nationales (voir chapitre 13).

6.4. Référence à d'autres rubriques

Équipement de protection individuel, voir section 8.

RUBRIQUE 7: Manipulation et stockage

7.1. Précautions à prendre pour une manipulation sans danger

Conseils pour une manipulation sans danger	:	Pas de précautions spéciales requises.
Mesures d'hygiène	:	Ne pas manger, fumer ou boire dans la zone de travail. Les tenues de travail contaminées doivent être conservées au poste de travail. Se laver les mains avant les pauses et à la fin de la journée de travail. Conserver à l'écart des aliments et boissons, y compris ceux pour animaux.

7.2. Conditions d'un stockage sûr, y compris d'éventuelles incompatibilités

Exigences concernant les aires de stockage et les conteneurs	:	Conserver le récipient bien fermé.
Classe de feu	:	incombustible
Classe de stockage (Allemagne)	:	12 Substances liquides non combustibles

7.3. Utilisation(s) finale(s) particulière(s)

Utilisation(s) particulière(s)	:	Pas d'information disponible.

RUBRIQUE 8: Contrôles de l'exposition/protection individuelle

8.1. Paramètres de contrôle

Autres valeurs limites d'exposition professionnelle

Information (supplémentaire)	:	Exempt

8.2. Contrôles de l'exposition

Équipement de protection individuelle

Protection des mains

Conseils	:	non requis

Protection des yeux

Conseils	:	non requis

RUBRIQUE 9: Propriétés physiques et chimiques

9.1. Informations sur les propriétés physiques et chimiques essentielles

Forme	:	liquide
Couleur	:	incolore
Odeur	:	inodore
Seuil olfactif	:	Non applicable
pH	:	4 - 7,5 (20 °C)
Point/intervalle de fusion	:	0 °C
Point/intervalle d'ébullition	:	100 °C
Point d'éclair	:	Non applicable
Taux d'évaporation	:	donnée non disponible
Inflammabilité (solide, gaz)	:	Non applicable
Limite d'explosivité, supérieure	:	Non applicable
Limite d'explosivité, inférieure	:	Non applicable
Pression de vapeur	:	23 mbar (20 °C)
Densité de vapeur relative	:	donnée non disponible
Densité	:	1 g/cm3 (20 °C)
Hydrosolubilité	:	Non applicable
Coefficient de partage: n-octanol/eau	:	Non applicable
Température d'auto-inflammabilité	:	Non applicable
Décomposition thermique	:	donnée non disponible
Viscosité, dynamique	:	0,952 mPa.s (20 °C)
Explosibilité	:	Le produit n'est pas explosif
Propriétés comburantes	:	aucune

9.2. Autres informations

Pas de données supplémentaires disponibles.

RUBRIQUE 10: Stabilité et réactivité

10.1. Réactivité

Conseils : Pas d'information disponible.

10.2. Stabilité chimique

Conseils : Pas de décomposition si le produit est entreposé et utilisé selon les prescriptions.
Pas de données supplémentaires disponibles.

10.3. Possibilité de réactions dangereuses

Réactions dangereuses : Pas d'information disponible.

10.4. Conditions à éviter

Décomposition thermique : donnée non disponible

10.5. Matières incompatibles

Matières à éviter : Métaux alcalins.

10.6. Produits de décomposition dangereux

Produits de décomposition dangereux : Pas d'information disponible.

RUBRIQUE 11: Informations toxicologiques

11.1. Informations sur les effets toxicologiques

Données pour le produit
Toxicité aiguë
Oral(e)
donnée non disponible
Inhalation
donnée non disponible
Dermale
donnée non disponible
Irritation
Peau

Résultat : Pas d'irritation de la peau

Sensibilisation		
Résultat	:	Aucun effet de sensibilisation connu.

Effets CMR		
Propriétés CMR		
Cancérogénicité	:	Compte tenu des données disponibles, les critères de classification ne sont pas remplis.
Mutagénicité	:	Compte tenu des données disponibles, les critères de classification ne sont pas remplis.
Tératogénicité	:	Compte tenu des données disponibles, les critères de classification ne sont pas remplis.
Toxicité pour la reproduction	:	Compte tenu des données disponibles, les critères de classification ne sont pas remplis.

Information supplémentaire		
Expérience de l'exposition humaine	:	Ne convient pas pour la consommation. Pas de nourriture,

RUBRIQUE 12: Informations écologiques

12.1. Toxicité

Données pour le produit		
Toxicité aiguë		
Poisson		
	:	donnée non disponible

12.2. Persistance et dégradabilité

Données pour le produit		
Persistance et dégradabilité		
Biodégradabilité		
Résultat	:	donnée non disponible

12.3. Potentiel de bioaccumulation

Données pour le produit		
Bioaccumulation		
Résultat	:	donnée non disponible

12.4. Mobilité dans le sol

Données pour le produit
Mobilité

Résultat : donnée non disponible

12.5. Résultats des évaluations PBT et vPvB

Données pour le produit
Résultats des évaluations PBT et vPvB

Résultat : Cette substance n'est pas considérée comme persistante, ni bioaccumulable ni toxique (PBT)., Cette substance n'est pas considérée comme très persistante et très bioaccumulable (vPvB).

12.6. Autres effets néfastes

Données pour le produit
Information écologique supplémentaire

Résultat : Pas de précautions spéciales pour l'environnement requises.

RUBRIQUE 13: Considérations relatives à l'élimination

13.1. Méthodes de traitement des déchets

Produit : non dangereux(se)

Emballages contaminés : Les emballages ne pouvant pas être nettoyés doivent être évacués de même manière que le produit.

Numéro européen d'élimination des déchets : Aucun code déchet du catalogue européen des déchets ne peut être attribué à ce produit, car seule l´utilisation qu´en fait l´utilisateur permet cette attribution.
Le code déchet est établi en consultation avec la déchetterie.

RUBRIQUE 14: Informations relatives au transport

Marchandise non dangereuse selon l' ADR, RID, IMDG et le code IATA.

14.1. Numéro ONU

Non applicable

14.2. Désignation officielle de transport de l'ONU

Non applicable

14.3. Classe(s) de danger pour le transport

Non applicable

14.4. Groupe d'emballage

Non applicable

14.5. Dangers pour l'environnement

Non applicable

14.6. Précautions particulières à prendre par l'utilisateur

Non applicable

14.7. Transport en vrac conformément à l'annexe II de la convention Marpol 73/78 et au recueil IBC

IMDG : Non applicable

RUBRIQUE 15: Informations relatives à la réglementation

15.1. Réglementations/législation particulières à la substance ou au mélange en matière de sécurité, de santé et d'environnement

Données pour le produit

Seuils quantitatifs OPAM : (Désormais sans seuil quantitatif selon les critères de SGH (2015).)

15.2. Évaluation de la sécurité chimique

donnée non disponible

RUBRIQUE 16: Autres informations

Abréviations et acronymes

FBC	facteur de bioconcentration
DBO	demande biochimique en oxygène
CAS	Chemical Abstracts Service
CLP	classification, étiquetage et emballage
CMR	cancérogène, mutagène ou toxique pour la reproduction

DCO	demande chimique en oxygène
DNEL	dose dérivée sans effet
EINECS	Inventaire européen des substances chimiques commerciales existantes
ELINCS	liste européenne des substances chimiques notifiées
SGH	système général harmonisé pour la classification et l'étiquetage des produits chimiques
CL50	concentration létale médiane
LOAEC	concentration minimale avec effet nocif observé
LOAEL	dose minimale avec effet nocif observé
LOEL	dose minimale avec effet observé
NLP	ne figure plus sur la liste des polymères
NOAEC	concentration sans effet nocif observé
NOAEL	dose sans effet nocif observé
NOEC	concentration sans effet observé
NOEL	dose sans effet observé
OCDE	Organisation de coopération et de développement économiques
LEP	limite d'exposition professionnelle
PBT	persistant, bioaccumulable et toxique
N° REACH Autor.	REACH - Numéro d'autorisation
N° REACH ConsDemAutor.	REACH - Numéro de consultation sur des demandes d'autorisation
PNEC	concentration prédite sans effet
STOT	toxicité spécifique pour certains organes cibles
SVHC	substance extrêmement préoccupante

Information supplémentaire

Les principales références bibliographiques et sources de données	:	Des informations de notre (nos) fournisseur(s) et données issues de la base des substances enregistrées de l'Agence Européenne des Produits Chimiques (ECHA) ont été utilisées pour créer la présente fiche de données de sécurité.
Méthodes usitées pour la classification	:	La classification des dangers pour la santé humaine, physique ou chimique et les dangers environnementaux sont dérivés de la combinaison de méthodes de calcul et si possible de données de test.
Informations de formation	:	Les travailleurs doivent être formés régulièrement à la manipulation sûre des produits basé sur les informations fournies dans la Fiche de Données de Sécurité et les conditions locales de la zone de travail. Les réglementations nationales pour la formation des travailleurs à la manipulation de produits dangereux doivent être également respectées.
Autres informations	:	Les informations contenues dans la présente fiche de sécurité ont été établies sur la base de nos connaissances à la date de publication de ce document. Ces informations ne sont données qu'à titre indicatif en vue de permettre des opérations de manipulation,

fabrication, stockage, transport, distribution, mise à disposition, utilisation et élimination dans des conditions satisfaisantes de sécurité, et ne sauraient donc être interprétées comme une garantie ou considérées comme des spécifications de qualité. Ces informations ne concernent en outre que le produit nommément désigné et, sauf indication contraire spécifique, peuvent ne pas être applicables en cas de mélange dudit produit avec d'autres substances ou utilisables pour tout procédé de fabrication.

Réservé aux utilisateurs professionnels. Attention - Eviter l'exposition - Se procurer les instructions spéciales avant utilisation.

|| Indique la section remise à jour.

ConnectingChemistry

BRENNTAG

FICHE DE DONNÉES DE SÉCURITÉ conformément au Règlement (CE) No. 1907/2006

GLYCOL DE PROPYLENE TECHN.

Version 2.2 Date d'impression 31.01.2019

Date de révision 07.11.2016

RUBRIQUE 1: Identification de la substance/du mélange et de la société/l'entreprise

1.1. Identificateur de produit

Nom commercial	:	GLYCOL DE PROPYLENE TECHN.
Nom de la substance	:	propane-1,2-diol
No.-CAS	:	57-55-6
No.-CE	:	200-338-0
No. enr. REACH EU	:	01-2119456809-23-xxxx
Synonymes et Autres noms	:	PROPAN-1,2-DIOL

1.2. Utilisations identifiées pertinentes de la substance ou du mélange et utilisations déconseillées

Utilisation de la substance/du mélange	:	A ce jour, nous n'avons pas d'informations relatives aux usages identifiés. Ces informations seront ajoutées à cette fiche de données de sécurité dès qu'elles seront disponibles.
Utilisations déconseillées	:	Actuellement, aucune utilisation contre-indiquée n'a été identifiée

1.3. Renseignements concernant le fournisseur de la fiche de données de sécurité

Société	:	Brenntag Schweizerhall AG Elsässerstrasse 231 CH 4002 Basel
Téléphone	:	+41 (0)58 344 80 00
Téléfax	:	+41 (0)58 344 82 08
Adresse e-mail	:	doku@brenntag.ch
Personne responsable/émettrice	:	Abteilung Produktsicherheit

1.4. Numéro d'appel d'urgence

Numéro d'appel d'urgence	:	Centre Suisse d'Information Toxicologique CH-8032 ZÜRICH Tel.: +41 (0) 44 251 51 51 Numéro de cas d'urgence national: 145

RUBRIQUE 2: Identification des dangers

2.1. Classification de la substance ou du mélange

Classification selon le règlement (CE) N° 1272/2008

Le produit n'est pas classé comme dangereux conformément au Règlement (CE) No. 1272/2008.

Effets néfastes les plus importants

Santé humaine	:	Se référer à la section 11 pour les informations toxicologiques.
Dangers physico-chimiques	:	Se référer à la section 9 pour les informations physicochimiques.
Effets potentiels sur l'environnement	:	Se référer à la section 12 pour les informations relatives à l'environnement.

2.2. Éléments d'étiquetage

Etiquetage selon le règlement (CE) N° 1272/2008

Le produit n'est pas classé comme dangereux conformément au Règlement (CE) No. 1272/2008.

Autre information d'étiquetage:

Information supplémentaire	:	À manipuler conformément aux bonnes pratiques d'hygiène industrielle et aux consignes de sécurité.

2.3. Autres dangers

Voir section 12.5 pour les résultats de l'évaluation PBT et vPvB.
Le produit ne nécessite pas d'étiquetage conformément aux directives de la CE et aux réglementations nationales du pays concerné.

RUBRIQUE 3: Composition/informations sur les composants

3.1. Substances

Remarques : Aucun composant dangereux selon le Règlement (CE) No. 1907/2006

Composant non dangereux

Nom Chimique	Numéro d'identification		Concentration [%]
propane-1,2-diol	No.-CAS No.-CE No. enr. REACH	: 57-55-6 200-338-0 01-2119456809-23-xxxx	> 99,8

RUBRIQUE 4: Premiers secours

4.1. Description des premiers secours

Conseils généraux	: Enlever immédiatement tout vêtement souillé.
En cas d'inhalation	: Transférer la personne à l'air frais. Si les troubles se prolongent, consulter un médecin.
En cas de contact avec la peau	: Laver avec de l'eau et du savon.
En cas de contact avec les yeux	: Bien rincer avec beaucoup d'eau, y compris sous les paupières. Si les troubles se prolongent, consulter un médecin.
En cas d'ingestion	: Se rincer la bouche à l'eau puis boire beaucoup d'eau. Ne jamais rien faire avaler à une personne inconsciente. Si les troubles se prolongent, consulter un médecin.

4.2. Principaux symptômes et effets, aigus et différés

Symptômes	: Voir le chapitre 11 pour des informations plus détaillées sur les effets pour la santé et les symptômes.
Effets	: Voir le chapitre 11 pour des informations plus détaillées sur les effets pour la santé et les symptômes.

4.3. Indication des éventuels soins médicaux immédiats et traitements particuliers nécessaires

Traitement	: Traiter de façon symptomatique. Pas de données supplémentaires disponibles.

RUBRIQUE 5: Mesures de lutte contre l'incendie

5.1. Moyens d'extinction

Moyens d'extinction appropriés	:	Pulvériser de l'eau ou utiliser de la mousse résistant à l'alcool, de la poudre sèche ou du dioxyde de carbone.
Moyens d'extinction inappropriés	:	jet d'eau

5.2. Dangers particuliers résultant de la substance ou du mélange

Dangers spécifiques pendant la lutte contre l'incendie	:	Peut se décomposer dans un incendie en dégageant des gaz toxiques, Produits de décomposition dangereux, Dioxyde de carbone (CO_2), Monoxyde de carbone

5.3. Conseils aux pompiers

Équipement de protection spécial pour les pompiers	:	En cas d'incendie, porter un appareil de protection respiratoire autonome.Vêtement de protection
Conseils supplémentaires	:	Refroidir par pulvérisation d'eau les récipients fermés se trouvant à proximité de la source d'incendie.Collecter séparément l'eau d'extinction contaminée, ne pas la rejeter dans les canalisations.

RUBRIQUE 6: Mesures à prendre en cas de dispersion accidentelle

6.1. Précautions individuelles, équipement de protection et procédures d'urgence

Précautions individuelles	:	Utiliser un équipement de protection individuelle. Garder les personnes à l'écart de l'endroit de l'écoulement/de la fuite et contre le vent. Veiller à une ventilation adéquate. Risque de glissade si le produit est déversé.

6.2. Précautions pour la protection de l'environnement

Précautions pour la protection de l'environnement	:	Ne pas déverser dans des eaux de surface ou dans les égouts. En cas de pollution de cours d'eau, lacs ou égouts, informer les autorités compétentes conformément aux dispositions locales.

6.3. Méthodes et matériel de confinement et de nettoyage

Méthodes et matériel de confinement et de nettoyage	:	Recueillir à l'aide d'un produit absorbant les liquides (sable, kieselguhr, neutralisant d'acide, liant universel). Conserver dans des récipients adaptés et fermés pour l'élimination.
Information supplémentaire	:	Traiter le produit récupéré selon la section "Considérations relatives à l'élimination".

6.4. Référence à d'autres rubriques

Équipement de protection individuel, voir section 8.

RUBRIQUE 7: Manipulation et stockage

7.1. Précautions à prendre pour une manipulation sans danger

Conseils pour une manipulation sans danger	:	Conserver hermétiquement fermé dans un endroit sec et frais. Prévoir un renouvellement d'air et/ou une ventilation suffisante dans les ateliers.
Mesures d'hygiène	:	Conserver à l'écart des aliments et boissons, y compris ceux pour animaux. Ne pas manger, fumer ou boire dans la zone de travail. Se laver les mains avant les pauses et à la fin de la journée de travail. Veiller à une ventilation adéquate. Éviter le contact avec la peau et les yeux.

7.2. Conditions d'un stockage sûr, y compris d'éventuelles incompatibilités

Exigences concernant les aires de stockage et les conteneurs	:	Conserver uniquement dans le récipient d'origine.
Indications pour la protection contre l'incendie et l'explosion	:	Mesures préventives habituelles pour la protection contre l'incendie. L'échauffement provoque une élévation de la pression avec risque d'éclatement; Substances liquide combustible. Tenir à l'écart de la chaleur et des sources d'ignition.

Classe de feu	:	Moyennement combustibles (Pec > 100°C)
Information supplémentaire sur les conditions de stockage	:	Conserver le récipient bien fermé. Conserver dans un endroit sec. Le produit est hygroscopique. Conserver à l'écart de la chaleur. Entreposer dans un endroit frais.
Précautions pour le stockage en commun	:	Conserver à l'écart des aliments et boissons, y compris ceux pour animaux.
Classe de stockage (Allemagne)	:	10 Substances liquides combustibles.
Température de stockage	:	< 40 °C

7.3. Utilisation(s) finale(s) particulière(s)

Utilisation(s) particulière(s)	:	Pas d'information disponible.

RUBRIQUE 8: Contrôles de l'exposition/protection individuelle

8.1. Paramètres de contrôle

Autres valeurs limites d'exposition professionnelle

Information (supplémentaire)	:	Ne contient pas de substances avec des valeurs limites d'exposition professionnelle.

Composant: propane-1,2-diol No.-CAS 57-55-6

Dose dérivée sans effet (DNEL) / Dose dérivée avec effet minimum (DMEL)

DNEL Travailleurs, Effets systémiques à long terme, Inhalation	:	168 mg/m3
DNEL Travailleurs, Long terme - effets locaux, Inhalation	:	10 mg/m3
DNEL Consommateurs, Effets systémiques à long terme, Contact avec la peau	:	213 mg/kg p.c. /jour
DNEL Consommateurs, Effets systémiques à long terme, Inhalation	:	50 mg/m3
DNEL Consommateurs, Effets systémiques à long terme, Ingestion	:	85 mg/kg p.c. /jour
DNEL Consommateurs, Long terme - effets locaux, Inhalation	:	10 mg/m3

Concentration prédite sans effet (PNEC)

Eau douce	:	260 mg/l
Eau de mer	:	26 mg/l
Libérations intermittentes extrapolé	:	183 mg/l
Sédiment d'eau douce	:	572 mg/kg poids sec
Sédiment marin	:	57,2 mg/kg poids sec
Sol	:	50 mg/kg poids sec
STP extrapolé	:	2000 mg/l
Empoisonnement secondaire extrapolé	:	1133 mg/kg

8.2. Contrôles de l'exposition

Équipement de protection individuelle

Protection respiratoire

Conseils : Appareil respiratoire seulement en cas de formation d'aérosol ou de brouillard.
En cas d'exposition faible ou de courte durée, filtre respirateur; en cas d'exposition intense ou durable, utiliser un appareil de respiration indépendant de l'air ambiant.
Type de Filtre recommandé:A
Filtre combiné: A-P2

Protection des mains

Conseils : Gants de protection
Le temps de pénétration peut être obtenu du fournisseur de gants de protection et il doit en être tenu compte.

Matériel	:	Caoutchouc naturel
délai de rupture	:	>= 8 h
Épaisseur du gant	:	0,5 mm

Matériel	:	Polyisoprène
délai de rupture	:	>= 8 h
Épaisseur du gant	:	0,6 mm

Matériel	:	Caoutchouc nitrile
délai de rupture	:	>= 8 h
Épaisseur du gant	:	0,35 mm

Protection des yeux

Conseils	:	Lunettes de sécurité

Protection de la peau et du corps

Conseils	:	Vêtements de travail protecteurs

Contrôles d'exposition liés à la protection de l'environnement

Conseils généraux	:	Ne pas déverser dans des eaux de surface ou dans les égouts. En cas de pollution de cours d'eau, lacs ou égouts, informer les autorités compétentes conformément aux dispositions locales.

RUBRIQUE 9: Propriétés physiques et chimiques

9.1. Informations sur les propriétés physiques et chimiques essentielles

Forme	:	liquide
Couleur	:	incolore clair
Odeur	:	inodore
Seuil olfactif	:	donnée non disponible
pH	:	6 - 7 (200 g/l ; 20 °C)
Point/intervalle de fusion	:	env. -60 °C
Point/intervalle d'ébullition	:	184 °C
Point d'éclair	:	104 °C
Taux d'évaporation	:	donnée non disponible
Inflammabilité (solide, gaz)	:	donnée non disponible
Limite d'explosivité, supérieure	:	12,6 %(V)
Limite d'explosivité, inférieure	:	2,4 %(V)
Pression de vapeur	:	0,18 mbar (20 °C)
Densité de vapeur relative	:	donnée non disponible
Densité	:	1,04 g/cm3 (20 °C)
Hydrosolubilité	:	complètement miscible
Coefficient de partage: n-octanol/eau	:	donnée non disponible
Température d'auto-inflammabilité	:	env. 371 °C
Décomposition thermique	:	donnée non disponible
Viscosité, dynamique	:	60 mPa.s (20 °C)

Explosibilité	:	La formation des mélanges explosifs d'air et vapeur est possible.
Propriétés comburantes	:	donnée non disponible

9.2. Autres informations

Pas de données supplémentaires disponibles.

RUBRIQUE 10: Stabilité et réactivité

10.1. Réactivité

Conseils	:	Pas de réactions dangereuses connues dans les conditions normales d'utilisation.

10.2. Stabilité chimique

Conseils	:	Pas de décomposition si le produit est entreposé et utilisé selon les prescriptions.

10.3. Possibilité de réactions dangereuses

Réactions dangereuses	:	Aucun(e) à notre connaissance.

10.4. Conditions à éviter

Conditions à éviter	:	Éviter l'humidité.Exposition à la lumière.Exposition à l'air.Tenir à l'écart de la chaleur et des sources d'ignition.Éviter une exposition directe au soleil.
Décomposition thermique	:	donnée non disponible

10.5. Matières incompatibles

Matières à éviter	:	Zinc, Oxydants forts, Acides

10.6. Produits de décomposition dangereux

Produits de décomposition dangereux	:	En cas d'incendie, il peut se produire un dégagement de (d'): Dioxyde de carbone (CO2), Monoxyde de carbone, Sous certaines conditions d'incendie, des traces d'autres produits toxiques ne peuvent pas être exclues.

RUBRIQUE 11: Informations toxicologiques

11.1. Informations sur les effets toxicologiques

Données pour le produit
Toxicité aiguë
Oral(e)
Merci de trouver ces informations dans la partie dédiée aux composants ci-après dans cette section.

Inhalation

Merci de trouver ces informations dans la partie dédiée aux composants ci-après dans cette section.

Dermale

Merci de trouver ces informations dans la partie dédiée aux composants ci-après dans cette section.

Irritation

Peau

Résultat	:	Pas d'irritation de la peau

Yeux

Résultat	:	Pas d'irritation des yeux

Sensibilisation

Résultat	:	Aucun effet de sensibilisation connu.

Information supplémentaire

Autres informations toxicologiques	:	À manipuler conformément aux bonnes pratiques d'hygiène industrielle et aux consignes de sécurité.
Expérience de l'exposition humaine	:	Aucun risque pour la santé n'est connu ni prévisible dans les conditions normales d'utilisation.,

Composant: propane-1,2-diol No.-CAS 57-55-6

Toxicité aiguë

Oral(e)

DL50 oral	:	22000 mg/kg (Rat, mâle et femelle)

Inhalation

CL50	:	> 317042 mg/l (Lapin; 2 h; poussières/brouillard)

Dermale

DL50 dermal	:	> 2000 mg/kg (Lapin)

Toxicité pour un organe cible spécifique		
Exposition unique		
Remarque	:	La substance ou le mélange n'est pas classé comme toxique spécifique pour un organe cible, exposition unique.
Exposition répétée		
Remarque	:	Dans de rares cas, une exposition excessive répétée au propylèneglycol peut provoquer des effets sur le système nerveux central.

RUBRIQUE 12: Informations écologiques

12.1. Toxicité

Composant:	propane-1,2-diol	No.-CAS 57-55-6
Toxicité aiguë		
Poisson		
CL50	:	40613 mg/l (Oncorhynchus mykiss (Truite arc-en-ciel); 96 h) (Essai en statique; OCDE ligne directrice 203)
algue		
CE50r	:	19000 mg/l (Pseudokirchneriella subcapitata (algues vertes); 96 h) (Essai en statique; Fin: Taux de croissance; OCDE Ligne directrice 201)
Bactérie		
NOEC	:	> 20000 mg/l (Pseudomonas putida; 18 h)

12.2. Persistance et dégradabilité

Données pour le produit		
Persistance et dégradabilité		
Persistance		
Résultat	:	donnée non disponible

12.3. Potentiel de bioaccumulation

Composant:	propane-1,2-diol	No.-CAS 57-55-6

Bioaccumulation		
Résultat	:	log Kow -1,07 (20,5 °C) (OCDE ligne directrice 107) BCF: 0,09 Le produit a la basse bioaccumulation de potentiel.

12.4. Mobilité dans le sol

Données pour le produit		
Mobilité		
Résultat	:	donnée non disponible
Répartition entre les compartiments environnementaux		
	:	donnée non disponible

12.5. Résultats des évaluations PBT et vPvB

Données pour le produit		
Résultats des évaluations PBT et vPvB		
Résultat	:	Cette substance n'est pas considérée comme persistante, ni bioaccumulable ni toxique (PBT)., Cette substance n'est pas considérée comme très persistante et très bioaccumulable (vPvB).

12.6. Autres effets néfastes

Données pour le produit		
Information écologique supplémentaire		
Résultat	:	Ne pas déverser dans des eaux de surface ou dans les égouts. Éviter la pénétration dans le sous-sol.

RUBRIQUE 13: Considérations relatives à l'élimination

13.1. Méthodes de traitement des déchets

Produit	:	L'élimination avec les déchets normaux n'est pas permise. Une élimination comme déchet spécial est nécessaire conformément à la réglementation locale. Empêcher le produit de pénétrer dans les égouts.
Emballages contaminés	:	Les emballages contaminés doivent être vidés aussi complètement que possible et peuvent alors, après nettoyage adéquat, faire l'objet d'une récupération. Les emballages ne pouvant pas être nettoyés doivent être évacués de même

manière que le produit.

Numéro européen d'élimination des déchets	:	Aucun code déchet du catalogue européen des déchets ne peut être attribué à ce produit, car seule l´utilisation qu´en fait l´utilisateur permet cette attribution. Le code déchet est établi en consultation avec la déchetterie.

RUBRIQUE 14: Informations relatives au transport

Marchandise non dangereuse selon l' ADR, RID, IMDG et le code IATA.

14.1. Numéro ONU

Non applicable

14.2. Désignation officielle de transport de l'ONU

Non applicable

14.3. Classe(s) de danger pour le transport

Non applicable

14.4. Groupe d'emballage

Non applicable

14.5. Dangers pour l'environnement

Non applicable

14.6. Précautions particulières à prendre par l'utilisateur

Non applicable

14.7. Transport en vrac conformément à l'annexe II de la convention Marpol 73/78 et au recueil IBC

IMDG : Non applicable

RUBRIQUE 15: Informations relatives à la réglementation

15.1. Réglementations/législation particulières à la substance ou au mélange en matière de sécurité, de santé et d'environnement

Données pour le produit

CPID	:	302191
Seuils quantitatifs OPAM	:	(Désormais sans seuil quantitatif selon les critères de SGH (2015).)
Ordonnance sur la	:	OPair (CH): Chap. 71 - classe 3 décision AG 1993

protection de l'air

15.2. Évaluation de la sécurité chimique

donnée non disponible

RUBRIQUE 16: Autres informations

Abréviations et acronymes

FBC	facteur de bioconcentration
DBO	demande biochimique en oxygène
CAS	Chemical Abstracts Service
CLP	classification, étiquetage et emballage
CMR	cancérogène, mutagène ou toxique pour la reproduction
DCO	demande chimique en oxygène
DNEL	dose dérivée sans effet
EINECS	Inventaire européen des substances chimiques commerciales existantes
ELINCS	liste européenne des substances chimiques notifiées
SGH	système général harmonisé pour la classification et l'étiquetage des produits chimiques
CL50	concentration létale médiane
LOAEC	concentration minimale avec effet nocif observé
LOAEL	dose minimale avec effet nocif observé
LOEL	dose minimale avec effet observé
NLP	ne figure plus sur la liste des polymères
NOAEC	concentration sans effet nocif observé
NOAEL	dose sans effet nocif observé
NOEC	concentration sans effet observé
NOEL	dose sans effet observé
OCDE	Organisation de coopération et de développement économiques
LEP	limite d'exposition professionnelle
PBT	persistant, bioaccumulable et toxique
N° REACH Autor.	REACH - Numéro d'autorisation
N° REACH ConsDemAutor.	REACH - Numéro de consultation sur des demandes d'autorisation
PNEC	concentration prédite sans effet
STOT	toxicité spécifique pour certains organes cibles
SVHC	substance extrêmement préoccupante

Information supplémentaire

Les principales références bibliographiques et sources de données	:	Des informations de notre (nos) fournisseur(s) et données issues de la base des substances enregistrées de l'Agence Européenne des Produits Chimiques (ECHA) ont été utilisées pour créer la présente fiche de données de sécurité.
Méthodes usitées pour la classification	:	La classification des dangers pour la santé humaine, physique ou chimique et les dangers environnementaux sont dérivés de la combinaison de méthodes de calcul et si possible de données de test.
Informations de formation	:	Les travailleurs doivent être formés régulièrement à la manipulation sûre des produits basé sur les informations fournies dans la Fiche de Données de Sécurité et les conditions locales de la zone de travail. Les réglementations nationales pour la formation des travailleurs à la manipulation de produits dangereux doivent être également respectées.
Autres informations	:	Les informations contenues dans cette fiche de données de sécurité sont basées sur l'état de nos connaissances, à la date indiquée. Les informations données dans la présente fiche doivent être considérées comme une description des exigences sécurité concernant le produit, elles ne doivent pas être considérées comme une garantie ou une spécification qualité et n'ont pas de valeur contractuelle sur les propriétés de celui-ci. Les informations contenues dans cette fiche de données de sécurité concernent le produit spécifiquement désigné, et ne peuvent pas être valides s'agissant du produit associé à un autre produit ou à un procédé, à moins que cela soit spécifié dans le texte du présent document.

|| Indique la section remise à jour.

| = Indication de modifications par rapport à la version précédente (plus tard)

SECTION 1: Identification de la substance/du mélange et de la société/l'entreprise

1.1 Identificateur de produit

Cette fiche de données de sécurité est valable pour

S15 Ethanol

dénat. à 2% de méthyléthylcétone et 0.5% de méthylisobutylcétone

Numéro d'enregistrement REACH de l'éthanol: 01-2119457610-43-0098 No CAS de l'éthanol: 64-17-5

1.2 Utilisations identifiées pertinentes de la substance ou du mélange et utilisations déconseillées

Les utilisations identifiées selon le règlement (CE) no 1907/2006 sont décrites dans l'annexe 1:
Annexe 1 "Utilisations identifiées" dans le fichier "Annexe1_fds_ethanol_utilisations_identifiees.pdf" (voir section 16.4)
Utilisations identifiées déconseillées: information non disponible

1.3 Renseignements concernant le fournisseur de la fiche de données de sécurité

Fournisseur	Alcosuisse
Route / boîte postale	Länggassstrasse 35 / Postfach
Code postal / lieu	CH-3000 / Bern 9
Téléphone / Téléfax	+41 (0)31 309 17 17 / +41 (0)31 309 17 08
Adresse e-mail du service chargé des renseignements sur cette FDS:	sicherheit@alcosuisse.ch

1.4 Numéro d'appel d'urgence

Numéro d'appel d'urgence du fournisseur: + 41 (0)31 309 17 17
(ce numéro n'est accessible qu'aux heures de bureau)

Numéro de cas d'urgence national: 145
(Centre suisse d'information toxicologique (TOX) à Zurich, ce service pour les appels à partir de la suisse est atteignable 24h/24h)
Centre suisse d'information toxicologique pour les appels à partir de l'étranger: +41 (0)44 251 51 51 (également 24h/24h)

SECTION 2: Identification des dangers

Selon le règlement (CE) no 1907/2006, l'éthanol dénaturé est considéré comme un mélange.

2.1 Classification du mélange

Flam. Liq. 2; GHS02; H225 Liquide et vapeurs très inflammables.
Eye Irrit. 2; GHS07; H319 Provoque une sévère irritation des yeux (si C > 50 %).

2.2 Éléments d'étiquetage du mélange

Pictogrammes:

GHS02, Flamme: 

GHS07, Point d'exclamation: 

Mot d'avertissement: Danger

Mention de dangers

H225 Liquide et vapeurs très inflammables.
H319 Provoque une sévère irritation des yeux (si C > 50 %).

Conseils de prudence

P210 Tenir à l'écart de la chaleur/des étincelles/des flammes nues/des surfaces chaudes. Ne pas fumer.
P233 Maintenir le récipient fermé de manière étanche.
P241 Utiliser du matériel électrique/de ventilation/d'éclairage/antidéflagrant.
P243 Prendre des mesures de précaution contre les décharges électrostatiques.
P280 Porter des gants de protection, des vêtements de protection, un équipement de protection des yeux, du visage.
P305+P351+ P338 EN CAS DE CONTACT AVEC LES YEUX: rincer avec précaution à l'eau pendant plusieurs minutes.
Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer.

2.3 Autres dangers

L'éthanol n'est pas à considérer comme une substance vPvB et/ou PBT selon le règlement (CE) no 1907/2006
EUH018: Lors de l'utilisation, formation possible de mélange vapeur-air inflammable/explosif.

SECTION 3: Composition/informations sur les composants

3.1 Substances: l'éthanol dénaturé est considéré selon le règlement (CE) no 1907/2006 comme un mélange.

3.2 Mélanges
Description: mélange des substances suivantes:

ETHANOL

Numéro d'enregistrement REACH:	01-2119457610-43-0098
Numéro CE:	200-578-6
Numéro CAS:	64-17-5
Numéro index:	603-002-00-5
Pourcentage:	ca. 91.5 % (m/m)
Classification selon l'ordonnance (CE) No 1272/2008:	Flam. Liq. 2; GHS02; H225 Eye Irrit. 2; GHS07; H319 Mot d'avertissement: Danger

METHYLETHYLCETONE (MEK); 2-BUTANONE

Numéro CE:	201-159-0
Numéro CAS:	78-93-3
Pourcentage:	2 % (m/m)
Classification selon l'ordonnance (CE) No 1272/2008:	Flam. Liq. 2; GHS02; H225 Eye Irrit. 2; GHS07; H319 STOT SE 3; GHS07; H336 Mot d'avertissement: Danger

4-METHYL-2-PENTANONE; (Methylisobutylcétone, MIBK)

Numéro CE:	203-550-1
Numéro CAS:	108-10-1
Pourcentage:	0.5 % (m/m)
Classification selon l'ordonnance (CE) No 1272/2008:	Flam. Liq. 2; GHS02; H225 Acute Tox. 4; GHS07; H332 Eye Irrit. 2; GHS07; H319 STOT SE 3; GHS07; H335 EUH066 Mot d'avertissement: Danger
Teneur en eau:	ca. 5.8 % (m/m)

La teneur des abréviations utilisées dans les sections 2 et 3 est indiquée à la section 16.

SECTION 4: Premiers secours

4.1 **Description des premiers secours**
En cas de troubles de santé consulter un médecin.
Après inhalation:
Transporter la personne à l'air frais. En cas d'irritation des voies respiratoires, consulter un médecin.
En cas d'inconscience, coucher et transporter la personne en position latérale stable.
Après contact avec la peau:
Laver immédiatement à l'eau. Enlever immédiatement les habits souillés.
En cas d'irritation persistante de la peau, consulter un médecin.
Après contact avec les yeux:
Rincer immédiatement avec précaution à l'eau pendant plusieurs minutes.
Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer.
Si l'irritation oculaire persiste: consulter un médecin.
Après ingestion:
Rincer immédiatement la bouche et boire ensuite de l'eau (environ 2 verres).
Ne pas faire vomir, demander d'urgence une assistance médicale. Ne rien faire ingérer à une personne inconsciente.
En cas de vomissement s'assurer que les voies respiratoires restent ouvertes afin d'éviter le danger d'asphyxie.

4.2 **Principaux symptômes et effets, aiguës et différés**
Migraine, étourdissement, perte de connaissance, nausées.
Le contact avec les yeux provoque une sévère irritation.

4.3 **Indication des éventuels soins médicaux immédiats et traitements particuliers nécessaires**
En cas d'inconscience alarmer immédiatement un médecin d'urgence.

SECTION 5: Mesures de lutte contre l'incendie

5.1 Moyens d'extinction
CO2, poudre d'extinction ou eau pulvérisée.
Combattre les foyers importants avec de l'eau pulvérisée ou de la mousse résistante à l'alcool.
Produits extincteurs déconseillés pour des raisons de sécurité: jet d'eau à grand débit.

5.2 Dangers particuliers résultant de la substance ou du mélange
Les mélanges vapeur-air explosibles peuvent se former même à température ambiante (à partir de 9 °C).
Les vapeurs sont plus lourds que l'air et peuvent s'accumuler dans les endroits bas ou confinés.
Les vapeurs peuvent se répandre le long du sol jusqu'à une source d'inflammation et provoquer un retour de flamme.
L'écoulement du liquide ou des vapeurs dans les égouts peut y créer un risque d'une explosion intense.
En cas d'incendie des fumées noires et des vapeurs/gaz dangereux peuvent se former: CO et CO2.
En cas de réchauffement le conteneur peut éclater, provoquant la libération d'un mélange vapeur-air explosible.

5.3 Conseils aux pompiers
Eloigner les personnes non protégées. Ne pas respirer les fumées et gaz/vapeurs.
Porter un appareil de respiration indépendant de l'air ambiant.
Refroidir les récipients en danger en pulvérisant de l'eau.
Récupérer à part l'eau d'extinction contaminée. Ne pas l'évacuer dans les canalisations.
Eviter le contact avec la peau par le port de vêtements de protection appropriés et en gardant une distance de sécurité.

5.4 Référence aux propriétés d'explosibilité des mélanges vapeurs-air
Voir sections 9.1 et 9.2

SECTION 6: Mesures à prendre en cas de dispersion accidentelle

6.1 Précautions individuelles, équipement de protection et procédures d'urgence
Porter un équipement de sécurité. Avertir et éloigner les personnes non protégées.
Assurer une ventilation/aération suffisante. Ne pas respirer les vapeurs.
En cas de ventilation insuffisante utiliser une protection respiratoire (voir section 8.2.2).
Les installations improvisées de ventilation et d'illumination doivent être d'exécution antidéflagrante.
Eloigner les sources d'inflammation. Eviter les charges électrostatiques. Ne pas fumer.
Empêcher l'écoulement du liquide ou des vapeurs dans les égouts et dans les endroits bas ou confinés (danger d'explosion).
Respecter les mesures de protection indiquées à la section 7.1.
Appliquer les équipements de protection individuelle selon la section 8.2.2.

6.2 Précautions pour la protection de l'environnement
Arrêter la fuite du produit si c'est possible sans risque.
Eviter le rejet dans les canalisations, dans les eaux de surface et dans les nappes d'eau souterraines.
En cas de manipulation de quantités importantes tenir à disposition des barrages mobiles et des obturateurs de canalisation.
En cas de pénétration dans les eaux ou les égouts, avertir les autorités compétentes.

6.3 Méthodes et matériel de confinement et de nettoyage
Assurer une ventilation suffisante. N'utiliser que des équipements antidéflagrants et des outils ne provoquant pas d'étincelles.
Ne pas rincer à l'eau ou aux produits nettoyants aqueux.
Recueillir les liquides à l'aide d'un produit adsorbant (sable, kieselguhr, neutralisant d'acide, liant universel, sciure).
Eliminer la matière collectée conformément au règlement dans des récipients étiquetés et bien fermés.
Attention: les adsorbants imbibés et aussi les torchons imbibés d'éthanol sont extrêmement inflammables.
En cas d'élimination par pompage ou par aspiration, n'utiliser que des pompes ou aspirateurs antidéflagrants.
Le matériel recueilli peut être assaini avec l'accord des autorités par une station d'épuration.
Alternativement assainir selon les indications à la section 13.

6.4 Référence à d'autres sections
Informations relatives à la manipulation sûre et au stockage, voir section 7.
Informations relatives aux équipements de protection individuelle, voir section 8.2
Informations relatives à l'élimination des déchets, voir section 13.

SECTION 7: Manipulation et stockage

Attention: Ne jamais percer, couper, meuler, braser, souder etc. à proximité ou directement sur des fûts "vides".
Ils peuvent contenir des mélanges air-vapeurs, présentant un grand danger d'explosion.
Ne jamais laisser des fûts "vides" aux employés ou autres personnes privées!

7.1 Précautions à prendre pour une manipulation sans danger

Les propriétés critiques de l'éthanol

L'éthanol déversé est très inflammable. Des mélanges vapeur-air explosibles peuvent se former à température ambiante.
Les vapeurs sont plus lourds que l'air et peuvent s'accumuler dans les endroits bas ou confinés (risque d'explosion).
L'éthanol tend à se charger électrostatiquement.

Mesures de précaution

Ne pas laisser les récipients ouverts. Eviter l'inhalation de vapeurs et de brouillards.
Veiller à une bonne ventilation/aspiration au poste de travail. Utiliser des appareils ne produisant pas d'étincelles.
Veiller à une bonne aération du local, même au niveau du sol (les vapeurs concentrées sont plus lourdes que l'air).
Prendre toutes les précautions usuelles pour la manipulation de liquides extrêmement inflammables, comme par exemple: des équipements électriques (de ventilation, d'éclairage et de manipulation etc.) conformes à ATEX.
Lors du transvasement du produit, raccorder et mettre à terre tous les éléments conducteurs (récipients, entonnoirs etc.) afin d'éviter des décharges électrostatiques.
Porter des chaussures à semelles conductrices et garder le sol conducteur (propre, aucune feuille de plastique au sol).
Ne jamais transvaser l'éthanol à l'aide de l'air comprimé. Pour pomper utiliser des pompes antidéflagrantes.
Prendre les mesures contre l'exposition chimique, indiquées à la section 8. Avant tout porter des lunettes de protection.
A la place de travail une douche oculaire doit être disponible .

7.2 Conditions d'un stockage sûr, y compris d'éventuelles incompatibilités

Indications relatives à la protection contre les incendies et les explosions

Les mélanges vapeur-air explosibles peuvent se former même à température ambiante (à partir de 9 °C).
L'éthanol est extrêmement inflammable. Le mélange concentrées (explosibles) des vapeurs avec l'air sont plus lourds que l'air.
Empêcher l'écoulement du liquide ou des vapeurs dans les égouts et dans les endroits bas ou confinés (danger d'explosion).
Tenir à l'abri des sources d'inflammation - ne pas fumer.
Prendre des mesures contre les charges électrostatiques. Porter des chaussures à semelles conductrices.
Utiliser des appareils et armatures antidéflagrants et des outils ne produisant pas d'étincelles.
Conserver à l'écart de substances oxydantes/comburantes et d'autres substances mentionnées à la section 10.3.

Réquisitions relatives aux locaux de stockage et aux récipients

N'utiliser que des équipements électriques (de ventilation, d'éclairage et de manipulation etc.) conformes à ATEX.
Stocker dans des emballages hermétiquement fermés (le produit est hygroscopique) à 5 à 35 °C dans un endroit bien aéré et bien protégé de la chaleur et de la radiation solaire.
Stockage au-dessus d'une cuve dans un local au sol sans écoulement.
N'utiliser que des emballages originaux ou spécialement agréés pour le produit (l'éthanol corrode l'aluminium!).
Empêcher l'accès de personnes non autorisées.

Indications concernant le stockage commun

Classe de stockage VCI: 3A (liquides inflammables)
Ne pas stocker avec les aliments et les matières fourragères.
Bien séparer des substances oxydantes/comburantes ou acides et autres substances non compatibles avec la classe 3A.

Limitations des quantités stockées

Respecter les limitations des quantités stockées en fonction des propriétés des locaux/bâtiments, voir:
Directive de protection incendie "Liquides inflammables" de l'Association des établissements d'assurance incendie AEAI, Berne.
Le seuil quantitatif pour être soumis à l'Ordonnance pour la protection contre les accidents majeurs OPAM est de 20'000 kg.

7.3 Utilisations finales particulières

Gamme d'utilisation très large, décrite dans l'annexe 1, "Utilisations identifiées" dans le fichier:
"1.331Annexe 1 FDS_ethanol_utilisations_identifiees.pdf" voir section 16.4 "Documents complémentaires".

SECTION 8: Contrôles de l'exposition/protection individuelle

8.1 **Paramètres de contrôle (Valeurs limites d'exposition aux postes de travail suisses 2015)**

ETHANOL (CAS-Nr.: 64-17-5)

Valeur VLE (4 x 15 minutes):	1920 mg/m3, 1000 ml/m3
Valeur VME:	960 mg/m3, 500 ml/m3

Indications:
C: groupe C de nuisances fœtotoxiques (si la valeur VME est respectée, il n'y a pas à craindre de lésions du fœtus).

METHYLETHYLCETONE, 2-Butanone (CAS-Nr.: 78-93-3)

Valeur VLE (4 x 15 minutes):	590 mg/m3, 200 ml/m3
Valeur VME:	590 mg/m3, 200 ml/m3

Indications:
B: méthode de détermination des valeurs biologiques tolérables disponible.
Valeur BAT (prise d'urine à la fin de l'exposition): 5 mg/l
C: groupe C de nuisances fœtotoxiques (si la valeur VME est respectée, il n'y a pas à craindre de lésions du fœtus).
R: résorption transcutanée (une intoxication par la peau est possible)

4-METHYL-2-PENTANONE (CAS-Nr.: 108-10-1)

Valeur VLE (4 x 15 minutes):	164 mg/m3, 40 ml/m3
Valeur VME:	82 mg/m3, 20 ml/m3

Indications:
B: méthode de détermination des valeurs biologiques tolérables disponible.
valeur BAT (prise d'urine à la fin de l'exposition): 2 mg/l
C: groupe C de nuisances fœtotoxiques (si la valeur VME est respectée, il n'y a pas à craindre de lésions du fœtus).
R: résorption transcutanée (une intoxication par la peau est possible)

Valeurs limites communautaires (selon les directives 91/322/CEE, 2000/39/CE, 2006/15/CE)

METHYLETHYLCETONE (CAS-Nr.: 78-93-3)

Valeur VLE:	900 mg/m3, 300 ml/m3
Valeur VME (8 heures):	600 mg/m3, 200 ml/m3

4-METHYL-2-PENTANONE (CAS-Nr.: 108-10-1)

Valeur VLE:	208 mg/m3, 50 ml/m3
Valeur VME (8 heures):	83 mg/m3, 20 ml/m3

Valeurs DNEL and PNEC de l'ETHANOL

DNEL = Derived no effect level (concentration ou dose, au-dessous de laquelle des effets sur l'homme ne sont pas à craindre)
PNEC = Predicted no effect concentration (concentration, au-dessous de laquelle des effets sur l'environnement ne sont pas à craindre)
F-exp = Facteur d'extrapolation

Valeurs DNEL	**pour la place de travail**
Effets toxiques locaux aiguës par inhalation	DNEL = 1900 mg/m3
Oral effets toxiques systémiques chroniques	DNEL = 343 mg/kg par jour
Dermal effets toxiques systémiques chroniques	DNEL = 343 mg/kg par jour
Effets toxiques systémiques chroniques par inhalation	DNEL = 950 mg/m3

Valeurs PNEC	**pour l'environnement**
Eau douce	PNEC = 0.96 mg/l; (F-exp = 10)
Eau marine	PNEC = 0.79 mg/l; (F-exp = 100)
Micro-organismes des sédiments	PNEC = 3.6 mg/kg de sédiment; (aucun F-exp)
Micro-organismes du sol	PNEC = 0.63 mg/kg de sol; (F-exp = 1000)
Micro-organismes des stations d'épuration	PNEC = 580 mg/l; (F-exp = 10)

8.2 Contrôles de l'exposition

Pour la détermination approximative de la concentration de l'éthanol au poste de travail on peut utiliser des tubes du type Dräger, p.ex. Compur (549 210 type 104 SA), Dräger (81 01631 type alcool 25/a), Auer (5085-818 type éthanol 100) ou un système d'échantillonnage passif par diffusion, p.ex. le Moniteur de vapeurs organiques 3500B de 3M ou le tube Orsa5 de Dräger. Des méthodes non-analytiques de contrôle d'exposition sont décrites dans l'annexe 2: Scénarios d'exposition" (voir section 16).

8.2.1 Contrôles techniques appropriés

Assurer une ventilation efficace, qui est particulièrement important au cas de locaux fermés.
Prendre des mesures techniques , par. ex. la ventilation mécanique, aspiration locale etc.
afin de ne pas dépasser les valeurs limites.
Ces mesures - spécialement l'aspiration de la ventilation au sol - sont également importantes pour empêcher la formation des mélanges vapeurs-air explosibles.
Utiliser des installations de ventilation antidéflagrantes.

8.2.2 Mesures de protection individuelle, telles que les équipements de protection individuelle

Les équipements de protection individuelle doivent être choisis spécifiquement pour les postes de travail, en considérant les concentrations et les quantités des substances critiques. Ceci en conformité avec l'ordonnance suisse sur les équipements de la protection individuelle (RS 819.14), avec la directive machines 2006/42/CE et avec les normes DIN EN 482 et DIN EN 689 au sujet des équipements de la protection individuelle (voir directive 89/686/CEE, étant également en force en Suisse).

Protection respiratoire

Une protection respiratoire n'est pas nécessaire si la pièce dispose d'une bonne ventilation.
En cas de situations précaires (avaries etc.) utiliser un masque de protection respiratoire avec filtre ABEK (EN 14387) en complément des mesures techniques (par ex. installation mobile de ventilation, protégée Ex).
Efficacité des filtres (étanches!) du type A1 jusqu'à 1000 ppm, du type A2 jusqu'à 5000 ppm et du type A3 jusqu'à 10000 ppm.
Si l'évaluation des risques le demande: utiliser une protection respiratoire indépendante de l'air ambiant.

Protection des mains

Utiliser des gants de protection chimique de la catégorie III (EN 374, avec le marquage "CE").
Les matériaux de gants suivants sont appropriés pour le contact avec le produit:
Caoutchouc butyle (0.5 mm, temps de pénétration >8 h)
Caoutchouc fluoré (0.4 mm, temps de pénétration >8 h)

Polychloroprène (Néoprène) (0.5 mm, temps de pénétration ca. 2 h)
Les matériaux de gants suivants ne sont pas approprié (sauf comme protection antiprojections):
Caoutchouc naturel/Latex (NR), Caoutchouc Nitrile (NBR), PVC

Protection des yeux
Utiliser des lunettes à protection latérale selon EN 166:2001.
Selon l'évaluation du risque porter une protection du visage ou un masque respiratoire complet.
A la place de travail une douche oculaire doit être disponible .

Protection du corps
Vêtements de protection antistatiques, difficilement inflammables et résistants aux solvants.
Chaussures de protection à semelles conductrices (et un sol conducteur dans les locaux exposés).

8.2.3 Contrôles d'exposition liés à la protection de l'environnement
Dans l'ordonnance suisse de protection de l'air (OPair) l'éthanol est considéré comme substance organique de la classe 3, c'est-à-dire que la concentration d'émission ne doit pas dépasser les 150 mg/m3 si le courant massique dépasse les 3.0 kg/h.

8.3 Scénarios d'exposition
Les scénarios d'exposition se trouvent à l'annexe 2 "Scénarios d'exposition" dans le fichier:
"2e-Ethanol_exposition_scenarios_E.pdf" (voir section 16.4).

SECTION 9: Propriétés physiques et chimiques

9.1 Informations sur les propriétés physiques et chimiques essentielles
Certaines des données suivantes ne sont que précises pour l'éthanol non-dénaturé:

Forme, couleur:	liquide clair, incolore
Odeur:	alcoolique
Seuil olfactif:	93 ppm (49 - 716 ppm) ; 178 mg/m3
pH de la solution aqueuse (10 g/l):	neutre
Point de fusion:	-114 °C
Point initial d'ébullition (à 1013 hPa):	78 °C
Point d'éclair:	12 - 13 °C
Indice d'évaporation (Ether = 1):	8
Inflammabilité:	facilement inflammable
Limite inférieure d'inflammabilité:	3,5 % Vol
Limite supérieure d'inflammabilité:	15 % Vol
Pression de vapeur (à 20 °C):	59 hPa (= 59 mBar)
Densité relative de vapeur (air = 1)	1.6
Densité relative (à 20 °C):	ca. 0.81 g/cm3
Solubilité dans l'eau (à 20 °C):	entièrement miscible
Solubilité dans des solvants (à 20 °C):	se mélange avec la plupart des solvants
Coefficient de partage (n-octanol/eau):	log Kow = -0.3
Température d'autoinflammation:	425 °C
Température de décomposition (sans oxygène):	≥ 700 °C
Viscosité dynamique (à 20 °C):	1.2 mPa s
Viscosité cinématique (à 20 °C):	1.52 mm2/s
Propriétés comburantes:	n'est pas comburant
Propriétés oxydantes:	n'est pas oxydant

9.2 Autres informations

Teneur en eau	ca. 5.8 % (m/m)
Solvants organiques / VOC:	ca. 94 % (m/m)
Liposolubilité:	facilement soluble
Groupe de gaz (groupe d'explosibilité)	IIA
Classe de température	T2 (max. 300 °C)

SECTION 10: Stabilité et réactivité

10.1 Réactivité
Réactions spontanées sous développement de chaleur intense aux agents puissants d'oxydation ou de réduction, ainsi qu'aux acides puissants, anhydrides d'acide, métaux alcalins, peroxydes.

10.2 Stabilité chimique
Le produit est chimiquement stable à des conditions d'usage conformes (à température ambiante).

10.3 Possibilité de réactions dangereuses

Danger d'explosion en contact avec les alcalins et leurs oxydes, du hypochlorite de calcium, du difluorure de sulfure, de l'anhydride acétique et de leurs sels, des acides fortes, du nitrate de mercure, de l'argent avec de l'acide nitrique, du nitrate d'argent, du mélange nitrate d'argent/ammoniaque, du mélange oxyde d'argent/ammoniaque, dioxyde d'azote.
L'éthanol peut réagir de manière dangereuse avec le bromure d'acétyle, le chlorure d'acétyle, le trifluorure de brome, le trioxyde de chrome, le chlorure de chromyle, l'oxyde d'éthylène, le fluor, le tert-butoxyde de potassium, le hydrure de lithium, le trioxyde de phosphore, le noir de platine, le hexafluorure d'uranium, le zirconium(IV) de chlorure, le zirconium (IV) de iodure et les métaux alcalino-terreux.
Formation de mélanges gazeux explosifs au contact de l'air. Les températures au-dessus de 9 °C favorisent l'évaporation qui peut conduire à la formation d'une atmosphère explosible.
Les conteneurs vides et mal nettoyés peuvent contenir des vapeurs qui, mélangés à l'air, constituent des mélanges explosibles.

10.4 Conditions à éviter

Ne pas surchauffer, pas de flammes et d'étincelles. Ne pas fumer.
Dans la zone-Ex il est défendu de percer, couper, meuler, braser, souder etc. (sauf avec un "permis de souder" par écrit).
Empêcher que les mélanges vapeurs-air puissent s'accumuler dans les caves, fosses, canalisations etc. (danger d'explosion).

10.5 Matières incompatibles

Voir sections 10.1 et 10.3.

10.6 Produits de décomposition dangereux

Possibilité de formation de gaz ou vapeurs inflammables (par. ex. hydrogène) au contact avec des agents oxydants puissants, métaux alcalins ou acides.

SECTION 11: Informations toxicologiques

Abréviations utilisées dans cette section:

LD50 Dose létale 50 %	DNEL = Derived no effect level
LC50 Concentration létale 50 %	NOAEL = No observed adverse effect level
CMR Cancérigène, mutagène, toxique pour la reproduction	NOAEC = No observed adverse effect conc.
F-exp Facteur d'extrapolation	ATE = Acute Toxicity Estimate
	SIEF = Substance Information Exchange Forum

11.1 Informations sur les effets toxicologiques

Les valeurs de cette section sont valables pour l'éthanol pur, non dénaturé, non absolu.
Elles sont extraites pour la plupart du rapport de sécurité chimique de l'éthanol ou du dossier d'enregistrement, publie par l'ECHA ou du banque de données GESTIS.

Toxicité aiguë:

Valeurs LD50/LC50 déterminantes pour la classification (= ATE selon décision du SIEF de l'enregistrement de l'éthanol).

LD50, orale, rat, souris	10470 mg/kg
LD50, dermale, lapin	15800 mg/kg
LC50, inhalative, rat, souris (durée 4 h)	30000 mg/m3

Irritation

De la peau:	non irritant
Des yeux:	irritant
Des voies respiratoires:	dépend de la concentration
Corrosivité:	l'éthanol n'est pas corrosif
Sensibilisation de la peau:	l'éthanol n'est pas sensibilisant
Sensibilisation des voies respiratoires:	l'éthanol n'est pas sensibilisant

Effets de toxicité locaux	**valeurs aux postes de travail**
Aiguës, orales	effet de seuil non observé
Aiguës, inhalatifs	DNEL = 1900 mg/m3 (F-exp = 1)
Aiguës, dermales	effet de seuil non observé
Subchroniques, orales	NOAEL = 1730 mg/kg par jour
Chroniques, inhalatifs	effet de seuil non observé
Chroniques, dermales	effet de seuil non observé

Effets de toxicité locaux	**valeurs pour la population**
Aiguës, orales	donnée non disponible
Aiguës, inhalatifs	DNEL = 950 mg/m3 (F-exp = 1)
Aiguës, dermales	effet de seuil non observé
Subchroniques, orales	donnée non disponible
Chroniques, inhalatifs	effet de seuil non observé
Chroniques, dermales	donnée non disponible

Effets toxiques systémiques	**valeurs aux postes de travail**
Aiguës, orales	effet de seuil non observé
Aiguës, dermales	effet de seuil non observé
Aiguës, inhalatifs	effet de seuil non observé
Chroniques, orales	DNEL = 343 mg/kg par jour
Chroniques, orale	NOAEL = 1730 mg/kg par jour
Chroniques, dermales	DNEL = 343 mg/kg par jour (F-exp = 24)
Chroniques, dermales	NOAEL = 8232 mg/kg par jour
Chroniques, inhalatifs	DNEL = 950 mg/m3 (F-exp = 1)

Effets toxiques systémiques	**valeurs pour la population**
Aiguës, orales	effet de seuil non observé
Aiguës, dermales	donnée non disponible
Aiguës, inhalatifs	effet de seuil non observé
Chroniques, orales	DNEL = 87 mg/kg par jour (F-exp = 20)
Chroniques, orales	NOAEL = 1730 mg/kg par jour
Chroniques, dermales	DNEL = 206 mg/kg par jour (F-exp = 40)
Chroniques, dermales	NOAEL = 8240 mg/kg par jour
Chroniques, inhalatifs	DNEL = 114 mg/m3 (carcinogénicité)

Carcinogénicité	
Carcinogénicité (rat)	NOEL >3000 mg/kg
Carcinogénicité (souris) féminines:	NOAEL > 44000 mg/kg
Carcinogénicité (souris) masculins:	NOAEL > 4250 mg/kg

Mutagénicité	
Mutagénicité (bactérien)	Tests négatifs

Toxicité pour la reproduction	
Troubles de la fertilité (exposition orale, divers)	NOAEL = 13800 mg/kg par jour
Troubles de la fertilité (exposition dermale)	donnée non disponible
Troubles de la fertilité (exposition par inhalation, divers)	NOAEC = 30400 mg/m3
Toxicité du développement (exposition orale, divers)	NOAEL = 5200 mg/kg par jour
Toxicité du développement (exposition dermale)	donnée non disponible
Toxicité du développement (exposition par inhalation, rat)	NOAEC = 39 000 mg/m3

L'appréciation des propriétés CMR de l'éthanol par la Deutsche Forschungsgemeinschaft DFG est la suivante:

Génotoxicité:	Groupe DFG 2 des substances mutagènes
Cancérogénicité:	Catégorie DFG 5 des substances cancérigènes
Nuisances fœtotoxiques:	Groupe DFG C des substances fœtotoxiques

Ces classifications de la DFG ne sont pas exécutoires.

Toxicité par aspiration l'éthanol n'est pas classé Asp. Tox. 1

Données sur la toxicité de l'éthanol sur l'homme, tirées de l'expérience

Toxicité par exposition aiguë

Effets sur les yeux: provoque une sévère irritation des yeux, douleur, larmoiement, rougeur.
Effets sur les voies respiratoires: irritation des voies respiratoires, toux, nausées, somnolence, étourdissements/vertiges.
Effet sur la peau: aucun effet important ou danger critique connu.
Effets de l'ingestion: irritant pour la bouche, la gorge et l'estomac. Peut causer une dépression du système nerveux central.

Toxicité par exposition subaiguë

Le risque de toxicité aigue par inhalation est faible pour l'homme et pour les animaux. Les expositions uniques jusqu'à 5000 ml/m3 n'ont aucun effet local ou systémique sur l'homme.
Les vapeurs en forte concentration produisent des effets narcotiques.

Toxicité par exposition chronique

Les expositions et les inhalations répétées à la valeur proches de la valeur VME produisent des concentrations d'éthanol dans le sang qui sont bien inférieures au seuil de dangerosité pour le système nerveux central.
La consommation à long terme de fortes doses d'alcool produit des effets toxiques sur tous les systèmes de l'organisme.

11.2 Les propriétés toxicologiques des dénaturants de concentration ≥0.5 %

Source d'information: dossier de l'enregistrement REACH de la substance (au site Internet de l'ECHA)

METHYL ETHYLCETONE (MEC), 2-BUTANONE	No CAS: 78-93-3
Concentration	2 % (m/m)
Toxicité aiguë, orale	LD50 rat = 4.29 mL/ kg / 3450 mg/kg
Toxicité aiguë, cutanée	LD50 (lapin) >10 mL mg/kg / >8000 mg/kg
Toxicité aiguë, inhalation	donnée non disponible
Toxicité à dose répétée, orale	donnée non disponible
Toxicité à dose répétée, cutanée	donnée non disponible

Toxicité à dose répétée, inhalation	NOAEC, rat = 5041 ppm / 15.1 mg/L
Corrosion/irritation cutanée	donnée non disponible
Lésions oculaires / irritation oculaire	lapin: irritant (catégorie 2)
Sensibilisation cutanée	cobaye: non sensibilisant
Sensibilisation respiratoire	donnée non disponible
Effets locaux, exposition aiguë, par inhalation, ouvriers	donnée non disponible
Effets locaux, exposition à long terme, inhalation, ouvriers	donnée non disponible
Effets systémiques, exposition à long terme, inhalation, ouvriers	DNEL = 600 mg/m3
Effets systémiques, exposition à long terme, cutanée, ouvriers	DNEL = 1161 mg/kg /jour
Carcinogénicité/mutagénicité/toxicité reproductive	aucune classification

4-METHYL-2-PENTANONE, (Methyl isobutyl cétone, MIBC)	No CAS: 108-10-1
Concentration	0.005
Toxicité aiguë, orale	LD50 rat = 2080 mg/kg
Toxicité aiguë, cutanée	LD50 (lapin) >20 mL/kg / >16000 mg/kg
Toxicité aiguë, inhalation	LC50 (4 h) rat > 2000 ppm / >8.3 mg/L
Toxicité à dose répétée, orale	NOAEL, rat = 250 mg/kg
Toxicité à dose répétée, cutanée	donnée non disponible
Toxicité à dose répétée, inhalation	NOAEC, rat = 450 ppm / 1.9 mg/L
Corrosion/irritation cutanée	lapin: non irritant
Lésions oculaires / irritation oculaire	lapin: légèrement irritant
Sensibilisation cutanée	cobaye: non sensibilisant
Sensibilisation respiratoire	donnée non disponible
Effets locaux, exposition aiguë, par inhalation, ouvriers	DNEL = 208 mg/m3
Effets locaux, exposition à long terme, inhalation, ouvriers	DNEL = 83 mg/m3
Effets systémiques, exposition aiguë, par inhalation, ouvriers	DNEL = 83 mg/m3
Effets systémiques, exposition à long terme, inhalation, ouvriers	DNEL = 83 mg/m3
Effets systémiques, exposition à long terme, cutané, ouvriers	DNEL = 11.8 mg/kg /jour
Carcinogénicité/mutagénicité/toxicité reproductive	aucune classification

SECTION 12: Informations écologiques

Les valeurs de cette section sont valables pour l'éthanol pur, non dénaturé, non absolu.
Elles sont extraites pour la plupart du rapport de sécurité chimique de l'éthanol ou du dossier d'enregistrement, ou du banque de données GESTIS.

Abréviations utilisées dans cette section

LC50 Concentration létale 50 %
EC50 Concentration d'effets 50 % (effet: par ex. immobilisation des puces d'eau)
EC10 Concentration d'effets 10 % (par ex. 10 % des puces d'eau immobilisés)
PNEC Predicted no effect concentration (pour la toxicité environnementale) F-exp = facteur d'extrapolation
PBT Persistant, bioaccumulable, toxique
vPvB très persistant, très bioaccumulable

12.1 Ecotoxicité

LC50 aiguë pour poissons d'eau douce	11200 mg/l
LC50 chronique pour poissons d'eau douce	donnée non disponible
EC50/LC50 aiguë pour les invertébrés d'eau douce	5012 mg/l
EC50/LC50 aiguë pour les invertébrés marins	857 mg/l
EC10/LC10 ou NOEC chronique pour les invertébrés d'eau douce	9.6 mg/l
EC10/LC10 ou NOEC chronique pour les invertébrés marins	79 mg/l
EC50/LC50 aiguë pour algues d'eau douce	275 mg/l
EC50/LC50 aiguë pour algues marines	1970 mg/l
EC10/LC10 or NOEC chronique pour algues d'eau douce	11.5 mg/l
EC10/LC10 or NOEC chronique pour algues marines	1580 mg/l
LC50 pour les organismes des sédiments	8200 -10000 mg/l
EC50/LC50 pour les plantes terrestres	633 mg/kg de sol
EC50/LC50 pour les micro-organismes aquatiques	5800 mg/l

Valeurs PNEC (Predicted No Effect Concentration)

Organismes d'eau douce	PNEC = 0.96 mg/l (F-exp = 10)
Organismes d'eau marine	PNEC = 0.79 mg/l (F-exp = 100)
Micro-organismes des sédiments d'eau douce	PNEC = 3.6 mg/kg de sédiment (coéff. de distrib.)
Micro-organismes des sédiments d'eau marine	PNEC = 2.9 mg/kg de sédiment (sans indication)
Micro-organismes du sol	PNEC = 0.63 mg/kg de sol (F-exp = 1000)
Microorganismes des stations d'épuration	PNEC = 580 mg/l (F-exp = 10)
"Intermittent release"	PNEC = 2.75 mg/l (F-exp = 100)

12.2 Persistance et dégradabilité

Biodégradabilité dans le screening test modifié de l'OECD	0.94
Demande biologique en oxygène DBO5	0.93 - 1.67 g/g

12.3 Potentiel de bioaccumulation

Facteur de bioconcentration (FBC):	0.66
Coefficient de partage dans l'octanol/eau:	log Kow = -0.3

12.4 Mobilité dans le sol

L'éthanol s'évapore facilement à la surface du sol.

12.5 Résultats des évaluations PBT et vPvB

PBT	Non applicable
vPvB	Non applicable

Vu le coefficient de partage octanol/eau favorable et la bonne biodégradabilité, une accumulation critique dans les organismes aquatiques n'est pas à craindre.

12.6 Autres effets néfastes donnée non disponible

SECTION 13: Considérations relatives à l'élimination

Ne pas éliminer les déchets d'éthanol par les canalisations!

13.1 Méthodes de traitement des déchets

Recyclage par distillation. Les déchets non réutilisables doivent être remis à une entreprise d'élimination des déchets autorisée ou les amener vers une usine d'incinération en observant les prescriptions légales en la matière.

Code déchets VeVA (Suisse):	S 20 01 13 Solvants
Code déchets selon le code de l'UE:	20 01 13* Solvants

Pour les mélanges produits avec l'alcool, il faut éventuellement considérer d'autres codes.

Codes déchets pour les matériaux contaminés par des substances dangereuses tels que les absorbants, les chiffons, les filtres, les vêtements souillés etc.: S 15 02 02 ou 15 02 02*, respectivement.

Emballages contaminés

Les emballages "complètement" vidés, sont extrêmement explosibles par les traces de vapeurs d'éthanol y restant.
Ne jamais laisser des fûts "vides" aux employés/autres personnes ou y percer, couper, meuler, braser, souder etc. soi-même!
S'il est inévitable d'évacuer des emballages contaminés, alors comme "emballages contenant des résidus de substances dangereuses et emballages contaminés par des substances dangereuses": S 15 01 10, (CH) ou 15 01 10* (EU)

Emballages non contaminés/nettoyés

Les emballages non contaminés et nettoyés peuvent être réutilisés. Agent de nettoyage recommandé: eau.

SECTION 14: Informations relatives au transport

14.1 Numéro ONU 1170

14.2 Nom d'expédition des Nations unies

ADR/RID (qualité normale jusqu'à 96 %):	1170 ETHANOL EN SOLUTION (ALCOOL ETHYLIQUE EN SOLUTION)
ADR/RID (qualité absolue, >96 %):	1170 ETHANOL (ALCOOL ETHYLIQUE)
IMDG (qualité normale jusqu'à 96 %):	ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
IMDG (qualité absolue, >96 %):	ETHANOL (ETHYL ALCOHOL)

14.3 Classe de danger pour le transport

Toutes les voies de transport:	Classe 3 (Liquides inflammables)
Etiquette de danger / Label:	3

14.4 **Groupe d'emballage**

Toutes les voies de transport: II

14.5 Dangers pour l'environnement

Dangers pour le milieu aquatique" (toutes les voies de transport):	Non / (ADN/(ADNR: Oui)
Polluant marin:	Non

14.6 Précautions particulières à prendre par l'utilisateur Attention: liquide inflammable

14.7 Transport en vrac conformément à l'annexe II de la convention Marpol 73/78 et au recueil IBC
Le produit est livré exclusivement dans des récipients appropriés et conformes aux règlements.

14.8 Autres indications

Numéro de danger (ADR/RID):	33
Code de restriction en tunnels (ADR):	D/E
Numéro EMS (pour IMDG):	F-E,S-D
UN "Model regulation":	UN 1993, LIQUIDE INFLAMMABLE, 3, II
Quantité limitée (ADR/RID):	LQ4

SECTION 15: Informations réglementaires

15.1 Réglementations/législation particulières au mélange en matière de sécurité, de santé et d'environnement

Législation Européenne:

Ordonnance (CE) no 2037/2000 (sur les substances appauvrissant la couche d'ozone):	Non applicable
Ordonnance (CE) no 850/2004 (polluants organiques persistants):	Non applicable
Ordonnance (CE) no 689/2008 (exportation et importation de produits chim. dangereux):	Non applicable
Directive 2002/95/CE (Directive RoHS: substances de la liste RoHS):	Non applicable
Directive (UE) no 528/2012 sur les produits biocides	statu "substance active" de l'éthanol est en discussion
Autorisation selon titre VII de l'ordonnance REACH (CE) no 1907/2006:	Non
Restrictions selon titre VIII de l'ordonnancer REACH (CE) no 1907/2006:	Aucune
Directive Machines 2006/42/CE (partie rel. équipements de protection individuelle):	voir section 8.2.2
Directive 89/686/CEE (équipements de protection individuelle et les normes EN):	voir section 8.2.3

Législation nationale de l'Allemagne:

Wassergefährdungsklasse selon VwVwS, Annexe 4:	WGK = 1 (faiblement toxique pour les eaux)
Pourcentage de COV selon la Lösemittelverordnung (31. BImSchV):	ca. 94 % (m/m)

Législation nationale Suisse:

Recherche des textes législatifs suisses: http://www.admin.ch/bundesrecht/00566/index.html?lang=fr (recherche: saisir le no RS)

Ordonnance sur les produits biocides RS 813.12	statu "substance active" de l'éthanol est en discussion
Ordonnance sur la réduction des risques RS 814.81	aucune restriction d'utilisation
Ordonnance PIC RS 814.82	aucune restriction
Ordonnance sur les accidents majeurs (OPAM) RS 814.012	voir section 7.2
Ordonnance sur les machines RS 819.14	voir section 8.2.2
Ordonnance sur la protection de l'air RS 814.318.142.1	voir section 8.2.3
Ordonnance sur le traitement des déchets RS 814.600	dispositions générales sur les déchets
Ordonnance sur les mouvements de déchets RS 814.610	voir section 13.1
Ordonnance sur la taxe d'incitation sur les composés COV RS 814.018, % COV:	ca. 94 % (m/m)
Ordonnance sur la protection de la maternité, 822.111.52	
Ordonnances sur la protection des jeunes travailleurs, RS 822.115 et RS 822.115.2	
Classe de protection des eaux suisse de l'éthanol:	B (= n'est que relevant en grandes quantités)

15.2 Évaluation de la sécurité chimique
Le mélange n'a pas été l'objet d'une évaluation de la sécurité chimique. Cependant il existe le rapport de la sécurité chimique de l'éthanol non dénaturé, dont les résultats ont été intégrés dans cette fiche de données de sécurité.
Vu la faible concentration des agents de dénaturation, nous considérons la plupart des résultats principaux de ce rapport comme également valables pour l'éthanol dénaturé.

SECTION 16: Autres informations

Les indications de cette fiche de données de sécurité sont fondées sur l'état actuel de nos connaissances, mais ne constituent pas une garantie quant aux propriétés du produit et ne donnent pas lieu à un rapport juridique contractuel.

16.1 La teneur des abréviations utilisées pour les indications de sécurité aux sections 2 et 3
Eye Irrit. 2 = Lésions oculaires graves/irritation oculaire catégorie 3
Flam. Liq. 2 = Liquide inflammable catégorie 2
STOT SE 3 = Toxicité spécifique pour certains organes cibles, exposition unique catégorie 3
Acute Tox. 3 = Toxicité aiguë, catégorie 3

Codes H pertinents
H225 = Liquide et vapeurs très inflammables.
H319 = Provoque une sévère irritation des yeux.
H332 = Nocif par inhalation.
H335 = Peut irriter les voies respiratoires.
H336 = Peut provoquer somnolence et des vertiges.
H370 = Risque avéré d'effets graves pour les organes.

H371 = Risque présumé d'effets graves pour les organes.
EUH066 = L'exposition repérée peut provoquer dessèchement ou gerçures de la peau.

Pictogrammes de danger
SGH01 = Bombe explosant
SGH02 = Flamme
SGH03 = Flamme sur un cercle
SGH04 = Bouteille à gaz
SGH05 = Corrosion
SGH06 = Tête de mort sur deux tibias
SGH07 = Point d'exclamation
GHS08 = Danger pour la santé
SGH09 = Environnement

16.2 Tous les codes P attribués à l'éthanol (selon le rapport sur la sécurité chimique)
Indications: Normalement il ne faudrait pas mettre plus de 6 phrases P sur l'étiquette.
Aux cas des produits pour le large public il faut toujours mettre les phrases P102 et P501 sur l'étiquette.
P102 = À conserver hors de portée des enfants.
P210 = Tenir à l'écart de la chaleur/des étincelles/des flammes nues/des surfaces chaudes. Ne pas fumer.
P233 = Maintenir le récipient fermé de manière étanche.
P240 = Mise à la terre/liaison équipotentielle du récipient et du matériel de réception.
P241 = Utiliser du matériel électrique/de ventilation/d'éclairage/antidéflagrant.
P242 = Ne pas utiliser d'outils produisant des étincelles.
P243 = Prendre des mesures de précaution contre les décharges électrostatiques.
P264 = Se laver les mains soigneusement après manipulation.
P280 = Porter des gants de protection/des vêtements de protection/un équipement de protection des yeux/du visage.
P303+P361+P353 = EN CAS DE CONTACT AVEC LA PEAU (ou les cheveux): enlever immédiatement les vêtements contaminés. Rincer la peau à l'eau/se doucher.
P305+P351+P338 = EN CAS DE CONTACT AVEC LES YEUX: rincer avec précaution à l'eau pendant plusieurs minutes. Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer.
P337+P313 = Si l'irritation oculaire persiste: consulter un médecin.
P370+P378 = En cas d'incendie: utiliser … pour l'extinction. (voir section 5.1)
P403+P235 = Stocker dans un endroit bien ventilé. Tenir au frais.
P501 = Eliminer le contenu/récipient selon les prescriptions locales / régionales / nationales / internationales.

16.3 Abréviations et acronymes
ADR = Accord européen sur le transport des marchandises dangereuses par Route
BlmSchV = Verordnung zur Durchführung des Bundes-Immissionsschutzgesetzes (Allemagne)
CAS = Chemical Abstracts Service (division of the American Chemical Society)
CE = Communauté Européenne
CE = Concentration effective (par ex. CE50 au cas de la toxicité aiguë pour les Daphnies: 50 % des Daphnies sont immobilisées)
CL50 = Concentration létale, 50 %
COV = Composés organiques volatiles
DIN = Norme du Deutsche Institut für Normung
DL50 = Dose létale, 50%
EMS = Emergency procedures for ships carrying dangerous goods (IMDG)
EN = Norme Européenne
GHS = Globally Harmonised System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IATA-DGR = International Air Transport Association-Dangerous Goods Regulations
IBC-Code = Code international "for the construction and equipment of ships carrying dangerous chemicals in bulk"
ICAO-TI = International Civil Aviation Organization-Technical Instructions
IMDG-Code = International Maritime Code for Dangerous Goods
ISO = Norme de la "International Standards Organization"
IUCLID = International Uniform Chemical Information Database
Log Kow = Coefficient de partage entre octanol et eau
MARPOL = Maritime Pollution Convention = Convention internationale pour la prévention de la pollution par les navires
OECD = Organisation for Economic Cooperation and Development
PBT = Persistant, bioaccumulable, toxique
RID = Règlement international concernant le transport des marchandises dangereuses par chemin de fer
SGH = Système harmonisé globalement de classification et d'étiquetage des produits chimiques
TRGS = Technische Regeln für Gefahrstoffe (Allemagne)
UN = United Nations (Nations Unies)
VOCV = Ordonnance sur la taxe d'incitation sur les composés organiques volatiles COV (Suisse, SR 814.018)
vPvB = très persistant et très bioaccumulable
VwVwS = Verwaltungsvorschrift wassergefährdender Stoffe (Allemagne)

16.4 Divers

Sources d'information importantes utilisées

Le rapport sur la sécurité chimique de l'éthanol du dossier d'enregistrement REACH de l'éthanol et ses scénarios d'exposition.
La banque de données GESTIS, les ordonnances et directives relevantes et la littérature technique.
Les dossiers de l'enregistrement REACH des dénaturants sur le site de l'ECHA.

Remarques relatives à la formation du personnel

Le personnel appelé à manutentionner des substances et des produits dangereux doit être instruit par une formation initiale et formation continue et pratique sur tous les dangers liés à ses activités et les mesures de protection à prendre concernant la sécurité au travail, la protection de la santé et de l'environnement et sur les premiers secours à apporter.
En l'absence de formation adéquate aucune mesure impliquant un risque personnel doit être prise.

Méthode utilisée pour la classification

La classification était effectuée selon la méthode décrite au règlement (CE) no 1272/2008 à partir des composants si les données sont disponibles pour tous les composants.

Documents complémentaires

Les document complémentaires suivants se trouvent également sur la CD des fiches de données de sécurité d'Alcosuisse:
"Annexe 1, Utilisations identifiées" dans le fichier: "1.331Annexe 1 utilisations identifiees.pdf"
"Annexe 2, Exposure scenarios (Scénarios d'exposition)" dans le fichier: "1.532Annexe 2_Ethanol_Exposure_scenarios.pdf"
Le CD-ROM contient encore des "Fiches élémentaires de données de sécurité de l'éthanol" dans les fichiers suivants:
"1.321CMK_Ethanol_pur.pdf" ou "1.322CMK_Ethanol_denature.docx" ou "1.323CMK_Ethanol_avec_methanol.pdf"

Annexe 1 Description des utilisations identifiées de l'éthanol à énumérer dans la partie 1.2

(extraites du rapport de sécurité chimique de l'éthanol)

1 Utilisation par des consommateurs: SU 21

Utilisation identifiées (IU) No et Désignation	Descripteurs des utilisations
10 Utilisation par des consommateurs de gazole routier contenant d'éthanol	**Catégorie de produits chimiques (PC):** PC 13: Carburants **Catégorie de rejet dans l'environnement (ERC):** ERC 9a: Utilisation intérieure à grande dispersion de substances en systèmes clos ERC 9b: Utilisation extérieure à grande dispersion de substances en systèmes clos **Vie utile ultérieure dans les articles pour cette utilisation?:** non
11 Utilisation par des consommateurs de combustibles domestiques contenant d'éthanol	**Catégorie de produits chimiques (PC):** PC 13: Carburants **Catégorie de rejet dans l'environnement (ERC):** ERC 8a: Utilisation intérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts ERC 8d: Utilisation extérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts **Vie utile ultérieure dans les articles pour cette utilisation?:** non
13 Utilisation par des consommateurs de l'éthanol dans des systèmes fermés	**Catégorie de produits chimiques (PC):** PC 16: Fluides de transfert de chaleur PC 17: Fluides hydrauliques **Catégorie de rejet dans l'environnement (ERC):** ERC 9a: Utilisation intérieure à grande dispersion de substances en systèmes clos ERC 9b: Utilisation extérieure à grande dispersion de substances en systèmes clos **Vie utile ultérieure dans les articles pour cette utilisation?:** non
14 Utilisation par des consommateurs de l'éthanol dans des produits de revêtement et des peintures	**Catégorie de produits chimiques (PC):** PC 9a: Revêtements et peintures, solvants, diluants **Catégorie de rejet dans l'environnement (ERC):** ERC 8a: Utilisation intérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts ERC 8d: Utilisation extérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts **Vie utile ultérieure dans les articles pour cette utilisation?:** non

IU = Identified Uses Uses SU = Sector of Use

1 Utilisation par des consommateurs: SU 21 (suite)

Utilisation identifiées (IU) No et Désignation	Descripteurs des utilisations
12 Utilisation par des consommateurs de produits contenant <50g/? d'éthanol	**Catégorie de produits chimiques (PC):** PC 1: Adhésifs, produits d'étanchéité PC 3: Produits d'assainissement de l'air PC 8: Produits biocides (désinfectants, insecticides) PC 12: Engrais PC 14: Produits de traitement de surface des métaux, y compris produits pour galvanisation et galvanoplastie PC 15: Produits de traitement de surfaces non métalliques PC 18: Encres et toners PC 23: Produits pour teinture, finition et soin du cuir PC 24: Lubrifiants, graisses et agents de décoffrage PC 27: Produits phytopharmaceutiques PC 28: Parfums, produits parfumés PC 30: Produits photochimiques PC 31: Produits lustrants et préparations de cires PC 34: Colorants pour textiles, produits de finition et d'imprégnation y compris agents de blanchiment et autres adjuvants de fabrication PC 39: Cosmétiques, produits de soins personnels **Catégorie de rejet dans l'environnement (ERC):** ERC 8a: Utilisation intérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts ERC 8d: Utilisation extérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts **Vie utile ultérieure dans les articles pour cette utilisation?:** non
15 Utilisation par des consommateurs de l'éthanol dans des produits antigel, de dégivrage et de lavage de vitres	**Catégorie de produits chimiques (PC):** PC 4: Produits antigel et de dégivrage **Catégorie de rejet dans l'environnement (ERC):** ERC 8d: Utilisation extérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts **Vie utile ultérieure dans les articles pour cette utilisation?:** non
16 Utilisation par des consommateurs de l'éthanol dans des produits de lavage et de nettoyage	**Catégorie de produits chimiques (PC):** PC 35: Produits de lavage et de nettoyage (y compris produits à base de solvants) **Catégorie de rejet dans l'environnement (ERC):** ERC 8a: Utilisation intérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts ERC 8d: Utilisation extérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts **Vie utile ultérieure dans les articles pour cette utilisation?:** non

IU = Identified Uses SU = Sector of Use

2 Utilisations professionnelles / artisanales: SU 22

Utilisation identifiées (IU) No et Désignation	Substance utilise pour cette application	Descripteurs des utilisations
7 Utilisation professionnelle / artisanale de l'éthanol comme source de combustibles	comme substance telle quelle dans un mélange	**Catégorie de processus (PROC)** PROC 16: Utilisation comme source de combustibles **Catégorie de rejet dans l'environnement (ERC):** ERC 9a: Utilisation intérieure à grande dispersion de substances en systèmes clos ERC 9b: Utilisation extérieure à grande dispersion de substances en systèmes clos **Vie utile ultérieure dans les articles pour cette utilisation?:** non
8 Utilisation professionnelle / artisanale de l'éthanol tel quel ou dans des mélanges pour des applications sans pulvérisation	comme substance telle quelle dans un mélange	**Catégorie de processus (PROC)** PROC 10: Application au rouleau / pinceau PROC 13: Traitement d'articles par trempage et versage PROC 14: Pastillage, compression, extrusion, granulation PROC 19: Mélange manuel entraînant un contact intime avec la peau; seuls les EPI sont disponibles. **Catégorie de rejet dans l'environnement (ERC):** ERC 8a: Utilisation intérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts ERC 8d: Utilisation extérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts **Vie utile ultérieure dans les articles pour cette utilisation?:** non
9 Utilisation professionnelle / artisanale de peintures, de revêtements, d'adhésives, de détergents et autres mélanges contenant de l'éthanol par pulvérisation	dans un mélange	**Catégorie de processus (PROC)** PROC 11: Pulvérisation en dehors d'installations industrielles **Catégorie de rejet dans l'environnement (ERC):** ERC 8a: Utilisation intérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts ERC 8d: Utilisation extérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts **Vie utile ultérieure dans les articles pour cette utilisation?:** non
18 Utilisation industrielle et professionnelle / artisanale de l'éthanol comme fluide de transfert de chaleur	comme substance telle quelle	**Catégorie de processus (PROC)** PROC 20: Utilisation comme fluides de transfert de chaleur et de pression **Catégorie de rejet dans l'environnement (ERC):** ERC 9a: Utilisation intérieure à grande dispersion de substances en systèmes clos ERC 9b: Utilisation extérieure à grande dispersion de substances en systèmes clos **Vie utile ultérieure dans les articles pour cette utilisation?:** non

3 Utilisation industrielle de substances et mélanges: SU 3 (partiellement également SU8, SU9, SU10)

Utilisation identifiées (IU) No et Désignation	Substance utilise pour cette application	Descripteurs des utilisations
1 Production ou utilisation comme produit intermédiaire ou produit chimique industriel	comme substance telle quelle	**Catégorie de processus (PROC)** PROC 1: Utilisation dans des processus fermés, exposition improbable PROC 2: Utilisation dans des processus fermés continus, exposition momentanée maîtrisée PROC 3: Utilisation dans des processus fermés par lots (synthèse ou formulation) PROC 4: Utilisation dans des processus par lots et d'autres processus (synthèse) pouvant présenter des possibilités d'exposition PROC 8a: Transfert de substance ou de préparation (chargement/déchargement) à partir de récipients ou de grands conteneurs, ou vers ces derniers, dans des installations non spécialisées PROC 8b: Transfert de substance ou de préparation (chargement/déchargement) à partir de récipients ou de grands conteneurs, ou vers ces derniers, dans des installations spécialisées **Catégorie de rejet dans l'environnement (ERC):** ERC 1: Fabrication de substances ERC 4: Utilisation industrielle d'adjuvants de fabrication dans des processus et des produits, qui ne deviendront pas partie intégrante des articles ERC 6a: Utilisation industrielle ayant pour résultat la fabrication d'une autre substance (utilisation d'intermédiaires) **Secteurs d'utilisation finale** SU 8: Fabrication de substances chimiques en vrac, à grande échelle (y compris les produits pétroliers) SU 9: Fabrication de substances chimiques fines **Vie utile ultérieure dans les articles pour cette utilisation?:** non
2 Distribution d'éthanol	comme substance telle quelle	**Catégorie de processus (PROC)** PROC 8a: Transfert de substance ou de préparation (chargement/déchargement) à partir de récipients ou de grands conteneurs, ou vers ces derniers, dans des installations non spécialisées PROC 8b: Transfert de substance ou de préparation (chargement/déchargement) à partir de récipients ou de grands conteneurs, ou vers ces derniers, dans des installations spécialisées PROC 9: Transfert de substance ou préparation dans de petits conteneurs (chaîne de remplissage spécialisée, y compris pesage) **Catégorie de rejet dans l'environnement (ERC):** ERC 2: Formulation de préparations **Secteurs d'utilisation finale** SU 8: Fabrication de substances chimiques en vrac, à grande échelle (y compris les produits petroliers) SU 9: Fabrication de substances chimiques fines **Vie utile ultérieure dans les articles pour cette utilisation?:** non

3 Utilisation industrielle de substances et mélanges: SU 3 (suite)

Utilisation identifiées (IU) No et Désignation	Substance utilise pour cette application	Descripteurs des utilisations
4 Utilisation industrielle de l'éthanol tel quel ou dans des mélanges pour des applications sans pulvérisation.	comme substance telle quelle dans un mélange	**Catégorie de processus (PROC)** PROC 10: Application au rouleau / pinceau PROC 13: Traitement d'articles par trempage et versage **Catégorie de rejet dans l'environnement (ERC):** ERC 4: Utilisation industrielle d'adjuvants de fabrication dans des processus et des produits, qui ne deviendront pas partie intégrante des articles **Vie utile ultérieure dans les articles pour cette utilisation?:** non
3 Formulation et confectionnement de l'éthanol et de ses mélanges	comme substance telle quelle	**Catégorie de processus (PROC)** PROC 3: Utilisation dans des processus fermés par lots (synthèse ou formulation) PROC 5: Mélange dans des processus par lots pour la formulation de préparations et d'articles (contacts multiples et/ou importants) PROC 8a: Transfert de substance ou de préparation (chargement/déchargement) à partir de récipients ou de grands conteneurs, ou vers ces derniers, dans des installations non spécialisées PROC 8b: Transfert de substance ou de préparation (chargement/déchargement) à partir de récipients ou de grands conteneurs, ou vers ces derniers, dans des installations spécialisées PROC 9: Transfert de substance ou préparation dans de petits conteneurs (chaîne de remplissage spécialisée, y compris pesage) PROC 14: Production de préparations ou d'articles par pastillage, compression, extrusion, granulation, immersion, imbibition, dégorgement ou imprégnation etc. **Catégorie de rejet dans l'environnement (ERC):** ERC 2: Formulation de préparations/mélanges **Secteurs d'utilisation finale** SU 10: Formulation [mélange] de preparations/mélanges et/ou reconditionnement (sauf alliages) **Vie utile ultérieure dans les articles pour cette utilisation?:** non
5 Utilisation industrielle de l'éthanol tel quel ou dans des mélanges pour des applications avec pulvérisation.	comme substance telle quelle dans un mélange	**Catégorie de processus (PROC)** PROC 7: Pulvérisation dans installations industrielles **Catégorie de rejet dans l'environnement (ERC):** ERC 4: Utilisation industrielle d'adjuvants de fabrication dans des processus et des produits, qui ne deviendront pas partie intégrante des articles **Vie utile ultérieure dans les articles pour cette utilisation?:** non

3 Utilisation industrielle de substances et mélanges: SU 3 (suite)

Utilisation identifiées (IU) No et Désignation	Substance utilise pour cette application	Descripteurs des utilisations
6 Utilisation industrielle de l'éthanol comme sources de combustibles	comme substance telle quelle dans un mélange	**Catégorie de processus (PROC)** PROC 16: Utilisation de matériaux comme sources de combustibles; il faut s'attendre à une exposition limitée à du produit non brûlé **Catégorie de rejet dans l'environnement (ERC):** ERC 7: Utilisation industrielle de substances en systèmes clos **Vie utile ultérieure dans les articles pour cette utilisation?:** non
17 Utilisation industrielle de l'éthanol comme réactif de laboratoire	comme substance telle quelle	**Catégorie de processus (PROC)** PROC 15: Utilisation en tant que réactif de laboratoire **Catégorie de rejet dans l'environnement (ERC):** ERC 2: Formulation de préparations ERC 4: Utilisation industrielle d'adjuvants de fabrication dans des processus et des produits, qui ne deviendront pas partie intégrante des articles ERC 8a: Utilisation intérieure à grande dispersion d'adjuvants de fabrication en systèmes ouverts **Vie utile ultérieure dans les articles pour cette utilisation?:** non
18 Utilisation industrielle et professionnelle / artisanale de l'éthanol comme fluide de transfert de chaleur	comme substance telle quelle	**Catégorie de processus (PROC)** PROC 20: Fluides de transfert de chaleur et de pression pour des utilisations diverses et industrielles dans des systèmes fermés **Catégorie de rejet dans l'environnement (ERC):** ERC 7: Utilisation industrielle de substances en systèmes clos **Vie utile ultérieure dans les articles pour cette utilisation?:** non

EXPOSURE SCENARIOS

Substance Name: ethanol

EC Number: 200-578-6

CAS Number: 64-17-5

Registrant's Identity: Intertek Testing Service (UK) Ltd

Table of Contents

9. EXPOSURE ASSESSMENT

9.1 Title: Exposure Scenario for Industrial manufacturing of Ethanol, or use as intermediate or process chemical

Ethanol REACH Association reference no. ES1

Systematic title based on use descriptor	SU3, SU8, SU9 PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b ERC1, ERC4, ERC6A
Processes, tasks, activities covered	Covers the industrial manufacture of Ethanol at controlled manufacturing plants in continuous and batch processes. Includes recycling/ recovery, material transfers, filling, storage, maintenance and loading, sampling and use as an intermediate or process chemical.
Assessment Method	Ecetoc TRA integrated model version 2, EUSES v.2.

9.1.1 Exposure Scenario

9.1.1.1. Operational conditions and risk management measures

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.

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.

Number of sites using the substance: Substance widely used.

9.1.1.2 Control of workers exposure

Product characteristic (including package design affecting exposure)	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5,73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
Human factors not influenced by risk management	Potentially exposed body parts	Two hands face side only (automated processes/PROC1, 2) Two hands (transfer, filling, etc./PROC8a,b)
	Exposed skin surface	480 cm^2 (automated processes/PROC1, 2, 3,4) 960 cm^2 (transfer, filling, etc./PROC8a,b)
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Outdoor
Technical conditions and measures at process level (source) to prevent release	No specific technical prevention measures required for process in high integrity contained systems with little potential for exposure or with only occasional minor exposure through e.g. maintenance and sampling.	
Technical conditions and measures to control dispersion from source towards the worker	Ventilation	None required
	Efficiency rate	95 %
Organisational measures to prevent /limit releases, dispersion and exposure	Handle substances within a predominantly closed system. Ensure material transfers are under containment or extract ventilation. No specific organizational measures required for processes in high integrity contained systems with little potential for exposure or with only occasional minor exposure through e.g. maintenance and sampling.Provide extract ventilation to points where emissions occur. Wear suitable gloves tested to EN374 during the activities where skin contact is possible.	
Conditions and measures related to personal protection, hygiene and health evaluation	PPE: Respiratory Protection - not required for normal operations. PPE: Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing .	

9.1.1.3 Control of environmental exposure

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

9.1.2. Exposure estimation

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

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

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

Release times per year (day/year)	350	Local release to air (kg/day)	226.0
Fraction used at main local source	0.086	Local release to waste water (kg/day)	11.3
Amount used locally (kg/day)	0	Local release to soil (kg/day)	0

Environmental exposure	PEC	PNEC	**Comment**
In STP / untreated wastewater(mg/l)	5.65	580	-
In local freshwater (mg/l)	0,0000264	0,96	-
In local soil	0.00119 (mg/kg)	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,00000224	0,79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

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

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2 and EUSES v2.0 respectively.
If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:
PECcorrected = PECcalculated * (local emission fraction) * (local WWTP flow rate fraction) * (local river flow rate fraction) * (local STP efficiency fraction)
Example for calculating your local freshwater PEC:
Corrected local freshwater PEC = 0,0000264* (your local emission [kg/day] / 350) * (2000 / your local WWTP flow rate [m3/day]) * (18000 / your local river flow rate [m3/day]) * ((1 – your local WWTP efficiency)/0.1)

9.2 Title: Exposure Scenario for Industrial distribution of Ethanol

Ethanol REACH Association reference no. ES2

Systematic title based on use descriptor	SU3, SU8, SU9 PROC8a, PROC8b, PROC9 ERC2
Processes, tasks, activities covered	Covers transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated and dedicated facilities, loading (including marine vessel/barge, rail/road car and IBC loading), storage, and repacking (including drums and small packs) of substance, including its distribution. Intended for e.g. traders, distributors, transporters, etc.
Assessment Method	Ecetoc TRA integrated model version 2

9.2.1 Exposure Scenario

9.2.1.1. Operational conditions and risk management measures

Process categories: Sampling, loading, filling, transfer, drumming, bagging in non-dedicated facilities. Exposure related to vapour, aerosols or spillage, and cleaning of equipment to be expected.

Environmental release category: Mixing, blending, diluting, transferring, filling, drumming and distributing activities of substances in all types of drumming, distribution and trading industry. Also includes drumming, filling and distribution activities in formulating industries, such as paints and do-it-yourself products, pigment pastes, fuels, household products (cleaning products), cosmetics, lubricants etc.

Number of sites using the substance: Substance widely used.

9.2.1.2 Control of workers exposure

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

9.2.1.3 Control of environmental exposure

Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 100 %
Amounts used	Daily at point source	n.a.
	Annually at point source	75,000 t/year (worst case scenario, at point source)
	Annually total	3,800,000 t/year total market
Frequency and duration of use	Pattern of release	300 days per year
Environment factors not influenced by 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
Technical conditions and measures at process level (source) to prevent release	Keep containers tightly closed. Store in a bounded area. Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations	
Organizational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into local or municipal STP.
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m^3/day
	Degradation efficacy	>90% (for ethanol)
	Sludge treatment	Disposal or recovery
Conditions and measures related to treatment of waste	Hazardous waste incineration or dispose for use in recycled fuels	

9.2.2. Exposure estimation

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

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

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

Release times per year (day/year)	300	Local release to air (kg/day)	50
Fraction used at main local source	0.1	Local release to waste water (kg/day)	15
Amount used locally (kg/day)	5000	Local release to soil (kg/day)	1

Environmental exposure	PEC	PNEC	**Comment**
In STP / untreated wastewater(mg/l)	4.66	580	-
In local freshwater (mg/l)	0,52	0,96	-
In local soil	0.007 (mg/kg)	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,0515	0,79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

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

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2 and EUSES v2.0 respectively.
If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:
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 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.

9.3 Title: Exposure Scenario for Industrial formulation and (re)packing of Ethanol, and its mixtures

Ethanol REACH Association reference no. ES3

Systematic title based on use descriptor	SU3, SU10 PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC14 ERC 2
Processes, tasks, activities covered	Covers industrial formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, large and small scale packing, maintenance. Includes formulation of fuels containing ethanol.
Assessment Method	Ecetoc TRA integrated model version 2, EUSES v.2.

9.3.1 Exposure Scenario

9.3.1.1. Operational conditions and risk management measures

Process category: Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage. Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated and dedicated facilities with possible exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment.

Environmental release category: Manufacture of organic and inorganic substances in chemical, petrochemical, primary metals and minerals industry including intermediates, monomers using continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions

Number of sites using the substance: Substance widely used.

9.3.1.2 Control of workers exposure

Product characteristic (including package design affecting exposure)	Physical state	liquid
	Concentration of substance in product	Up to 100 %
	Vapour pressure of substance	5,73 kPa
Amounts used	n.a. in tier1 TRA model	
Frequency and duration of use/exposure	Frequency of exposure (weekly)	> 4 Days/week
	Frequency of exposure (annual)	240 Days/year
	Duration of exposure	> 4 Hours/day
Human factors not influenced by risk management	Potentially exposed body parts	Two hands face side only (automated processes/PROC3) Two hands (transfer, filling, etc./PROC8a,b)
	Exposed skin surface	480 cm^2 (automated processes/PROC3) 960 cm^2 (transfer, filling, etc./PROC8a,b)
Other given operational conditions affecting workers exposure	Assumes a good basic standard of occupational hygiene is implemented.	
	Setting (indoor/outdoor)	Indoors
Technical conditions and measures at process level (source) to prevent release	No specific measures identified.	
Technical conditions and measures to control dispersion from source towards the worker	Ensure material transfers are under containment or extract ventilation. Provide good ventilation to points where emissions occur. Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).	
Organisational measures to prevent /limit releases, dispersion and exposure	No specific measures identified.	
Conditions and measures related to personal protection, hygiene and health evaluation	PPE: Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing . Wear suitable gloves tested to EN374 during the activities where excessive skin contact is possible.	

9.3.1.3 Control of environmental exposure

Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 100 %
Amounts used	Daily at point source	n.a.

	Annually at point source	280,000 t/year (maximum at point source in worst case)
	Annually total	3,800,000 t/year
Frequency and duration of use	Pattern of release	Continuous 300 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor
	Processing temperature	Ambient
	Processing pressure	Ambient
Technical conditions and measures at process level (source) to prevent release	Keep containers tightly closed. Store in a bounded area. Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations. Formulation activity is assumed to be a predominantly enclosed process.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment))	Efficacy >90%
Organizational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into municipal STP.
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m^3/day
	Degradation efficacy	90% (for ethanol)
	Sludge treatment	Disposal or recovery
Conditions and measures related to treatment of waste	Hazardous waste incineration or dispose for use in recycled fuels	

9.3.2. Exposure estimation

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

Workers exposure	Exposure estimate	DNEL	Comment
Inhalation (mg/m^3)	96.04	950	PROC 8a results in the highest exposure in this exposure scenario
Dermal (mg/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-Ib, IC-9, UC-27, fraction main source 0,1) and based on the worst-case scenario.
Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the local and/or municipal STP under evaluated conditions.

Release times per year (day/year)	300	Local release to air (kg/day)	469
Fraction used at main local source	0.1	Local release to waste water (kg/day)	28
Amount used locally (kg/day)	93.333	Local release to soil (kg/day)	9

Environmental exposure	PEC	PNEC	**Comment**
In STP / untreated wastewater(mg/l)	1.73	580	-
In local freshwater (mg/l)	0,185	0,96	-
In local soil	0.0117 (mg/kg)	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,0186	0,79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

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

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.
If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:
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 = 0,185 * (your local emission [kg/day] / 28) * (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.

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

Ethanol REACH Association reference no. ES4

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

9.4.1 Exposure Scenario

9.4.1.1. 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 dying, 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.

9.4.1.2 Control of workers exposure

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

9.4.1.3 Control of environmental exposure

Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 100 %
Amounts used	Daily at point source	n.a.
	Annually to the region	2,750 t/year (general)
	Annually total	27,500 t/year (general) total market
Frequency and duration of use	Pattern of release	300 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoors and outdoors
	Processing temperature	Ambient
	Processing pressure	Ambient
Technical conditions and measures at process level (source) to prevent release	Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment))	Efficacy >70%
Organizational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into municipal STP.
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m^3/day
	Degradation efficacy	90% (for ethanol)
	Sludge treatment	Disposal or recovery
Conditions and measures related to treatment of waste	Hazardous waste incineration or dispose for use in recycled fuels	

9.4.2. Exposure estimation

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

Workers exposure	Exposure estimate	DNEL	Comment
Inhalation (mg/m^3)	96.04	950	PROC 10 results in the highest exposure in this exposure scenario
Dermal (mg/kd/day)	27.43	343	
Combined (mg/kg/day)	41.15	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 and MC-Ic, IC-9, UC-27 fraction main source 0,1 using local STP). Below values are those related to processes with the highest risk characterization ratio (related to industrial use of coatings, inks and adhesives). All other activities covered in this exposure scenario result in lower environmental exposure estimates.
Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the local and/or municipal STP under evaluated conditions.

Release times per year (day/year)	300	Local release to air (kg/day)	367
Fraction used at main local source	0.1	Local release to waste water (kg/day)	5
Amount used locally (kg/day)	458	Local release to soil (kg/day)	1

Environmental exposure	PEC	PNEC	**Comment**
In STP / untreated wastewater(mg/l)	0.285	580	-
In local freshwater (mg/l)	0,039	0,96	-
In local soil	0.0091 (mg/kg)	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,0039	0,79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

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

The workers exposure and environmental emissions have been evaluated using 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:
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 freshwater PEC = 0,039 * (your local emission [kg/day] / 5) * (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.

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

Ethanol REACH Association reference no. ES5

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

9.5.1 Exposure Scenario

9.5.1.1. 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.

9.5.1.2 Control of workers exposure

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

9.5.1.3 Control of environmental exposure

Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 25 %
Amounts used	Daily at point source	n.a.
	Annually to the region	2,750 t/year (maximum in worst case)
	Annually total	27,500 t/year total market
Frequency and duration of use	Pattern of release	Continuous 300 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoors and outdoors
	Processing temperature	Ambient
	Processing pressure	Ambient
Technical conditions and measures at process level (source) to prevent release	Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment))	Efficacy >70%
Organizational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into municipal STP.
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m^3/day
	Degradation efficacy	90% (for ethanol)
	Sludge treatment	Disposal or recovery
Conditions and measures related to treatment of waste	Hazardous waste incineration or dispose for use in recycled fuels	

9.5.2. Exposure estimation

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

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

Environmental exposure estimation is based on Ecetoc TRA model v2 including the data from TGD A&B tables (MC-Ib, IC-14, UC-48, fraction main source 0,1 using local STP). Below values are those related to processes with the highest risk characterization ratio (related to industrial use of coatings, inks and adhesives). All other activities covered in this exposure scenario result in lower environmental exposure estimates.
Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by >90% in the Local and Municipal STP under evaluated conditions.

Release times per year (day/year)	300	Local release to air (kg/day)	367
Fraction used at main local source	0.1	Local release to waste water (kg/day)	5
Amount used locally (kg/day)	458	Local release to soil (kg/day)	1

Environmental exposure	PEC	PNEC	**Comment**
In STP / untreated wastewater(mg/l)	0.285	580	-
In local freshwater (mg/l)	0,039	0,96	-
In local soil	0.0091 (mg/kg)	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,0039	0,79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

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

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.
If the local environmental emission conditions deviate significantly from the used default values, please use the below algorithm to estimate the correct local emissions and RCRs:
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 freshwater PEC = 0,039 * (your local emission [kg/day] / 5) * (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.

9.6 Title: Exposure Scenario for Industrial use of Ethanol as fuel source

Ethanol REACH Association reference no. ES6a

Systematic title based on use descriptor	SU3 PROC16 ERC7
Processes, tasks, activities covered	Use as fuel or fuel additive in industrial setting.
Assessment Method	Ecetoc TRA integrated model version 2

9.6.1 Exposure Scenario

9.6.1.1. Operational conditions and risk management measures

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.

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.

Number of sites using the substance: Substance widely used.

9.6.1.2 Control of workers exposure

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

9.6.1.3 Control of environmental exposure

Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 100 %
Amounts used	Daily at point source	n.a.
	Annually to the region	30,000 t/year (maximum in worst case)
	Annually total	300,000 t/year total market
Frequency and duration of use	Pattern of release	Continuous 300 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoors and outdoors
	Processing temperature	Ambient
	Processing pressure	Ambient
Technical conditions and measures at process level (source) to prevent release	Do not discharge into sewers or drains. Waste product and empty containers should be disposed of as hazardous waste in accordance with all local and national regulations.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Apply technical measures aiming at reduction and cleaning of waste water (WWTP/local STP (e.g. biological treatment))	Efficacy >70%
Organizational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into municipal STP.
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m^3/day
	Degradation efficacy	90%
	Sludge treatment	Disposal or recovery
Conditions and measures related to treatment of waste	Hazardous waste incineration or dispose for use in recycled fuels	

9.6.2. Exposure estimation

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

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

Environmental exposure estimation is based on Ecetoc TRA model v2 including the data from TGD A&B tables (MC-Ic, 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:
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 freshwater PEC = 0,0152 * (your local emission [kg/day] / 5) * (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.

9.7 Title: Exposure Scenario for Professional use of Ethanol as fuel source

Ethanol REACH Association reference no. ES6b

Systematic title based on use descriptor	SU22 PROC16 ERC 9a, ERC 9b
Processes, tasks, activities covered	Use as fuel or fuel additive in professional setting.
Assessment Method	Ecetoc TRA integrated model version 2

9.7.1 Exposure Scenario

9.7.1.1. Operational conditions and risk management measures

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.

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.

Number of sites using the substance: Substance widely used.

9.7.1.2 Control of workers exposure

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

9.7.1.3 Control of environmental exposure

Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 100 %
Amounts used	Daily at point source	n.a.
	Annually to the region	380,000 t/year
	Annually total	3,800,000 t/year total market for industrial, professional and consumer use
Frequency and duration of use	Pattern of release	Continuous wide dispersive: 365 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoors and outdoors
	Processing temperature	Ambient
	Processing pressure	Ambient
Technical conditions and measures at process level (source) to prevent release	Do not discharge into sewers or drains.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Do not discharge directly into environment. Use in predominantly enclosed systems	
Organizational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into municipal STP.
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m^3/day
	Degradation efficacy	90%
	Sludge treatment	Disposal or recovery
Conditions and measures related to treatment of waste	Hazardous waste incineration or dispose for use in recycled fuels	

9.7.2. Exposure estimation

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

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

Environmental exposure estimation is based on Ecetoc TRA model ERC9a, and TGD-A&B table (MC-IV, IC-6, UC-27). Below values are those related to TGD A&B table calculation.
Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by 90% in the STP under evaluated conditions.

Release times per year (day/year)	365	Local release to air (kg/day)	n.a. wide dispersive
Fraction used at main local source	0,002	Local release to sewage (kg/day)	n.a. wide dispersive
Amount used locally (kg/day)	2082	Local release to soil (kg/day)	n.a. wide dispersive

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

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

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.
If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:
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 freshwater PEC = 0,0240 * (your local emission [kg/day] / 5) * (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.

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

Ethanol REACH Association reference no. ES7

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

9.8.1 Exposure Scenario

9.8.1.1. 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 dying, 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.

9.8.1.2 Control of workers exposure

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

9.8.1.3 Control of environmental exposure

Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 100 %
Amounts used	Daily at point source	n.a.
	Annually at point source	n.a. (wide dispersive use)
	Annually total	10,000 t/year total market
Frequency and duration of use	Pattern of release	Continuous 365 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoors and outdoors
	Processing temperature	Ambient
	Processing pressure	Ambient
Technical conditions and measures at process level (source) to prevent release	No specific measures identified.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	No specific measures identified.	
Organizational measures to prevent/limit release from site	Do not release wastewater directly into environment. Wastewater release into municipal STP.	
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m^3/day
	Degradation efficacy	90% (for ethanol)
	Sludge treatment	Disposal or recovery
Conditions and measures related to treatment of waste	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

9.8.2. Exposure estimation

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

Workers exposure	Exposure estimate	DNEL	Comment
Inhalation (mg/m^3)	115,25	950	PROC 19 results in the highest exposure in this exposure scenario
Dermal (mg/kd/day)	84,86	343	
Combined (mg/kg/day)	101,32	343	

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

Release times per year (day/year)	365	Local release to air (kg/day)	5
Fraction used at main local source	0.1	Local release to waste water (kg/day)	5
Amount used locally (kg/day)	5.5	Local release to soil (kg/day)	1

Environmental exposure	PEC	PNEC	**Comment**
In STP / untreated wastewater(mg/l)	0.34	580	-
In local freshwater (mg/l)	0,045	0,96	-
In local soil	0.0003 (mg/kg)	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,0044	0,79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

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

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

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

Ethanol REACH Association reference no. ES8

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

9.9.1 Exposure Scenario

9.9.1.1. 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.

9.9.1.2 Control of workers exposure

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

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

9.9.1.3 Control of environmental exposure

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

9.9.2. Exposure estimation

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

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

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

Release times per year (day/year)	365	Local release to air (kg/day)	n.a. wide dispersive
Fraction used at main local source	0.1	Local release to waste water (kg/day)	n.a. wide dispersive
Amount used locally (kg/day)	5.5	Local release to soil (kg/day)	n.a. wide dispersive

Environmental exposure	PEC	PNEC	**Comment**
In STP / untreated wastewater(mg/l)	0.34	580	-
In local freshwater (mg/l)	0,045	0,96	-
In local soil	0.0003 (mg/kg)	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,0044	0,79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

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

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.
If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:
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 = 0,045 * (your local emission [kg/day] / 5) * (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.

9.10 Title: Exposure Scenario for Consumer use of Ethanol as automotive fuel

Ethanol REACH Association reference no. ES9a

Systematic title based on use descriptor	SU21 PC13 ERC9a, ERC9b
Processes, tasks, activities covered	Covers the consumer use of automotive fuels which contain Ethanol
Assessment Method	Ecetoc TRA integrated model version 2, ConsExpo v 4.1

9.10.1 Exposure Scenario

9.10.1.1. Operational conditions and risk management measures

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.

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.

Number of sites using the substance: Substance widely used.

9.10.1.2 Control of consumer exposure

Substance content in the product	Can be > 25 %
Amounts of product used / applied per event	Up to 100 litre
Exposure/release fraction	0,001 (Only to vapour and minor spills during the filling of the tank)
Frequency and duration of use/exposure	Frequency of exposure: weekly
	Duration of exposure per event: < 5 minutes (only during the filling of the tank)
Setting and external conditions during use	Outdoors
Technical (product related) use conditions	No specific measures required.
Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer; e.g. product labelling)	No specific measures required.

9.10.1.3 Control of environmental exposure

Product characteristics	Physical state	Liquid
	Concentration of substance in product	Can be > 25 %
Amounts used	Daily at point source	n.a.
	Annually at point source	n.a. (wide dispersive use)
	Annually total	3,800,000 t/year total market for industrial, professional and consumer use
Frequency and duration of use	Pattern of release	365 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/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 form 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.	

9.10.2. Exposure estimation

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

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

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

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

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

Additional good practice advice beyond the REACH CSA

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

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

9.11 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

9.11.1 Exposure Scenario

9.11.1.1. 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.

9.11.1.2 Control of consumer exposure

Substance content in the product	> 25 %
Amounts of product used / applied per event	Up to 1 litre
Potentially exposed body parts	Inside one hand: 210 cm^2
Frequency and duration of use/exposure	Frequency of use: weekly
	Duration of use: 5 minutes (Only during the filling of the device)
Setting and external conditions during use	Indoors and/or outdoors
Technical (product related) use conditions	No specific measures required.
Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer)	PPE: Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing .

9.11.1.3 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	18,000m3/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 form 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.	

9.11.2. Exposure estimation

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

Consumer exposure	Exposure estimate	DNEL	Comment
Dermal (mg/kg/day)	70,00	LTS 206	-
Oral (mg/kg/day)	0,00	LTS 87	-
Inhalation (mg/m3 for 24hr day)	0,81	LTS 144	-
All routes systemic	-	-	-

Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a and d settings and total use of 10.000 tpa.
Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by >90% in the STP under evaluated conditions.

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

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

Additional good practice advice beyond the REACH CSA

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.

9.12 Title: Exposure Scenario for Consumer use of Ethanol in products (<50g per event)

Ethanol REACH Association reference no. ES9c

Systematic title based on use descriptor	SU21 PC: 1, 3, 8, 12, 14, 15, 18, 23, 24, 27, 28, 30, 31, 34, 39 ERC8a, ERC8d
Processes, tasks, activities covered	Covers the consumer use of products which contain Ethanol with amount applied in use of less than 50g per event
Assessment Method	Ecetoc TRA integrated model version 2, ConsExpo v 4.1

9.12.1 Exposure Scenario

9.12.1.1. Operational conditions and risk management measures

Product categories: Adhesives (other than carpet and floor glue), sealants; Air care products; Artists supply and hobby preparations; Building and construction preparations; Metal-surface treatment products; Non-metal-surface treatment products; Ink and toners; Lawn and garden preparations; Leather tanning, finishing, impregnation, dye and care products; Lubricants, greases and release products; Plant protection products; Cosmetics and toiletries; Perfumes and fragrances; Photo-chemicals; Polishes and wax blends; Textile dye, finishing and impregnation products.

Environmental release category: Wide dispersive indoor and outdoor use. Use (usually) results in direct release into the sewage system or environment.

Number of sites using the substance: Substance widely used.

9.12.1.2 Control of consumer exposure

Substance content in the product	< 1 %	1 – 5 %	5 – 25 %	> 25 %
Product characteristic (including package design affecting exposure)	PC24, PC31	PC5, PC10, PC22, PC23, PC27, PC30, PC34	PC1, PC8, PC14, PC15, PC18,	PC3, PC28
Amounts of product used / applied per event	< 50 g	< 50 g	< 50 g	< 10 g
Frequency and duration of use/exposure	Frequency of use: Up to daily			
	Duration of use/application: up to 4 hours			
Setting and external conditions during use	Indoors (minimum room volume 20m^3) or outdoors			
Technical (product related) use conditions	n.a.	n.a.	n.a.	Controlled spray or release device.
Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer; e.g. product labelling)	No specific measures required.	No specific measures required.	No specific measures required.	Do not spray empty in small, enclosed areas. Avoid inhalation and skin contact.

9.12.1.3 Control of environmental exposure

Product characteristics	Physical state	Liquid
	Concentration of substance in product	Could be > 25 %
Amounts used	Daily at point source	n.a.
	Annually at point source	n.a. (wide dispersive use)
	Annually total	10,000 t/year total market, excluding cosmetics and toiletries
Frequency and duration of use	Pattern of release	365 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor
	Processing temperature	Ambient
	Processing pressure	Ambient
Conditions and measures related to municipal sewage treatment plant	Size of STP	> 2000 m^3/day
	Degradation efficacy	90%
	Sludge treatment (disposal or recovery)	Disposal or recovery
Conditions and measures related to disposal of waste resulting from the use of the products	No specific measures required.	
Conditions and measures related to recovery of waste resulting from the use	No specific measures required.	

9.12.2. Exposure estimation

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

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

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

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

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

Additional good practice advice beyond the REACH CSA

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

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

9.13 Title: Exposure Scenario for Consumer use of Ethanol in enclosed systems

Ethanol REACH Association reference no. ES9d

Systematic title based on use descriptor	SU21 PC16 (Heat transfer fluids), PC17 (Hydraulic fluids) ERC9a, ERC9b
Processes, tasks, activities covered	Covers the consumer use of products which contain Ethanol - products in enclosed systems (with no expected exposure to ethanol during use)
Assessment Method	Ecetoc TRA integrated model version 2, ConsExpo v 4.1

9.13.1 Exposure Scenario

9.13.1.1. Operational conditions and risk management measures

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.

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.

Number of sites using the substance: Substance widely used.

9.13.1.2 Control of consumer exposure

Substance content in the product	> 25 %
Product characteristic (including package design affecting exposure)	Substance is enclosed in the system and there is no consumer exposure possible under normal and reasonably foreseeable conditions of use.
Amounts of product used / applied per event	n.a. substance in enclosed system
Frequency and duration of use/exposure	Frequency of use: 1-5 times per year
	Duration per use: divers
Setting and external conditions during use	n.a. substance in enclosed system
Technical (product related) use conditions	n.a. substance in enclosed system
Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer; e.g. product labelling)	Do not open, break or dismantle the container during use. Do not open, break or dismantle the container before disposal. Dispose off as chemical waste. PPE: Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing .

9.13.1.3 Control of environmental exposure

Product characteristics	Physical state	Liquid
	Concentration of substance in product	Can be > 25 %
Amounts used	Daily at point source	n.a.
	Annually at point source	n.a. (wide dispersive use in closed systems)
	Annually total	10,000 t/year total market
Frequency and duration of use	Pattern of release	365 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor
	Processing temperature	Ambient
	Processing pressure	Ambient
Conditions and measures related to municipal sewage treatment plant	No release into the wastewaters or sewage is expected from this use. Substance is used in enclosed system during its service life.	
Conditions and measures related to disposal of waste resulting from the use of the products	No waste expected from this use.	
Conditions and measures related to recovery of waste resulting from the use	n.a.	

9.13.2. Exposure estimation

Consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010)) CSA (Heat transfer fluid category).

Consumer exposure	Exposure estimate	DNEL	Comment
Dermal (mg/kg/day)	0,85	LTS 206	-
Oral (mg/kg/day)	0,00	LTS 87	-
Inhalation (mg/m3 for 24hr day)	0,04	LTS 144	-
All routes systemic	-	-	-

Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC9a and b default settings and total use of 10.000 tpa. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by >90% in the STP under evaluated conditions.

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

Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0,017	580	-
In local freshwater (mg/l)	0,0155	0,96	-
In local soil (mg/kg)	0,00013	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,00145	0,79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

Additional good practice advice beyond the REACH CSA

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.

9.14 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

9.14.1 Exposure Scenario

9.14.1.1. 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.

9.14.1.2 Control of consumer exposure

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

9.14.1.3 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	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor and/or outdoor
	Processing temperature	Ambient
	Processing pressure	Ambient
Conditions and measures related to municipal sewage treatment plant	Size of STP	> 2000 m^3/day
	Degradation efficacy	90%
	Sludge treatment (disposal or recovery)	Disposal or recovery
Conditions and measures related to disposal of waste resulting from the use of the products	No specific measures required.	

9.14.2. 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) Dermal (mg/kg/day) (chronic)	21.44 0.30	n/a LTS 206	-
Oral (mg/kg/day)	0,00	LTS 87	-
Inhalation (mg/m3 , mean event) Inhalation (mg/m3, chronic)	~375 0.50	950 LTS 144	-
All routes systemic	-	-	-

Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a and d settings and total use of 10.000 tpa. Below presented estimates are based on ERC8d with total use of 10,000 tpa.
Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to be degraded for >90% in the STP under evaluated conditions.

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

Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0,340	580	-
In local freshwater (mg/l)	0,0447	0,96	-
In local soil (mg/kg)	0,0003	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,0044	0,79	-

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.

Additional good practice advice beyond the REACH CSA	
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.

9.15 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

9.15.1 Exposure Scenario

9.15.1.1. 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.

9.15.1.2 Control of consumer exposure

Substance content in the product	> 25 %
Amounts of product used / applied per event	1 – 50 gram
Exposed skin area	214 cm^2
Frequency and duration of use/exposure	Frequency of use: weekly (up to 50 days per year)
	Duration of exposure per event: < 5 minutes
Setting and external conditions during use	Indoors and / or outdoors
Technical (product related) use conditions	Controlled spray or dosing delivery device.
Organisational consumer protection measures (e.g. recommendation and/or use instruction information for consumer)	PPE: Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing .

9.15.1.3 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	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor
	Processing temperature	Ambient
	Processing pressure	Ambient
Conditions and measures related to municipal sewage treatment plant	Size of STP	> 2000 m^3/day
	Degradation efficacy	90%
	Sludge treatment (disposal or recovery)	Disposal or recovery
Conditions and measures related to disposal of waste resulting from the use of the products	No specific measures required.	

9.15.2. Exposure estimation

Consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010)) CSA (PC24 Lock- de-icer with conc 50%).

Consumer exposure	Exposure estimate	DNEL	Comment
Dermal (mg/kg/day)	17,87	LTS 206	Based on one use a day of 0.25hr / event
Oral (mg/kg/day)	0,00	LTS 87	
Inhalation (mg/m3 for 24hr day)	0,51	LTS 144	
All routes systemic	-	-	

Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8d and TGD A&B table (MC-IV, IC-6, UC-5) settings. Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by >90% in the STP under evaluated conditions.

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

Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0,0011	580	-
In local freshwater (mg/l)	0,014	0,96	-
In local soil (mg/kg)	0,00013	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,0013	0,79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

Additional good practice advice beyond the REACH CSA

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.

9.16 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

9.16.1 Exposure Scenario

9.16.1.1. 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.

9.16.1.2 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.

9.16.1.3 Control of environmental exposure

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

9.16.2. Exposure estimation

Consumer exposure estimation provided below is only indicative for one particular PC. The estimates are calculated with the industry model (draft version MasterCSA_8April2010)) CSA (for category all-purpose liquid cleaners with concentration of the substance at 15%)

Consumer exposure	Exposure estimate	DNEL	Comment
Dermal (mg/kg/day)	10,7	LTS 206	Daily use
Oral (mg/kg/day)	0,00	LTS 87	
Inhalation (mg/m3 for 24hr day)	1,73	LTS 144	
All routes systemic	-	-	

Environmental exposure estimation is based on Ecetoc TRA model v2 based on ERC8a and total volume of 40.000 tpa.
Ethanol is fully soluble in water, readily biodegradable, not bio-accumulative, does not accumulate in the sediments or soil and is assumed to degrade by >90% in the STP under evaluated conditions.

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

Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0,681	580	-
In local freshwater (mg/l)	0,0818	0,96	-
In local soil (mg/kg)	0,000451	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,00808	0,79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

Additional good practice advice beyond the REACH CSA Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH	Use specific measures expected to reduce the predicted exposure beyond the level estimated based on the exposure scenario when possible.

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

Ethanol REACH Association reference no. ES10

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

9.17.1 Exposure Scenario

9.17.1.1. 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.

9.17.1.2 Control of workers exposure

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

9.17.1.3 Control of environmental exposure

Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 100 %
Amounts used	Daily at point source	n.a.
	Annually to the region	500 t/year
	Annually total	5,000 t/year total market
Frequency and duration of use	Pattern of release	Continuous 300 days per year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000m3/day (default)
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoor
	Processing temperature	Ambient
	Processing pressure	Ambient
Technical conditions and measures at process level (source) to prevent release	No specific onsite measures identified	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	No specific onsite measures identified	
Organizational measures to prevent/limit release from site	Do not release wastewater directly into environment	Wastewater release into municipal STP.
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m^3/day
	Degradation efficacy	90%
	Sludge treatment	Disposal or recovery
Conditions and measures related to treatment of waste	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

9.17.2. Exposure estimation

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

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

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

Release times per year (day/year)	365	Local release to air (kg/day)	3
Fraction used at main local source	0,1	Local release to sewage (kg/day)	3
Amount used locally (kg/day)	2,47	Local release to soil (kg/day)	1

Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	0,170	580	-
In local freshwater (mg/l)	0,027	0,96	-
In local soil (mg/kg)	0,0002	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,0027	0,79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

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

The workers exposure and environmental emissions have been evaluated using Ecetoc TRA integrated tool version 2.
If the local environmental emission conditions deviate significantly from the used default values, please use the algorithm below to estimate the correct local emissions and RCRs:
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 = 0,027 * (your local emission [kg/day] / 3) * (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.

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

Ethanol REACH Association reference no. ES11

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

9.18.1 Exposure Scenario

9.18.1.1. 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.

9.18.1.2 Control of workers exposure

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

9.18.1.3 Control of environmental exposure

Product characteristics	Physical state	liquid
	Concentration of substance in product	Up to 100 %
Amounts used	Daily at point source	n.a.
	Annually to the region	1000 t/year
	Annually total	10,000 t/year total market
Frequency and duration of use	Pattern of release	No release into environment (closed system)
Environment factors not influenced by risk management	Flow rate of receiving surface water	n.a.
Other given operational conditions affecting environmental exposure	Processing setting (indoor/outdoor)	Indoors and outdoors
	Processing temperature	Ambient
	Processing pressure	Ambient
Technical conditions and measures at process level (source) to prevent release	No specific measures identified. Handle substance within a closed system.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	No specific measures identified. Store substance within a closed system.	
Organizational measures to prevent/limit release from site	Use in closed systems; no intended release into environment.	
Conditions and measures related to municipal sewage treatment plant	Size of STP	>2000 m^3/day
	Degradation efficacy	90%
	Sludge treatment	Disposal or recovery
Conditions and measures related to treatment of waste	All waste products are assumed to be collected and returned for re-processing or re-use. Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

9.18.2. Exposure estimation

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

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

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

Release times per year (day/year)	365	Local release to air (kg/day)	~ 0 (negligible)
Fraction used at main local source	0,1	Local release to sewage (kg/day)	~ 0 (negligible)
Amount used locally (kg/day)	5,5	Local release to soil (kg/day)	~ 0 (negligible)

Environmental exposure	PEC	PNEC	Comment
In STP (mg/l)	~ 0 (negligible)	580	-
In local freshwater (mg/l)	0,0107	0,96	-
In local soil (mg/kg)	0,0002	0,63 (mg/kgwwt)	-
In local marine water (mg/l)	0,0010	0,79	-
Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation.		

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

The workers exposure and environmental emissions have been evaluated using 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)

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.

9.19. Regional Exposure Assessment

The detail required for the regional exposure assessment should take into account the fact that this substance is readily biodegradable and not bioaccumulative. The exposure assessment is modelled using the Mackay Level III fugacity model v 2.80.1, with the following input parameters:

Regional model as specified in table R16-14 of the guidance.
The following half life values:

Compartment	Half life (h)
Air	38
Water	96
Soil	96
Sediment	750
Suspended particles	96
Fish	96
Aerosol	96

Emission volumes used.
It should be noted that these volumes are based on the TOTAL volume of ethanol used in the EU – data provided by the Ethanol REACH Association, The Hague, Netherlands for the exposure scenarios and uses covered by the CSR. This regional exposure assessment therefore covers ALL market volumes of ethanol used in listed scenarios and is not just limited to the individual registrants volume.

Emissions to water include allowance for degradation where waste water treatment plants (WWTP) are assumed to be present in the exposure scenarios. Water emissions are reduced and air emissions increased as per appendix R16-3 of the guidance. For wide dispersive uses (professional and consumer uses) it is assumed that 80% of water emissions pass through a WWTP.

REACH Ethanol Association emission scenario reference number	Regional environmental missions (from exposure scenarios ES1-18)		
	Air	Water	Soil
	kg/day	kg/day	kg/day
ES1 (manuf of intermediates)	23	1.1	0
ES2	253	76	5.1
ES3	637	38	12.2
ES4	367	5	1
ES5	367	5	1
ES6a	9	1	2
ES7	49	5	1
ES10	3	3	1
ES11	0	0	0
ES8	2466	42	0
ES9a+ES6b	104	0	0
ES9b	3	0	0
ES9c (cosmetics)	49183	0	0
ES9c (all other uses)	1973	67	0
ES9d	137	42	137
ES9e	2144	36	0
ES9f	30985	496	0
ES9g	2087	2538	0
kg/day	**91419**	**3354**	**160**
kg/hr	**3809**	**140**	**6.7**

	Predicted regional Exposure Concentrations		Explanation / source of measured data
	value	unit	
Freshwater	7.72	µg/l	Mackay Fugacity Level III model
Freshwater sediments	0.060	µg/kg	Mackay Fugacity Level III model
Soil	0.252	µg/kg	Mackay Fugacity Level III model
Air	1.11	µg/m3	Mackay Fugacity Level III model

Figures above exclude base level for continental exposure. To allow for this, concentrations need to be increased by approximately 10%.

	Predicted regional Exposure Concentrations		Explanation / source of measured data
	value	unit	
Fish	1.85E-04	µg/g	Mackay Fugacity Level III model

As ethanol is both readily biodegradable and non bioaccumulative, regional concentration calculations in food can be considered as likely to be substantially below any possible levels of concern.

APPENDIX 1 TO CHAPTER 9 - USE MAPPING FOR ETHANOL
(Additional guidance to assist in identifying appropriate ES's to use)

ETHANOL ACTIVITIES covered by Exposure Scenarios under REACH *23rd June 2010*

Use / Activity	Area of Application	Sector of Use	Process Category (mandatory)	Product Category	Environmental Release Category	EtOH REACH Association ES reference number
		SU	PROC	PC	ERC	
Manufacture, or use as an intermediate or process chemical	Industrial	3,8,9	1, 2, 3, 4, 8a, 8b		1,4, 6A	**ES1, ES10**
Bulk loading/unloading of ethanol and blends (eg marine, road, rail, IBC) and repacking (eg drums, small packs)	Industrial	3,8,9	8a, 8b, 9		2	**ES2**
Formulation of preparations, including manufacture of cosmetics, detergents, inks and coatings	Industrial	3,10	3, 5, 8a, 8b, 9, 14		2	**ES3, ES10**
Detergent and cleaner use (spray & non-spray)	Industrial	3	7, 10, 13		4	**ES4, ES5**
	Professional	22	10, 11, 13, 19		8A, 8D	**ES7, ES8**
	Consumer	21		3, 4, 9a, 35	8A	**ES9**
Use in deicers / screenwash	Professional	22	11		8D	**ES8**
	Consumer	21		4	8D	**ES9**
Cosmetics use (spray & non-spray) - environment and occupational only	Consumer	21		28, 39	8A, 8D	**ES9**
Use in coatings, inks, and adhesives	Industrial	3	7, 10, 13,		4	**ES4, ES5**
	Professional	22	10, 11, 13, 19		8A, 8D	**ES7, ES8**
	Consumer	21		1, 4, 9a, 9c, 15, 18, 23, 24, 31	8A, 8D	**ES9**
Laboratory reagents use	Industrial	3	15		4	**ES10**

Use / Activity	Area of Application	Sector of Use	Process Category (mandatory)	Product Category	Environmental Release Category	EtOH REACH Association ES reference number
	Professional	22	15		8A	**ES10**
Explosives manufacture and distribution	Professional	22	10, 13, 14, 19		8A, 8D	**ES7**
Heat transfer fluid use	Industrial	3	20		7	**ES11**
	Professional	22	20		9A	**ES11**
	Consumer	21		16, 17	9A	**ES9**
Manufacture of fuel, including blending	Industrial	3, 8, 9	1, 2, 3, 4, 8a, 8b,		1	**ES1, ES10**
Formulation and packing of fuel preparations and mixtures	Industrial	3,10	3, 5, 8a, 8b, 9, 14		2	**ES3, ES10**
Use as a fuel	Industrial	3	16		7	**ES6a**
	Professional	22	16		9a, 9b	**ES6b**
	Consumer	21		13	9a, 9b	**ES9**
Distribution of fuel	Industrial	3,8,10	8a, 8b, 9		2	**ES2**
Other consumer uses	Consumer	21		1, 3, 4, 8, 9a, 9c, 12, 13, 14, 15, 16, 17, 18, 23, 24, 27, 28, 30, 31, 34, 35, 39	8A, 8B, 8D	**ES9**

APPENDIX 2 TO CHAPTER 9 – LIST OF EXPOSURE SCENARIOS

(Additional guidance to assist in identifying appropriate ES's to use)

List of Exposure Scenarios						
ES	Descriptive Title	SU	PROCs	ERC	PCs	Description of activities
ES1	Industrial manufacturing of ethanol and use as intermediate or process chemical.	SU3, SU8, SU9	PROC1, PROC2, PROC3, PROC4, PROC8a,b	ERC1, 4, 6a	n.a.	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.
ES2	Distibution of Ethanol	SU3, SU8, SU9	PROC8a,b, PROC9,	ERC2	n.a.	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated and dedicated facilities. Includes material transfers, storage, maintenance and loading. Intended for e.g. traders, distributors, transporters, etc. Covers fuel activities.
ES3	Industrial formulation and (re)packing of Ethanol and its mixtures	SU3, SU10	PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC14	ERC2		Industrial mixing or blending in batch processes for formulation of preparations, transfer of substance or preparation into small containers (dedicated filling line), and transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated and non-dedicated facilities. This Exposure Scenario covers activities of formulators/producers of industrial, professional and/or consumer products such as cleaning agents, cosmetics, coatings, paints, inks, lubricants, adhesives, pharmaceuticals, fuels etc. In these products and processes, ethanol is used as an ingredient, solvent, additive or stabilizer.
ES4	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, fuel source)	SU3	PROC10, PROC13	ERC4,		Indoor roller application, brushing and treatment of surfaces. Treatment of articles by dipping and pouring.
ES5	Industrial (end) use of ethanol as such or in preparations by spraying (e.g. as processing aid, cleaning agent, solvent or ingredient in coatings, paints and inks)	SU3	PROC7	ERC4		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.
ES6a	Industrial use of ethanol as fuel source	SU3	PROC16	ERC7		Use as fuel or fuel additive in industrial setting.

ES6b	Professional use of ethanol as fuel source	SU22	PROC16	ERC9a, 9b		Use as fuel or fuel additive in professional and public domain setting.
ES7	Professional (end) use of ethanol as such or in preparations in non-spray application (e.g. as processing aid, cleaning agent, application of coatings, fuel source)	SU22	PROC10, PROC13, PROC14, PROC19	ERC8a, 8d		Indoor roller application, brushing and treatment of surfaces. Treatment of articles by dipping and pouring. Use as fuel source in professional and public domain setting. Includes stabilization of explosives.
ES8	Professional application of paints, coatings, adhesives, cleaners and other mixtures/products containing ethanol by spraying.	SU22	PROC11	ERC8a, 8d		Non industrial / professional spraying of mixtures and products such as paints, coatings, adhesives, polishes, cleaners, deicers, screenwash etc.
ES9a	Consumer use of products which contain ethanol	SU21	n.a.	ERC9a, 9b	13	Use of automotive fuels which contain ethanol
ES9b	Consumer use of products which contain ethanol	SU21	n.a.	ERC8a, 8d	13	Use of ethanol in domestic fuel products (ethanol gel burners, fondue sets, heaters etc)
ES9c	Consumer use of products which contain ethanol	SU21	n.a.	ERC8a, 8d	1, 3, 8, 12, 14, 15, 18, 23, 24, 27, 28, 30, 31, 34, 39	Use of ethanol in consumer products with amount applied in use of <50g per event
ES9d	Consumer use of products which contain ethanol	SU21	n.a.	ERC9a, 9b	16, 17	Use of ethanol in consumer products in enclosed systems (with no expected exposure to ethanol during use)
ES9e	Consumer use of products which contain ethanol	SU21	n.a.	ERC8a, 8d	9a	Consumer use of ethanol in coatings and paint products
ES9f	Consumer use of products which contain ethanol	SU21	n.a.	ERC8d	4	Consumer use of ethanol in antifreeze, deicing and screenwash products
ES9g	Consumer use of products which contain ethanol	SU21	n.a.	ERC8a, 8d	35	Consumer use of ethanol in washing and cleaning products
ES10	Industrial use as laboratory reagent	SU3	PROC15	ERC2, 4, 8a		Use of substances at small scale laboratory (< 1 l or 1 kg). Larger laboratories and R+D installations should be treated as industrial processes.
ES11	Industrial and professional (end) use of ethanol as a heat transfer fluid	SU3, SU22	PROC20	ERC7, 9a, 9b		Heat and pressure transfer fluids in dispersive, professional use but closed systems

APPENDIX 3 TO CHAPTER 9 – DETAILS OF CSA-worker exposure

PART 1

	PROC			SETTINGS USED IN ECETOC TRA MODEL									
	Short Exposure Scenario name	Process Category (PROC)	Activity Type	Indoors / Outdoors	Vent	Vent eff %	Duration (h)	inh PPE	inh PPE eff %	derm PPE	derm PPE MF	Prep? %	Dermal max exp skin area (cm2)
Industrial use	ES 1 Industrial manufacture of ethanol in continuous processes	1 - Use in closed process, no likelihood of exposure	Industrial	Indoors	No		>4 hours (default)	No		No		No	240
		2 - Use in closed, continuous process with occasional controlled exposure	Industrial	Indoors	No		>4 hours (default)	No		No		No	480
		8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	Industrial	Indoors	No		>4 hours (default)	No		No		No	960
		8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	Industrial	Indoors	No		>4 hours (default)	No		No		No	480
		9 -Transfer of chemicals into small containers (dedicated filling line)	Industrial	Indoors	No		>4 hours (default)	No		No		No	480
	ES 1 Industrial manufacture of ethanol (and its reaction products and/or mixtures) in batch processes	3 - Use in closed batch process (synthesis or formulation)	Industrial	Indoors	No		>4 hours (default)	No		No		No	240
		4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Industrial	Indoors	No		>4 hours (default)	No		No		No	480
		8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	Industrial	Indoors	No		>4 hours (default)	No		No		No	960
		8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	Industrial	Indoors	No		>4 hours (default)	No		No		No	480
		9 -Transfer of chemicals into small containers (dedicated filling line)	Industrial	Indoors	No		>4 hours (default)	No		No		No	480
	ES 2 Bulk distribution, loading/ unloading, and drumming /repacking of ethanol and mixtures, products containing ethanol (distributor and trader activities)	8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	Industrial	Indoors	No		>4 hours (default)	No		No		No	960
		8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	Industrial	Indoors	No		>4 hours (default)	No		No		No	480
		9 -Transfer of chemicals into small containers (dedicated filling line)	Industrial	Indoors	No		>4 hours (default)	No		No		No	480
	ES 3 Industrial formulation of preparations/mixtures and products (adding, blending and	3 - Use in closed batch process (synthesis or formulation)	Industrial	Indoors	No		>4 hours (default)	No		No		No	240
		5 -Mixing or blending in batch processes (multistage and/or significant contact)	Industrial	Indoors	No		>4 hours (default)	No		No		No	480

	PROC			SETTINGS USED IN ECETOC TRA MODEL									
	Short Exposure Scenario name	**Process Category (PROC)**	**Activity Type**	**Indoors / Outdoors**	**Vent**	**Vent eff %**	**Duration (h)**	**inh PPE**	**inh PPE eff %**	**derm PPE**	**derm PPE MF**	**Prep? %**	**Dermal max exp skin area (cm2)**
	mixing of ethanol in mixtures and products)	8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	Industrial	Indoors	No		>4 hours (default)	No		No		No	960
		8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	Industrial	Indoors	No		>4 hours (default)	No		No		No	480
		9 -Transfer of chemicals into small containers (dedicated filling line)	Industrial	Indoors	No		>4 hours (default)	No		No		No	480
		14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation	Industrial	Indoors	No		>4 hours (default)	No		No		No	480
	ES 4 Industrial (end) use of ethanol as such or in preparations/ products in non-spray application (e.g. as processing aid, cleaning or degreasing agent, application of coatings, paints, inks, etc.), including industrial use as fuel	10 - Roller application or brushing	Industrial	Indoors	No		>4 hours (default)	No		No		No	960
		13 -Treatment of articles by dipping and pouring	Industrial	Indoors	No		>4 hours (default)	No		No		No	480
	ES 5 Industrial (end) use/ application of ethanol as such or in preparations/ products by spraying (e.g. as processing aid, cleaning or degreasing agent, solvent or ingredient in coatings, paints and inks, etc.)	7 -Industrial spraying	Industrial	Indoors	No		>4 hours (default)	No		No		Yes at > 25% w/w	1500
		7 -Industrial spraying	Industrial	Indoors	Yes	95	>4 hours (default)	No		No		Yes at > 25% w/w	1500
	ES 6a	16 - Using material as fuel sources, limited exposure to unburned product to be expected	Industrial	Indoors	No		>4 hours (default)	No		No		No	240
Professional / Public domain use	ES6b	16 - Using material as fuel sources, limited exposure to unburned product to be expected	Public Domain (Professional)	Indoors	No		>4 hours (default)	No		No		No	240
	ES 7 Professional (end) use of ethanol as such or in preparations /	10 - Roller application or brushing	Public Domain (Professional)	Indoors	No		>4 hours (default)	No		No		No	960
		~~13 -Treatment of articles by dipping and~~	~~Public Domain~~	~~Indoors~~	~~No~~		~~>4 hours~~	~~No~~		~~No~~		~~Yes at > 25%~~	~~480~~

	PROC		SETTINGS USED IN ECETOC TRA MODEL									
Short Exposure Scenario name	**Process Category (PROC)**	**Activity Type**	**Indoors / Outdoors**	**Vent**	**Vent eff %**	**Duration (h)**	**inh PPE**	**inh PPE eff %**	**derm PPE**	**derm PPE MF**	**Prep? %**	**Dermal max exp skin area (cm2)**
products in non-spray application (e.g. as processing aid, cleaning or degreasing agent, application of coatings, paints and inks, etc.), including professional use as fuel	pouring	(Professional)				(default)					w/w	
	14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation	Public Domain (Professional)	Indoors	No		>4 hours (default)	No		No		Yes at > 25% w/w	480
	19 - Hand-mixing with intimate contact (only PPE available	Public Domain (Professional)	Indoors	No		>4 hours (default)	No		Yes	0.2	Yes at > 25% w/w	1980
	19 - Hand-mixing with intimate contact (only PPE available	Public Domain (Professional)	Indoors	No		1 - 4 hours	No		No		Yes at > 25% w/w	1980
	19 - Hand-mixing with intimate contact (only PPE available	Public Domain (Professional)	Indoors	No		>4 hours (default)	No		No		Yes at 5 – 25% w/w	1980
	19 - Hand-mixing with intimate contact (only PPE available	Public Domain (Professional)	Indoors	No		>4 hours (default)	No		No		Yes at 1 – 5% w/w	1980
	19 - Hand-mixing with intimate contact (only PPE available	Public Domain (Professional)	Indoors	No		1 - 4 hours	No		No		Yes at 5 – 25% w/w	1980
	19 - Hand-mixing with intimate contact (only PPE available	Public Domain (Professional)	Outdoors	Yes		>4 hours (default)	No		No		Yes at > 25% w/w	1980
ES 8 Professional application of paints, coatings, adhesives and other mixtures/products containing ethanol by spraying.	11 - Non industrial spraying	Public Domain (Professional)	Indoors	Yes	30	>4 hours (default)	No		Yes	0.2	Yes at > 25% w/w	1500
	11 - Non industrial spraying	Public Domain (Professional)	Indoors	No		>4 hours (default)	No		No		Yes at 5 – 25% w/w	1500
	11 - Non industrial spraying	Public Domain (Professional)	Indoors	No		>4 hours (default)	No		No		Yes at 1 – 5% w/w	1500
	11 - Non industrial spraying	Public Domain (Professional)	Indoors	No		1 - 4 hours	No		Yes	0.2	Yes at 5 – 25% w/w	1500
	11 - Non industrial spraying	Public Domain (Professional)	Indoors	Yes	80	>4 hours (default)	No		No		Yes at > 25% w/w	1500
	11 - Non industrial spraying	Public Domain (Professional)	Outdoors	Yes	n.a.	>4 hours (default)	No		Yes	0.2	Yes at > 25% w/w	1500
ES 9 (Consumer use)												
ES 10 Industrial and professional use as laboratory reagent	15 - Use of laboratory reagents in small scale laboratories	Industrial	Indoors	No		>4 hours (default)	No		No		No	240
	15 - Use of laboratory reagents in small scale laboratories	Public Domain (Professional)	Indoors	No		>4 hours (default)	No		No		No	240

	PROC			SETTINGS USED IN ECETOC TRA MODEL									
	Short Exposure Scenario name	Process Category (PROC)	Activity Type	Indoors / Outdoors	Vent	Vent eff %	Duration (h)	inh PPE	inh PPE eff %	derm PPE	derm PPE MF	Prep? %	Dermal max exp skin area (cm2)
	ES 11 Professional (end) use of ethanol as a heat transfer fluid	20 - Heat and pressure transfer fluids (closed systems) in dispersive use	Public Domain (Professional)	Indoors	No		>4 hours (default)	No		No		No	480

PART 2

	PROC		ESTIMATE OF EXPOSURES				RISK CHARACTERISATION RATIO			RMM phrase
	Short Exposure Scenario name	Process Category (PROC)	Inhalative Exp Est (ppm)	Inhalative Exp Est (mg/m3)	Dermal Exp Est (mg/kg bw/day)	Total Derm + Inh (mg/kg bw/day)	Risk Char - Inh	Risk Char Derm	Risk CharTotal	
Industrial use	ES 1 Industrial manufacture of ethanol in continuous processes	1 - Use in closed process, no likelihood of exposure	0.01	0.01920833	0.3429	0.34564405	2.022E-05	0.0022123	0.00223	
		2 - Use in closed, continuous process with occasional controlled exposure	10	19.2083333	1.3714	4.11544762	0.0202193	0.0088477	0.0265513	
		8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	50	96.0416667	13.7143	27.4345381	0.1010965	0.0884794	0.176997	
		8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	50	96.0416667	6.8571	20.5773381	0.1010965	0.0442394	0.132757	
		9 -Transfer of chemicals into small containers (dedicated filling line)	50	96.0416667	6.8571	20.5773381	0.1010965	0.0442394	0.132757	
	ES 1 Industrial manufacture of ethanol (and its reaction products and/or mixtures) in batch processes	3 - Use in closed batch process (synthesis or formulation)	25	48.0208333	0.3429	7.20301905	0.0505482	0.0022123	0.0464711	
		4 - Use in batch and other process (synthesis) where opportunity for exposure arises	20	38.4166667	6.8571	12.3451952	0.0404386	0.0442394	0.0796464	
		8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	50	96.0416667	13.7143	27.4345381	0.1010965	0.0884794	0.176997	
		8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	50	96.0416667	6.8571	20.5773381	0.1010965	0.0442394	0.132757	
		9 -Transfer of chemicals into small containers (dedicated filling line)	50	96.0416667	6.8571	20.5773381	0.1010965	0.0442394	0.132757	

	PROC	ESTIMATE OF EXPOSURES				RISK CHARACTERISATION RATIO			RMM phrase
Short Exposure Scenario name	**Process Category (PROC)**	**Inhalative Exp Est (ppm)**	**Inhalative Exp Est (mg/m3)**	**Dermal Exp Est (mg/kg bw/day)**	**Total Derm + Inh (mg/kg bw/day)**	**Risk Char - Inh**	**Risk Char Derm**	**Risk CharTotal**	
ES 2 Bulk distribution, loading/ unloading, and drumming /repacking of ethanol and mixtures, products containing ethanol (distributor and trader activities)	8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	50	96.0416667	13.7143	27.4345381	0.1010965	0.0884794	0.176997	
	8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	50	96.0416667	6.8571	20.5773381	0.1010965	0.0442394	0.132757	
	9 -Transfer of chemicals into small containers (dedicated filling line)	50	96.0416667	6.8571	20.5773381	0.1010965	0.0442394	0.132757	
ES 3 Industrial formulation of preparations/mixtures and products (adding, blending and mixing of ethanol in mixtures and products)	3 - Use in closed batch process (synthesis or formulation)	25	48.0208333	0.3429	7.20301905	0.0505482	0.0022123	0.0464711	
	5 -Mixing or blending in batch processes (multistage and/or significant contact)	50	96.0416667	13.7143	27.4345381	0.1010965	0.0884794	0.176997	
	8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	50	96.0416667	13.7143	27.4345381	0.1010965	0.0884794	0.176997	
	8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	50	96.0416667	6.8571	20.5773381	0.1010965	0.0442394	0.132757	
	9 -Transfer of chemicals into small containers (dedicated filling line)	50	96.0416667	6.8571	20.5773381	0.1010965	0.0442394	0.132757	
	14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation	50	96.0416667	3.4286	17.1488381	0.1010965	0.02212	0.1106377	
ES 4 Industrial (end) use of ethanol as such or in preparations/ products in non-spray application (e.g. as processing aid, cleaning or degreasing agent, application of coatings, paints, inks, etc.), including industrial use as fuel	10 - Roller application or brushing	50	96.0416667	27.4286	41.1488381	0.1010965	0.1769587	0.2654764	
	13 -Treatment of articles by dipping and pouring	50	96.0416667	13.7143	27.4345381	0.1010965	0.0884794	0.176997	

		PROC	ESTIMATE OF EXPOSURES				RISK CHARACTERISATION RATIO			RMM phrase
	Short Exposure Scenario name	**Process Category (PROC)**	**Inhalative Exp Est (ppm)**	**Inhalative Exp Est (mg/m3)**	**Dermal Exp Est (mg/kg bw/day)**	**Total Derm + Inh (mg/kg bw/day)**	**Risk Char - Inh**	**Risk Char Derm**	**Risk CharTotal**	
	ES 5 Industrial (end) use/ application of ethanol as such or in preparations/ products by spraying (e.g. as processing aid, cleaning or degreasing agent, solvent or ingredient in coatings, paints and inks, etc.)	7 -Industrial spraying	250	480.208333	42.8571	111.45829	0.5054825	0.2764974	0.7190857	
		7 -Industrial spraying	12.5	24.0104167	2.1429	5.57295952	0.0252741	0.0138252	0.0359546	Minimise exposure by enclosing the operation or equipment and provide extract ventilation at openings; Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20
	ES 6a	16 - Using material as fuel sources, limited exposure to unburned product to be expected	5	9.60416667	0.3429	1.71492381	0.0101096	0.0022123	0.011064	
Professional / Public domain use	ES6b	16 - Using material as fuel sources, limited exposure to unburned product to be expected	10	19.2083333	0.3429	3.08694762	0.0202193	0.0022123	0.0199158	
	ES 7 Professional (end) use of ethanol as such or in preparations / products in non-spray application (e.g. as processing aid, cleaning or degreasing agent, application of coatings, paints and inks, etc.), including professional use as fuel	10 - Roller application or brushing	100	192.083333	27.4286	54.8690762	0.202193	0.1769587	0.353994	
		13 -Treatment of articles by dipping and pouring	100	192.083333	13.7143	41.1547762	0.202193	0.0884794	0.2655147	
		14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation	100	192.083333	3.4286	30.8690762	0.202193	0.02212	0.1991553	
		19 - Hand-mixing with intimate contact (only PPE available	100	192.083333	28.28572	55.7261962	0.202193	0.1824885	0.3595238	Wear suitable gloves tested to EN374 and avoid skin contact;
		19 - Hand-mixing with intimate contact (only PPE available	60	115.25	141.4286	157.892886	0.1213158	0.9124426	1.0186638	Do not carry out operation for more than 4 hours
		19 - Hand-mixing with intimate contact (only PPE available	60	115.25	84.85716	101.321446	0.1213158	0.5474655	0.6536867	Limit the substance content in the product to 25 %
		19 - Hand-mixing with intimate contact (only PPE available	20	38.4166667	28.28572	33.7738152	0.0404386	0.1824885	0.2178956	Limit the substance content in the product to 5 %
		19 - Hand-mixing with intimate	36	69.15	84.85716	94.7357314	0.0727895	0.5474655	0.6111983	Do not carry out operation for more

	PROC	ESTIMATE OF EXPOSURES				RISK CHARACTERISATION RATIO			RMM phrase
Short Exposure Scenario name	**Process Category (PROC)**	**Inhalative Exp Est (ppm)**	**Inhalative Exp Est (mg/m3)**	**Dermal Exp Est (mg/kg bw/day)**	**Total Derm + Inh (mg/kg bw/day)**	**Risk Char - Inh**	**Risk Char Derm**	**Risk CharTotal**	
	contact (only PPE available								than 4 hours; Limit the substance content in the product to 25 %
	19 - Hand-mixing with intimate contact (only PPE available	70	134.458333	141.4286	160.636933	0.1415351	0.9124426	1.0363673	Ensure operation is undertaken outdoors
ES 8 Professional application of paints, coatings, adhesives and other mixtures/products containing ethanol by spraying.	11 - Non industrial spraying	350	672.291667	21.42858	117.470247	0.7076754	0.1382489	0.7578726	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.; Wear suitable gloves tested to EN374
	11 - Non industrial spraying	300	576.25	64.28574	146.607169	0.6065789	0.4147467	0.9458527	Limit the substance content in the product to 25 %
	11 - Non industrial spraying	100	192.083333	21.42858	48.8690562	0.202193	0.138249	0.315284	Limit the substance content in the product to 5 %
	11 - Non industrial spraying	180	345.75	21.42858	70.8214371	0.3639474	0.138249	0.4569125	Do not carry out operation for more than 4 hours; Wear suitable gloves tested to EN374; Limit the substance content in the product to 25 %
	11 - Non industrial spraying	100	192.083333	2.1429	29.5833762	0.202193	0.0138252	0.1908605	
	11 - Non industrial spraying	350	672.291667	21.42858	117.470247	0.7076754	0.1382489	0.7578726	Ensure operation is undertaken outdoors; Wear suitable gloves tested to EN374 if substance content in the product exceeds 5%.
ES 9 (Consumer use)	n.a. Consumer use is not evaluated with the Ecetoc TRA worker tool								
ES 10 Industrial and professional use as laboratory reagent	15 - Use of laboratory reagents in small scale laboratories	10	19.2083333	0.3429	3.08694762	0.0202193	0.0022123	0.0199158	
	15 - Use of laboratory reagents in small scale laboratories	10	19.2083333	0.3429	3.08694762	0.0202193	0.0022123	0.0199158	
ES 11 Professional (end) use of ethanol as a heat transfer fluid	20 - Heat and pressure transfer fluids (closed systems) in dispersive use	20	38.4166667	1.7143	7.20239524	0.0404386	0.01106	0.0464671	

Exposure Modifiers for Refinement of ECETOC TRA Estimates – WORKER

Ref 3: Exposure Modifiers for Refinement of ECETOC TRA Estimates - WORKERS

Please note comments included in cell annotations	

1. Inhalation exposure			*modifying factor*	*description*	Examples only of RMM-standard phrases - Solvents Industry (ESIG/ESVOC)
a.	Concentration		1	> 25%	*(not applicable)*
			0.6	5 - 25%	Limit the substance content in the product to 25 % [OC18]
			0.2	1 - 5%	Limit the substance in product to 5 % [OC17]
			0.1	< 1%	Limit the substance in product to 1 % [OC16]
b.	LEV-professional	PROC 12, 24	75%	LEV: 75% effective	Provide extract ventilation to points where emissions occur [E54] Ensure material transfers are under containment or extract ventilation [E66] Provide extract ventilation to material transfer points and other openings [E82]
		PROC 2,3,4,5,6,8a,8b,9,10,11, 12,13,14,15,16,19,20,21, 23,25	80%	LEV: 80% effective	Provide extract ventilation to points where emissions occur [E54] Ensure material transfers are under containment or extract ventilation [E66] Provide extract ventilation to material transfer points and other openings [E82]
		PROC 17, 18	90%	LEV: 90% effective	Minimise exposure by enclosing the operation or equipment and provide extract ventilation at openings [E60] Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 [E70]
			95%	LEV: 95% effective	Carry out in a vented booth or extracted enclosure [E57]
	LEV-industrial	PROC 12, 24	80%	LEV: 80% effective	Provide extract ventilation to points where emissions occur [E54] Ensure material transfers are under containment or extract ventilation [E66] Provide extract ventilation to material transfer points and other openings [E82]
		PROC 2,3,4,5,6,8a,9,10,13, 14,15,16,19,21,22,23,25	90%	LEV: 90% effective	Provide extract ventilation to points where emissions occur [E54] Ensure material transfers are under containment or extract ventilation [E66] Provide extract ventilation to material transfer points and other openings [E82]
		PROC 7, 8b solids, 17, 18	95%	LEV: 95% effective	Minimise exposure by enclosing the operation or equipment and provide extract ventilation at openings [E60] Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 [E70]
		PROC 8b volatiles	97%	LEV: 97% effective	Provide extract ventilation to points where emissions occur [E54] Ensure material transfers are under containment or extract ventilation [E66]

1. Inhalation exposure			*modifying factor*	*description*	**Examples only of RMM-standard phrases - Solvents Industry (ESIG/ESVOC)**
					Provide extract ventilation to material transfer points and other openings [E82]
			99%	LEV: 99% effective	Carry out in a vented booth provided with laminar airflow [E59] Minimise exposure by extracted full enclosure for the operation or equipment [E61]
c.	**Ventilation**	**professional/industrial**	30%	30% effective	Ensure operation is undertaken outdoors [E69] 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. [E1]
		professional/industrial	70%	Controlled mechanical ventilation: 70% effective	Provide enhanced general ventilation by mechanical means [E48] Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour) (E40]
d.	**Duration of exposure (note: check also exposure during task against DNEL-short term)**				
			1	> 4 hours	*(not applicable)*
			0.6	1-4 hours	Avoid carrying out operation for more than 4 hours [OC12]
			0.2	15 min - 1 hour	Avoid carrying out operation for more than 1 hour [OC11]
			0.1	< 15 min	Avoid carrying out operation for more than 15 minutes [OC10]
e.	**RPE**		0.1	half mask respirator	Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29]
			0.05	full face respirator	Wear a full face respirator conforming to EN140 with Type A filter or better. [PPE24] Wear a full face respirator conforming to EN140 with Type A/P2 filter or better. [PPE32]
			0.025	*(outside scope of TRA)*	*(sophisticated forms of RPE that require specialised maintenance)*

2. Dermal exposure (to reduce systemic exposure and to protect against systemic adverse health effects)					
			modifying factor	*description*	
a.	**Concentration**		1	> 25%	*(not applicable)*
			0.6	5 - 25%	Limit the substance content in the product to 25 % [OC18]
			0.2	1 - 5%	Limit the substance in product to 5 % [OC17]
			0.1	< 1%	Limit the substance in product to 1 % [OC16]
b.	**LEV present**	PROC 1	0.1	Predicted dermal exposure value varies between PROCs. Note: LEV modifier for dermal exposure may differ from LEV modifiers for inhalatory exposure by PROC	
		PROC 2	0.1		
		PROC 3	0.1		
		PROC 4	0.1		
		PROC 5	0.005		

2. Dermal exposure (to reduce systemic exposure and to protect against systemic adverse health effects)					
			modifying factor	*description*	
		PROC 6	0.05		
		PROC 7	0.05		
		PROC 8a	0.01		
		PROC 8b	0.1		
		PROC 9	0.1		
		PROC 10	0.05		
		PROC 11	0.02		
		PROC 12	0.1		
		PROC 13	0.05		
		PROC 14	0.1		
		PROC 15	0.1		
		PROC 16	0.1		
		PROC 17	0.05		
		PROC 18	0.05		
		PROC 19	0.1		
		PROC 20	0.1		
		PROC 21	0.1		
		PROC 22	0.3		
		PROC 23	0.1		
		PROC 24	0.1		
		PROC 25	0.5		
c.	**PPE**		1	no gloves, disposable gloves without permeation data for substance	
			0.2	wear suitable gloves	Wear suitable gloves tested to EN374 [PPE15]
			0.1	chemically resistant gloves with 'basic' training	Wear chemically resistant gloves (tested to type EN374) in combination with ‘basic’ employee training [PPE16]
			0.05	chemically resistant gloves with specific activity training	Wear chemically resistant gloves (tested to type EN374) in combination with specific activity training [PPE17]
			0.02	chemically resistant gloves with specific activity training and intensive management superv. controls	Wear chemically resistant gloves (tested to type EN374) in combination with intensive management supervision controls [PPE18]

Note: duration of exposure is considered not to be an appropriate modifying factor for dermal exposure

3. Additional dermal protection? (to protect agains local adverse skin effects; no exposure modifying factor)		
	description	
a. if substance/product is corrosive, irritant or sensitizing ->	Wear suitable gloves	Wear suitable gloves tested to EN374 [PPE15]
	Hand, body and eye protection	Wear suitable gloves (tested to EN374), coverall and eye protection. [PPE23]
b. if contributing scenario's implies direct skin contact ->	*Recommended*: Wear suitable gloves	{Wear suitable gloves tested to EN374 [PPE15]}
	Recommended: Hand, body and eye protection	{Wear suitable gloves (tested to EN374), coverall and eye protection. [PPE23]}

Environmental Exposure Assessment for Ethanol – WORKER
PART 1

	Exposure scenario information				Calculation approach		Amount produced or used						Sewage Treatment				
	Use no.	Life cycle stage	Use	mapped ERC	approach for calculation	settings	Total tonnage for use	Fraction of tonnage to region	M/I tonnage to region	F_{main}	T(emis)	M(use)	Use of local STP?	STP marine?	Sludge To Soil?	STP with primary settler?	River (m3/d)
	INDUSTRIAL scenarios																
ES 1 Industrial manufacture of ethanol in continuous processes (ERC 1, ERC 6a)	1	Manufacturing	Ind Manufacturing of ethanol	ERC1, 6a	EUSES	MC-Ib, IC-2, UC-33	3000000	0.1	300000		300		yes	yes	no	yes	18000
ES 1 Industrial manufacture of ethanol (and its reaction products and/or mixtures) in batch processes	1	Manufacturing	Ind Manufacturing of ethanol	ERC1, 6a	EUSES	MC-Ib, IC-2, UC-33	3000000	0.1	300000		300		yes	yes	no	yes	18000
(ERC 1, ERC 6a)	2	Manufacturing	Ind Manufacturing of ethanol (synthesis)	ERC1, 6a	TGD A& B table	MC-Ib, IC-2, UC-33	20000	0.1	2000	0.5	300	**3333**	yes	yes	no	yes	18000
ES 2 Bulk distribution, loading/ unloading, and drumming /repacking of ethanol and mixtures, products containing ethanol (distributor and trader activities) (ERC 2)	3	Formulation	Formulation of preparations general	ERC2	TGD A& B table	MC-Ib, IC-2, UC-48	150000	0.1	15000	0.1	300	**5000**	yes	yes	no	yes	18000

	Exposure scenario information				Calculation approach		Amount produced or used						Sewage Treatment				
	Use no.	Life cycle stage	Use	mapped ERC	approach for calculation	settings	Total tonnage for use	Fraction of tonnage to region	M/I tonnage to region	F_{main}	T(emis)	M(use)	Use of local STP?	STP marine ?	Sludge To Soil?	STP with primary settler ?	River (m3/d)
ES 3 Industrial formulation of preparations/mixtures and products (adding, blending and mixing of ethanol in mixtures and products) (ERC 2)	3	Formulation	Formulation of preparations general	ERC2	TGD A& B table	MC-Ib, IC-2, UC-48	150000	0.1	15000	0.1	300	**5000**	yes	yes	no	yes	18000
	4	Formulation	Formulation of Paints, coatings and adhesives	ERC2	TGD A& B table	MC-Ib, IC-14, UC-48	100000	0.1	10000	0.2	300	6667	yes	yes	no	yes	18000
	5	Formulation	Formulation of fuels	ERC2	TGD A& B table	MC-Ib, IC-9, UC-27	2800000	0.1	280000	0.1	300	**93333**	yes	yes	no	yes	18000
	6	Formulation	Formulation of Cleaning agents	ERC2	TGD A& B table	MC-Ib, IC-5, UC-9	65000	0.1	6500	0.1	300	2167	yes	no	no	yes	18000
	7	Formulation	Formulation of cosmetics	ERC2	TGD A& B table	MC-Ib, IC-5, UC-15	200000	0.1	20000	0.1	300	6667	yes	yes		no	18000
ES 4 / ES 6a Industrial (end) use of ethanol as such or in preparations/ products in non-spray application (e.g. as processing aid, cleaning or degreasing agent, application of coatings, paints, inks, etc.), including industrial use as fuel (ERC 4)	8	Processing	Ind use in coatings, paints, inks and adesives	ERC4	TGD A& B table	MC-Ib, IC-14, UC-48	27500	0.1	2750	0.05	300	458	yes	yes			18000
	9	Processing	Ind use as fuel	ERC7	TGD A& B table	MC-Ic, IC-9, UC-27	300000	0.1	30000	0.02	350	**1714**	yes	yes			18000
ES 5	8	Processing	Ind use in	ERC4	TGD A& B	MC-Ib,	27500	0.1	2750	0.05	300	458	yes	yes			18000

	Exposure scenario information				Calculation approach		Amount produced or used						Sewage Treatment				
	Use no.	Life cycle stage	Use	mapped ERC	approach for calculation	settings	Total tonnage for use	Fraction of tonnage to region	M/I tonnage to region	F_{main}	T(emis)	M(use)	Use of local STP?	STP marine?	Sludge To Soil?	STP with primary settler?	River (m3/d)
Industrial (end) use/ application of ethanol as such or in preparations/ products by spraying (e.g. as processing aid, cleaning or degreasing agent, solvent or ingredient in coatings, paints and inks, etc.) (ERC4)			coatings, paints, inks and adesives		table	IC-14, UC-48											
PROFESSIONAL, PUBLIC DOMAIN, CONSUMER SCENARIOS																	
ES 7 / ES 6b	10	Processing	Professional/ind use in cleaning, coatings, paint and inks	ERC4, 8a,b,d	TGD A& B table	MC-Ic, IC-6, UC-9	20000	0.1	2000	0.002	200	**20**	yes	yes			18000
Professional (end) use of ethanol as such or in preparations / products in non-spray application (e.g. as processing aid, cleaning or degreasing agent, application of coatings, paints and inks, etc.), including professional use as fuel																	
(ERC 8a, 8b, 8d, 9a, 9b)	6	Processing	Professional use in fuels	ERC 9a, 9b	TGD A& B table	MC-Ic, IC-6, UC-9	3800000 Total Indust, profess, consumer	0.1	380000	0.002	365		yes	yes			18000

	Exposure scenario information				Calculation approach		Amount produced or used						Sewage Treatment				
	Use no.	Life cycle stage	Use	mapped ERC	approach for calculation	settings	Total tonnage for use	Fraction of tonnage to region	M/I tonnage to region	F_{main}	T(emis)	M(use)	Use of local STP?	STP marine ?	Sludge To Soil?	STP with primary settler ?	River (m3/d)
	12	Service life	Private use in cleaning, coatings and paints	ERC8 a,b,d	ERC	ERC8a	10000	0.1	1000	0.002	365	**5.479**	yes	yes			18000
ES 8 Professional application of paints, coatings, adhesives and other mixtures/products containing ethanol by spraying.	10	Processing	Professional/ind use in cleaning, coatings, paint and inks	ERC4, 8a,b,d	TGD A& B table	MC-Ic, IC-6, UC-9	20000	0.1	2000	0.002	200	**20**	yes	yes			18000
(ERC 4, ERC 8a,b,d)	12	Service life	Private use in cleaning, coatings and paints	ERC8 a,b,d	ERC	ERC8a, 8d	10000	0.1	1000	0.002	365	5.479	yes	yes			18000
ES 9 (Consumer use)	12	Service life	Private/consumer use of products containing ethanol	ERC8 a,b,d	ERC	ERC8a, 8d	10000	0.1	1000	0.002	365	**5.479**	yes	yes			18000
ES 10 Industrial and professional use as laboratory reagent	11	Processing	Ind use of functional fluids; Ind use as laboratory agent	ERC4	TGD A& B table	MC-Ic, IC-15, UC-48	10000	0.1	1000	0.05	300	**166.7**	yes	yes			18000
(ERC 4, ERC 8a, 8d)	15	Processing/Service life	Professional use as laboratory agent	ERC8 a,b,d	ERC	ERC8d	5000	0.1	500	0.002	365	2.74	yes	yes			18000
ES 11 Professional (end) use of ethanol as a heat transfer fluid (ERC 7, ERC 9a)	14	Service life	Prof. and cons. use of functional fluids	ERC7, 9a	ERC	ERC9a	10000	0.1	1000	0.002	365	**5.479**	yes	yes			18000

PART 2

		Local releases estimates (kg/d)			Regional releases estimates (kg/d)				STP		Local freshwater		Local marine water		local soil	
	Use no.	Air	Water	Soil	Air	Wastewater	Soil	Freshwater	PEC	RCR	PEC	RCR	PEC	RCR	PEC	RCR
ES 1 Industrial manufacture of ethanol in continuous processes (ERC 1, ERC 6a)	1	100	300	8	822	1970	0	493		0.3100	0.1490	**0.9400**	0.1480	**0.9300**	0.0027	**0.0130**
ES 1 Industrial manufacture of ethanol (and its reaction products and/or mixtures) in batch processes (ERC 1, ERC 6a)	1	100	300	8	822	1970	0	493		0.3100	0.1490	**0.9400**	0.1480	**0.9300**	0.0027	**0.0130**
	2	17	10	0	27	13	1	3	0.62140962	0.0011	0.0728	**0.3833**	0.0072	**0.0451**	0.0006	**0.0129**
ES 2 Bulk distribution, loading/ unloading, and drumming /repacking of ethanol and mixtures, products containing ethanol (distributor and trader activities) (ERC 2)	3	50	15	1	411	99	4	24	0.93211443	**0.0016**	0.1039	**0.5471**	0.0103	**0.0646**	0.0014	**0.0306**
ES 3 Industrial formulation of preparations/mixtures and products (adding, blending and mixing of ethanol in mixtures and products) (ERC 2)	3	50	15	1	411	99	4	24	0.93211443	**0.0016**	0.1039	**0.5471**	0.0103	**0.0646**	0.0014	**0.0306**
	4	67	20	1	274	66	3	16	1.24281924	**0.0021**	0.1350	**0.7105**	0.0134	**0.0840**	0.0018	**0.0393**
	5	467	28	9	3836	184	77	46	1.73994694	**0.0030**	0.1858	**0.9781**	0.0186	**0.1164**	0.0117	**0.2533**
	6	0	2	17	4	13	142	3	0.08116415	**0.0001**	0.0188	**0.0990**	0.0018	**0.0114**	0.0002	**0.0044**
	7	1	6	53	11	39	438	10	0.24973584	**0.0004**	0.0357	**0.1881**	0.0035	**0.0220**	0.0002	**0.0051**
ES 4 / ES 6a Industrial (end) use of ethanol as such or in preparations/ products in non-spray application (e.g. as processing aid, cleaning or degreasing agent, application of coatings, paints, inks, etc.), including industrial use as fuel (ERC 4)	8	367	5	0	6027	60	8	15	0.28481274	**0.0005**	0.0392	**0.2061**	0.0039	**0.0241**	0.0091	**0.1963**
	9	9	1	2	411	33	82	8	0.05326368	**0.0001**	0.0161	**0.0849**	0.0016	**0.0098**	0.0004	**0.0098**
ES 5 Industrial (end) use/ application of ethanol as such or in preparations/ products by spraying (e.g. as processing aid, cleaning or degreasing agent, solvent or ingredient in coatings, paints and inks, etc.)	8	367	5	0	6027	60	8	15	0.28481274	**0.0005**	0.0392	**0.2061**	0.0039	**0.0241**	0.0091	**0.1963**
ES 7 / ES 6b Professional (end) use of ethanol as such or in preparations / products in non-spray application (e.g. as processing aid, cleaning or degreasing agent, application of coatings, paints and inks, etc.), including professional use as fuel	10	0	20	16	0	4384	4384	1085	1.24281924	**0.0021**	0.1350	**0.7103**	0.0134	**0.0840**	0.0002	**0.0042**

		Local releases estimates (kg/d)			Regional releases estimates (kg/d)				STP		Local freshwater		Local marine water		local soil	
	Use no.	Air	Water	Soil	Air	Wastewater	Soil	Freshwater	PEC	RCR	PEC	RCR	PEC	RCR	PEC	RCR
(ERC 8a, 8b, 8d, 9a, 9b)	6	0	20	16	0	4384	4384	1085	1.24281924	**0.0021**	0.1350	**0.7103**	0.0134	**0.0840**	0.0002	**0.0042**
	12	5	5	0	2740	2192	0	542	0.34049842	**0.0006**	0.0447	**0.2354**	0.0044	**0.0276**	0.0003	**0.0076**
ES 8 Professional application of paints, coatings, adhesives and other mixtures/products containing ethanol by spraying. (ERC 4, ERC 8a,b,d)	10	0	20	16	0	4384	4384	1085	1.24281924	**0.0021**	0.1350	**0.7103**	0.0134	**0.0840**	0.0002	**0.0042**
	12	5	5	0	2740	2192	0	542	0.34049842	**0.0006**	0.0447	**0.2354**	0.0044	**0.0276**	0.0003	**0.0076**
ES 9 (Consumer use)	12	5	5	0	2740	2192	0	542	0.34049842	**0.0006**	0.0447	**0.2354**	0.0044	**0.0276**	0.0003	**0.0076**
ES 10 Industrial and professional use as laboratory reagent (ERC 4, ERC 8a, 8d)	11	2	2	0	27	22	0	5	0.10356827	**0.0002**	0.0210	**0.1107**	0.0020	**0.0128**	0.0002	**0.0050**
	15	3	3	0	1370	1096	14	271	0.17024921	**0.0003**	0.0277	**0.1458**	0.0027	**0.0169**	0.0002	**0.0059**
ES 11 Professional (end) use of ethanol as a heat transfer fluid (ERC 7, ERC 9a)	14	0	0	0	137	0	0	0	0	**0.0000**	0.0107	**0.0562**	0.0010	**0.0063**	0.0002	**0.0043**

APPENDIX 4 TO CHAPTER 9 – ECETOC TRA tool calculation for environmental exposure scenarios

PART 1

ES nr.	Exposure scenario information				Calculation approach	
	Use no.	Life cycle stage	Use	mapped ERC	approach	settings
1, 2, 3	1	Manufacturing	Ind Manufacturing of ethanol	ERC1, 6a	EUSES	see EUSES report file
1, 2, 3	2	Manufacturing	Ind Manufacturing of ethanol (synthesis)	ERC1, 6a	TGD A& B table	MC-Ib, IC-2, UC-33
3	3	Formulation	Formulation of preparations general	ERC2	TGD A& B table	MC-Ib, IC-2, UC-48
3	4	Formulation	Formulation of Paints, coatings and adhesives	ERC2	TGD A& B table	MC-Ib, IC-14, UC-48
3	5	Formulation	Formulation of fuels	ERC2	TGD A& B table	MC-Ib, IC-9, UC-27
3	6	Formulation	Formulation of Cleaning agents	ERC2	TGD A& B table	MC-Ib, IC-5, UC-9
3	7	Formulation	Formulation of cosmetics	ERC2	TGD A& B table	MC-Ib, IC-5, UC-15
4.5	8	Processing	Ind use in coatings, paints, inks and adhesives	ERC4	TGD A& B table	MC-Ib, IC-14, UC-48
6a	9	Processing	Ind use as fuel	ERC4/ERC7	TGD A& B table	MC-Ic, IC-9, UC-27
4,5,7	10	Processing	Professional/ind use in cleaning	ERC4, 8a,b,d	TGD A& B table	MC-Ic, IC-6, UC-9
11	11	Processing	Ind use of functional fluids; Ind use as laboratory agent	ERC7	TGD A& B table	MC-Ic, IC-15, UC-48
8, 9e	12	Service life	Private use in coatings and paints	ERC8 a,b,d	ERC	ERC8a
8, 9b	13	Service life	Private use as fuel (domestic fuels)	ERC8 a,b,d	ERC	ERC8d
10	15	Processing	Professional use as laboratory agent	ERC8 a,b,d	ERC	ERC8d
6b,9a,11	14	Service life	Prof. and cons. use of functional fluids, fuels	ERC7, 9a	ERC	ERC9a
6b,9a,11	14	Service life	Prof. and cons. use of functional fluids, fuels	ERC7, 9b	ERC	MC-IV, IC-6, UC-27

PART 2

ES nr.		Amount produced or used						Sewage Treatment				
	Use no.	Total tonnage for use	Fraction of tonnage to region	M/I tonnage to region	Fmain	T(emis)	M(use)	Use of local STP?	STP marine?	Sludge To Soil?	STP with primary settler?	River (m3/d)
1, 2, 3	1	4600000	0.1	300000		350		yes	yes	no	yes	18000
1, 2, 3	2	20000	0.1	2000	0.5	300	3333	yes	yes	no	yes	18000
3	3	150000	0.1	15000	0.1	300	5000	yes	yes	no	yes	18000
3	4	100000	0.1	10000	0.2	300	6667	yes	yes	no	yes	18000
3	5	2800000	0.1	280000	0.1	300	93333	yes	yes	no	yes	18000
3	6	65000	0.1	6500	0.1	300	2167	yes	no	no	yes	18000
3	7	200000	0.1	20000	0.1	300	6667	yes	yes		no	18000
4.5	8	27500	0.1	2750	0.05	300	458	yes	yes			18000
6a	9	300000	0.1	30000	0.02	350	1714	yes	yes			18000
4, 5, 7	10	20000	0.1	2000	0.002	200	20	yes	yes			18000
11	11	10000	0.1	1000	0.05	300	166.666667	yes	yes			18000
8, 9e	12	10000	0.1	1000	0.002	365	5.47945205	yes	yes			18000
8, 9b	13	10000	0.1	1000	0.002	365	5.47945205	yes	yes			18000
10	15	5000	0.1	500	0.002	365	2.73972603	yes	yes			18000
6b,9a,11	14	3800000	0.1	1000	0.002	365	2082	yes	yes			18000
6b,9a,11	14	3800000	0.1	1000	0.002	365	2082	yes	yes			18000

PART 3

									Risk characterization							
ES nr.		Local releases estimates (kg/d)			Regional releases estimates (kg/d)				STP		Local freshwater		Local marine water		local soil	
	Use no.	Air	Water	Soil	Air	Wastewater	Soil	Freshwater	PEC	RCR	PEC	RCR	PEC	RCR	PEC	RCR
1, 2, 3	1	226	11						5.65	0.0970	0.0000	0.0001	0.0000	0.0000	0.0012	0.0360
1, 2, 3	2	17	10	0	27	13	1	3	0.62141	0.0011	0.0728	0.3833	0.0072	0.0451	0.0006	0.0129
3	3	50	15	1	411	99	4	24	0.932114	0.0016	0.1039	0.5471	0.0103	0.0646	0.0014	0.0306
3	4	67	20	1	274	66	3	16	1.242819	0.0021	0.1350	0.7105	0.0134	0.0840	0.0018	0.0393
3	5	467	28	9	3836	184	77	46	1.739947	0.0030	0.1858	0.9781	0.0186	0.1164	0.0117	0.2533
3	6	0	2	17	4	13	142	3	0.081164	0.0001	0.0188	0.0990	0.0018	0.0114	0.0002	0.0044
3	7	1	6	53	11	39	438	10	0.249736	0.0004	0.0357	0.1881	0.0035	0.0220	0.0002	0.0051
4.5	8	367	5	0	6027	60	8	15	0.284813	0.0005	0.0392	0.2061	0.0039	0.0241	0.0091	0.1963
6a	9	9	1	2	411	33	82	8	0.053264	0.0001	0.0152	0.0800	0.0016	0.0099	0.0006	0.0160
4, 5, 7	10	0	20	16	0	4384	4384	1085	1.242819	0.0021	0.1350	0.7103	0.0134	0.0840	0.0002	0.0042
11	11	2	2	0	27	22	0	5	0.103568	0.0002	0.0210	0.1107	0.0020	0.0128	0.0002	0.0050
8, 9e	12	5	5	0	2740	2192	0	542	0.340498	0.0006	0.0447	0.2354	0.0044	0.0276	0.0003	0.0076
8, 9b	13	5	5	0	2740	2192	27	542	0.340498	0.0006	0.0447	0.2354	0.0044	0.0276	0.0003	0.0076
10	15	3	3	0	1370	1096	14	271	0.170249	0.0003	0.0277	0.1458	0.0027	0.0169	0.0002	0.0059
6b,9a,11	14	104	0	0	104	0	0	0	0	0.0000	0.0110	0.0590	0.0013	0.0084	0.0037	0.0830
6b,9a,11	14	830	1	0	416000	416	103	104	0.065	0.0001	0.0240	0.1240	0.0034	0.0210	0.0273	0.6020

APPENDIX 5 TO CHAPTER 9 – Ethanol Consumer Exposure Calculation

For consumer exposure calculations, the Generic Exposure Scenario (GES) Tool was used that has been developed by the European Solvents VOC Coordination Group (ESVOC), under the aegis of CEFIC. The version of the GES Tool used was the latest (at that time) draft version dated 8th April 2010.The GES Tool defaults have been applied, using the High Volatility case, i.e. vapour pressure greater than 10Pa. The following table shows the divergence from the default values used in the GES Tool.

		Table 2b: Characterising the Risk - after refinement of exposure estimate				
		inhalation		inhalation	inhalation	
		Amount Used per event (g)		Location (indoors, outdoors, garage)	Air Exchange Rate (1/hr)	
		Value	Comments		Value	Comments
PC1:Adhesives, sealants	Glues DIY-use (carpet glue, tile glue, wood parquet glue)	50.00	Maximum according to exposure assessment	indoor, typical	0.60	RIVM general fact sheet
PC1:Adhesives, sealants	Glue from **spray**	50.00	Maximum according to exposure assessment	indoor, typical	0.60	RIVM general fact sheet
PC1:Adhesives, sealants	Sealants	50.00	Maximum according to exposure assessment	indoor, typical	0.60	RIVM general fact sheet
PC4_n:Anti-freeze and de-icing products	Washing car window	50	as per exposure scenario	outdoor	0.60	est. conservative value for outdoor
PC9a:Coatings and paints, fillers putties, thinners	Waterborne latex wall paint	2760.00	est. 400 sq ft per gallon, for walls of 20 m3 room est. 304 sq ft or 0.76 gallons = 2760 g; consistent with EPA 2009 EFH 75th percentile	indoor, ventilation	2.50	Default for TRA tool with this setting

		Table 2b: Characterising the Risk - after refinement of exposure estimate				
		inhalation		inhalation	inhalation	
		Amount Used per event (g)		Location (indoors, outdoors, garage)	Air Exchange Rate (1/hr)	
		Value	Comments		Value	Comments
PC9a:Coatings and paints, fillers putties, thinners	Solvent rich, high solid, water borne paint	744.00	EFH 2009 75th percentile oil paint	indoor, ventilation	2.50	Default for TRA tool with this setting
PC9a:Coatings and paints, fillers putties, thinners	Aerosol **spray** can	215.00	EFH 2009 75th percentile spray paint	garage	4.20	Guidance R15, p50, all doors and windows open
PC9a:Coatings and paints, fillers putties, thinners	Removers (paint-, glue-, wall paper-, sealant-remover)	491.00	EFH 2009 75th percentile	indoor, ventilation	2.50	Default for TRA tool with this setting
PC15_n: Non-metal surface treatment products	Waterborne latex wall paint	2760.00	est. 400 sq ft per gallon, for walls of 20 m3 room est. 304 sq ft or 0.76 gallons = 2760 g; consistent with EPA 2009 EFH 75th percentile	indoor, ventilation	2.50	RIVM general fact sheet
PC15_n: Non-metal surface treatment products	Solvent rich, high solid, water borne paint	250.00	Maximum in ES	indoor, ventilation	2.50	RIVM general fact sheet
PC15_n: Non-metal surface treatment products	Removers (paint-, glue-, wall paper-, sealant-remover)	491.00	EFH 2009 75th percentile	indoor, ventilation	2.50	RIVM general fact sheet

10. RISK CHARACTERISATION

10.1 Title: Exposure Scenario for Industrial manufacturing of Ethanol, or use as intermediate or process chemical

Ethanol REACH Association reference no. ES1

10.1.1. Human health

10.1.1.1 Workers

Workers exposure	Exposure estimate	DNEL	RCR	Comment
Inhalation (mg/m^3)	96.04	950 (OEL)	0.10	PROC8a results in the highest exposure in this exposure scenario
Dermal (mg/kd/day)	13.71	343	0.040	
Combined (mg/kg/day)	27.43	343	0.080	

10.1.1.2 Consumer

Not applicable – No consumer exposure in this scenario

10.1.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.1.2 Environmental

10.1.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.0000264	0.96	0.0000275	-
In local marine water (mg/l)	0.00000224	0.79	0.00000283	-
10.1.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.00119	0.63	0.00188	-
10.1.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.1.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	5.65	580	0.00974	-

10.2 Title: Exposure Scenario for Industrial distribution of Ethanol

Ethanol REACH Association reference no. ES2

10.2.1. Human health

10.2.1.1 Workers

Workers exposure	Exposure estimate	DNEL	RCR	Comment
Inhalation (mg/m^3)	96.04	950 (OEL)	0.10	PROC8a results in the highest exposure in this exposure scenario
Dermal (mg/kd/day)	13.71	343	0.04	
Combined (mg/kg/day)	27.43	343	0.08	

10.2.1.2 Consumer

Not applicable – No consumer exposure in this scenario

10.2.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.2.2 Environmental

10.2.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.104	0.96	0.108	-
In local marine water (mg/l)	0.0103	0.79	0.013	-
10.2.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.0014	0.63	0.00222	-
10.2.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.2.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.932	580	0.00161	-

10.3 Title: Exposure Scenario for Industrial formulation and (re)packing of Ethanol, and its mixtures

Ethanol REACH Association reference no. ES3

10.3.1. Human health

10.3.1.1 Workers

Workers exposure	Exposure estimate	DNEL	RCR	Comment
Inhalation (mg/m^3)	96.04	950 (OEL)	0.10	PROC8a results in the highest exposure in this exposure scenario
Dermal (mg/kd/day)	13.71	343	0.04	
Combined (mg/kg/day)	27.43	343	0.08	

10.3.1.2 Consumer

Not applicable – No consumer exposure in this scenario

10.3.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.3.2 Environmental

10.3.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.185	0.96	0.193	-
In local marine water (mg/l)	0.0186	0.79	0.0235	-
10.3.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.0117	0.63	0.0186	-
10.3.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.3.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	1.73	580	0.00298	-

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

Ethanol REACH Association reference no. ES4

10.4.1. Human health

10.4.1.1 Workers

Workers exposure	Exposure estimate	DNEL	RCR	Comment
Inhalation (mg/m^3)	96.04	950 (OEL)	0.10	PROC10 results in the highest exposure in this exposure scenario
Dermal (mg/kd/day)	27.43	343	0.08	
Combined (mg/kg/day)	41.15	343	0.12	

10.4.1.2 Consumer

Not applicable – No consumer exposure in this scenario

10.4.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.4.2 Environmental

10.4.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.039	0.96	0.0406	-
In local marine water (mg/l)	0.0039	0.79	0.00494	-
10.4.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.0091	0.63	0.0144	-
10.4.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.4.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.285	580	0.000491	-

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

Ethanol REACH Association reference no. ES5

10.5.1. Human health

10.5.1.1 Workers

Workers exposure	Exposure estimate	DNEL	RCR	Comment
Inhalation (mg/m^3)	480.21	950 (OEL)	0.51	Exposure estimates and RCRs given here are calculated for conditions without LEV (worst case scenario)
Dermal (mg/kd/day)	42.86	343	0.12	
Combined (mg/kg/day)	111.46	343	0.32	

10.5.1.2 Consumer

Not applicable – No consumer exposure in this scenario

10.5.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.5.2 Environmental

10.5.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.039	0.96	0.0406	-
In local marine water (mg/l)	0.0039	0.79	0.00494	-
10.5.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.0091	0.63	0.0144	-
10.5.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.5.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.285	580	0.000491	-

10.6 Title: Exposure Scenario for Industrial use of Ethanol as fuel source

Ethanol REACH Association reference no. ES6a

10.6.1. Human health

10.6.1.1 Workers

Workers exposure	Exposure estimate	DNEL	RCR	Comment
Inhalation (mg/m^3)	9.6	950 (OEL)	0.01	-
Dermal (mg/kd/day)	0.3	343	0.0009	
Combined (mg/kg/day)	1.7	343	0.005	

10.6.1.2 Consumer

Not applicable – No consumer exposure in this scenario

10.6.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.6.2 Environmental

10.6.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.0152	0.96	0.0158	-
In local marine water (mg/l)	0.0016	0.79	0.00203	-
10.6.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.0006	0.63	0.000952	-
10.6.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.6.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.053	580	0.0000914	-

10.7 Title: Exposure Scenario for Professional use of Ethanol as fuel source

Ethanol REACH Association reference no. ES6b

10.7.1. Human health

10.7.1.1 Workers

Workers exposure	Exposure estimate	DNEL	RCR	Comment
Inhalation (mg/m^3)	**9.6**	**950 (OEL)**	**0.01**	**-**
Dermal (mg/kd/day)	**0.3**	**343**	**0.0008**	
Combined (mg/kg/day)	**1.7**	**343**	**0.005**	

10.7.1.2 Consumer

Not applicable – No consumer exposure in this scenario

10.7.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	**Negligible compared to daily dietary intake and endogenous formation**

10.7.2 Environmental

10.7.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	**0.0240**	**0.96**	**0.025**	**-**
In local marine water (mg/l)	**0.0034**	**0.79**	**0.00430**	**-**
10.7.2.2. Terrestrial compartment	**PEC**	**PNEC**	**RCR**	**Comment**
In local soil (mg/kgwwt)	**0.0273**	**0.63**	**0.0433**	**-**
10.7.2.3. Atmospheric compartment	**PEC**	**PNEC**	**RCR**	**Comment**
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.7.2.4. Microbiological activity in sewage treatment plants	**PEC**	**PNEC**	**RCR**	**Comment**
In STP (mg/l)	**0.065**	**580**	**0.000112**	**-**

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

Ethanol REACH Association reference no. ES7

10.8.1. Human health

10.8.1.1 Workers

Workers exposure	Exposure estimate	DNEL	RCR	Comment
Inhalation (mg/m^3)	**115.25**	**950 (OEL)**	**0.121**	**PROC19 results in the highest exposure in this exposure scenario**
Dermal (mg/kd/day)	**84.86**	**343**	**0.247**	
Combined (mg/kg/day)	**101.32**	**343**	**0.295**	

10.8.1.2 Consumer

Not applicable – No consumer exposure in this scenario

10.8.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	**Negligible compared to daily dietary intake and endogenous formation**

10.8.2 Environmental

10.8.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	**0.045**	**0.96**	**0.0469**	**-**
In local marine water (mg/l)	**0.0044**	**0.79**	**0.00557**	**-**
10.8.2.2. Terrestrial compartment	**PEC**	**PNEC**	**RCR**	**Comment**
In local soil (mg/kgwwt)	**0.0003**	**0.63**	**0.00476**	**-**
10.8.2.3. Atmospheric compartment	**PEC**	**PNEC**	**RCR**	**Comment**
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.8.2.4. Microbiological activity in sewage treatment plants	**PEC**	**PNEC**	**RCR**	**Comment**
In STP (mg/l)	**0.34**	**580**	**0.000586**	**-**

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

Ethanol REACH Association reference no. ES8

10.9.1. Human health

10.9.1.1 Workers

Workers exposure	Exposure estimate	DNEL	RCR	Comment
Inhalation (mg/m^3)	672.29	950 (OEL)	0.71	-
Dermal (mg/kd/day)	21.43	343	0.06	
Combined (mg/kg/day)	117.47	343	0.342	

10.9.1.2 Consumer

Not applicable – No consumer exposure in this scenario

10.9.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.9.2 Environmental

10.9.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.045	0.96	0.0469	-
In local marine water (mg/l)	0.0044	0.79	0.00557	-
10.9.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.0003	0.63	0.00476	-
10.9.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.9.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.34	580	0.000586	-

10.10 Title: Exposure Scenario for Consumer use of Ethanol as automotive fuel

Ethanol REACH Association reference no. ES9a

10.10.1. Human health

10.10.1.1 Workers

Not applicable – No worker exposure in this scenario

10.10.1.2 Consumer

Consumer exposure	Exposure estimate	DNEL	RCR	Comment
Dermal (mg/kd/day)	35.00	LTS 206	0.170	-
Oral (mg/kd/day)	0.00	LTS 87	0.00	
Inhalation (mg/m^3)	1.54	LTS 114	0.014	
All routes systemic	-	-	0.184	

10.10.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.10.2 Environmental

10.10.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.024	0.96	0.025	-
In local marine water (mg/l)	0.0034	0.79	0.00430	-
10.10.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.0273	0.63	0.0433	-
10.10.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.10.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.065	580	0.000112	-

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

Ethanol REACH Association reference no. ES9b

10.11.1. Human health

10.11.1.1 Workers

Not applicable – No worker exposure in this scenario

10.11.1.2 Consumer

Consumer exposure	Exposure estimate	DNEL	RCR	Comment
Dermal (mg/kd/day)	70.00	LTS 206	0.34	-
Oral (mg/kd/day)	0.00	LTS 87	0.00	
Inhalation (mg/m^3)	0.81	LTS 114	0.007	
All routes systemic	-	-	0.347	

10.11.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.11.2 Environmental

10.11.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.0447	0.96	0.0466	-
In local marine water (mg/l)	0.0044	0.79	0.00557	-
10.11.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.0003	0.63	0.000476	-
10.11.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.11.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.34	580	0.000586	-

10.12 Title: Exposure Scenario for Consumer use of Ethanol in products (<50g per event)

Ethanol REACH Association reference no. ES9c

10.12.1. Human health

10.12.1.1 Workers

Not applicable – No worker exposure in this scenario

10.12.1.2 Consumer

Consumer exposure	Exposure estimate	DNEL	RCR	Comment
Dermal (mg/kd/day)	2.87	LTS 206	0.01	Consumer exposure for PC39 is regulated by the Cosmetic Directive 76/768/EEC and therefore out of scope for this section.
Oral (mg/kd/day)	0.00	LTS 87	0.00	
Inhalation (mg/m^3)	10.31	LTS 114	0.09	
All routes systemic	-	-	0.10	

10.12.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.12.2 Environmental

10.12.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.0447	0.96	0.0466	-
In local marine water (mg/l)	0.0044	0.79	0.00557	-
10.12.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.0003	0.63	0.000476	-
10.12.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.12.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.34	580	0.000586	-

10.13 Title: Exposure Scenario for Consumer use of Ethanol in products in enclosed systems

Ethanol REACH Association reference no. ES9d

10.13.1. Human health

10.13.1.1 Workers

Not applicable – No worker exposure in this scenario

10.13.1.2 Consumer

Consumer exposure	Exposure estimate	DNEL	RCR	Comment
Dermal (mg/kd/day)	0.85	LTS 206	0.004	-
Oral (mg/kd/day)	0.00	LTS 87	0.00	
Inhalation (mg/m^3)	0.04	LTS 114	<0.001	
All routes systemic	-	-	0.004	

10.13.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.13.2 Environmental

10.13.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.0155	0.96	0.0161	-
In local marine water (mg/l)	0.00145	0.79	0.00184	-
10.13.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.00013	0.63	0.000206	-
10.13.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.13.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.017	580	0.0000293	-

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

Ethanol REACH Association reference no. ES9e

10.14.1. Human health

10.14.1.1 Workers

Not applicable – No worker exposure in this scenario

10.14.1.2 Consumer

Consumer exposure	Exposure estimate	DNEL	RCR	Comment
Dermal (mg/kd/day) (chronic)	0.3	LTS 206	0.001	-
Oral (mg/kd/day)	0.00	LTS 87	0.00	
Inhalation (mg/m^3) (event)	375	950	0.395	
Inhalation (mg/m3) (chronic)	0.5	LTS 114	0.004	
All routes systemic (chronic)	-	-	0.005	

10.14.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.14.2 Environmental

10.14.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.0447	0.96	0.0466	-
In local marine water (mg/l)	0.0044	0.79	0.00557	-
10.14.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.0003	0.63	0.000476	-
10.14.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.14.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.34	580	0.000586	-

10.15 Title: Exposure Scenario for Consumer use of Ethanol in antifreeze, deicing, and screenwash products

Ethanol REACH Association reference no. ES9f

10.15.1. Human health

10.15.1.1 Workers

Not applicable – No worker exposure in this scenario

10.15.1.2 Consumer

Consumer exposure	Exposure estimate	DNEL	RCR	Comment
Dermal (mg/kd/day)	17.87	LTS 206	0.09	Based on one use a day of 0.25hr / event
Oral (mg/kd/day)	0.00	LTS 87	0.00	
Inhalation (mg/m^3)	0.51	LTS 114	0.004	
All routes systemic	-	-	0.094	

10.15.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.15.2 Environmental

10.15.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.014	0.96	0.0146	-
In local marine water (mg/l)	0.0013	0.79	0.00165	-
10.15.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.00013	0.63	0.000206	-
10.15.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.15.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.0011	580	0.0000019	-

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

Ethanol REACH Association reference no. ES9g

10.16.1. Human health

10.16.1.1 Workers

Not applicable – No worker exposure in this scenario

10.16.1.2 Consumer

Consumer exposure	Exposure estimate	DNEL	RCR	Comment
Dermal (mg/kd/day)	10.7	LTS 206	0.05	Based on daily use
Oral (mg/kd/day)	0.00	LTS 87	0.00	
Inhalation (mg/m^3)	1.73	LTS 114	0.015	
All routes systemic	-	-	0.055	

10.16.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.16.2 Environmental

10.16.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.0818	0.96	0.0852	-
In local marine water (mg/l)	0.00808	0.79	0.0102	-
10.16.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.000451	0.63	0.000716	-
10.16.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.16.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.681	580	0.00117	-

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

Ethanol REACH Association reference no. ES10

10.17.1. Human health

10.17.1.1 Workers

Workers exposure	Exposure estimate	DNEL	RCR	Comment
Inhalation (mg/m^3)	19.21	950 (OEL)	0.02	-
Dermal (mg/kd/day)	0.34	343	0.001	
Combined (mg/kg/day)	3.09	343	0.009	

10.17.1.2 Consumer

Not applicable – No consumer exposure in this scenario

10.17.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.17.2 Environmental

10.17.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.027	0.96	0.0281	-
In local marine water (mg/l)	0.0027	0.79	0.00342	-
10.17.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.0002	0.63	0.000317	-
10.17.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.17.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.17	580	0.000293	-

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

Ethanol REACH Association reference no. ES11

10.18.1. Human health

10.18.1.1 Workers

Workers exposure	Exposure estimate	DNEL	RCR	Comment
Inhalation (mg/m^3)	38.42	950 (OEL)	0.04	-
Dermal (mg/kd/day)	1.71	343	0.005	
Combined (mg/kg/day)	7.20	343	0.02	

10.18.1.2 Consumer

Not applicable – No consumer exposure in this scenario

10.18.1.3 Indirect exposure to humans via the environment

Total daily intake via local environment (mg/kgdw/d)	Negligible compared to daily dietary intake and endogenous formation

10.18.2 Environmental

10.18.2.1 Aquatic compartment	PEC	PNEC	RCR	Comment
In local freshwater (mg/l)	0.0107	0.96	0.0111	-
In local marine water (mg/l)	0.0010	0.79	0.00127	-
10.18.2.2. Terrestrial compartment	PEC	PNEC	RCR	Comment
In local soil (mg/kgwwt)	0.0002	0.63	0.000317	-
10.18.2.3. Atmospheric compartment	PEC	PNEC	RCR	Comment
Since it is not possible to derive a PNEC for this compartment, risk characterisation is not possible.				
10.18.2.4. Microbiological activity in sewage treatment plants	PEC	PNEC	RCR	Comment
In STP (mg/l)	0.0 (negligible)	580	0.0	(negligible)

10.19 Overall exposure (combined for all relevant emission sources)

10.19.1 Human Health (combined for all exposure routes)

The exposure scenarios for workers are not considered to exist in combination. Each has been created to cover all likely operational procedures in that particular part of the supply chain.
Consideration of consumer scenarios in combination with worker scenarios needs to be in the context of the very rapid metabolism of ethanol – any likely body burden from exposures to ethanols that fall within the conditions of the exposure scenarios are likely to have cleared from the bloodstream after exposure ceases. Relevant combinations of consumer and worker scenarios that are relevant are likely to be rare. The following combinations of worker and consumer scenarios that could occur simultaneously or in very close proximity are considered possible, if unlikely. References are the ES reference number according to the Ethanol REACH Association reference number:

Worker scenario	RCR of worker scenario	Consumer scenarios in combination		Combined RCR
		ES9a	ES9f	
ES1	0.08	0.184	0.094	0.358
ES2	0.08	0.184	0.094	0.358
ES3	0.08	0.184	0.094	0.358
ES4	0.12	0.184	0.094	0.362
ES5	0.32	0.184	0.094	0.598
ES6a	0.005	0.184	0.094	0.283
ES6b	0.005	0.184	0.094	0.283
ES7	0.295	0.184	0.094	0.573
ES8	0.342	0.184	0.094	0.620
ES10	0.009	0.184	0.094	0.287
ES11	0.02	0.184	0.094	0.298

It is exceedingly unlikely that all consumer scenarios would be performed simultaneously in the space of the same day and every day. Even if this was the case, the combined RCR for exposure scenarios ES9a to ES9g would be 0.916, ie still less than 1.
Consideration of use in cosmetics is outside of the scope of this assessment.
It can be considered that all feasible combinations of exposure scenarios would not lead to RCRs greater than 1.

10.19.2 Environment (combined for all exposure routes)

Note: The RCRs are calculated based on PECs that are derived from the TOTAL tonnage of ethanol that is used in Europe and not a single supply chain. These tonnages were derived from information provided by the Ethanol REACH Association, Den Haag, Netherlands.

Regional scenario	Predicted Exposure Concentrations		PNEC		RCR
	value	unit	value	unit	
Freshwater	7.72	µg/l	0.96	mg/l	0.00804
Freshwater sediments	0.060	µg/kg	3.6	mg/kg	<0.0001
Soil	0.252	µg/kg	0.63	mg/kg	0.00040
Air	1.11	µg/m3	n/a		n/a