

**Greenbase™ Flowzan® Biopolymer**

Version 1.8

Revision Date 2016-06-02

SECTION 1: Identification of the substance/mixture and of the company/undertaking**Product information**

Product Name : Greenbase™ Flowzan® Biopolymer
 Material : 1113684, 1095064, 1101166, 1077462, 1099185

EC-No.Registration number

Chemical name	CAS-No. EC-No. Index No.	Legal Entity Registration number
Di(Ethylene Glycol) Butyl Ether	112-34-5 203-961-6 603-096-00-8	Chevron Phillips Chemicals International NV 01-2119475104-44-0007
Propylene oxide	75-56-9 200-879-2 603-055-00-4	Chevron Phillips Chemicals International NV 01-2119480483-35-0052

Relevant Identified Uses Supported : Use in Oil and Gas field drilling and production operations – Professional
 Use in Oil and Gas field drilling and production operations – Professional

Company : Chevron Phillips Chemical Company LP
 Drilling Specialties Company LLC
 10001 Six Pines Drive
 The Woodlands, TX 77380

Local : Chevron Phillips Chemicals International N.V.
 Airport Plaza (Stockholm Building)
 Leonardo Da Vincilaan 19
 1831 Diegem
 Belgium

SDS Requests: (800) 852-5530
 Technical Information: (832) 813-4862
 Responsible Party: Product Safety Group
 Email:sds@cpchem.com

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Emergency telephone:**Health:**

866.442.9628 (North America)

1.832.813.4984 (International)

Transport:

CHEMTREC 800.424.9300 or 703.527.3887(int'l)

Asia: +800 CHEMCALL (+800 2436 2255) China: +86-21-22157316

EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group

E-mail address : SDS@CPChem.com

Website : www.CPChem.com

SECTION 2: Hazards identification**Classification of the substance or mixture
REGULATION (EC) No 1272/2008**

Eye irritation, Category 2

H319:

Causes serious eye irritation.

Label elements**Labeling (REGULATION (EC) No 1272/2008)**

Hazard pictograms :



Signal Word : Warning

Hazard Statements : H319 Causes serious eye irritation.

Precautionary Statements : **Prevention:**
 P264 Wash skin thoroughly after handling.
 P280 Wear protective gloves/ eye protection/ face protection.

Response:
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P337 + P313 If eye irritation persists: Get medical advice/ attention.

SECTION 3: Composition/information on ingredients

Synonyms : Xanthan Gum Suspension

SDS Number:100000063660

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Molecular formula : Mixture

Mixtures**Hazardous ingredients**

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]
Di(Ethylene Glycol) Butyl Ether	112-34-5 203-961-6 603-096-00-8	Eye Irrit. 2; H319	55 - 65
Calcium Stearate	1592-23-0 216-472-8		0,6 - 1

For the full text of the H-Statements mentioned in this Section, see Section 16.

For additional details, see the Exposure Scenario in the Annex portion

SECTION 4: First aid measures

- General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Do not leave the victim unattended.
- If inhaled : If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.
- In case of skin contact : If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

SECTION 5: Firefighting measures

- Flash point : 100 °C (212 °F)
Method: Tag closed cup
- Autoignition temperature : No data available
- Suitable extinguishing media : Dry chemical.
- Unsuitable extinguishing media : High volume water jet.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
- Further information : Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the

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surrounding environment.

Fire and explosion protection : Normal measures for preventive fire protection.

Hazardous decomposition products : Carbon oxides.

SECTION 6: Accidental release measures

Personal precautions : Use personal protective equipment.

Environmental precautions : Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

For additional details, see the Exposure Scenario in the Annex portion

SECTION 7: Handling and storage**Handling**

Advice on safe handling : Do not breathe vapors/dust. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Storage

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection**Ingredients with workplace control parameters****SK**

Zložka	Podstata	Hodnota	Kontrolné parametre	Poznámka
Di(Ethylene Glycol) Butyl Ether	SK OEL	NPEL priemerný	10 ppm, 67,5 mg/m ³	
	SK OEL	NPEL krátkodobý	15 ppm, 101,2 mg/m ³	

SI

Sestavine	Osnova	Vrednost	Parametri nadzora	Pripomba
Di(Ethylene Glycol) Butyl Ether	SI OEL	MV	10 ppm, 67,5 mg/m ³	Y.

Y Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in BAT vrednosti.

SE

Bestandsdelar	Grundval	Värde	Kontrollparametrar	Anmärkning
Di(Ethylene Glycol) Butyl Ether	SE AFS	NGV	15 ppm, 100 mg/m ³	
	SE AFS	KTV	30 ppm, 200 mg/m ³	
Calcium Stearate	SE AFS	NGV	5 mg/m ³	43, 44, II.c, Total

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	SE AFS	NGV	5 mg/m3	2, 43, 44, Total
	SE AFS	NGV	5 mg/m3	2, 43, 44, Totalt damm

- 2 Med respirabelt damm menas den dammfraction som definieras i svensk standard SS-EN 481, Arbetsplatsluft. - Partikelstorleksfraktioner för mätning av luftburna partiklar, Utgåva 1, 1993, punkt 2.11 och som har en provtagningskaraktäristik enligt punkt 5.3. Med inhalerbart damm menas den dammfraction som definieras i svensk standard SS-EN 481, Arbetsplatsluft - Partikelstorleksfraktioner för mätning av luftburna partiklar, Utgåva 1, 1993, punkt 2.3 och som har en provtagningskaraktäristik enligt punkt 5.1. Med respirabelt damm menas den dammfraction som definieras i svensk standard SS-EN 481, Arbetsplatsluft - Partikelstorleksfraktioner för mätning av luftburna partiklar, Utgåva 1, 1993, punkt 2.11 och som har en provtagningskaraktäristik enligt punkt 5.3. Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i den provtagare som beskrivs i Metodserien, Provtagning av totaldamm och respirabelt damm, Metod nr 1010, Arbetarskyddsstyrelsen, numera Arbetsmiljöverket. Filterdiametern är normalt 37 mm, men kan även vara 25 mm. Trots sitt namn provtas inte den totala mängden luftburna partiklar med denna metod.
- 43 Här innefattas stearater som salter och estrar, bl.a. Aluminiummonostearat [7047-84-9], Aluminiumdistearat [300-92-5], Aluminiumtristearat [637-12-7], Ammoniumstearat [1002-89-7], N-butylstearat [123-95-5], Dietylenglykolmonostearat [106-11-6], Etylenglykolmonostearat [111-60-4], Glycerolmonostearat [31566-31-1], Kalciumstearat [1592-23-0], Kaliumstearat [593-29-3], Litiumstearat [4485-12-5], Magnesiumstearat [557-04-0], Natriumstearat [822-16-2], Zinkstearat [557-05-1]
- 44 Gränsvärdet gäller inte sådana metallstearater som innehåller toxiska metaller, t.ex. bly. I detta fall ska gränsvärdet för bly användas
- II.c Se sidan 57 anmärkning II: Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i den provtagare som beskrivs i Metodserien, Provtagning av totaldamm och respirabelt damm, Metod nr 1010, arbetarskyddsstyrelsen, numera Arbetslivsinstitutet, 1979. Filterdiametern är normalt 37 mm, men kan även vara 25 mm.

RO

Componente	Bază	Valoare	Parametri de control	Notă
Di(Ethylene Glycol) Butyl Ether	RO OEL	TWA	150 mg/m3	
	RO OEL	STEL	250 mg/m3	

PT

Componentes	Bases	Valor	Parâmetros de controlo	Nota
Di(Ethylene Glycol) Butyl Ether	PT DL 305/2007	oito horas	10 ppm, 67,5 mg/m3	
	PT DL 305/2007	curta duração	15 ppm, 101,2 mg/m3	
Calcium Stearate	PT OEL	VLE-MP	10 mg/m3	(J), A4, iritação do TRS,

- (J) Não inclui estearatos de metais tóxicos
- A4 Agente não classificável como carcinogénico no Homem.
- irritação do trato respiratório superior
- TRS

PL

Składniki	Podstawa	Wartość	Parametry dotyczące kontroli	Uwaga
Di(Ethylene Glycol) Butyl Ether	PL NDS	NDS	67 mg/m3	
	PL NDS	NDSch	100 mg/m3	

NO

Komponenter	Grunnlag	Verdi	Kontrollparametere	Nota
Di(Ethylene Glycol) Butyl Ether	FOR-2011-12-06-1358	TWA	10 ppm, 68 mg/m3	

NL

Bestanddelen	Basis	Waarde	Controleparameters	Opmerking
Di(Ethylene Glycol) Butyl Ether	NL WG	TGG-8 uur	50 mg/m3	H,
	NL WG	TGG-15 min	100 mg/m3	H,

H Huidopname

MT

Ingredients	Basis	Value	Control parameters	Note
Di(Ethylene Glycol) Butyl Ether	MT OEL	TWA	10 ppm, 67,5 mg/m3	
	MT OEL	STEL	15 ppm, 101,2 mg/m3	

LV

Sastāvdaļas	Bāze	Vērtība	Pārvaldības parametri	Piezīme
Di(Ethylene Glycol) Butyl Ether	LV OEL	AER 8 st	10 ppm, 67,5 mg/m3	
	LV OEL	AER īslaicīgā	15 ppm, 101,2 mg/m3	

LU

Composants	Base	Valeur	Paramètres de contrôle	Note
Di(Ethylene Glycol) Butyl Ether	LU OEL	TWA	10 ppm, 67,5 mg/m3	
	LU OEL	STEL	15 ppm, 101,2 mg/m3	

LT

Komponentai	Pagrindas, bazė	Vertė	Kontrolės parametrai	Pastaba
Di(Ethylene Glycol) Butyl Ether	LT OEL	IPRD	15 ppm, 100 mg/m3	
	LT OEL	TPRD	30 ppm, 200 mg/m3	
Calcium Stearate	LT OEL	IPRD	5 mg/m3	

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IT

Componenti	Base	Valore	Parametri di controllo	Nota
Di(Ethylene Glycol) Butyl Ether	IT OEL	TWA	10 ppm, 67,5 mg/m3	
	IT OEL	STEL	15 ppm, 101,2 mg/m3	

IE

Ingredients	Basis	Value	Control parameters	Note
Di(Ethylene Glycol) Butyl Ether	IE OEL	OELV - 8 hrs (TWA)	10 ppm, 67,5 mg/m3	IOELV,
	IE OEL	OELV - 15 min (STEL)	15 ppm, 101,2 mg/m3	IOELV,
Calcium Stearate	IE OEL	OELV - 8 hrs (TWA)	10 mg/m3	

IOELV Indicative Occupational Exposure Limit Value

HU

Komponensek	Bázis	Érték	Ellenőrzési paraméterek	Megjegyzés
Di(Ethylene Glycol) Butyl Ether	HU OEL	AK-érték	67,5 mg/m3	EU2,
	HU OEL	CK-érték	101,2 mg/m3	EU2,

EU2 96/94/EK irányelvben közölt érték

GR

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
Di(Ethylene Glycol) Butyl Ether	GR OEL	TWA	10 ppm, 67,5 mg/m3	
	GR OEL	STEL	15 ppm, 101,2 mg/m3	

GB

Ingredients	Basis	Value	Control parameters	Note
Di(Ethylene Glycol) Butyl Ether	GB EH40	TWA	10 ppm, 67,5 mg/m3	
	GB EH40	STEL	15 ppm, 101,2 mg/m3	

FR

Composants	Base	Valeur	Paramètres de contrôle	Note
Di(Ethylene Glycol) Butyl Ether	FR VLE	VME	10 ppm, 67,5 mg/m3	bleu,
	FR VLE	VLCT (VLE)	15 ppm, 101,2 mg/m3	bleu,

bleu Valeurs limites réglementaires indicatives

FI

Aineosat	Peruste	Arvo	Valvontaa koskevat muuttujat	Huomautus
Di(Ethylene Glycol) Butyl Ether	FI OEL	HTP-arvot 8h	10 ppm, 68 mg/m3	

ES

Componentes	Base	Valor	Parámetros de control	Nota
Di(Ethylene Glycol) Butyl Ether	ES VLA	VLA-ED	10 ppm, 67,5 mg/m3	r, VLI,
	ES VLA	VLA-EC	15 ppm, 101,2 mg/m3	r, VLI,
Calcium Stearate	ES VLA	VLA-ED	10 mg/m3	

r Esta sustancia tiene establecidas restricciones a la fabricación, la comercialización o el uso en los términos especificados en el 'Reglamento CE 1907/2006 sobre Registro, Evaluación, Autorización y Restricción de sustancias y preparados químicos' (REACH) de 18 de diciembre de 2006 (DOUE L 369 de 30 de diciembre de 2006). Las restricciones de una sustancia pueden aplicarse a todos los usos o sólo a usos concretos. El anexo XVII del Reglamento REACH contiene la lista de todas las sustancias restringidas y especifica los usos que se han restringido.

VLI Agente químico para el que la U.E. estableció en su día un valor límite indicativo. Todos estos agentes químicos figuran al menos en una de las directivas de valores límite indicativos publicadas hasta ahora (ver Anexo C. Bibliografía). Los estados miembros disponen de un tiempo fijado en dichas directivas para su transposición a los valores límites de cada país miembro. Una vez adoptados, estos valores tienen la misma validez que el resto de los valores adoptados por el país.

EE

Komponendid, osad	Alused	Väärtus	Kontrolliparameetrid	Märkused
Di(Ethylene Glycol) Butyl Ether	EE OEL	Piirnorm	10 ppm, 67,5 mg/m3	

DK

Komponenter	Basis	Værdi	Kontrolparametre	Note
Di(Ethylene Glycol) Butyl Ether	DK OEL	GV	10 ppm, 68 mg/m3	E,

E At stoffet har en EF-grænseværdi

DE

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Di(Ethylene Glycol) Butyl Ether	DE TRGS 900	AGW	10 ppm, 67 mg/m3	DFG, EU, 11, Y, Dampf und Aerosole

11 Summe aus Dampf und Aerosolen.
DFG Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission)
EU Europäische Union (Von der EU wurde ein Luftgrenzwert festgelegt: Abweichungen bei Wert und Spitzenbegrenzung sind möglich.)
Y Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden

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CZ

Složky	Základ	Hodnota	Kontrolní parametry	Poznámka
Di(Ethylene Glycol) Butyl Ether	CZ OEL	PEL	70 mg/m3	I,
	CZ OEL	NPK-P	100 mg/m3	I,

I dráždí sliznice (oči, dýchací cesty) resp. kůži

CY

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
Di(Ethylene Glycol) Butyl Ether	CY OEL	TWA	10 ppm, 67,5 mg/m3	
	CY OEL	STEL	15 ppm, 101,2 mg/m3	

CH

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Di(Ethylene Glycol) Butyl Ether	CH SUVA	MAK-Wert	10 ppm, 67 mg/m3	SSc,
	CH SUVA	KZGW	15 ppm, 101 mg/m3	SSc,

SSc Eine Schädigung der Leibesfrucht braucht bei Einhaltung des MAK-Wertes nicht befürchtet zu werden.

BG

Съставки	Основа	Стойност	Параметри на контрол	Бележка
Di(Ethylene Glycol) Butyl Ether	BG OEL	TWA	10 ppm, 67,5 mg/m3	-,
	BG OEL	STEL	15 ppm, 101,2 mg/m3	-,

- Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност. Граничните стойности на тези химични агенти във въздуха на работната среда, определени с наредбата, са съобразени със съответните стойности, приети за Европейската общност, като могат да бъдат равни или по-ниски от тях.

BE

Bestanddelen	Basis	Waarde	Controleparameters	Opmerking
Di(Ethylene Glycol) Butyl Ether	BE OEL	TGG 8 hr	10 ppm, 67,5 mg/m3	
	BE OEL	TGG 15 min	15 ppm, 101,2 mg/m3	
Calcium Stearate	BE OEL	TGG 8 hr	10 mg/m3	

AT

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Di(Ethylene Glycol) Butyl Ether	AT OEL	TMW	10 ppm, 67,5 mg/m3	
	AT OEL	KZW	15 ppm, 101,2 mg/m3	

Engineering measures

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Air-Purifying Respirator for Dusts and Mists / P100. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the

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product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

- Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles. Wear face-shield and protective suit for abnormal processing problems.
- Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place. Wear as appropriate:. Protective suit. Safety shoes.
- Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

For additional details, see the Exposure Scenario in the Annex portion

SECTION 9: Physical and chemical properties**Information on basic physical and chemical properties****Appearance**

- Physical state : Liquid
- Color : Yellow
- Odor : Mild

Safety data

- Flash point : 100 °C (212 °F)
Method: Tag closed cup
- Lower explosion limit : Not applicable
- Upper explosion limit : Not applicable
- Oxidizing properties : no
- Autoignition temperature : No data available
- Molecular formula : Mixture
- Molecular weight : Not applicable
- pH : Not applicable
- Freezing point : Not applicable
- Boiling point/boiling range : 230 °C (446 °F)
- Vapor pressure : 14,70 PSI
at 21 °C (70 °F)
- Relative density : 1,1
- Density : 1,102 g/l
- Water solubility : Soluble

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Viscosity, kinematic : No data available

Relative vapor density : No data available

SECTION 10: Stability and reactivity

Chemical stability : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Conditions to avoid : No data available.

Materials to avoid : May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Hazardous decomposition products : Carbon oxides

Other data : No decomposition if stored and applied as directed.

SECTION 11: Toxicological information**Acute oral toxicity**

Di(Ethylene Glycol) Butyl Ether : LD50: 2.410 mg/kg
Species: Mouse
Sex: male

Acute dermal toxicity

Di(Ethylene Glycol) Butyl Ether : LD50: 2.764 mg/kg
Species: Rabbit
Method: OECD Test Guideline 402

Greenbase™ Flowzan® Biopolymer**Skin irritation** : May cause skin irritation in susceptible persons.**Greenbase™ Flowzan® Biopolymer****Eye irritation** : May cause irreversible eye damage.**Sensitization**

Di(Ethylene Glycol) Butyl Ether : Did not cause sensitization on laboratory animals.

Repeated dose toxicity

Di(Ethylene Glycol) Butyl Ether : Species: Rat, Male and female
Sex: Male and female
Application Route: Oral
NOEL: 250 mg/kg
Lowest observable effect level: 1.000 mg/kg

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Method: OCED Guideline 408
Target Organs: Blood, Liver, Kidney

Species: Rat, Male and female
Sex: Male and female
Application Route: inhalation (vapor)
NOEL: 94 mg/m3
Method: OECD Guideline 413
Target Organs: Lungs

Species: Rat, Male and female
Sex: Male and female
Application Route: Dermal
NOEL: 2.000 mg/kg
Target Organs: Skin

Reproductive toxicity

Di(Ethylene Glycol) Butyl
Ether

: Species: Mouse
Sex: male and female
Application Route: Oral
Dose: 0, 720, 1340, 2050mg/kg bw
Number of exposures: continuous
Test period: 14 weeks
Method: OECD Test Guideline 416
NOAEL Parent: 720 mg/kg
NOAEL F1: 720 mg/kg
NOAEL F2: 720 mg/kg
Information given is based on data obtained from similar substances.

Developmental Toxicity

Di(Ethylene Glycol) Butyl
Ether

: Species: Rat
Application Route: Oral diet
Dose: 25, 115, 633 mg/kg/d
Number of exposures: GD 0 -20 d
Method: OECD Guideline 414
NOAEL Teratogenicity: 633 mg/kg
NOAEL Maternal: 633 mg/kg
No adverse effects expected

Species: Rabbit
Application Route: Dermal
Dose: 25, 115, 633 mg/kg/d
Exposure time: 4 h/d
Number of exposures: GD 8 -19 d
Method: OECD Guideline 414
NOAEL Teratogenicity: 1.000 mg/kg
NOAEL Maternal: 1.000 mg/kg
No adverse effects expected

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Aspiration toxicity : No aspiration toxicity classification.

CMR effects

Di(Ethylene Glycol) Butyl : Carcinogenicity: Not available

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Ether

Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects., In vivo tests did not show mutagenic effects
 Teratogenicity: Animal testing did not show any effects on fetal development.
 Reproductive toxicity: Animal testing did not show any effects on fertility.

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Further information : No data available.

SECTION 12: Ecological information**Toxicity to fish**

Di(Ethylene Glycol) Butyl Ether : LC50: > 1.000 mg/l
 Exposure time: 96 h
 Species: Scophthalmus maximus (Flatfish, Flounder)
 semi-static test Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

Di(Ethylene Glycol) Butyl Ether : EC50: > 1.000 mg/l
 Exposure time: 48 h
 Species: Acartia tonsa (Marine Copepod)
 static test Method: ISO TC147/SC5/WG2

Toxicity to algae

Di(Ethylene Glycol) Butyl Ether : EC50: > 1.000 mg/l
 Exposure time: 72 h
 Species: Skeletonema costatum (marine diatom)
 Growth inhibition Method: ISO 10253

Elimination information (persistence and degradability)

Biodegradability : Expected to be biodegradable

Ecotoxicology Assessment

Results of PBT assessment
 Di(Ethylene Glycol) Butyl Ether : This substance is not considered to be persistent, bioaccumulating and toxic (PBT)., This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Additional ecological information : No data available

SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped.

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Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

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Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information**National legislation****Chemical Safety Assessment**

Ingredients : 2-(2-butoxyethoxy)ethanol 203-961-6

Major Accident Hazard Legislation : 96/82/EC Update: 2003
Directive 96/82/EC does not apply

Water contaminating class (Germany) : WGK 1 slightly water endangering

Other Registrations

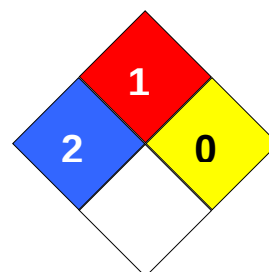
Regulation Registration number
Danish PR number: 1711315

Notification status

Europe REACH	:	On the inventory, or in compliance with the inventory
United States of America TSCA	:	On the inventory, or in compliance with the inventory
Canada DSL	:	On the inventory, or in compliance with the inventory
Australia AICS	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	On the inventory, or in compliance with the inventory
Japan ENCS	:	On the inventory, or in compliance with the inventory
Korea KECI	:	On the inventory, or in compliance with the inventory
Philippines PICCS	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 2
Fire Hazard: 1
Reactivity Hazard: 0

**Further information**

Legacy SDS Number : CPC00051

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Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key or legend to abbreviations and acronyms used in the safety data sheet

ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

Full text of H-Statements referred to under sections 2 and 3.

H319 Causes serious eye irritation.

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Annex**1. Short title of Exposure Scenario: Use in Oil and Gas field drilling and production operations – Professional**

Main User Groups	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sector of use	: SU 22, SU2b: Professional uses: Public domain (administration, education, entertainment, services, craftsmen), Offshore industries
Process category	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities
Environmental release category	: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Further information	: Oil field well drilling and production operations (including drilling muds and well cleaning) including material transfers, on-site formulation, well head operations, shaker room activities and related maintenance.

2.1 Contributing scenario controlling environmental exposure for:ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Maximum allowable site tonnage : 575
(MSafe) based on release
following total wastewater
treatment removal (tonnes/day):
(MSafe)

Frequency and duration of use

Continuous exposure : 16 days/year, Batch process

Environment factors not influenced by risk management

Flow rate : 18.000 m3/d
Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air : 0 %

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Emission or Release Factor: Water : 100 %
 Emission or Release Factor: Soil : 0 %
 Local release rate: Water : 31 tonnes/day
 Local release rate: Soil : 0 kg/day

Technical conditions and measures / Organizational measures

Air : No specific measures required
 Remarks : Prevent environmental discharge consistent with regulatory requirements.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
 Remarks : Not applicable

Conditions and measures related to external treatment of waste for disposal

Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations.
 Disposal methods : Dispose of as special waste in compliance with local and national regulations.

Conditions and measures related to external recovery of waste

Remarks : Not applicable

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics

Physical Form (at time of use) : Liquid substance
 Remarks : Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use

Exposure duration : 12 h

Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures

None

Organizational measures to prevent /limit releases, dispersion and exposure

No specific measures identified.

2.2 Contributing scenario controlling worker exposure for: CS114: Bulk transfers from tote tanks and supply vessels

Technical conditions and measures

Transfer via enclosed lines., Clear transfer lines prior to de-coupling.

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Organizational measures to prevent /limit releases, dispersion and exposure

Clear spills immediately.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection., Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: CS45: Filling/ preparation of equipment from drums or containers.**Technical conditions and measures**

Use drum pumps or carefully pour from container.

Organizational measures to prevent /limit releases, dispersion and exposure

Avoid spillage when withdrawing pump.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374., Use suitable eye protection.

2.2 Contributing scenario controlling worker exposure for: CS115: Drilling mud (re-)formulation**Technical conditions and measures**

Handle substance within a closed system., Provide extraction ventilation at points where emissions occur.

Organizational measures to prevent /limit releases, dispersion and exposure

Ensure the ventilation system is regularly maintained and tested.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374., Use suitable eye protection.

2.2 Contributing scenario controlling worker exposure for: CS116: Drill floor operations**Conditions and measures related to personal protection, hygiene and health evaluation**

Use suitable eye protection., Wear suitable gloves tested to EN374., Wear suitable coveralls to prevent exposure to the skin., Wear rubber boots.

2.2 Contributing scenario controlling worker exposure for: CS117, CS138, CS111: Operation of solids filtering equipment, With potential for aerosol generation., elevated temperature**Technical conditions and measures**

Local exhaust ventilation, Provide extraction ventilation at points where emissions occur., Re-circulation of exhaust air is not recommended. (Effectiveness: 90 %)

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Organizational measures to prevent /limit releases, dispersion and exposure

Ensure the ventilation system is regularly maintained and tested.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374., Use suitable eye protection.

2.2 Contributing scenario controlling worker exposure for: CS120: Cleaning of solids filtering equipment**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur.

Organizational measures to prevent /limit releases, dispersion and exposure

Ensure the ventilation system is regularly maintained and tested.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374., Use suitable eye protection.

2.2 Contributing scenario controlling worker exposure for: CS121: Treatment and disposal of filtered solids**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur.

Organizational measures to prevent /limit releases, dispersion and exposure

Ensure the ventilation system is regularly maintained and tested.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374., Use suitable eye protection.

2.2 Contributing scenario controlling worker exposure for: CS2: Process sampling**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374., Use suitable eye protection.

2.2 Contributing scenario controlling worker exposure for: CSxx: In line injection of process chemicals by fixed dose pumping.**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: CSxx: Application of process chemicals by pouring from a jug into systems.

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Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc.
Controlled ventilation means air is supplied or removed by a powered fan.

Organizational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374., Use suitable eye protection.

2.2 Contributing scenario controlling worker exposure for: CSxx: Scale squeeze operations.**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374., Use suitable eye protection.

2.2 Contributing scenario controlling worker exposure for: CS39: Equipment cleaning and maintenance**Technical conditions and measures**

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc.
Controlled ventilation means air is supplied or removed by a powered fan., Drain or remove substance from equipment prior to break-in or maintenance.

Organizational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374., Use suitable eye protection.

2.2 Contributing scenario controlling worker exposure for: CS15, CS56, CS67: General exposures (closed systems), with sample collection, Storage**Technical conditions and measures**

Store substance within a closed system., Ensure dedicated sample points are provided., Avoid dip sampling.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection.

3. Exposure estimation and reference to its source**Environment**

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Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio
ERC4	CHARM Model		Air			
			Freshwater			
			Freshwater sediment			
			Sea water		0,00539 mg/L	0,0539
			Marine sediment		0,000511 µg/kg dry weight (d.w.)	0,000013
			Sewage treatment plant			

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Remarks:

- Air
- No data available
- Freshwater
- Not applicable
- Freshwater sediment
- Not applicable
- Sewage treatment plant
- Not applicable

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio
CS114	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	3,9 ppm	0,39
			Worker – dermal, long-term – systemic	1,78 mg/kg/d	0,09
CS45	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	3,9 ppm	0,39
			Worker – dermal, long-term – systemic	1,78 mg/kg/d	0,09
CS115	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,6 ppm	0,26
			Worker – dermal, long-term – systemic	0,442 mg/kg/d	0,022
CS116	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,5 ppm	0,65
			Worker – dermal, long-term – systemic	1,78 mg/kg/d	0,09
CS117, CS138, CS111	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,5 ppm	0,65
			Worker – dermal, long-term – systemic	1,78 mg/kg/d	0,09
CS120	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,3 ppm	0,63
			Worker – dermal, long-term – systemic	3,565 mg/kg/d	0,18
CS121	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,6 ppm	0,26
			Worker – dermal, long-term – systemic	0,442 mg/kg/d	0,022
CS2	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,6 ppm	0,26
			Worker – dermal, long-term – systemic	0,442 mg/kg/d	0,022
CSxx	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,013 ppm	0,001
			Worker – dermal, long-term – systemic	0,442 mg/kg/d	0,022
CSxx	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,3 ppm	0,63
			Worker – dermal, long-term – systemic	3,565 mg/kg/d	0,178

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			term – systemic		
CSxx	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,5 ppm	0,65
			Worker – dermal, long-term – systemic	1,78 mg/kg/d	0,09
CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,3 ppm	0,63
			Worker – dermal, long-term – systemic	3,565 mg/kg/d	0,178
CS15, CS67, CS56	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	3,9 ppm	0,39
			Worker – dermal, long-term – systemic	1,78 mg/kg/d	0,089

CS114: Bulk transfers from tote tanks and supply vessels

CS45: Filling/ preparation of equipment from drums or containers.

CS115: Drilling mud (re-)formulation

CS116: Drill floor operations

CS117: Operation of solids filtering equipment

CS138: With potential for aerosol generation.

CS111: elevated temperature

CS120: Cleaning of solids filtering equipment

CS121: Treatment and disposal of filtered solids

CS2: Process sampling

CSxx: In line injection of process chemicals by fixed dose pumping.

CSxx: Application of process chemicals by pouring from a jug into systems.

CSxx: Scale squeeze operations.

CS39: Equipment cleaning and maintenance

CS15: General exposures (closed systems)

CS67: Storage

CS56: with sample collection

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

Available hazard data do not enable the derivation of a DNEL for eye irritant effects.

Risk management measures described will protect against acute exposure. Since exposures have been assessed on a task basis, exposure assessments will cover both long and short term exposures.

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

1. Short title of Exposure Scenario: **Use in Oil and Gas field drilling and production operations – Professional**

Main User Groups : **SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

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Sector of use	: SU 22 ,: Professional uses: Public domain (administration, education, entertainment, services, craftsmen), Onshore industries
Process category	: PROC1 : Use in closed process, no likelihood of exposure PROC2 : Use in closed, continuous process with occasional controlled exposure PROC3 : Use in closed batch process (synthesis or formulation) PROC4 : Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a : Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b : Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities
Environmental release category	: ERC8d : Wide dispersive outdoor use of processing aids in open systems
Further information	: Oil field well drilling and production operations (including drilling muds and well cleaning) including material transfers, on-site formulation, well head operations, shaker room activities and related maintenance.

2.1 Contributing scenario controlling environmental exposure for:ERC8d: Wide dispersive outdoor use of processing aids in open systems

Maximum allowable site tonnage : 2.000
(MSafe) based on release
following total wastewater
treatment removal (kg/d):(MSafe)

Frequency and duration of use

Continuous exposure : 30 days/year, Continuous process

Environment factors not influenced by risk management

Flow rate : 18.000 m3/d
Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air : 0,05 %
Emission or Release Factor: Water : 7 %
Emission or Release Factor: Soil : 0 %
Remarks : Release fraction to wastewater wide dispersive use
Local release rate: Water : 46,2 kg/day
Local release rate: Air : 0,33 kg/day
Local release rate: Soil : 0 kg/day

Technical conditions and measures / Organizational measures

Air : Not applicable
Water : Treat onsite wastewater (prior to receiving water discharge) to

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- provide the required removal efficiency of $\geq$ (%):
(Effectiveness: 87,4 %)
- Remarks : Bund storage facilities to prevent soil and water pollution in the event of spillage.
- Remarks : Prevent environmental discharge consistent with regulatory requirements.
- Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
- Remarks : A leak prevention plan is needed to prevent low level continual releases.
- Remarks : Soil emission controls are not applicable as there is no direct release to soil.
- Remarks : Onsite wastewater treatment required.

Conditions and measures related to municipal sewage treatment plant

- Type of Sewage Treatment Plant : Onsite sewage treatment plant
- Flow rate of sewage treatment plant effluent : 2.000 m3/d
- Remarks : Not applicable

Conditions and measures related to external treatment of waste for disposal

- Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations.
- Disposal methods : Dispose of waste product or used containers according to local regulations.

Conditions and measures related to external recovery of waste

- Recovery Methods : Estimated amount entering waste treatment no greater than:
(Effectiveness: 0 %)
- Remarks : Not applicable

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics

- Physical Form (at time of use) : Liquid substance
- Remarks : Liquid, vapour pressure < 0.5 kPa at STP

Amount used

- Remarks : Not applicable

Frequency and duration of use

- Exposure duration : 12 h
- Remarks : Inhalation exposure, To scale from an exposure of 1-4 hours to 12 hours, multiply by 2.1
- Remarks : Dermal exposure, No corrections required as all exposure are assumed to be substance concentration of up to 100%.

Other operational conditions affecting workers exposure

- Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above

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ambient temperature, unless stated differently.

Technical conditions and measures

None

Organizational measures to prevent /limit releases, dispersion and exposure

No specific measures identified.

2.2 Contributing scenario controlling worker exposure for: CS114: Bulk transfers from tote tanks and supply vessels**Technical conditions and measures**

Transfer via enclosed lines., Clear transfer lines prior to de-coupling., Clear spills immediately

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection., Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: CS45: Filling/ preparation of equipment from drums or containers.**Technical conditions and measures**

Use drum pumps or carefully pour from container.

Organizational measures to prevent /limit releases, dispersion and exposure

Avoid spillage when withdrawing pump.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection., Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: CS115: Drilling mud (re-)formulation**Technical conditions and measures**

Handle substance within a closed system., Provide extraction ventilation at points where emissions occur.

Organizational measures to prevent /limit releases, dispersion and exposure

Ensure the ventilation system is regularly maintained and tested.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection., Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: CS116: Drill floor operations**Conditions and measures related to personal protection, hygiene and health evaluation**

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Use suitable eye protection., Wear suitable gloves tested to EN374., Wear suitable coveralls to prevent exposure to the skin., Wear rubber boots.

2.2 Contributing scenario controlling worker exposure for: CS117, CS138, CS111: Operation of solids filtering equipment, With potential for aerosol generation., elevated temperature**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur., Re-circulation of exhaust air is not recommended., Local exhaust ventilation (Effectiveness: 90 %)

Organizational measures to prevent /limit releases, dispersion and exposure

Ensure the ventilation system is regularly maintained and tested.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection., Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: CS120: Cleaning of solids filtering equipment**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur.

Organizational measures to prevent /limit releases, dispersion and exposure

Ensure the ventilation system is regularly maintained and tested.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection., Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: CS121: Treatment and disposal of filtered solids**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur.

Organizational measures to prevent /limit releases, dispersion and exposure

Ensure the ventilation system is regularly maintained and tested.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection., Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: CS2: Process sampling**Conditions and measures related to personal protection, hygiene and health evaluation**

Use suitable eye protection., Wear suitable gloves tested to EN374.

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2.2 Contributing scenario controlling worker exposure for: CSxx: In line injection of process chemicals by fixed dose pumping.**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: CSxx: Application of process chemicals by pouring from a jug into systems.**Technical conditions and measures**

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc.
Controlled ventilation means air is supplied or removed by a powered fan.

Organizational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374., Use suitable eye protection.

2.2 Contributing scenario controlling worker exposure for: CSxx: Scale squeeze operations.**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374., Use suitable eye protection.

2.2 Contributing scenario controlling worker exposure for: CS39: Equipment cleaning and maintenance**Technical conditions and measures**

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc.
Controlled ventilation means air is supplied or removed by a powered fan., Drain or remove substance from equipment prior to break-in or maintenance.

Organizational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection., Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: CS15, CS67, CS56: General exposures (closed systems), Storage, with sample collection

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Technical conditions and measures

Store substance within a closed system., Ensure dedicated sample points are provided., Avoid dip sampling.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection.

3. Exposure estimation and reference to its source**Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio
ERC8d	CHARM Model		Air		0,00882 µg/m ³	
			Freshwater		0,297 mg/L	0,297
			Freshwater sediment		1,35 mg/kg dry weight (d.w.)	0,338
			Sea water		0,0297 mg/L	0,297
			Marine sediment		0,135 mg/kg dry weight (d.w.)	0,338
			Sewage treatment plant		23,3 mg/L	0,117

ERC8d: Wide dispersive outdoor use of processing aids in open systems

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio
CS114	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	3,9 ppm	0,39
			Worker – inhalation, long-term – systemic	1,78 mg/kg/d	0,09
CS45	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	3,9 ppm	0,39
			Worker – inhalation, long-term – systemic	1,78 mg/kg/d	0,09
CS115	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,6 ppm	0,26
			Worker – inhalation, long-term – systemic	0,422 mg/kg/d	0,022
CS116	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,5 ppm	0,65
			Worker – inhalation, long-term – systemic	1,78 mg/kg/d	0,09
CS117, CS138, CS111	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,5 ppm	0,65
			Worker – inhalation, long-term – systemic	1,78 mg/kg/d	0,09
CS120	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,3 ppm	0,63
			Worker – inhalation, long-term – systemic	3,565 mg/kg/d	0,18
CS121	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,6 ppm	0,26
			Worker – inhalation, long-term – systemic	0,442 mg/kg/d	0,022
CS2	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	2,6 ppm	0,26

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			Worker – inhalation, long-term – systemic	0,442 mg/kg/d	0,022
CSxx			Worker – inhalation, long-term – systemic	0,013 ppm	0,001
			Worker – inhalation, long-term – systemic	0,442 mg/kg/d	0,022
CSxx	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,3 ppm	0,63
			Worker – dermal, long- term – systemic	3,565 mg/kg/d	0,178
CSxx	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,5 ppm	0,65
			Worker – dermal, long- term – systemic	1,78 mg/kg/d	0,09
CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,3 ppm	0,63
			Worker – inhalation, long-term – systemic	3,565 mg/kg/d	0,178
CS15, CS67, CS56	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	3,9 ppm	0,39
			Worker – inhalation, long-term – systemic	1,78 mg/kg/d	0,089

CS114: Bulk transfers from tote tanks and supply vessels

CS45: Filling/ preparation of equipment from drums or containers.

CS115: Drilling mud (re-)formulation

CS116: Drill floor operations

CS117: Operation of solids filtering equipment

CS138: With potential for aerosol generation.

CS111: elevated temperature

CS120: Cleaning of solids filtering equipment

CS121: Treatment and disposal of filtered solids

CS2: Process sampling

CSxx: In line injection of process chemicals by fixed dose pumping.

CSxx: Application of process chemicals by pouring from a jug into systems.

CSxx: Scale squeeze operations.

CS39: Equipment cleaning and maintenance

CS15: General exposures (closed systems)

CS67: Storage

CS56: with sample collection

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

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Available hazard data do not enable the derivation of a DNEL for eye irritant effects. Risk management measures described will protect against acute exposure. Since exposures have been assessed on a task basis, exposure assessments will cover both long and short term exposures.

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.