

Notitie / Memo

HaskoningDHV Nederland B.V.
Water

Aan: Ekwadraat; [redacted]
Van: [redacted]
Datum: 3/9/2021
Kopie:
Ons kenmerk: BH8845WATNT210309
Classificatie: Projectgerelateerd
Goedgekeurd door: [redacted]

Onderwerp: ABM-toets reinigingsmiddelen en ontschuimingsmiddel

1 Inleiding

Ekwadraat Group (hierna Ekwadraat) is een adviesbureau dat gespecialiseerd is in duurzame energie, energiebesparing en transitie management. Ekwadraat vraagt een ABM-toets aan namens het bedrijf Bio LNG ECL te Leeuwarden. Bio LNG ECL heeft het voornemen om een nieuwe vergistingsinstallatie op te richten, voor het vergisten van dierlijke mest en overige organische stoffen. Voor de grond- en hulpstoffen die mogelijk met het afvalwater geloosd worden, is een ABM-toets uitgevoerd. Bio LNG ECL lost het afvalwater (condensaat) direct op het oppervlaktewater i.c. het Van Harinxmakanaal.

Restanten van de te vergisten mest- en grondstoffen zullen volledig als digestaat in de vergistingsinstallatie achterblijven en niet met het condensaat worden geloosd. De mest- en grondstoffen zijn derhalve niet meegenomen in de ABM-toets. Het condensaat is afkomstig van de verdampingseenheid van de vergistingsinstallatie. Het condensaat wordt behandeld in twee in serie geschakelde omgekeerde osmose-installaties (RO), waarna het afvalwater op het oppervlaktewater wordt geloosd. De reinigingsmiddelen (voor het reinigen van de omgekeerde osmose-installatie) en het ontschuimingsmiddel (voor het voorkomen van schuimvorming in de verdampingseenheid) kunnen mogelijk wel met het afvalwater worden geloosd.

In dit document zijn de reinigingsmiddelen en het ontschuimingsmiddel getoetst op waterbezwaarlijkheid volgens de Algemene Beoordelingsmethodiek (ABM). Het wordt hierbij geconcludeerd dat de reinigingsmiddelen weinig waterbezwaarlijk zijn (C1 of B5-classificatie) en het ontschuimingsmiddel waterbezwaarlijk is en op lange termijn schadelijke effecten kan veroorzaken (A4-classificatie).

In hoofdstuk 2 is een korte toelichting op de ABM gegeven. In hoofdstuk 3 (en bijlage 1) zijn de resultaten van de ABM-toets weergegeven. In hoofdstuk 4 is een korte samenvatting opgenomen en wordt een advies gegeven op basis van de resultaten.

2 Toelichting ABM

Voor het bepalen van de invloed van stoffen op het aquatisch milieu en de daarmee benodigde saneringsinspanning bij het lozen van deze stoffen, is de Algemene BeoordelingsMethodiek (hierna ABM) ontwikkeld. Naarmate een stof milieubezwaarlijker is, zal de mate van inspanning om de emissie te beperken toenemen. De waterbezwaarlijkheid van een stof wordt bepaald door een combinatie van stof-intrinsieke eigenschappen zoals (eco)toxiciteit, carcinogeniteit, mutageniteit, biologische afbreekbaarheid en de verdelingscoëfficiënt (log Kow) in n-octanol/water. Middels de ABM wordt op

basis van de beschikbare voornoemde gegevens de stof of mengsel van stoffen ingedeeld in één van de volgende vier saneringsinspanningen:

- **Z:** Zeer Zorgwekkende Stoffen (ZZS), verzameling van de meest gevaarlijke stoffen voor mens en milieu.
- **A:** niet snel afbreekbare, waterbezwaarlijke stoffen.
- **B:** afbreekbare, waterbezwaarlijke stoffen.
- **C:** stoffen die van nature voorkomen in het oppervlaktewater.

In bijlage 2 is het stroomschema weergegeven waarop de ABM-indeling van individuele stoffen wordt gebaseerd. Om een ABM-indeling aan mengsels te geven wordt het toetsingsschema zoals weergegeven in bijlage 3 gehanteerd. Aan de hand van de resultaten van de toetsing wordt bepaald wat de waterbezwaarlijkheid van het product is en welke saneringsinspanning van toepassing is. Naarmate een stof of mengsel milieubezwaarlijker is zal de mate van inspanning om de emissie te beperken toenemen. In Figuur 1 wordt deze relatie schematisch weergegeven.



Figuur 1: Algemene relatie tussen saneringsinspanning en waterbezwaarlijkheid

Na het uitvoeren van de ABM-toetsing wordt in de regel een analyse gemaakt van de (bron)maatregelen en (zuiveringstechnische) voorzieningen die reeds aanwezig zijn. Hierbij wordt een relatie gelegd tussen de saneringsinspanning conform de ABM en de aanwezige zuiveringstechnische voorzieningen.

3 Resultaten ABM-toets

In bijlage 1 zijn de bestanddelen, eigenschappen en toxiciteitsgegevens weergegeven van de reinigingsmiddelen en het ontschuimingsmiddel. De basis van de ABM-indeling zijn de gegevens afkomstig van ECHA¹ of zoals vermeld op de SDS'en van de genoemde producten. Voor de diverse bestanddelen en de concentraties hiervan in de producten, is met deze gegevens de waterbezwaarlijkheid bepaald van het product. Voor het gehanteerde stroomschema, zie bijlage 2. In onderstaande Tabel 1 is een overzicht weergegeven van de resultaten van de ABM-toets.

¹ ECHA: European Chemicals Agency, een agentschap van de Europese Unie

Tabel 1: ABM-beoordeling van de producten en individuele componenten

Product	Cas-nummer	Toepassing	ABM-beoordeling	Aanduiding waterbezwaarlijkheid
Sulphuric Acid 96 %	7664-93-9	Reinigingsmiddel	C1 (bij een neutrale pH van 6 - 9)	Weinig schadelijk voor in water levende organismen, komt van nature voor in oppervlaktewater.
Caustic Soda 50%	1310-73-2	Reinigingsmiddel	C1 (bij een neutrale pH van 6 - 9)	Weinig schadelijk voor in water levende organismen, komt van nature voor in oppervlaktewater.
Formic acid 75-78%	64-18-6	Reinigingsmiddel	B5	Weinig schadelijk voor in water levende organismen.
Struktol SB 2080	-	Ontschuimingsmiddel	A4*	Weinig schadelijk voor in water levende organismen kan in het aquatisch milieu op lange termijn schadelijke effecten veroorzaken.
* Deze component is ingedeeld op basis van expert judgement.				

Toelichting

Voor de reinigingsmiddelen Sulphuric Acid 96% en Caustic Soda 50% is de pH bepalend voor de toxiciteit. Bij neutralisatie (pH tussen 6 en 9) zullen de stoffen uiteenvallen in componenten die van nature voorkomen in het oppervlaktewater.

Het reinigingsmiddel Formic acid 75-78% zal naar verwachting in kleine hoeveelheden worden gebruikt voor het reinigen van de omgekeerde osmose-installatie en zal in het aquatisch milieu snel biologisch worden afgebroken.

Van het ontschuimingsmiddel zouden de eventuele vluchtige componenten, door middel van het indamproces, mogelijk met het condensaat kunnen worden geloosd. Het ontschuimingsmiddel Struktol SB 2080 bestaat uit derivaten van natuurlijke vetzuren. Op basis van expert judgement wordt vanwege de slechte oplosbaarheid verwacht dat het gaat om lange vetzuurketens. Naar verwachting zullen de derivaten van natuurlijke vetzuren niet met het condensaat worden geloosd, maar bij het indamproces achterblijven in het digestaat. Daarnaast wordt het condensaat door twee omgekeerde osmose-installatie geleid waardoor het wordt gezuiverd, voordat het op het oppervlaktewater wordt geloosd.

4 Advies

De reinigingsmiddelen (Sulphuric Acid 96%, Caustic Soda 50% en Formic acid 75-78%) hebben een waterbezwaarlijkheid van categorie respectievelijk C1, C1 en B5. Deze producten zijn niet toxisch voor het aquatisch milieu en kunnen op basis hiervan, bij een lozing met een neutrale pH, in principe direct geloosd worden op het oppervlaktewater.

Het ontschuimingsmiddel (Struktol SB 2080) heeft een waterbezwaarlijkheid van categorie A4. Het product zal niet snel afbreken en daarom wordt in beginsel geadviseerd een dergelijk product niet te lozen zonder voorafgaande zuivering van het afvalwater. Doordat in deze situatie het condensaat door een omgekeerde osmose-installatie gezuiverd is, kan het behandelde afvalwater worden geloosd op het oppervlaktewater.

Bijlage 1 Gegevens beoordeelde stoffen

ABM-toets

Datum: 2 maart 2021

Zaaknummer: 20000000000000000000

Bedrijf: J

Contactpersoon: J

Aantal producten: 1

Zwart

Zwart

Producteigenschappen zoals weergegeven op het MSDS, zie referentie

Zwart

Zwart

Stofeigenschappen zoals weergegeven in de ECHA database

Groen

Groen

Stofeigenschappen zoals weergegeven op de MSDS

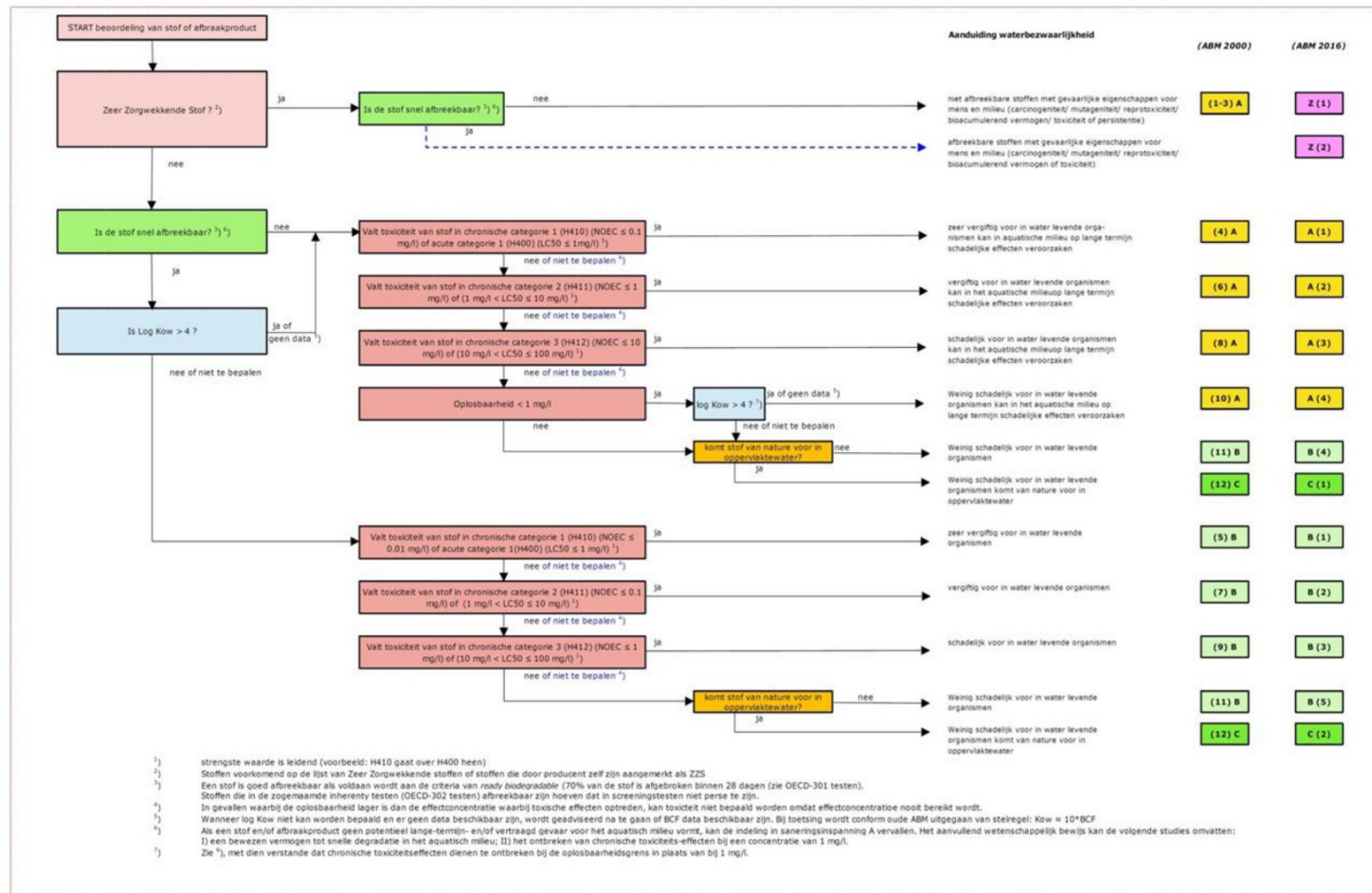
Groen

Groen

Stofeigenschappen zijn gebaseerd op expert judgement

nr.	Product gegevens					Stofgegevens												Resultaten			
	MSDS-referentie	Leverancier	MSDS-datum	Toepassing	Product	Werkzame stof	Cas-nummer	Andere identificatie nummers	Gewichts- percentage	ZZS (RIVM, Versie 27-10- 2020)	Potentieel ZZS (RIVM, Versie 30-10- 2020)	Altbreek- baarheid	Matrizen voor de aquatische toxiciteit	Chronische toxiciteit (NOEC)	Acute toxiciteit (LC-50)	Oplosbaarheid	Log Kow	M-factor	Waterbezuurlijk(ke)heid	Opmerkingen	
1	Actinov AS	29/05/2017	Reinigingsmiddel	Sulphuric Acid 98 %		Sulphuric Acid	7664-93-9	231-639-5	99.5%	Nee	Nee	Nee	Geen	Geen data	Geen data	Mengbaar	Niet te bepalen	1		C1	Anorgaanische stof, Log Kow niet te bepalen. Toeschild te op basis van pH, bij ABM wordt uitbreiden van neutralisatie
2	Actinov AS	12/11/2017	Reinigingsmiddel	Caustic Soda 50%		Sodium hydroxide	1310-73-2	215-185-5	55%	Nee	Nee	Nee	Geen	Geen data	Geen data	1000 g/l	Niet te bepalen	1		C1	Anorgaanische stof, Log Kow niet te bepalen. Toeschild te op basis van pH, bij ABM wordt uitbreiden van neutralisatie
3	BERSCHEME J.C.Brücking & Co. GmbH	19/02/2017	Reinigingsmiddel	Formic acid 75-78%		Formic acid	64-18-6	200-579-1	78%	Nee	Nee	Ja	Geen	72 mol	130 mol	Mengbaar	-1.9	1		B5	
4	Schill+Seilacher "Struktal" GmbH	9/12/2020	Ontschuimingsmiddel	Struktal SB 2080		Derivaten van natuurlijke vetzuren	-	-	100%	Nee	Nee	Nee	-	-	-	Niet resp. gering mengbaar	-	-		A4	Geen gegevens beschikbaar. Op basis van expert judgement gaat het om lange vetzuurketens. Lange vetzuurketens zijn niet snel afbreekbaar en zijn niet toxisch. In de SDS staat een waterbezuurlijkheid van A4 vermeld.

Bijlage 2 ABM stroomschema



Bijlage 3 Toetsingsschema waterbezwaarlijkheid voor mengsels

Resultaat indeling	Z1	Z2	A1	A2	A3	A4	B4	C1= C2	B1	B2	B3	B5= B4
Rekenregels per categorie ¹⁾												
Z1 $\sum M \cdot C_{Z1}$	$\geq 0,1$ %						$< 0,1$					
Z2 $\sum M \cdot C_{Z2}$		$\geq 0,1$ %					$< 0,1$					
A1 $\sum M \cdot C_1$			≥ 25 %	$2,5\% \leq C_1$ $< 25\%$	$0,25\% \leq$ $C_1 < 2,5\%$		$< 0,25$ %					
A2 $\sum M \cdot C_{A1} \cdot 10 +$ $\sum C_{A2}$				$\geq 25\%$	$2,5\% \leq$ $C_1 < 25$		$< 2,5\%$					
A3 $\sum M \cdot C_{A1} \cdot 100 +$ $\sum C_{A2} \cdot 10 +$ $\sum C_{A3}$					$\geq 25\%$		$< 25\%$					
A4 $\sum M \cdot C_{A1} \cdot 100 +$ $\sum C_{A2} \cdot 10 +$ $\sum C_{A3} + \sum C_{A4}$						$\geq 25\%$	$< 25\%$					
B4 $\sum C_{B4}$							$\geq 1\%$					
C1 = C2								100%				
B1 $\sum M \cdot C_{B1}$									$\geq 25\%$	$2,5\% \leq$ $C_1 < 25\%$	$0,25\% \leq$ $C_1 < 2,5\%$	$< 0,25$ %
B2 $\sum M \cdot C_{B1} \cdot 10 +$ $\sum C_{B2}$										$\geq 25\%$	$2,5\% \leq$ $C_1 < 25\%$	$< 2,5$ %
B3 $\sum M \cdot C_{B1} \cdot 100 +$ $\sum C_{B2} \cdot 10 +$ $\sum C_{B3}$											$\geq 25\%$	< 25 %
B5 $\sum C_{B5}$												$\geq 1\%$

¹⁾ Met $\sum M \cdot C_{Z1} = \sum_{k=1}^n (M_k) \cdot C_{Z1,k}$; Met $\sum M \cdot C_{Z2} = \sum_{k=1}^n (M_k) \cdot C_{Z2,k}$; $\sum M \cdot C_{A1} = \sum_{k=1}^n (M_k) \cdot C_{A1,k}$;
 $\sum C_{A2} = \sum_{k=1}^n C_{A2,k}$; $\sum C_{A3} = \sum_{k=1}^n C_{A3,k}$ en $\sum C_{A4} = \sum_{k=1}^n C_{A4,k}$; $\sum M \cdot C_{B1} = \sum_{k=1}^n (M_k) \cdot C_{B1,k}$;
 $\sum C_{B2} = \sum_{k=1}^n C_{B2,k}$; $\sum C_{B3} = \sum_{k=1}^n C_{B3,k}$; $\sum C_{B4} = \sum_{k=1}^n C_{B4,k}$; $\sum C_{B5} = \sum_{k=1}^n C_{B5,k}$

Bijlage 4 MSDS'en



Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH)

Formic acid 75-78%

Version number: 6.0
Replaces version of: 2015-10-23 (5)

Revision: 2017-02-19
First version: 17.03.2006

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

1.1 Product identifier

Trade name	<u>Formic acid 75-78%</u>
Registration number (REACH)	not relevant (mixture)
CAS number	not relevant (mixture)

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Industrial use Professional use Chemicals for various applications Intermediate for organic synthesis
Uses advised against	Do not use for squirting or spraying Do not use for products which come into direct contact with the skin Do not use for products which come into contact with the food stuffs Do not use for private purposes (household)

1.3 Details of the supplier of the safety data sheet

BERGCHEMIE J.C.Bröcking & Co. GmbH Rudolfstrasse 14 42285 Wuppertal Germany	Telephone: ++49 (0) 202 - 45 60 60 Telefax: ++49 (0) 202 / 44 79 32
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e-mail (competent person) sdb@csb-online.de

Please do not use this e-mail adress to ask for the latest safety data sheet. For this purpose contact BERGCHEMIE J.C.Bröcking & Co. GmbH.

1.4 Emergency telephone number

As above or next toxicological information centre.

Formic acid 75-78%

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Classification acc. to GHS				
Section	Hazard class	Category	Hazard class and category	Hazard statement
2.16	substance or mixture corrosive to metals	1	Met. Corr. 1	H290
3.10	acute toxicity (oral)	4	Acute Tox. 4	H302
3.11	acute toxicity (inhal.)	4	Acute Tox. 4	H332
3.2	skin corrosion/irritation	1B	Skin Corr. 1B	H314
3.3	serious eye damage/eye irritation	1	Eye Dam. 1	H318

for full text of abbreviations: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

Skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis.

Additional information

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

Signal word danger

Pictograms

GHS05, GHS07



Hazard statements

H290 May be corrosive to metals.
H302+H332 Harmful if swallowed or if inhaled.
H314 Causes severe skin burns and eye damage.

Precautionary statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Formic acid 75-78%

Precautionary statements

P308+P311 IF exposed or concerned: Call a POISON CENTER/doctor.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental hazard information

EUH071 Corrosive to the respiratory tract.

Hazardous ingredients for labelling Formic acid

2.3 Other hazards

This material is combustible, but will not ignite readily.

Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

not relevant (mixture)

3.2 Mixtures

Description of the mixture

Hazardous ingredients acc. to GHS				
Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms
Formic acid	CAS No 64-18-6 EC No 200-579-1 Index No 607-001-00-0 REACH Reg. No 01-2119491174-37	75 - 78	Flam. Liq. 3 / H226 Acute Tox. 4 / H302 Acute Tox. 3 / H331 Skin Corr. 1A / H314 Eye Dam. 1 / H318	

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Take off immediately all contaminated clothing.

Remove affected person from the danger area and lay down.

Do not leave affected person unattended.

Self-protection of the first aider.

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Following inhalation

Provide fresh air.

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.

In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following skin contact

Wash with plenty of soap and water.

Call a physician immediately. Causes poorly healing wounds.

Following eye contact

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Remove contact lenses, if present and easy to do. Continue rinsing.

Following ingestion

Rinse mouth immediately and drink plenty of water.

Do NOT induce vomiting.

Call a physician in any case.

Notes for the doctor

none

4.2 Most important symptoms and effects, both acute and delayed

Causes poorly healing wounds.

Subsequent observance for pneumonia and pulmonary oedema.

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

water spray, alcohol resistant foam, fire extinguishing powder, carbon dioxide (CO₂)

Unsuitable extinguishing media

water jet

5.2 Special hazards arising from the substance or mixture

Hazardous decomposition products: Section 10.

Substance or mixture corrosive to metals.

Hazardous combustion products

carbon monoxide (CO), carbon dioxide (CO₂)

5.3 Advice for firefighters

Containments may explode when heated.

Keep containers cool with water spray.

In case of fire and/or explosion do not breathe fumes.

Co-ordinate firefighting measures to the fire surroundings.

Do not allow firefighting water to enter drains or water courses.

Collect contaminated firefighting water separately.

Fight fire with normal precautions from a reasonable distance.

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Special protective equipment for firefighters

use suitable breathing apparatus

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.

Ventilate affected area.

Avoid contact with skin and eyes.

Do not breathe mist/vapours/spray.

Use suitable breathing apparatus.

Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing.

Avoidance of ignition sources.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases.

6.2 Environmental precautions

In case of formation of gases/vapours/mists suppress with water spray. Keep away from drains, surface and ground water.

Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advices on how to clean up a spill

Collect spillage.

Absorbent material (e.g. sand, diatomaceous earth, acid binder, universal binder, sawdust, etc.).

Appropriate containment techniques

Use of adsorbent materials.

Neutralisation techniques.

Other information relating to spills and releases

Place in appropriate containers for disposal.

Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5.

Personal protective equipment: see section 8.

Incompatible materials: see section 10.

Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation.
Keep away from sources of ignition - No smoking.
Vapours may form explosive mixtures with air.
Never add water to this product.

Specific notes/details

None.

Handling of incompatible substances or mixtures

Do not mix with alkali.

Measures to protect the environment

Avoid release to the environment.

Advice on general occupational hygiene

Do not eat, drink and smoke in work areas.
Wash hands after use.
Preventive skin protection (barrier creams/ointments) is recommended.
Remove contaminated clothing and protective equipment before entering eating areas.

7.2 Conditions for safe storage, including any incompatibilities

Corrosive conditions

Store in corrosive resistant container with a resistant inner liner.

Flammability hazards

Keep away from sources of ignition - No smoking.
Vapours may form explosive mixtures with air.

Incompatible substances or mixtures

Incompatible materials: see section 10.

Protect against external exposure, such as

heat, frost, sunlight

Consideration of other advice

Keep away from food, drink and animal feedingstuffs.

Ventilation requirements

Keep any substance that emits harmful vapours or gases in a place that allows these to be permanently extracted.
Provision of sufficient ventilation.

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Packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)									
Country	Name of agent	CAS No	Notation	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Source
EU	formic acid	64-18-6		IOELV	5	9			2006/15/EC
GB	formic acid	64-18-6		WEL	5	9.6			EH40/2005

Notation

STEL short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period unless otherwise specified

TWA time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average

Relevant DNELs of components of the mixture						
Name of substance	CAS No	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
Formic acid	64-18-6	DNEL	9.5 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
Formic acid	64-18-6	DNEL	19 mg/m³	human, inhalatory	worker (industry)	acute - systemic effects
Formic acid	64-18-6	DNEL	19 mg/m³	human, inhalatory	worker (industry)	acute - local effects
Formic acid	64-18-6	DNEL	9.5 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects

Relevant PNECs of components of the mixture				
Name of substance	CAS No	Endpoint	Threshold level	Environmental compartment
Formic acid	64-18-6	PNEC	2 mg/l	freshwater
Formic acid	64-18-6	PNEC	0.2 mg/l	marine water
Formic acid	64-18-6	PNEC	7.2 mg/l	sewage treatment plant (STP)
Formic acid	64-18-6	PNEC	13.4 mg/kg	freshwater sediment

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Relevant PNECs of components of the mixture				
Name of substance	CAS No	Endpoint	Threshold level	Environmental compartment
Formic acid	64-18-6	PNEC	1.34 mg/kg	marine sediment
Formic acid	64-18-6	PNEC	1.5 mg/kg	soil
Formic acid	64-18-6	PNEC	1 mg/l	water

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Hand protection

Material	Material thickness	Breakthrough times of the glove material
FKM: fluoro-elastomer	these information are not available	these information are not available
CR: chloroprene (chlorobutadiene) rubber	these information are not available	these information are not available
IIR: isobutene-isoprene (butyl) rubber	these information are not available	these information are not available

Wear suitable gloves.

Chemical protection gloves are suitable, which are tested according to EN 374.

Check leak-tightness/impermeability prior to use.

In the case of wanting to use the gloves again, clean them before taking off and air them well.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Unsuitable materials::

Other protection measures

Acid-resistant, acid-proof overalls or apron.

Acid-proof, acid-resistant boots or safety shoes.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

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Environmental exposure controls

Use appropriate container to avoid environmental contamination.
Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	liquid
Form	fluid
Colour	colourless to yellowish
Odour	pungent
Odour threshold	these information are not available

Other safety parameters

pH (value)	<1 (20 °C), acid
Melting point/freezing point	these information are not available
Initial boiling point and boiling range	(unknown)
Flash point	>65 °C
Evaporation rate	these information are not available
Flammability (solid, gas)	not relevant (fluid)

Explosive limits

Lower explosion limit (LEL)	12 vol%
Upper explosion limit (UEL)	51 vol%
Vapour pressure	these information are not available
Density	1.18 g/cm ³
Vapour density	these information are not available
Relative density	these information are not available

Solubility(ies)

Water solubility	miscible in any proportion
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Partition coefficient

n-octanol/water (log KOW)	-0.54
Auto-ignition temperature	500 °C
Relative self-ignition temperature for solids	not relevant (Fluid)

Formic acid 75-78%

Decomposition temperature	these information are not available
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Viscosity

Kinematic viscosity	these information are not available
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Dynamic viscosity	these information are not available
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Explosive properties	not explosive
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Oxidising properties	shall not be classified as oxidising
----------------------	--------------------------------------

9.2 Other information

Temperature class (EU, acc. to ATEX)	T1 (maximum permissible surface temperature on the equipment: 450°C)
--------------------------------------	---

SECTION 10: Stability and reactivity

10.1 Reactivity

Substance or mixture corrosive to metals.

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture.
Danger of bursting container.
May be corrosive to metals.
Metals (due to the release of hydrogen in an acid/alkaline medium).
Explosive reaction with:
Alkalis.
Oxidiser.

10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

10.5 Incompatible materials

amine, strong oxidiser, caustic solutions, metals, hypochlorites
Release of flammable materials with:
light metals (due to the release of hydrogen in an acid/alkaline medium)

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known.
Hazardous combustion products: see section 5.

Formic acid 75-78%

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Classification procedure

If not otherwise specified the classification is based on:

Ingredients of the mixture (additivity formula).

Classification according to GHS (1272/2008/EC, CLP)

Acute toxicity

Harmful if swallowed.

Harmful if inhaled.

Acute toxicity estimate (ATE)

Oral 973.3 mg/kg

Inhalation: vapour 10.47 mg/l/4h

Acute toxicity of components of the mixture						
Name of substance	CAS No	Exposure route	Endpoint	Value	Species	Source
Formic acid	64-18-6	oral	LD50	730 mg/kg	rat	European Chemicals Agency, http://echa.europa.eu/
Formic acid	64-18-6	inhalation: vapour	LC50	7.85 mg/l/4h	rat	European Chemicals Agency, http://echa.europa.eu/

Skin corrosion/irritation

Causes severe skin burns and eye damage.

Classification procedure

The classification is based on an extreme pH value.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitisation

Skin sensitisation

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Respiratory sensitisation

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Formic acid 75-78%

Germ cell mutagenicity

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Carcinogenicity

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Reproductive toxicity

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Specific target organ toxicity - single exposure

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Specific target organ toxicity - repeated exposure

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Other information

Corrosive to the respiratory tract.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity (acute)

Test data are not available for the complete mixture.

Aquatic toxicity (chronic)

Test data are not available for the complete mixture.

Aquatic toxicity (chronic) of components of the mixture

Aquatic toxicity (chronic) of components of the mixture						
Name of substance	CAS No	Endpoint	Value	Species	Source	Exposure time
Formic acid	64-18-6	NOEC	100 mg/l	daphnia magna	European Chemicals Agency, http://echa.europa.eu/	21 d
Formic acid	64-18-6	LOEC	>100 mg/l	daphnia magna	European Chemicals Agency, http://echa.europa.eu/	21 d

Formic acid 75-78%

12.2 Persistence and degradability

Degradability of components of the mixture

Degradability of components of the mixture						
Name of substance	CAS No	Process	Degradation rate	Time	Method	Source
Formic acid	64-18-6	oxygen depletion	100 %	14 d		European Chemicals Agency, http://echa.europa.eu/
Formic acid	64-18-6	DOC removal	4 %	6 d		European Chemicals Agency, http://echa.europa.eu/

Biodegradation

The relevant substances of the mixture are readily biodegradable.

Persistence

Data are not available.

12.3 Bioaccumulative potential

No.

Bioaccumulative potential of components of the mixture

Bioaccumulative potential of components of the mixture			
Name of substance	CAS No	BCF	Log KOW
Formic acid	64-18-6		-0.54 (25 °C)

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

12.6 Other adverse effects

Data are not available.

Endocrine disrupting potential

None of the ingredients are listed.

Formic acid 75-78%

Remarks

Water hazard class - WHC (Wassergefährdungsklasse): 1 (Slightly hazardous to water)
Keep away from drains, surface and ground water.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

This material and its container must be disposed of as hazardous waste.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.
Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions.

SECTION 14: Transport information

14.1	UN number	3412
14.2	UN proper shipping name	FORMIC ACID
14.3	Transport hazard class(es)	
	Class	8
14.4	Packing group	II
14.5	Environmental hazards	non-environmentally hazardous acc. to the dangerous goods regulations
14.6	Special precautions for user	
	Provisions for dangerous goods (ADR) should be complied within the premises.	
14.7	Transport in bulk according to Annex II of MARPOL and the IBC Code	
	The cargo is not intended to be carried in bulk.	
14.8	<u>Information for each of the UN Model Regulations</u>	
	Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)	
	UN number	3412
	Proper shipping name	UN3412, FORMIC ACID, 8, II, (E)
	Class	8
	Classification code	C3
	Packing group	II
	Danger label(s)	8

Formic acid 75-78%



Excepted quantities (EQ)	E2
Limited quantities (LQ)	1 L
Transport category (TC)	2.
Tunnel restriction code (TRC)	E
Hazard identification No	80
Emergency Action Code	2X

International Maritime Dangerous Goods Code (IMDG)

UN number	3412
Proper shipping name	UN3412, FORMIC ACID, 8, II
Class	8
Packing group	II
Danger label(s)	8



Special provisions (SP)	-
Excepted quantities (EQ)	E2
Limited quantities (LQ)	1 L
EmS	F-A, S-B
Stowage category	A
Segregation group	1 - Acids

International Civil Aviation Organization (ICAO-IATA/DGR)

UN number	3412
Proper shipping name	UN3412, Formic acid, 8, II
Class	8
Packing group	II
Danger label(s)	8



Excepted quantities (EQ)	E2
Limited quantities (LQ)	0,5 L

Formic acid 75-78%

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Relevant provisions of the European Union (EU)

Restrictions according to REACH, Annex XVII

none of the ingredients are listed

Dangerous substances with restrictions (REACH, Annex XVII)					
Name of substance	Name acc. to inventory	CAS No	Type of registration	Conditions of restriction	No
Ameisensäure 75 - 78%	this product meets the criteria for classification in accordance with Regulation No 1272/2008/EC		1907/2006/EC annex XVII	R3	3

Legend

- R3
1. Shall not be used in:
 - ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays,
 - tricks and jokes,
 - games for one or more participants, or any article intended to be used as such, even with ornamental aspects,
 2. Articles not complying with paragraph 1 shall not be placed on the market.
 3. Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they:
 - can be used as fuel in decorative oil lamps for supply to the general public, and,
 - present an aspiration hazard and are labelled with R65 or H304,
 4. Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the European Standard on Decorative oil lamps (EN 14059) adopted by the European Committee for Standardisation (CEN).
 5. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of dangerous substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met:
 - (a) lamp oils, labelled with R65 or H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: 'Keep lamps filled with this liquid out of the reach of children'; and, by 1 December 2010, 'Just a sip of lamp oil - or even sucking the wick of lamps - may lead to life-threatening lung damage';
 - (b) grill lighter fluids, labelled with R65 or H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as follows: 'Just a sip of grill lighter may lead to life threatening lung damage';
 - (c) lamp oils and grill lighters, labelled with R65 or H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.
 6. No later than 1 June 2014, the Commission shall request the European Chemicals Agency to prepare a dossier, in accordance with Article 69 of the present Regulation with a view to ban, if appropriate, grill lighter fluids and fuel for decorative lamps, labelled R65 or H304, intended for supply to the general public.
 7. Natural or legal persons placing on the market for the first time lamp oils and grill lighter fluids, labelled with R65 or H304, shall by 1 December 2011, and annually thereafter, provide data on alternatives to lamp oils and grill lighter fluids labelled R65 or H304 to the competent authority in the Member State concerned. Member States shall make those data available to the Commission.

Formic acid 75-78%

List of substances subject to authorisation (REACH, Annex XIV)

none of the ingredients are listed

Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - Annex II

none of the ingredients are listed

Regulation 166/2006/EC concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

none of the ingredients are listed

Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)

none of the ingredients are listed

Regulation 98/2013/EU on the marketing and use of explosives precursors

none of the ingredients are listed

SECTION 16: Other information

Indication of changes (revised safety data sheet)

Indication of changes: Section 1, 2, 3, 7, 8, 10, 11, 15

Abbreviations and acronyms

Abbreviations and acronyms	
Abbr.	Descriptions of used abbreviations
2006/15/EC	Comission Directive establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC
Acute Tox.	Acute toxicity
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
BCF	Bioconcentration factor
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances

Formic acid 75-78%

Abbreviations and acronyms	
Abbr.	Descriptions of used abbreviations
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
Eye Dam.	Seriously damaging to the eye
Eye Irrit.	Irritant to the eye
Flam. Liq.	Flammable liquid
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
index No	The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
IOELV	Indicative occupational exposure limit value
log KOW	n-Octanol/water
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
Skin Corr.	Corrosive to skin
Skin Irrit.	Irritant to skin
STEL	Short-term exposure limit
TWA	Time-weighted average
vPvB	Very Persistent and very Bioaccumulative
WEL	Workplace exposure limit

Formic acid 75-78%

Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.
Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU.
Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN).
International Maritime Dangerous Goods Code (IMDG).
Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties.
Health hazards.
Environmental hazards.
The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

List of relevant phrases (code and full text as stated in chapter 2 and 3)

List of relevant phrases (code and full text as stated in chapter 2 and 3)	
Code	Text
H226	Flammable liquid and vapour.
H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H331	Toxic if inhaled.
H332	Harmful if inhaled.

Responsible for the safety data sheet

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47809 Krefeld

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Telefax: +49 (0) 2151 - 652086 - 9
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Website: www.csb-online.de

Disclaimer

This information is based upon the present state of our knowledge.
This SDS has been compiled and is solely intended for this product.

SAFETY DATA SHEET

Sulphuric Acid 96 %

The safety data sheet is in accordance with Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

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

Date issued	24.11.2015
Revision date	29.05.2017

1.1. Product identifier

Product name	Sulphuric Acid 96 %
Synonyms	Svovelsyre 96 %
REACH Reg. No.	01-2119458838-20
CAS no.	7664-93-9
EC no.	231-639-5
Index no.	016-020-00-8
Formula	H ₂ SO ₄
Extended SDS with ES incorporated, Comments	Exposure Scenario available.

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/preparation	pH-regulation. Process-chemicals. Liquid for metal surface treatment. Chemical/technical industry.
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1.3. Details of the supplier of the safety data sheet

Distributor

Company name	Acinor AS
Office address	Titangt. 13, NO-1630 Gamle Fredrikstad
Postal address	Titangaten 13
Postcode	1630
City	Gamle Fredrikstad
Country	Norway
Tel	69384082
Fax	69384084
E-mail	post@acinor.no
Website	www.acinor.no
Enterprise no.	NO 984 648 324 MVA

1.4. Emergency telephone number

Emergency telephone	Tel: +47 22 59 13 00
	Description: Norwegian Poison Information Center
	Tel: 112 or 999
	Description: Ambulance

SECTION 2: Hazards identification

2.1. Classification of substance or mixture

Classification according to Regulation (EC) No 1272/2008 [CLP / GHS]	Skin Corr 1A; H314
	Eye Dam. 1; H318
Substance / mixture hazardous properties	Causes severe burns to skin and eyes.
Additional information on classification	See supplementary information (section 16).

2.2. Label elements

Hazard Pictograms (CLP)



Signal word	Danger
Hazard statements	H314 Causes severe skin burns and eye damage.
Precautionary statements	P280 Wear protective gloves / protective clothing / eye protection / face protection. P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting. P303+P361+P353 IF ON SKIN (or hair): Remove / Take off immediately all contaminated clothing. Rinse skin with water / shower. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310 Immediately call a POISON CENTER or doctor / physician. P405 Store locked up. P501 Dispose of contents / container to an approved waste disposal plant.

2.3. Other hazards

PBT / vPvB	The chemical contains no PBT or vPvB substances.
------------	--

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance	Identification	Classification	Contents
Sulphuric acid...%	CAS no.: 7664-93-9	Skin Corr 1A;H314	91 – 99.5 %
	EC no.: 231-639-5		
	Index no.: 016-020-00-8		
	REACH Reg. No.: 01-2119458838-20		
Substance comments	See section 16 for explanation of hazard statements (H) listed above.		

SECTION 4: First aid measures

4.1. Description of first aid measures

General	Emergency telephone number: see section 1.4. In case of unconsciousness or severe accidents, call 112.
Inhalation	Rinse nose and mouth with water. Fresh air and rest. Consult a physician. For breathing difficulties oxygen may be necessary. Perform artificial respiration if breathing has stopped. Get medical attention.
Skin contact	Rinse immediately with plenty of water. Remove contaminated clothing. Get medical attention immediately. Chemical burns must be treated by a physician.
Eye contact	Promptly rinse eyes with plenty of water (tempered at 20-30°C) for at least 30 minutes. Remove contact lenses and open eyes wide apart. Transport to physician. Keep on flushing during transport.
Ingestion	Rinse mouth with water. Drink plenty of water. Liquid can also be given as milk or cream. Never give liquid to an unconscious person. Do not induce vomiting. Get medical attention immediately! Transport to hospital. Bring the safety data sheet.

4.2. Most important symptoms and effects, both acute and delayed

Information for health personnel	Treat as chemical burns/scalding. Risk of perforation of the esophagus. Hospital treatment is required.
Acute symptoms and effects	Inhalation: Inhalation of vapors may cause severe irritation or burns in the respiratory tract. Eye contact: The chemical is corrosive to the eyes and may cause permanent damage. Symptoms such as strong burning, tearing/watering, redness and blurred vision may occur. In severe cases, there is a risk of visual damage/blindness. Skin contact: Burning pain and severe corrosive skin damage. Forms blisters and can cause ulceration. Ingestion: Causes burns if swallowed. Causes burning sensation in the mouth, throat and esophagus. May cause serious permanent damage. Risk of perforation of the stomach if there has been swallowed large amounts.

4.3. Indication of any immediate medical attention and special treatment needed

Other Information	Treat symptomatically. Symptoms may be delayed. No specific information from the manufacturer.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Dry-powder, carbon dioxide (CO ₂), water mist, alcohol resistant foam.
Improper extinguishing media	Do not use water jet.

5.2. Special hazards arising from the substance or mixture

Fire and explosion hazards	The chemical is not classified as flammable.
Hazardous combustion products	May include, but is not limited to: Carbon dioxide (CO ₂). Carbon monoxide (CO). Oxides of sulphur (SO _x). Hydrogen.

5.3. Advice for firefighters

Personal protective equipment	Use compressed air equipment when the chemical is involved in fire. In case of evacuation, an approved protection mask should be used. See also section 8.
Other Information	Containers close to fire should be removed immediately or cooled with water. Spill water from fire fighting may be strongly caustic.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal protection measures	Beware! The product is corrosive. Avoid inhalation of vapours and contact with skin and eyes. Use protective equipment as referred to in section 8. Ensure adequate ventilation.
------------------------------	--

6.2. Environmental precautions

Environmental precautionary measures	Do not allow to enter into sewer, water system or soil.
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6.3. Methods and material for containment and cleaning up

Cleaning method	Absorb in vermiculite, dry sand or earth and place into containers. Collect in a suitable container and dispose as hazardous waste according to section 13. Containers with collected spillage must be properly labelled with correct contents and hazard symbol/Hazard pictograms. Flush area with plenty of water. Do not use solvents.
Clean up	Do not allow to enter into sewer, water system or soil. Neutralize spilled material with crushed limestone, sodium carbonate (soda ash) or lime.

6.4. Reference to other sections

Other instructions	See also sections 8 and 13.
--------------------	-----------------------------

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling	Provide adequate ventilation. Use protective equipment as referred to in section 8. Avoid inhalation. Avoid contact with skin and eyes. Arrange working conditions to avoid direct contact. Never pour water into acid/base. Dilute by slowly pouring the product into water while stirring.
----------	--

Protective Safety Measures

Advice on general occupational hygiene	Wash hands at the end of each work shift and before eating, smoking and using the toilet. Do not eat, drink or smoke during work. Wash contaminated clothing before reuse.
--	--

7.2. Conditions for safe storage, including any incompatibilities

Storage	Store in a tightly closed container in a dry place. Protect from sunlight. Store in a well-ventilated place. Store at room temperature.
Special risks and properties	The chemical is corrosive. Diluting or dissolving in water causes rapid heating.
Conditions to avoid	Do not store near heat sources or expose to high temperatures. Moisture.

Conditions for safe storage

Packaging compatibilities	PTFE, PE, PP, glass, stoneware / porcelain, carbon steel, steel with PTFE coating, cast iron.
---------------------------	---

Advice on storage
compatibility

Keep away from: Water/moisture. Metals. Strong reducing agents. Organic material. Alkalies.

7.3. Specific end use(s)

Specific use(s)

See section 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Substance	Identification	Value	TWA Year
Sulphuric acid ...%	CAS no.: 7664-93-9	TWA (8h): 0,05 mg/m ³	
Other Information about threshold limit values	References (laws/regulations): EH40/2005 Workplace exposure limits, with later amendments.		

8.2. Exposure controls

Limitation of exposure on workplace	Provide adequate ventilation, including appropriate local extraction, to ensure that the defined occupational exposure limit is not exceeded. The personal protective equipment must be CE-marked and the latest version of the standards shall be used. The protective equipment and the specified standards recommended below are only suggestions, and should be selected on advice from the supplier of such equipment. A risk assessment of the work place/work activities (the actual risk) may lead to other control measures. The protection equipments suitability and durability will depend on application.
--	--

Eye / face protection

Eye protection	Wear tight-fitting goggles or face shield.
Reference to relevant standard	EN 166 (Personal eye-protection. Specifications).

Hand protection

Hand protection	Use chemical resistant gloves. The gloves abilities may vary among the different glove manufacturers.
Suitable materials	Butyl. Viton rubber (fluor rubber).
Unsuitable materials	Rubber (natural, latex). Nitrile. Leather. Polychloroprene / chloroprene rubber.
Breakthrough time	Comments: Butyl: 2 hours. Viton rubber ≥ 8 hours.
Thickness of glove material	Comments: Butyl: 0.5 mm. Viton rubber: 0.4 mm.
Additional hand protection measures	Change gloves frequently.
Reference to relevant standard	BS-EN 374 (Protective gloves against chemicals and micro-organisms). BS-EN 420 (Protective gloves. General requirements and test methods).

Skin protection

Skin protection (except hands)	Wear appropriate clothing to prevent any possibility of skin contact.
--------------------------------	---

Respiratory protection

Respiratory protection	In case of inadequate ventilation or risk of inhalation of vapours, use suitable respiratory equipment with combination filter (type E2/P3).
------------------------	--

Reference to relevant standard	EN 14387 (Respiratory protective devices. Gas filter(s) and combined filter(s). Requirements, testing, marking). EN 143 (Respiratory protective devices. Particle filters. Requirements, testing, marking).
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Appropriate environmental exposure control

Environmental exposure controls	Do not allow to enter into sewer, water system or soil. See also section 12.
---------------------------------	--

Other Information

Other Information	Emergency shower and eyewash facilities should be available at the workplace
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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid.
Colour	Colourless.
Odour	Slightly pungent odour.
Odour limit	Comments: Not specified by the manufacturer.
pH	Status: In delivery state Value: < 0,3 Comments: 10% solution.
Freezing point	Comments: ca. -32 °C (93% 20 °C); ca. -11 °C (96% 20 °C); ca. 0 °C (98% 20 °C)
Boiling point / boiling range	Comments: 282 °C (93% 20 °C) 330 °C (96% 20 °C) 326 °C (98% 20 °C)
Flash point	Comments: Not specified by the manufacturer.
Evaporation rate	Comments: Not specified by the manufacturer.
Flammability (solid, gas)	Not relevant.
Explosion limit	Comments: Not relevant.
Vapour pressure	Value: 0,006 kPa Temperature: 20 °C
Vapour density	Comments: Not specified by the manufacturer.
Specific gravity	Comments: See density.
Density	Comments: 1,82 g/cm ³ (93% 20 °C); 1,84 g/cm ³ (96% 20 °C); 1,84 g/cm ³ (98% 20 °C)
Bulk density	Comments: Not specified by the manufacturer.
Solubility in water	Soluble.
Partition coefficient: n-octanol/water	Comments: Not specified by the manufacturer.
Spontaneous combustability	Comments: Not specified by the manufacturer.
Decomposition temperature	Value: ~ 800 °C
Viscosity	Value: 20 cP Comments: Dynamic. (93-98% 25 °C)
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

9.2. Other information

Physical hazards

Dissociation constant	Value: 1,92
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Other physical and chemical properties

Physical and chemical properties	Molecular weight : 98,07 g/mol.
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Reactive with the materials listed in Section 10.5.
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10.2. Chemical stability

Stability	Stable under normal temperature conditions and recommended use.
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Arise in contact with incompatible materials (see section 10.5) and/or under inappropriate conditions (see section 10.4). Dangerous polymerisation will not occur. Generates heat on contact with water. Contact with water liberates toxic gas.
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10.4. Conditions to avoid

Conditions to avoid	High temperature. Moisture.
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10.5. Incompatible materials

Materials to avoid	Water/moisture. Strong reducing agents. Organic material. Metals. Alkalies.
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10.6. Hazardous decomposition products

Hazardous decomposition products	None under normal conditions. See also section 5.2.
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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	Type of toxicity: Acute Effect Tested: LD50 Route of exposure: Oral Value: = 2140 mg/kg Species: Rotte
	Type of toxicity: Acute Effect Tested: LC50 Route of exposure: Inhalation. Duration: 4 h Value: = 0,375 mg/l Species: Rotte
Other toxicological data	Additional test data is available from the supplier/manufacturer.

Other information regarding health hazards

Inhalation	Vapours are corrosive. May give a burning sensation to the nose and throat. After 24-36 hours, injured persons may develop serious shortness of breath and lung oedema. High concentrations may cause severe lung damage
Skin contact	Burning pain and severe corrosive skin damage. Cause blisters and burns.
Eye contact	Causes severe burns and serious eye damage. Immediate first aid is imperative. Risk of permanent corneal damage, loss of sight and blindness.
Ingestion	May cause burns in mucous membranes, throat, oesophagus and stomach. Risk of perforation of the stomach if there has been swallowed large amounts.
Assessment of acute toxicity classification	Based on available data, the classification criteria are not met.
Assessment of skin corrosion / irritation, classification	Corrosive to skin.
Assessment eye damage or irritation, classification	Causes serious eye damage.
Sensitisation	Based on available data, the classification criteria are not met.
Mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.
Reproductive toxicity	Based on available data, the classification criteria are not met.
STOT-single exposure	Based on available data, the classification criteria are not met.
STOT-repeated exposure	Based on available data the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic, fish	Value: 500 mg/l Test duration: 96 h Species: Brachydanio rerio Method: LC50 (statisk)
Acute aquatic, Daphnia	Value: 29 mg/l Test duration: 24 h Species: Daphnia magna Method: EC50
Ecotoxicity	The chemical is not classified as harmful to the environment.
Aquatic, comments	Additional test data is available from the supplier/manufacturer.

12.2. Persistence and degradability

Persistence and degradability	The product is not biodegradable.
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12.3. Bioaccumulative potential

Bioaccumulative potential	The chemical is not expected to be bioaccumulative.
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12.4. Mobility in soil

Mobility	The product is water soluble and may spread in water systems.
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12.5. Results of PBT and vPvB assessment

PBT assessment results	The chemical contains no PBT-substances.
vPvB evaluation results	The chemical contains no vPvB substances.

12.6. Other adverse effects

Other adverse effects / Remarks	Do not allow to enter into sewer, water system or soil. Large spills can negatively impact the aquatic environment locally due to an decrease in the pH-value.
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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Specify the appropriate methods of disposal	Disposed of as hazardous waste by approved contractor. The waste code (EWC-Code) is intended as a guide. The code must be chosen by the user, if the use differs from the one mentioned below.
EWC waste code	EWC waste code: 06 01 01 sulphuric acid and sulphurous acid Classified as hazardous waste: Yes
EWL Packing	EWC waste code: 15 01 10 packaging containing residues of or contaminated by dangerous substances Classified as hazardous waste: Yes
Other Information	Do not empty into drains.

SECTION 14: Transport information

14.1. UN number

ADR / RID / ADN	1830
IMDG	1830
ICAO/IATA	1830

14.2. UN proper shipping name

Proper Shipping Name English ADR/RID/ADN	SULPHURIC ACID
ADR / RID / ADN	SULPHURIC ACID
IMDG	SULPHURIC ACID
ICAO/IATA	SULPHURIC ACID

14.3. Transport hazard class(es)

ADR / RID / ADN	8
Class Code ADR / RID / ADN	C1
IMDG	8
ICAO/IATA	8

14.4. Packing group

ADR / RID / ADN	II
IMDG	II

ICAO/IATA	II
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14.5. Environmental hazards

IMDG Marine pollutant	No
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14.6. Special precautions for user

Special safety precautions for user	Not relevant.
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14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Product name	SULPHURIC ACID
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Additional information.

ADR / RID / ADN Hazard label	8
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IMDG Hazard label	8
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ICAO /IATA Hazard label	8
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ADR / RID - Other information

Tunnel restriction code	E
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Transport category	2
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Hazard no.	80
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IMDG / ICAO / IATA Other information

EmS	F-A, S-B
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SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

References (laws/regulations)	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures (CLP-regulation) with later amendments. Regulation (EC) No 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH Regulation), with later amendments. The List of Wastes (England) (Amendment) Regulations 2005. (SI 2005 No. 895). Dangerous Goods regulations
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15.2. Chemical safety assessment

Chemical safety assessment performed	Yes
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SECTION 16: Other information

Supplier's notes	The information contained in this SDS must be made available to all those who handle the product.
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List of relevant H-phrases (Section 2 and 3).	H314 Causes severe skin burns and eye damage. H318 Causes Serious eye damage.
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Classification according to	Skin Corr 1A; H314
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Regulation (EC) No 1272/2008 [CLP / GHS]	Eye Dam. 1; H318
Additional information	The classification is based on information about the ingredients and with consideration to pH.
Key literature references and sources for data	Suppliers Safety data sheet dated: 01.06.2015
Abbreviations and acronyms used	ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road DNEL: Derived No Effect Level EC50: The effective concentration of substance that causes 50% of the maximum response EWC: European Waste Code (a code from the EU's common classification system for waste) IATA: The International Air Transport Association ICAO: The International Civil Aviation Organisation IMDG: The International Maritime Dangerous Goods Code LC50: Median concentration lethal to 50% of a test population. LD50: Lethal dose, is the amount of a substance given to a group of test animals, which causes the death of 50%. PBT: Persistent, Bioaccumulative and Toxic PNEC: Predicted No Effect Concentration RID: The Regulations concerning the International Carriage of Dangerous Goods by Rail vPvB: very Persistent and very Bioaccumulative
Information which has been added, deleted or revised	Sections being revised since previous version: 1-16
Checking quality of information	This SDS is quality controlled by Kiwa Teknologisk Institutt in Norway, certified according to the Quality Management System requirements specified in ISO 9001:2008.
Prepared by	Kiwa Teknologisk Institutt as, Norway by Johan K. Rian

SAFETY DATA SHEET

Caustic Soda 50%

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

Date issued 12.11.2012

1.1. Product identifier

Product name Caustic Soda 50%
Synonyms Natronlut 50%
REACH Reg No 01-2119457892-27
CAS no. 1310-73-2
EC no. 215-185-5

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/preparation pH regulation. Production of alkaline soap. Refining of oils.

1.3. Details of the supplier of the safety data sheet

Distributor

Company name Acinor AS
Office address Titangt. 13, NO-1630 Gamle Fredrikstad
Postal address Titangaten 13
Postcode 1630
City Gamle Fredrikstad
Country Norway
Tel 69384082
Fax 69384084
E-mail post@acinor.no
Website http://www.acinor.no
Enterprise no. NO 984 648 324 MVA
Contact person Rolf Egil de Flon

1.4. Emergency telephone number

Emergency telephone Toxic Information:22 59 13 00

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to 67/548/EEC or 1999/45/EC C; R35
Classification according to Regulation (EC) No 1272/2008 [CLP/GHS] Skin Corr 1A; H314;
Substance / mixture hazardous properties Causes severe skin burns and eye damage.

2.2. Label elements

Hazard Pictograms (CLP)



Composition on the label Sodium hydroxide: 5 - 55 %

Signal word	Danger
Hazard statements	H314 Causes Severe skin burns and eye damage.
Precautionary statements	P101 If medical advice is needed, have product container or label at hand. P273 Avoid release to the environment. P280 Wear protective gloves/protective clothing/eye protection/face protection. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.3. Other hazards

PBT / vPvB	PBT/vPvB assessment has not been performed.
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SECTION 3: Composition/information on ingredients

3.1. Substances

Component name	Identification	Classification	Contents
Water	CAS no.: 7732-18-5 EC no.: 231-791-2		45 - 95 %
Sodium hydroxide	CAS no.: 1310-73-2 EC no.: 215-185-5 Index no.: 011-002-00-6 Synonyms: Sodium hydroxide	C; R35 Skin Corr. 1A; H314	5 - 55 %
Component comments	See section 16 for explanation of H- and R-phrases listed above.		

SECTION 4: First aid measures

4.1. Description of first aid measures

General	If in doubt, seek medical advice.
Inhalation	Fresh air and rest. Get medical attention if any discomfort continues. For breathing difficulties oxygen may be necessary. Perform artificial respiration if breathing has stopped. Get medical attention.
Skin contact	Remove contaminated clothing. Wash the skin immediately with soap and water. Important to remove the substance from the skin immediately. Get medical attention. Chemical burns must be treated by a physician. Wash contaminated clothes before reuse.
Eye contact	Promptly rinse eyes with plenty of water (tempered at 20-30°C) for at least 15 minutes. Remove contact lenses and open eyes wide apart. Immediately consult a doctor. Immediately transport to hospital or eye specialist. Continue flushing during transport to hospital.
Ingestion	DO NOT INDUCE VOMITING! Rinse mouth thoroughly with water and give large amounts of milk or water to people not unconscious. Immediately consult a doctor. Risk of perforation of esophagus and stomach. Transport to hospital. Bring the safety data sheet.

4.2. Most important symptoms and effects, both acute and delayed

Information for health personnel	Treat Symptomatically. Treated as burn injuries.
Acute symptoms and effects	Is highly corrosive and can cause severe pain. Skin contact: Cause blisters and burns. Corrosive to the eyes, danger of vision impairment / blindness, burning nose, chemical burns to the skin. Causes burns if swallowed. Causes burning sensation in the mouth, throat and esophagus. May cause serious permanent damage. Inhalation of product may cause irritation, high levels can cause difficulty in breathing and possible lung damage. Inhalation of high concentrations of this product may cause the same symptoms if swallowed.

4.3. Indication of any immediate medical attention and special treatment needed

Other Information	No specific treatment required, see section 4.1.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Use fire-extinguishing media appropriate for surrounding materials.
Improper extinguishing media	Do not use water jet.

5.2. Special hazards arising from the substance or mixture

Fire and explosion hazards	The product is not classified as flammable.
Hazardous combustion products	Explosive gases/vapors/fumes.

5.3. Advice for firefighters

Personal protective equipment	Use fresh air equipment when the product is involved in fire. In case of evacuation, an approved protection mask should be used. See also section 8.
Other Information	Containers close to fire should be removed immediately or cooled with water. Extinguishing water must not be discharged into drains.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Use protective equipment as referred to in section 8. Avoid inhalation of vapours and contact with skin and eyes. Look out! The product is corrosive.
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6.2. Environmental precautions

Environmental precautions	Do not allow to enter into sewer, water system or soil.
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6.3. Methods and material for containment and cleaning up

Methods for cleaning	Absorb in vermiculite, dry sand or earth and place into containers. Collect in a suitable container and dispose as hazardous waste according to section 13.
Cleaning up	Limit spread of spilled material. Small amounts could be picked up using moist disposable cloth. Wash the contaminated surface with water.

6.4. Reference to other sections

Other instructions	See also sections 8 and 13.
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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling	Use protective equipment as referred to in section 8. Provide adequate ventilation. Avoid direct contact. Avoid inhalation of vapours. Avoid spilling, skin and eye contact. Change contaminated clothing. Use work methods which minimise aerosol production. Never add water directly to this product - may cause vigorous reaction/boiling. Always dilute by carefully pouring the product into the water.
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Protective Measures

Advice on general occupational hygiene	Wash hands at the end of each work shift and before eating, smoking and using the toilet. Do not eat, drink or smoke during work.
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7.2. Conditions for safe storage, including any incompatibilities

Storage	Store dry and cool in a well ventilated area. Store in tightly closed container. Store protected from light and direct sunlight. Corrosive storage.
Requirements for storage rooms and vessels	Suitable containers: Acid resistant steel. Unsuitable containers: aluminium. Zinc. Lead. Tin.
Hints on storage assembly	Keep away from: Acids. Water, steam, water mixtures.

7.3. Specific end use(s)

Specific use(s)	See section 1.2.
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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Other Information about threshold limit values

CAS-nr.:1310-73-2 has got note T = maximum value.

Exposure limit values

Component name	Identification	Value	Year
Sodium hydroxide	CAS no.: 1310-73-2 EC no.: 215-185-5 Index no.: 011-002-00-6 Synonyms: Sodium hydroxide	15 min.: 2 mg/m ³	2011

8.2. Exposure controls

Occupational exposure controls

Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. Provide adequate ventilation, including appropriate local extraction, to ensure that the defined occupational exposure limit is not exceeded.

Respiratory protection

Respiratory protection

In case of inadequate ventilation or risk of inhalation of vapours, use suitable respiratory equipment with combination filter (type B2/P2). Wear air-supplied mask in confined areas.

Hand protection

Hand protection

Use chemical resistant gloves.

Necessary hand protection properties

Use gloves with long sleeves.

Suitable materials

Nitrile. Butyl rubber. Polyvinyl chloride (PVC). Neoprene. 4H multilayered gloves.

Breakthrough time

Penetration time is not known. The recommended material of gloves is recommended after a study of the single components in the product.

Eye / face protection

Eye protection

Use safety goggles or face shield in case of splash risk.

Skin protection

Skin protection (other than of the hands)

Wear appropriate protective clothing to protect against possible skin contact.

Additional skin protection measures

Wash promptly if skin becomes wet or contaminated. Promptly remove any clothing that becomes wet or contaminated.

Other Information

Other Information

The listed protective equipment is a recommendation. A risk assessment of the actual risk may lead to other requirements.
Eye wash facilities and emergency shower should be available when handling this product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Fluid.
Colour	Colourless.
Odour	No characteristic odour.
Comments, Odour limit	Not known.
pH (as supplied)	Value: > 14
Comments, pH (as supplied)	Concentrated solution.
Comments, Melting point / melting range	Not known.
Boiling point / boiling range	Value: ~ 145 °C
Comments, Flash point	Not known.
Comments, Evaporation rate	Not known.
Flammability (solid, gas)	Not known.

Comments, Explosion limit	Not known.
Vapour pressure	Value: 0,4 kPa Test temperature: 40 °C
Comments, Vapour density	Not known.
Specific gravity	Value: 1,63
Solubility in water	Soluble.
Comments, Partition coefficient: n-octanol / water	Not known.
Comments, Spontaneous combustability	Not known.
Comments, Decomposition temperature	Not known.
Comments, Viscosity	Not known.

Physical hazards

Explosive properties	Not known.
Oxidising properties	Not known.

9.2. Other information

Other physical and chemical properties

Physical and chemical properties	Freezing point: -12 °C.
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Data lacking.
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10.2. Chemical stability

Stability	Stable under normal temperature conditions and recommended use. The substance is hygroscopic and will absorb water by contact with the moisture in the air.
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Arise in contact with incompatible materials (section 10.5) and inappropriate conditions (section 10.4). Corrosive to some metals as zinc and aluminium, evolving hydrogen gas that may form explosive mixtures with air.
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10.4. Conditions to avoid

Conditions to avoid	Moisture.
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10.5. Incompatible materials

Materials to avoid	Acids. Water, steam, water mixtures. Aluminium. Lead. Zinc. Tin.
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10.6. Hazardous decomposition products

Hazardous decomposition products	None under normal conditions. See also section 5.2.
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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological Information:

LD50 oral	Value: > 500 mg/kg Test animal species: Rabbit Comments: 25% solution.
LD50 dermal	Value: 1350 mg/kg Test animal species: Rabbit

Other information regarding health hazards

General	Causes severe burns. Prolonged exposure to this chemical may cause permanent damage.
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Potential acute effects

Inhalation	Highly Corrosive. Vapours are corrosive. After 24-36 hours, injured persons may develop serious shortness of breath and lung oedema. High concentrations may cause severe lung damage.
Skin contact	Causes severe burns. May cause serious chemical burns to the skin. Cause blisters and burns.
Eye contact	Strongly corrosive. Causes severe burns and serious eye damage. Immediate first aid is imperative. Risk of permanent corneal damage, loss of sight and blindness.
Ingestion	Causes burns if swallowed. Causes burning sensation in the mouth, throat and esophagus. May cause serious permanent damage.

Delay / Repeating

Sensitisation	None of the substances mentioned in section 3 is considered to have sensitizing effects according to current labelling rules.
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Carcinogenic, Mutagenic or Reprotoxic

Carcinogenicity	None of the substances mentioned in section 3 is considered as carcinogenic according to current labelling rules.
Mutagenicity	None of the substances mentioned in section 3 are considered to have mutagenic or pro-mutagenic effects.
Teratogenic properties	None of the substances mentioned in section 3 are considered to cause harm to the unborn child.
Reproductive toxicity	None of the substances mentioned in section 3 are considered to have genotoxic effects.

Symptoms of Exposure

Other Information	In case of eyedamage, continue to flush with water all the way to the doctor. Chemical burns to skin may be treated as fire caused wounds. Splash in eye requires examination by eye specialist.
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SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic, fish	Value: 180 mg/l Method of testing: LC50 Fish, species: Carp Duration: 24 hours
Acute aquatic, fish, Comments	Value: 125 mg/l Method of testing: LC50 Fish, species: Mosquito fish Duration: 96 hours Value: 99 mg/l Method of testing: LC50 Fish, species: Bluegill Duration: 48 hours
Acute aquatic, Daphnia	Value: 30 mg/l Method of testing: EC50 Duration: 48 hours
Ecotoxicity	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms. The necessity of neutralization has to be evaluated.

12.2. Persistence and degradability

Persistence and degradability	The product consists mainly of inorganic materials which are not biodegradable.
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12.3. Bioaccumulative potential

Bioaccumulative potential Not expected to bioaccumulate.

12.4. Mobility in soil

Mobility Soluble in water.

12.5. Results of PBT and vPvB assessment

PBT assessment results PBT assessment has not been performed.

vPvB evaluation results vPvB assessment has not been performed.

12.6. Other adverse effects

Other adverse effects / Remarks Alkalies cause increased pH values in the water. A high pH value harms aquatic organisms. Do not allow to enter into sewer, water system or soil.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Specify the appropriate methods of disposal Disposed of as hazardous waste by approved contractor. The waste code (EWC-Code) is intended as a guide. The code must be chosen by the user, if the use differs from the one mentioned above.

Product classified as hazardous waste Yes

EWC waste code EWC: *06 02 04 sodium and potassium hydroxide

NORSAS 7132 Bases, unorganic.

SECTION 14: Transport information

14.1. UN number

ADR 1824

RID 1824

IMDG 1824

ICAO/IATA 1824

14.2. UN proper shipping name

ADR SODIUM HYDROXIDE SOLUTION

RID SODIUM HYDROXIDE SOLUTION

IMDG SODIUM HYDROXIDE SOLUTION

ICAO/IATA SODIUM HYDROXIDE SOLUTION

14.3. Transport hazard class(es)

ADR 8

Hazard no. 80

RID 8

IMDG 8

ICAO/IATA 8

14.4. Packing group

ADR II

RID II

IMDG II

ICAO/IATA II

14.5. Environmental hazards

IMDG Marine pollutant No

14.6. Special precautions for user

EmS F-A, S-B

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

Other applicable information.

Other applicable information. Not applicable.

SECTION 15: Regulatory information

EC no. 215-185-5

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

References (laws/regulations)	Norwegian regulation on classification and labeling of dangerous chemicals. Valid from June 21, 2010. Regulation on classification, labeling and packaging of substances and mixtures (CLP) dated 16.06.2012. Commission Regulation (EU) No 453/2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Annex II Safety Data Sheets. Administrative norms for pollution of the atmosphere, the latest edition, from Norwegian labour inspection authority Norwegian regulations on waste, no. 930/2004, from Ministry of the Environment. Dangerous Goods regulations The Safety Data Sheet is based on information provided by the producer.
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15.2. Chemical safety assessment

Chemical safety assessment has been carried out	No
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SECTION 16: Other information

Supplier's notes	The information contained in this SDS must be made available to all those who handle the product.
Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]	Skin Corr 1A; H314;
List of relevant R phrases (under headings 2 and 3).	R35 Causes severe burns.
List of relevant H-phrases (Section 2 and 3).	H314 Causes Severe skin burns and eye damage.
Abbreviations and acronyms used	PBT: Persistent, Bioaccumulative and Toxic vPvB: very Persistent and very Bioaccumulative
Sources of key data used to compile the safety data sheet	Version: 3 from supplier dated: 16.12.2010
Information which has been added, deleted or revised	New Safety Data Sheet.
Checking quality of information	This SDS is quality controlled by National Institute of Technology in Norway, certified according to the Quality Management System requirements specified in ISO 9001:2008.
Responsible for safety data sheet	Acinor AS
Prepared by	National Institute of Technology as, Norway v/ 

**Veiligheidsinformatieblad
volgens 1907/2006/EG, Artikel 31**

datum van de druk: 08.12.2020

Versienummer 10

Herziening van: 08.12.2020

**RUBRIEK 1: Identificatie van de stof of het mengsel en van de
vennootschap/onderneming**

- **1.1 Productidentificatie**
- **Handelsnaam:** Struktol SB 2080
- **Artikelnummer:** 02015
- **1.2 Relevant geïdentificeerd gebruik van de stof of het mengsel en ontraden gebruik**
Geen verdere relevante informatie verkrijgbaar.
- **Toepassing van de stof / van de bereiding** Ontschuimingsmiddel
- **1.3 Details betreffende de verstrekker van het veiligheidsinformatieblad**
- **Fabrikant/leverancier:**
Schill+Seilacher "Struktol" GmbH
Moorfleeter Str. 28
D-22113 Hamburg
Phone: +49 / (0)40 / 73362-0
Fax: +49 / (0)40 / 73362-194
- **Inlichtingengevende sector:**
CRA - Chemical Regulatory Affairs
E-Mail: msds@struktol.de
- **1.4 Telefoonnummer voor noodgevallen:**
University Medical Center Utrecht (NVIC)
Telefoon: +31 (0)30 - 274 88 88
Uitsluitend bestemd om professionele hulpverleners te informeren bij acute vergiftigingen

RUBRIEK 2: Identificatie van de gevaren

- **2.1 Indeling van de stof of het mengsel**
- **Indeling overeenkomstig Verordening (EG) nr. 1272/2008**
Het product is niet geclassificeerd volgens de CLP-verordening.
- **2.2 Etiketteringselementen**
- **Etikettering overeenkomstig Verordening (EG) nr. 1272/2008 vervalt**
- **Gevarenpictogrammen vervalt**
- **Signaalwoord vervalt**
- **Gevarenaanduidingen vervalt**
- **2.3 Andere gevaren**
- **Resultaten van PBT- en zPzB-beoordeling**
- **PBT:** Niet bruikbaar.
- **zPzB:** Niet bruikbaar.

RUBRIEK 3: Samenstelling en informatie over de bestanddelen

- **3.2 Chemische karakterisering: Mengsels**
- **Beschrijving:** Derivaten van natuurlijke vetzuren.
- **Gevaarlijke inhoudstoffen:** vervalt

(Vervolg op blz. 2)

**Veiligheidsinformatieblad
volgens 1907/2006/EG, Artikel 31**

datum van de druk: 08.12.2020

Versienummer 10

Herziening van: 08.12.2020

Handelsnaam: Struktol SB 2080

(Vervolg van blz. 1)

· **Aanvullende gegevens:**

Deze informatie geldt alleen voor het product in geconcentreerde vorm.

De woordelijke inhoud van de opgegeven aanwijzingen inzake de mogelijke gevaren is te vinden in hoofdstuk 16.

RUBRIEK 4: Eerstehulpmaatregelen

· **4.1 Beschrijving van de eerstehulpmaatregelen**

· **Algemene informatie:** Geen speciale maatregelen noodzakelijk.

· **Na het inademen:** Frisse lucht toedienen; bij klachten arts ontbieden.

· **Na huidcontact:** Wanneer de huid geïrriteerd blijft, een dokter raadplegen.

· **Na oogcontact:** Ogen bij geopend ooglid meerdere minuten met stromend water spoelen

· **4.2 Belangrijkste acute en uitgestelde symptomen en effecten**

Geen verdere relevante informatie verkrijgbaar.

· **4.3 Vermelding van de vereiste onmiddellijke medische verzorging en speciale behandeling**

Geen verdere relevante informatie verkrijgbaar.

RUBRIEK 5: Brandbestrijdingsmaatregelen

· **5.1 Blusmiddelen**

· **Geschikte blusmiddelen:**

CO₂, bluspoeder of waterstraal. Grotere brand met waterstraal bestrijden of met schuim, dat tegen alcohol bestand is.

· **Blusmiddelen die uit veiligheidsoogpunt niet geschikt zijn:** Krachtige waterstraal

· **5.2 Speciale gevaren die door de stof of het mengsel worden veroorzaakt**

Bij een brand kan vrijkomen:

Koolmonoxyde en kooldioxyde

Siliciumoxide rook.

· **5.3 Advies voor brandweerlieden**

· **Speciale beschermende kleding:** Ontploffings- en brandgassen niet inademen.

RUBRIEK 6: Maatregelen bij het accidenteel vrijkomen van de stof of het mengsel

· **6.1 Persoonlijke voorzorgsmaatregelen, beschermingsmiddelen en noodprocedures**

Niet nodig.

· **6.2 Milieuvoorzorgsmaatregelen:**

Het product mag niet zonder voorbehandeling (waterzuiveringsinstallatie) in het water terecht komen.

Niet in de riolering/het oppervlaktewater/het grondwater laten terechtkomen.

Niet in de ondergrond/bodem laten terechtkomen.

(Vervolg op blz. 3)

Veiligheidsinformatieblad
volgens 1907/2006/EG, Artikel 31

datum van de druk: 08.12.2020

Versienummer 10

Herziening van: 08.12.2020

Handelsnaam: Struktol SB 2080

(Vervolg van blz. 2)

- **6.3 Insluitings- en reinigingsmethoden en -materiaal:**
Met vloeistofbindend materiaal (zand, bergmeel, zuurbinder, universele binder, zaagmeel) opnemen.
- **6.4 Verwijzing naar andere rubrieken**
Informatie inzake veilig gebruik - zie hoofdstuk 7.
Informatie inzake persoonlijke beschermingsuitrusting - zie hoofdstuk 8.
Informatie inzake berging - zie hoofdstuk 13.

RUBRIEK 7: Hantering en opslag

- **7.1 Voorzorgsmaatregelen voor het veilig hanteren van de stof of het mengsel**
De gebruikelijke voorzorgsmaatregelen bij de omgang met chemicaliën moeten in acht genomen worden.
- **Informatie m.b.t. brand- en ontploffingsgevaar:**
Geen bijzondere maatregelen noodzakelijk.
- **7.2 Voorwaarden voor een veilige opslag, met inbegrip van incompatibele producten**
- **Opslag:**
- **Eisen ten opzichte van opslagruimte en tanks:** Op een koele plaats bewaren.
- **Informatie m.b.t. gezamenlijke opslag:** Niet noodzakelijk.
- **Verdere inlichtingen over eisen m.b.t. de opslag:** Droog bewaren.
- **7.3 Specifiek eindgebruik** Geen verdere relevante informatie verkrijgbaar.

RUBRIEK 8: Maatregelen ter beheersing van blootstelling/persoonlijke bescherming

- **8.1 Controleparameters**
- **Aanvullende gegevens m.b.t. de inrichting van technische installaties:**
Geen aanvullende gegevens. Zie 7.
- **Bestanddelen met grenswaarden die m.b.t. de werkruimte in acht genomen moeten worden:**
Vervalt.
- **Aanvullende gegevens:** Als basis dienden lijsten die bij opstelling geldig waren.
- **8.2 Maatregelen ter beheersing van blootstelling**
- **Persoonlijke beschermingsvoorzieningen:**
- **Algemene beschermings- en gezondheidsmaatregelen:**
De gebruikelijke voorzorgsmaatregelen bij de omgang met chemicaliën moeten in acht genomen worden.
- **Ademhalingsbescherming:** Bij goede ventilatie niet noodzakelijk.
- **Handbescherming:**
Het handschoenmateriaal moet ondoorlatend en bestand zijn tegen het product / de stof / de bereiding.
Kies handschoenmateriaal rekening houdend met de penetratietijden, de permeatiegraden en de degradatie.

(Vervolg op blz. 4)

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· **Handschoenmateriaal**

De keuze van een geschikte handschoen is niet alleen afhankelijk van het materiaal, maar ook van andere kwaliteitskenmerken en verschilt van fabrikant tot fabrikant. Aangezien het product uit meerdere stoffen is samengesteld, is de duurzaamheid van de handschoenmaterialen niet vooraf berekenbaar en moet derhalve vóór het gebruik worden getest.

· **Doordringingstijd van het handschoenmateriaal**

De precieze penetratietijd kunt u te weten komen bij de handschoenfabrikant; houd er rekening mee.

Waarde voor de permeatie: Level ≥ 6

· **Voor een langdurig contact van maximaal 15 minuten zijn handschoenen uit de volgende materialen geschikt:**

Nitrilrubber

· **Oogbescherming:** Bij het omgieten is het gebruik van een veiligheidsbril aan te bevelen.

· **Lichaamsbescherming:** Draag geschikte beschermende arbeidskleding

RUBRIEK 9: Fysische en chemische eigenschappen

· **9.1 Informatie over fysische en chemische basiseigenschappen**

· **Algemene gegevens**

· **Voorkomen:**

Vorm:

Vloeibaar

Kleur:

Geelachtig

· **Geur:**

Aromatisch

· **Geurdrempelwaarde:**

Niet bepaald.

· **pH-waarde:**

Niet bepaald.

· **Toestandsverandering**

Smelt-/vriespunt:

Niet bepaald.

Beginkookpunt en kooktraject:

Niet bepaald.

Stolpunt:

~ -10 °C

· **Vlampunt:**

>130 °C (DIN EN ISO 2592)

· **Ontvlambaarheid (vast, gas):**

Niet bruikbaar.

· **Ontledingstemperatuur:**

Niet bepaald.

· **Zelfontsteking:**

Het produkt ontbrandt niet uit zichzelf.

· **Ontploffingseigenschappen:**

Het produkt is niet ontploffingsgevaarlijk.

· **Ontploffingsgrenzen:**

Onderste:

Niet bepaald.

Bovenste:

Niet bepaald.

· **Dampspanning:**

Niet bepaald.

Dichtheid bij 20 °C:

0,95 g/cm³ (DIN 51757)

(Vervolg op blz. 5)

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(Vervolg van blz. 4)

· Relatieve dichtheid	Niet bepaald.
· Dampdichtheid	Niet bepaald.
· Verdampingssnelheid	Niet bepaald.
· Oplosbaarheid in/mengbaarheid met Water:	Niet resp. gering mengbaar.
· Verdelingscoëfficiënt: n-octanol/water:	Niet bepaald.
· Viscositeit	
Dynamisch bij 25 °C:	150 mPas (DIN ISO 3219)
Kinematisch:	Niet bepaald.
· 9.2 Overige informatie	Geen verdere relevante informatie verkrijgbaar.

RUBRIEK 10: Stabiliteit en reactiviteit

- **10.1 Reactiviteit** Geen verdere relevante informatie verkrijgbaar.
- **10.2 Chemische stabiliteit**
- **Thermische afbraak / te vermijden omstandigheden:**
Geen afbraak bij gebruik volgens voorschrift.
- **10.3 Mogelijke gevaarlijke reacties** Geen gevaarlijke reacties bekend.
- **10.4 Te vermijden omstandigheden** Geen verdere relevante informatie verkrijgbaar.
- **10.5 Chemisch op elkaar inwerkende materialen:**
Geen verdere relevante informatie verkrijgbaar.
- **10.6 Gevaarlijke ontledingsproducten:** Geen gevaarlijke ontbindingsproducten bekend.

RUBRIEK 11: Toxicologische informatie

- **11.1 Informatie over toxicologische effecten**
- **Acute toxiciteit**
Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **Primaire aandoening:**
- **Huidcorrosie/-irritatie**
Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **Ernstig oogletsel/oogirritatie**
Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **Sensibilisatie van de luchtwegen/de huid**
Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **Aanvullende toxicologische informatie:**
- **CMR-effecten (kankerverwekkendheid, mutageniteit en giftigheid voor de voortplanting)**
- **Mutageniteit in geslachtscellen**
Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.

(Vervolg op blz. 6)

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- **Kankerverwekkendheid**
Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **Giftigheid voor de voortplanting**
Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **STOT bij eenmalige blootstelling**
Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **STOT bij herhaalde blootstelling**
Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **Gevaar bij inademing**
Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.

RUBRIEK 12: Ecologische informatie

- **12.1 Toxiciteit**
- **Aquatische toxiciteit:** Geen verdere relevante informatie verkrijgbaar.
- **12.2 Persistentie en afbreekbaarheid** Geen verdere relevante informatie verkrijgbaar.
- **12.3 Bioaccumulatie** Geen verdere relevante informatie verkrijgbaar.
- **12.4 Mobiliteit in de bodem** Geen verdere relevante informatie verkrijgbaar.
- **Verdere ecologische informatie:**
- **Algemene informatie:**
Waterbezwaarlijkheid (NL): A(4) Weinig schadelijk voor in water levende organismen kan in het aquatische milieu op lange termijn schadelijke effecten veroorzaken
Negatieve ecologische effecten zijn volgens de huidige stand van onze kennis niet te verwachten.
Het product mag niet zonder voorbehandeling (waterzuiveringsinstallatie) in het water terecht komen.
Niet lozen in grondwater, in oppervlaktewater of in riolering.
- **12.5 Resultaten van PBT- en zPzB-beoordeling**
- **PBT:** Niet bruikbaar.
- **zPzB:** Niet bruikbaar.
- **12.6 Andere schadelijke effecten** Geen verdere relevante informatie verkrijgbaar.

RUBRIEK 13: Instructies voor verwijdering

- **13.1 Afvalverwerkingsmethoden**
- **Aanbeveling:**
Mag niet tesamen met huisvuil gestort worden of in de riolering terechtkomen.
Afvalverwijdering volgens overheidsbepalingen.
- **Niet gereinigde verpakkingen:**
- **Aanbeveling:** Afvalverwijdering volgens overheidsbepalingen.

NL

(Vervolg op blz. 7)

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RUBRIEK 14: Informatie met betrekking tot het vervoer

- | | |
|---|--|
| · 14.1 VN-nummer | |
| · ADR/RID/ADN, ADN, IMDG, IATA | vervalt |
| · 14.2 Juiste ladingnaam overeenkomstig de modelreglementen van de VN | |
| · ADR/RID/ADN, ADN, IMDG, IATA | vervalt |
| · 14.3 Transportgevaarklasse(n) | |
| · ADR/RID/ADN, ADN, IMDG, IATA | |
| · klasse | vervalt |
| · 14.4 Verpakkingsgroep: | |
| · ADR/RID/ADN, IMDG, IATA | vervalt |
| · 14.5 Milieugevaren: | |
| | Niet bruikbaar. |
| · 14.6 Bijzondere voorzorgen voor de gebruiker | |
| | Niet bruikbaar. |
| · 14.7 Vervoer in bulk overeenkomstig bijlage II bij Marpol en de IBC-code | |
| | Niet in dit informatieblad opgenomen. |
| · Transport/verdere gegevens: | |
| | Geen gevaar overeenkomstig de bovengenoemde verordeningen. |
| · VN "Model Regulation": | |
| | vervalt |

RUBRIEK 15: Regelgeving

- **15.1 Specifieke veiligheids-, gezondheids- en milieureglementen en -wetgeving voor de stof of het mengsel**
- | |
|--|
| · SZW-lijst van kankerverwekkende stoffen |
| geen der bestanddelen staat op de lijst. |
| · SZW-lijst van mutagene stoffen |
| geen der bestanddelen staat op de lijst. |
| · NIET-limitatieve lijst van voor de voortplanting giftige stoffen - Vruchtbaarheid |
| geen der bestanddelen staat op de lijst. |
| · NIET-limitatieve lijst van voor de voortplanting giftige stoffen - Ontwikkeling |
| geen der bestanddelen staat op de lijst. |
| · NIET-limitatieve lijst van voor de voortplanting giftige stoffen - Borstvoeding |
| geen der bestanddelen staat op de lijst. |
| · Lijst Zeer Zorgwekkende Stoffen (ZZS) |
| geen der bestanddelen staat op de lijst. |

(Vervolg op blz. 8)

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· **Lijst van Potentieel Zeer Zorgwekkende Stoffen**

geen der bestanddelen staat op de lijst.

· **Richtlijn 2012/18/EU**

· **Gevaarlijke stoffen die met naam genoemd worden - BIJLAGE I**

geen der bestanddelen staat op de lijst.

· **Richtlijn 2011/65/EU betreffende beperking van het gebruik van bepaalde gevaarlijke stoffen in elektrische en elektronische apparatuur - Bijlage II**

geen der bestanddelen staat op de lijst.

· **Nationale voorschriften:**

· **Gevaarklasse v. water:**

Waterbezwaarlijkheid (NL): A(4) Weinig schadelijk voor in water levende organismen kan in het aquatische milieu op lange termijn schadelijke effecten veroorzaken

WGK 1 (duits regel): weinig gevaarlijk voor water.

· **15.2 Chemische veiligheidsbeoordeling:**

Een chemische veiligheidsbeoordeling is niet uitgevoerd.

RUBRIEK 16: Overige informatie

Deze gegevens zijn gebaseerd op de huidige stand van onze kennis. Zij beschrijven echter geen garantie van produkteigenschappen en vestigen geen contractuele rechtsbetrekking.

Deze informatie geldt alleen voor het product in geconcentreerde vorm.

· **Blad met gegevens van de afgifte-sector: CRA - Chemical Regulatory Affairs**

· **Afkortingen en acroniemen:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

· *** Gegevens die ten opzichte van de voorgaande versie zijn veranderd**

Toelichting grondslagen

In dit document kunt u secties vinden die onleesbaar zijn gemaakt. Deze informatie is achterwege gelaten op basis van de Wet open overheid (Woo). De letter die hierbij is vermeld correspondeert met de bijbehorende grondslag in onderstaand overzicht.

J Art. 5.1 lid 2 sub e

Het belang van de openbaarmaking van deze informatie weegt niet op tegen het belang van de eerbiediging van de persoonlijke levenssfeer van betrokkenen