



SAFETY DATA SHEET

AQUA-COL™ E

The safety data sheet is in accordance with Commission Regulation (EU) 2020/878 of 18 June 2020 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	31.05.2018
Revision date	28.03.2023

1.1. Product identifier

Product name	AQUA-COL™ E
Synonyms	6282DF
Extended SDS with ES incorporated	Yes

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

Product group	Liquid
Use of the substance / mixture	Shale Control additive.

1.3. Details of the supplier of the safety data sheet**Supplier**

Company name	Baker Hughes Norge AS
Office address	Kontinentalvegen 8
Postal address	Kontinentalvegen 8
Postcode	4056
City	TANANGER
Country	Norway
Telephone number	+47 51 71 75 00
Fax	+47 51 71 75 01
Email	BHNorwayHS&ETeam@bakerhughes.com
Website	www.bakerhughes.com

1.4. Emergency telephone number

Emergency telephone

Telephone number: +47 21 93 06 78

Description: CHEMTREC Nødtelefonnummer (NO)

Telephone number: +47 22 59 13 00

Description: Giftinformasjonen

Telephone number: +47 51 69 46 24

Description: Beredskapstelefon

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture**Classification according to
Regulation (EC) No 1272/2008
[CLP / GHS]

Eye Dam. 1; H318

Substance / mixture hazardous
properties

Causes serious eye damage.

2.2. Label elements**Hazard pictograms (CLP)**

Composition on the label

2-[2-(2-Butoxyethoxy)ethoxy]ethanol

Signal word

Danger

Hazard statements

H318 Causes serious eye damage.

Precautionary statements

P280 Wear face protection/protective gloves/protective clothing.
 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.

2.3. Other hazards

PBT / vPvB

The chemical contains no PBT or vPvB substances.

Other hazards

None of the substances listed in section 3.2 is listed on ECHA's Endocrine disruptor assessment list.

SECTION 3: Composition / information on ingredients**3.2. Mixtures**

Substance	Identification	Classification	Contents	Notes
2-[2-(2-Butoxyethoxy)ethoxy] ethanol	CAS No.: 143-22-6 EC No.: 205-592-6 Index No.: 603-183-00-0 REACH Reg. No.: 01-2119475107-38	Eye Dam. 1; H318	≥ 25 ≤ 50 %	
3,6,9,12-tetraoxahexadecan-1-ol	CAS No.: 1559-34-8 EC No.: 216-322-1	Eye Irrit. 2; H319	≥ 25 ≤ 50 %	

	REACH Reg. No.: 01-2120768763-41		
2-(2-Butoksyetoksy) etanol	CAS No.: 112-34-5	Eye Irrit. 2;H319	≤ 3 %
	EC No.: 203-961-6		
	Index No.: 603-096-00-8		
	REACH Reg. No.: 01-2119475104-44		
Remarks, substance	CAS No 143-22-6 has specific concentration limits: Eye Irrit. 2; H319: 20 % ≤ C < 30 % og Eye Dam. 1; H318: C ≥ 30 %		
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 113.
Inhalation	Provide rest, warmth and fresh air. Get medical attention if any discomfort continues.
Skin contact	Remove/Take off immediately all contaminated clothing. Wash skin with soap and water. Get medical attention if any discomfort continues.
Eye contact	Promptly rinse eyes with plenty of water (tempered at 20-30°C) for at least 30 minutes. Remove any contact lenses. Hold the eyelids apart. Immediately consult a doctor. Transport to physician. Keep on flushing during transport.
Ingestion	Immediately give a couple of glasses of water or milk, provided the victim is fully conscious. Do not induce vomiting. Get medical attention.
Recommended personal protective equipment for first aid responders	It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

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

Acute symptoms and effects	Skin contact: The chemical may irritate skin and cause itching, burning and redness. Eye contact: Risk of serious damage to eyes. 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. Ingestion: May cause chemical burns in mouth, oesophagus and stomach. Abdominal pain.
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4.3. Indication of any immediate medical attention and special treatment needed

Other information	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
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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 chemical is not classified as flammable. Containers can burst violently when heated, due to excess pressure build-up.
Hazardous combustion products	May include, but is not limited to: Carbon monoxide (CO). Carbon dioxide (CO ₂).

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.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal protection measures	Provide adequate ventilation. Use protective equipment as referred to in section 8. Avoid inhalation of vapours and contact with skin and eyes.
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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

Clean up	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.
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6.4. Reference to other sections

Other instructions	See also sections 7, 8 and 13.
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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 of vapours/spray and contact with skin and eyes. Avoid swallowing. Empty containers retain product residue and can be hazardous. Do not reuse container.
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Protective safety measures

Advice on general occupational hygiene

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

7.2. Conditions for safe storage, including any incompatibilities

Storage

Store in tightly closed original container in a dry, cool and well-ventilated place. Keep upright.

Conditions for safe storage

Packaging compatibilities

Store in original container.

Advice on storage compatibility

Keep away from food and drink.

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	Exposure limits	TWA Year
2-(2-Butoksyetoksy) etanol	CAS No.: 112-34-5	Limit value (8 h) : 68 mg/m ³ Limit value (8 h) : 10 ppm	
Control parameters comments	References (laws/regulations): Norwegian regulation on exposure limits: FOR-2011-12-06-1358 Forskrift om tiltaks- og grenseverdier (sist endret gjennom FOR-2022-12-19-2350).		

DNEL / PNEC

DNEL

Group: Consumer
Route of exposure: Long-term inhalation (systemic)
Value: 12 mg/m³
Comments: Applies to CAS-nr.: 143-22-6.

Group: Consumer
Route of exposure: Long-term oral (systemic)
Value: 12,5 mg/kg bw/day
Comments: Applies to CAS-nr.: 143-22-6.

Group: Consumer
Route of exposure: Long-term inhalation (local)
Value: 15,252 mg/m³
Comments: Applies to CAS-nr.: 143-22-6.

Group: Professional
Route of exposure: Long-term inhalation (systemic)
Value: 24 mg/m³
Comments: Applies to CAS-nr.: 143-22-6.

Group: Professional
Route of exposure: Long-term inhalation (local)
Value: 30,5 mg/m³
Comments: Applies to CAS-nr.: 143-22-6.

Group: Consumer
Route of exposure: Acute inhalation (local)
Value: 48 mg/m³
Comments: Applies to CAS-nr.: 143-22-6.

Group: Consumer
Route of exposure: Acute inhalation (systemic)
Value: 48 mg/m³
Comments: Applies to CAS-nr.: 143-22-6.

Group: Professional
Route of exposure: Acute inhalation (local)
Value: 96 mg/m³
Comments: Applies to CAS-nr.: 143-22-6.

Group: Professional
Route of exposure: Acute inhalation (systemic)
Value: 96 mg/m³
Comments: Applies to CAS-nr.: 143-22-6.

Group: Consumer
Route of exposure: Acute oral (systemic)
Value: 103,4 mg/kg bw/day
Comments: Applies to CAS-nr.: 143-22-6.

Group: Consumer
Route of exposure: Long-term dermal (systemic)
Value: 125 mg/kg bw/day
Comments: Applies to CAS-nr.: 143-22-6.

Group: Consumer
Route of exposure: Acute dermal (systemic)
Value: 200 mg/kg bw/day
Comments: Applies to CAS-nr.: 143-22-6.

Group: Professional
Route of exposure: Long-term dermal (systemic)
Value: 208 mg/kg bw/day
Comments: Applies to CAS-nr.: 143-22-6.

Group: Professional
Route of exposure: Acute dermal (systemic)
Value: 400 mg/kg bw/day
Comments: Applies to CAS-nr.: 143-22-6.

Group: Consumer
Route of exposure: Long-term dermal (local)
Value: 2,823 mg/cm²
Comments: Applies to CAS-nr.: 143-22-6.

Group: Consumer
Route of exposure: Acute dermal (local)
Value: 4,173 mg/cm²
Comments: Applies to CAS-nr.: 143-22-6.

Group: Professional

Route of exposure: Long-term dermal (local)
Value: 5,65 mg/cm²
Comments: Applies to CAS-nr.: 143-22-6.

Group: Professional
Route of exposure: Acute dermal (local)
Value: 8,35 mg/cm²
Comments: Applies to CAS-nr.: 143-22-6.

Group: Consumer
Route of exposure: Long-term oral (systemic)
Value: 5 mg/kg bw/day
Comments: Applies to CAS-nr.: 112-34-5.

Group: Consumer
Route of exposure: Long-term inhalation (local)
Value: 40,5 mg/m³
Comments: Applies to CAS-nr.: 112-34-5.

Group: Consumer
Route of exposure: Long-term inhalation (systemic)
Value: 40,5 mg/m³
Comments: Applies to CAS-nr.: 112-34-5.

Group: Consumer
Route of exposure: Long-term dermal (systemic)
Value: 50 mg/kg bw/day
Comments: Applies to CAS-nr.: 112-34-5.

Group: Consumer
Route of exposure: Acute inhalation (local)
Value: 60,7 mg/m³
Comments: Applies to CAS-nr.: 112-34-5.

Group: Professional
Route of exposure: Long-term inhalation (local)
Value: 67,5 mg/m³
Comments: Applies to CAS-nr.: 112-34-5.

Group: Professional
Route of exposure: Long-term inhalation (systemic)
Value: 67,5 mg/m³
Comments: Applies to CAS-nr.: 112-34-5.

Group: Professional
Route of exposure: Long-term dermal (systemic)
Value: 83 mg/kg bw/day
Comments: Applies to CAS-nr.: 112-34-5.

Group: Professional
Route of exposure: Acute inhalation (local)
Value: 101,2 mg/m³
Comments: Applies to CAS-nr.: 112-34-5.

8.2. Exposure controls

Precautionary measures to prevent exposure

Instruction on measures to prevent exposure

Reference is made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

Technical measures to prevent exposure

Provide adequate ventilation. 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 equipment's suitability and durability will depend on application.

Eye / face protection

Eye protection equipment

Description: Wear tight-fitting goggles or face shield.

Reference to relevant standard: EN 166 (Personal eye-protection. Specifications).

Additional eye protection measures

Eye wash facilities shall be available at the work place. Either a fixed eye wash facility connected to the drinking water (preferably warm water) or a portable disposable unit.

Hand protection

Suitable gloves type

Butyl rubber. Neoprene.

Breakthrough time

Value: > 8 hour(s)

Thickness of glove material

Comments: No specific information from the manufacturer.

Hand protection equipment

Description: Use protective gloves that are suitable for the application. Glove thickness must be chosen in consultation with the glove supplier. The gloves abilities may vary among the different glove manufacturers.

Reference to relevant standard: EN ISO 374 (Protective gloves against chemicals and micro-organisms). EN 420 (Protective gloves - General requirements and test methods).

Additional hand protection measures

Replace gloves if signs of wear and tear. Gloves must only be worn on clean, dry hands.

Skin protection

Recommended protective clothing

Description: Wear appropriate protective clothing to protect against possible skin contact.

Additional skin protection measures

Emergency shower should be available at the workplace.

Respiratory protection

Recommended respiratory protection

Description: In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with combination filter (type A2/P2)
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).

Appropriate environmental exposure control

Environmental exposure controls

Do not allow to enter into sewer, water system or soil.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Fluid.
Colour	Colourless.
Odour	Slight odour.
Odour limit	Comments: Not determined.
pH	Status: In delivery state Value: 6 - 8,5 Concentration: 50 % wt/wt
Melting point / melting range	Value: -35 °C
Boiling point / boiling range	Value: 278 °C
Flash point	Value: 131 -142 °C Method: Closed cup
Flammability	May be combustible at high temperature.
Explosion limit	Comments: Not determined.
Vapour pressure	Value: 0,033 kPa Comments: 0,25 mmHg Temperature: 25 °C
Vapour density	Comments: Not determined.
Particle characteristics	Comments: Not relevant for liquids.
Relative density	Value: 0,989 Temperature: 20 °C
Density	Comments: Not specified by the manufacturer.
Solubility	Medium: Water Comments: Easily soluble.
Partition coefficient: n-octanol/ water	Value: 0,44
Auto-ignition temperature	Value: 202 °C
Decomposition temperature	Comments: Not determined.
Viscosity	Value: 9,5 - 13,5 cP Temperature: 25 °C Type: Dynamic

9.2. Other information

Other physical and chemical properties

Physical and chemical properties

No further information is available.

9.2.2. Other safety characteristics

Comments	No further information is available.
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	No data available.
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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	Hazardous polymerization will not occur under normal conditions.
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10.4. Conditions to avoid

Conditions to avoid	No data available.
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10.5. Incompatible materials

Materials to avoid	No data available.
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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 hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity	Effect tested: LD50 Route of exposure: Oral Value: 5300 mg/kg Species: Rat Comments: Applies to CAS-nr.: 143-22-6.
	Effect tested: LD50 Route of exposure: Dermal Value: 2700 mg/kg Species: Rabbit Comments: Applies to CAS-nr.: 112-34-5.
	Effect tested: LD50 Route of exposure: Oral Value: 4500 mg/kg Species: Rat Comments: Applies to CAS-nr.: 112-34-5.

Other information regarding health hazards

Acute toxicity, mixture estimate

Dose: ATEmix calculated
 Route of exposure: Oral
 Value: 5300 mg/kg
 Comments: Gjelder CAS-nr.: 143-22-6

Dose: ATEmix calculated
 Route of exposure: Oral
 Value: 4500 mg/kg
 Comments: Gjelder CAS-nr.: 112-34-5

Dose: ATEmix calculated
 Route of exposure: Dermal
 Value: 2700 mg/kg
 Comments: Gjelder CAS-nr.: 112-34-5

Assessment of acute toxicity, classification

Based on available data, the classification criteria are not met.

Assessment of skin corrosion / irritation, classification

Based on available data, the classification criteria are not met.

Assessment of eye damage or irritation, classification

Causes serious eye damage.

Assessment of respiratory sensitisation, classification

Based on available data, the classification criteria are not met.

Assessment of skin sensitisation, classification

Based on available data, the classification criteria are not met.

Assessment of germ cell mutagenicity, classification

Based on available data, the classification criteria are not met.

Assessment of carcinogenicity, classification

Based on available data, the classification criteria are not met.

Assessment of reproductive toxicity, classification

Based on available data, the classification criteria are not met.

Assessment of specific target organ toxicity - single exposure, classification

Based on available data, the classification criteria are not met.

Assessment of specific target organ toxicity - repeated exposure, classification

Based on available data, the classification criteria are not met.

Assessment of aspiration hazard, classification

Based on available data, the classification criteria are not met.

Symptoms of exposure

In case of ingestion

May cause chemical burns in mouth, oesophagus and stomach.

In case of skin contact

The chemical may irritate skin and cause itching, burning and redness.

In case of inhalation

No specific information from the manufacturer.

In case of 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.

11.2 Other information

Endocrine disruption

None of the substances listed in section 3.2 is listed on ECHA's Endocrine

disruptor assessment list.

SECTION 12: Ecological information

12.1. Toxicity

Aquatic toxicity, fish

Toxicity type: Acute
Value: 1300000 µg/l
Effect dose concentration: LC50
Test duration: 96 hour(s)
Species: Lepomis macrochirus
Comments: Applies to CAS-nr.: 112-34-5.

Ecotoxicity

The chemical is not classified as harmful to the environment.

12.2. Persistence and degradability

Persistence and degradability
description/evaluation

There are no data available on the chemical itself.

12.3. Bioaccumulative potential

Bioaccumulation, evaluation

Information on bioaccumulation is not available for the chemical.

Bioaccumulation, comments

Log Pow = 0,44. Low potential for bioaccumulation. Applies to AQUA-COL™ E.
Log Pow = 0,51. Low potential for bioaccumulation. Applies to CAS-nr.: 143-22-6.
Log Pow = 1. Low potential for bioaccumulation. Applies to CAS-nr.: 112-34-5.

12.4. Mobility in soil

Mobility

May be dispersed in soil and groundwater. Soluble in water.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB
assessment

The chemical contains no PBT or vPvB substances.

12.6. Endocrine disrupting properties

Endocrine disrupting properties

None of the substances listed in section 3.2 is listed on ECHA's Endocrine disruptor assessment list.

12.7. Other adverse effects

Additional ecological information

Do not allow to enter into sewer, water system or soil.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Appropriate methods of disposal
for the chemical

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: 160508 discarded organic chemicals consisting of or containing dangerous substances

	Classified as hazardous waste: Yes
NORSAS	7042 Organic solvents, non -halogenated.
Other information	Do not empty into drains.

SECTION 14: Transport information

Dangerous goods No

14.1. UN number

Comments Not considered as dangerous goods under UN, IMO, ADR/RID or IATA/ICAO regulations.

14.2. UN proper shipping name

Comments Not relevant.

14.3. Transport hazard class(es)

Comments Not relevant.

14.4. Packing group

Comments Not relevant.

14.5. Environmental hazards

Comments Not relevant.

14.6. Special precautions for user

Special safety precautions for user Not relevant.

14.7. Maritime transport in bulk according to IMO instruments

Transport in bulk (yes/no) No

Ship type required Data lacking.

SECTION 15: Regulatory information

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

Restriction of chemicals according to Annex XVII (REACH)	CAS 112-34-5 are covered by entries 55, and the use is restricted according to REACH Annex XVII. The restriction is not relevant to this mixture and use.
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. Norwegian regulation on waste, 01.06.2004 no. 930, with later amendments. Norwegian regulation on dangerous goods: FOR 2009-04-01 nr 384: Forskrift om landtransport av farlig gods med senere endringer, Direktoratet for

	samfunnssikkerhet og beredskap. Norwegian regulation on declaration: FOR-2015-05-19-541, 01.06.2015 with later amendments.
Declaration No.	627618

15.2. Chemical safety assessment

Chemical safety assessment performed	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.
List of relevant H-phrases (Section 2 and 3)	H318 Causes serious eye damage. H319 Causes serious eye irritation.
CLP classification, comments	Calculation method.
Key literature references and sources for data	Suppliers Safety data sheet dated: 05.04.2021.
Abbreviations and acronyms used	ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road ATE: Acute Toxicity Estimate DNEL: Derived No Effect Level 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 IMO: International Maritime Organization 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%. Log Pow: Partition coefficient: n-octanol / water PBT: Persistent, Bioaccumulative and Toxic RID: The Regulations concerning the International Carriage of Dangerous Goods by Rail UN: United Nations vPvB: very Persistent and very Bioaccumulative
Information added, deleted or revised	Sections being revised since previous version: 1-3, 7-9, 11-12, 15-16
Checking quality of information	This SDS is quality controlled by Kiwa Kompetanse AS in Norway, certified according to the Quality Management System requirements specified in ISO 9001:2015.
Version	3
Prepared by	Kiwa Kompetanse, Norway by SR
Exposure scenario	 AQUA-COL™ E eSDS - ENG.pdf