

SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

GASSTOP LIQUID (AQUEOUS)

Revision Date: 28-Jan-2016

Revision Number: 14

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

1.1. Product Identifier

Product Name GASSTOP LIQUID (AQUEOUS)
Internal ID Code HM004601

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

| | |
|--|---|
| Recommended Use | Fluid Loss Additive |
| Sector of uses | Refer to the Annex for a listing of uses. |
| Product category(ies) | Not applicable |
| Process categories | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC15 - Use as a laboratory reagent PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities |
| Article categories | Not applicable |
| Environmental release category(ies) | ERC2 - Formulation of preparations (mixtures) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles ERC7 - Industrial use of substances in closed systems |
| Sector of uses | SU2a - Mining, (without offshore industries) SU2b - Offshore industries SU3 - Industrial uses |

1.3. Details of the supplier of the safety data sheet

Halliburton Energy Services
Halliburton House, Howemoss Place
Kirkhill Industrial Estate
Dyce
Aberdeen, AB21 0GN
United Kingdom

www.halliburton.com

For further information, please contact

E-mail Address: fdunexchem@halliburton.com

1.4. Emergency telephone number

+44 8 08 189 0979 / 1-760-476-3961

Global Incident Response Access Code: 334305

Contract Number: 14012

| Emergency telephone - \$45 - (EC)1272/2008 | |
|--|---|
| Europe | 112 |
| Bulgaria | Bulgarian poison centre: +359 2 915-44-09 or +359 2 915-43-46 |
| Croatia | Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health) |
| Cyprus | 00357 22 88 7171 |
| Denmark | Poison Control Hotline (DK): +45 82 12 12 12 |
| France | ORFILA (FR): + 01 45 42 59 59 |
| Germany | Poison Center Berlin (DE): +49 030 30686 790 |
| Italy | Poison Center, Milan (IT): +39 02 6610 1029 |
| Netherlands | National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals) |
| Norway | Poisons Information (NO): + 47 22 591300 |
| Poland | Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08 97 |
| Portugal | CIAV - Centro de Informação Antivenenos (Portuguese Poison Centre): + 351 213 303 |

| | |
|----------------|---|
| | 271 |
| Romania | +40 21 318 36 06 |
| Spain | Poison Information Service (ES): +34 91 562 04 20 |
| United Kingdom | NHS Direct (UK): +44 0845 46 47 |

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

| | |
|-------------------------------|-------------------|
| Skin Corrosion/Irritation | Category 2 - H315 |
| Serious Eye Damage/Irritation | Category 2 - H319 |

2.2. Label Elements

Hazard Pictograms



Signal Word:

Warning

Hazard Statements:

H315 - Causes skin irritation

H319 - Causes serious eye irritation

Precautionary Statements:

P264 - Wash face, hands and any exposed skin thoroughly after handling

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P332 + P313 - If skin irritation occurs: Get medical advice/attention

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P337 + P313 - If eye irritation persists: Get medical advice/attention

Contains

Substances

Sodium hydroxide

CAS Number

1310-73-2

2.3. Other Hazards

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Mixture

| Substances | EINECS | CAS Number | PERCENT (w/w) | EU - CLP Substance Classification | REACH Reg. No |
|------------------|-----------|------------|---------------|---|------------------|
| Sodium hydroxide | 215-185-5 | 1310-73-2 | 1 - 5% | Skin Corr. 1A (H314) STOT SE 3 (H335) Met. Corr. 1 (H290) | 01-2119457892-27 |

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

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Eyes

In case of contact, or suspected contact, immediately flush eyes with plenty of

| | |
|------------------|---|
| | water for at least 15 minutes and get medical attention immediately after flushing. |
| Skin | In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. |
| Ingestion | If swallowed, induce vomiting immediately by giving two glasses of water and sticking fingers down throat; never give anything to an unconscious person. Get medical attention. |

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

Causes eye irritation. Causes skin irritation.

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

Notes to Physician Treat symptomatically

SECTION 5: Firefighting measures

5.1. Extinguishing media**Suitable Extinguishing Media**

All standard fire fighting media

Extinguishing media which must not be used for safety reasons

None known.

5.2. Special hazards arising from the substance or mixture**Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

5.3. Advice for firefighters**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

6.4. Reference to other sections

See Section 8 and 13 for additional information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Use appropriate protective equipment. Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Store away from acids. Store in a cool well ventilated area.

7.3. Specific end use(s)**Exposure scenario**

Please refer to the attached Annex for a listing of exposure scenarios.

Other Guidelines

No information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters**Exposure Limits**

| Substances | CAS Number | EU | UK | Netherlands | France |
|------------------|------------|----------------|---------------------------|----------------|---------------------|
| Sodium hydroxide | 1310-73-2 | Not applicable | STEL: 2 mg/m ³ | Not applicable | 2 mg/m ³ |

| Substances | CAS Number | Germany | Spain | Portugal | Finland |
|------------------|------------|---------------------|--------------------------------------|------------------------------|---------------------------|
| Sodium hydroxide | 1310-73-2 | 2 mg/m ³ | 2 mg/m ³ STEL [VLA-EC] | Ceiling: 2 mg/m ³ | STEL: 2 mg/m ³ |

| Substances | CAS Number | Austria | Ireland | Switzerland | Norway |
|------------------|------------|---|--------------------------|---|----------------|
| Sodium hydroxide | 1310-73-2 | TWA: 2 mg/m ³ STEL: 4 mg/m ³ | 2 mg/m ³ STEL | TWA: 2 mg/m ³ STEL: 2 mg/m ³ | Not applicable |

| Substances | CAS Number | Italy | Poland | Hungary | Czech Republic |
|------------------|------------|----------------|---|---|--------------------------|
| Sodium hydroxide | 1310-73-2 | Not applicable | TWA: 0.5 mg/m ³ STEL: 1 mg/m ³ | TWA: 2 mg/m ³ STEL: 2 mg/m ³ | TWA: 1 mg/m ³ |

| Substances | CAS Number | Denmark | Romania | Croatia | Cyprus | Bulgaria |
|------------------|------------|------------------------------|----------------|---------------------------|----------------|----------------------------|
| Sodium hydroxide | 1310-73-2 | Ceiling: 2 mg/m ³ | Not applicable | STEL: 2 mg/m ³ | Not applicable | TWA: 2.0 mg/m ³ |

Derived No Effect Level (DNEL)**Worker**

| Substances | Long-term exposure - systemic effects, Inhalation | Acute / short term exposure - systemic effects, Inhalation | Long-term exposure - local effects, Inhalation | Acute / short term exposure - local effects, Inhalation | Long-term exposure - systemic effects, Dermal | Acute / short term exposure - systemic effects, Dermal | Long-term exposure - local effects, Dermal | Acute / short term exposure - local effects, Dermal | Hazards for the eyes - local effects |
|------------------|---|--|--|---|---|--|--|---|--------------------------------------|
| Sodium hydroxide | Not available | Not available | 1 mg/m ³ | Not available | Not available | Not available | Not available | Not available | Not available |

General Population

| Substances | Long-term exposure - systemic effects, Inhalation | Acute / short term exposure - systemic effects, Inhalation | Long-term exposure - local effects, Inhalation | Acute / short term exposure - local effects, Inhalation | Long-term exposure - systemic effects, Dermal | Acute / short term exposure - systemic effects, Dermal | Long-term exposure - local effects, Dermal | Acute / short term exposure - local effects, Dermal | Long-term exposure - systemic effects, Oral | Acute / short term exposure - local effects, Oral | Hazards for the eyes - local effects |
|------------------|---|--|--|---|---|--|--|---|---|---|--------------------------------------|
| Sodium hydroxide | Not available | Not available | 1 mg/m ³ | Not available | Not available | Not available | Not available | Not available | Not available | Not available | Not available |

Predicted No Effect Concentration (PNEC)**8.2. Exposure controls****Engineering Controls**

Use in a well ventilated area.

Personal protective equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional. Dust/mist respirator. (N95, P2/P3)

Hand Protection

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Nitrile gloves. (>= 0.35 mm thickness)
This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.

Skin Protection

Normal work coveralls.

Eye Protection

Chemical goggles; also wear a face shield if splashing hazard exists.

Other Precautions

Eyewash fountains and safety showers must be easily accessible.

Environmental Exposure Controls Do not allow material to contaminate ground water system

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid
Odor: Odorless
Color: Clear
Odor Threshold: No information available

| <u>Property</u> <u>Remarks/ - Method</u> | <u>Values</u> |
|---|--------------------------|
| pH: | No data available |
| Freezing Point / Range | No data available |
| Melting Point / Range | No data available |
| Boiling Point / Range | No data available |
| Flash Point | No data available |
| Flammability (solid, gas) | No data available |
| Upper flammability limit | No data available |
| Lower flammability limit | No data available |
| Evaporation rate | No data available |
| Vapor Pressure | No data available |
| Vapor Density | No data available |
| Specific Gravity | 1.03 |
| Water Solubility | Soluble in water |
| Solubility in other solvents | No data available |
| Partition coefficient: n-octanol/water | No data available |
| Autoignition Temperature | No data available |
| Decomposition Temperature | No data available |
| Viscosity | No data available |
| Explosive Properties | No information available |
| Oxidizing Properties | No information available |

9.2. Other information

VOC Content (%) No data available

| |
|---|
| SECTION 10: Stability and reactivity |
|---|

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Strong oxidizers. Strong acids.

10.6. Hazardous decomposition products

Oxides of nitrogen. Oxides of sulfur. Carbon monoxide and carbon dioxide.

| |
|--|
| SECTION 11: Toxicological information |
|--|

11.1. Information on toxicological effects**Acute Toxicity**

| | |
|---------------------|---|
| Inhalation | May cause mild respiratory irritation. |
| Eye Contact | Causes eye irritation. |
| Skin Contact | Causes skin irritation. |
| Ingestion | Irritation of the mouth, throat, and stomach. |

Chronic Effects/Carcinogenicity

No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

Toxicology data for the components

| Substances | CAS Number | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|------------------|------------|-------------------|-------------------|-------------------|
| Sodium hydroxide | 1310-73-2 | No data available | No data available | No data available |

| Substances | CAS Number | Skin corrosion/irritation |
|------------------|------------|---------------------------|
| Sodium hydroxide | 1310-73-2 | Causes severe burns |

| Substances | CAS Number | Serious eye damage/irritation |
|------------------|------------|----------------------------------|
| Sodium hydroxide | 1310-73-2 | Causes severe eye burns (Rabbit) |

| Substances | CAS Number | Skin Sensitization |
|------------------|------------|---|
| Sodium hydroxide | 1310-73-2 | Did not cause sensitization on laboratory animals (guinea pig) |
| Substances | CAS Number | Respiratory Sensitization |
| Sodium hydroxide | 1310-73-2 | No information available |
| Substances | CAS Number | Mutagenic Effects |
| Sodium hydroxide | 1310-73-2 | Did not show mutagenic effects in animal experiments In vitro tests did not show mutagenic effects. |
| Substances | CAS Number | Carcinogenic Effects |
| Sodium hydroxide | 1310-73-2 | No data of sufficient quality are available. |
| Substances | CAS Number | Reproductive toxicity |
| Sodium hydroxide | 1310-73-2 | No information available |
| Substances | CAS Number | STOT - single exposure |
| Sodium hydroxide | 1310-73-2 | May cause respiratory irritation. |
| Substances | CAS Number | STOT - repeated exposure |
| Sodium hydroxide | 1310-73-2 | No significant toxicity observed in animal studies at concentration requiring classification. Not applicable due to corrosivity of the substance. |
| Substances | CAS Number | Aspiration hazard |
| Sodium hydroxide | 1310-73-2 | Not applicable |

SECTION 12: Ecological information

12.1. Toxicity

| Substances | CAS Number | Toxicity to Algae | Toxicity to Fish | Toxicity to Microorganisms | Toxicity to Invertebrates |
|------------------|------------|--------------------------|---|----------------------------|---|
| Sodium hydroxide | 1310-73-2 | No information available | LC50 (48h) 189 mg/L (Leuciscus melanotus) LC50 (24h) 145 mg/L (Poecilia reticulata) LC50 (96h) 125 mg/L (Gambusia affinis) LOEL (150 d) = 25 mg/L (Lebistes reticulatus) | No information available | EC50 (48h) 40.4 mg/L (Ceriodaphnia sp.) |

12.2. Persistence and degradability

| Substances | CAS Number | Persistence and Degradability |
|------------------|------------|--|
| Sodium hydroxide | 1310-73-2 | The methods for determining biodegradability are not applicable to inorganic substances. |

12.3. Bioaccumulative potential

| Substances | CAS Number | Log Pow |
|------------------|------------|--------------------------|
| Sodium hydroxide | 1310-73-2 | No information available |

12.4. Mobility in soil

| Substances | CAS Number | Mobility |
|------------------|------------|--------------------------|
| Sodium hydroxide | 1310-73-2 | No information available |

12.5. Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

| Substances | PBT and vPvB assessment |
|------------------|-------------------------|
| Sodium hydroxide | Not applicable |

12.6. Other adverse effects**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

SECTION 13: Disposal considerations**13.1. Waste treatment methods****Disposal methods**

Disposal should be made in accordance with federal, state, and local regulations.

Contaminated Packaging

Follow all applicable national or local regulations.

SECTION 14: Transport information**IMDG/IMO**

| | |
|-----------------------------|----------------|
| UN Number | Not restricted |
| UN proper shipping name: | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group: | Not applicable |
| Environmental Hazards: | Not applicable |

RID

| | |
|-----------------------------|----------------|
| UN Number | Not restricted |
| UN proper shipping name: | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group | Not applicable |
| Environmental Hazards: | Not applicable |

ADR

| | |
|-----------------------------|----------------|
| UN Number | Not restricted |
| UN proper shipping name: | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group | Not applicable |
| Environmental Hazards: | Not applicable |

IATA/ICAO

| | |
|-----------------------------|----------------|
| UN Number | Not restricted |
| UN proper shipping name: | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group: | Not applicable |
| Environmental Hazards: | Not applicable |

14.1. UN Number Not restricted

14.2. UN proper shipping name: Not restricted

14.3. Transport Hazard Class(es): Not applicable

14.4. Packing Group Not applicable

14.5. Environmental Hazards: Not applicable

14.6. Special Precautions for User None

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****International Inventories****EINECS (European Inventory of Existing Chemical Substances)**

This product, and all its components, complies with EINECS

US TSCA Inventory

All components listed on inventory or are exempt.

Canadian Domestic Substances List (DSL)

All components listed on inventory or are exempt.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

**Germany, Water Endangering
Classes (WGK)** Not determined

15.2. Chemical safety assessment

Yes

SECTION 16: Other information

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

H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation

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

bw – body weight
CAS – Chemical Abstracts Service
CLP – REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Classification, Labelling and Packaging of substances and mixtures
EC – European Commission
EC10 – Effective Concentration 10%
EC50 – Effective Concentration 50%
EEC – European Economic Community
ErC50 – Effective Concentration growth rate 50%
IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL0 – Lethal Loading 0%
LL50 – Lethal Loading 50%
MARPOL – International Convention for the Prevention of Pollution from Ships
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NOEC – No Observed Effect Concentration
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PBT – Persistent Bioaccumulative and Toxic
PC – Chemical Product category
PEL – Permissible Exposure Limit
ppm – parts per million
PROC – Process category
REACH – REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL – Short Term Exposure Limit
SU – Sector of Use category

Key literature references and sources for data

www.ChemADVISOR.com/

Revision Date: 28-Jan-2016

Revision Note

SDS sections updated:

2

This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

End of Safety Data Sheet

Revision Number: 14

Revision Date: 28-Jan-2016

GASSTOP LIQUID (AQUEOUS)**Annex to SDS**

| Substances | CAS Number | Process categories | Environmental release category | Product category(ies) | Sector of uses |
|------------------|------------|-----------------------|--------------------------------|-----------------------|-----------------|
| Sodium hydroxide | 1310-73-2 | PROC4; PROC8b; PROC15 | ERC2; ERC4; ERC7 | - | SU2a; SU2b; SU3 |

Exposure Scenario

Application of bulk onshore/offshore oilfield liquid or solid/powder.

1. Title Section**Use**

Use in batch process where opportunities for exposure arise.
 Transfer from support vessel to installation.
 Transfer from bulk/ IBC/ drum to on-site storage, transfer to process.
 Transfer from pot/tin/tube to process. On-site sampling and testing e.g. QC

Sector of uses

SU2a - Mining, (without offshore industries)
 SU2b - Offshore industries
 SU3 - Industrial uses

Worker**Process categories**

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC15 - Use as a laboratory reagent
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Product category(ies)

Not applicable

Article categories

Not applicable

Environmental**Environmental release category(ies)**

ERC2 - Formulation of preparations (mixtures)
 ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
 ERC7 - Industrial use of substances in closed systems

2. Conditions of use affecting exposure**Control of environmental exposure**

Amount used, frequency and duration of use (or from service life)

| Substances | Daily Amount Per Site | Annual site tonnage | Frequency | Duration of use |
|------------------|-----------------------|---------------------|-----------|-----------------|
| Sodium hydroxide | - | - | - | - |

Technical and organisational conditions and measures

| Substances | Technical and organisational conditions and measures |
|------------------|---|
| Sodium hydroxide | Risk management measures related to the environment aim to avoid discharging NaOH solutions into municipal wastewater or to surface water, in case such discharges are expected to cause significant pH changes. Regular control of the pH value during introduction into open waters is required. In general discharges should be carried out such that pH changes in receiving surface waters are minimised. In general most aquatic organisms can tolerate pH values in the range of 6-9. This is also reflected in the description of standard OECD tests with aquatic organisms. |

Conditions and measures related to sewage treatment plant

| Substances | Conditions and measures related to sewage treatment plant |
|------------------|---|
| Sodium hydroxide | Solid industrial waste of lime should be reused or discharged to the industrial wastewater and further neutralized if needed. |

Conditions and measures related to treatment of waste (including article waste)

| Substances | Conditions and measures related to treatment of waste (including article waste) |
|------------------|---|
| Sodium hydroxide | Dispose of contents/container in accordance with local/regional/national/international regulations. |

Other conditions affecting environmental exposure

| Substances | Other conditions affecting environmental exposure |
|------------------|---|
| Sodium hydroxide | No information available |

Control of Worker Exposure

Product (article) characteristics

| | |
|-----------------|--------------------------|
| Physical State: | Liquid |
| Vapor Pressure | No information available |
| Dustiness | Not applicable |

| Substances | Limit the substance content in the product to |
|------------------|---|
| Sodium hydroxide | 0-100% |

Amount used (or contained in articles), frequency and duration of use/exposure

| Substances | Amounts used (daily) | Covers daily exposures up to (hours/day) | Frequency (days/year) |
|------------------|----------------------|--|-----------------------|
| Sodium hydroxide | - | 8 | 200 |

Technical and organisational conditions and measures

| Substances | Technical and organisational conditions and measures |
|------------------|--|
| Sodium hydroxide | Use in closed batch process (synthesis or formulation). Ensure material transfers are under containment or extract ventilation. Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.). Use of pliers, grip arms with long handles with manual use "to avoid direct contact and exposure by splashes (no working over one's head)". |

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

| Substances | Conditions and measures related to personal protection, hygiene and health evaluation |
|------------------|---|
| Sodium hydroxide | Use suitable eye protection. Face shield. Wear suitable gloves tested to EN374. Wear respiratory protection. Refer to section 8 of the SDS. |

Other conditions affecting workers exposure

| Substances | Other conditions affecting workers exposure |
|------------------|---|
| Sodium hydroxide | Indoor and outdoor use. |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

| Substances | Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply |
|------------------|--|
| Sodium hydroxide | Personal measures have to be applied in case of potential exposure only. Wash hands after use. Launder contaminated clothing before reuse. Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. |

3. Exposure estimation and reference to its source

Environmental release and exposure

| Substances | Environmental release and exposure |
|------------------|---|
| Sodium hydroxide | <p>The aquatic effect and risk assessment only deals with the effect on organisms/ecosystems due to possible pH changes related to OH⁻ discharges, as the toxicity of the Na⁺ ion is expected to be insignificant compared to the (potential) pH effect. The sediment compartment is not considered, because it is not considered relevant for NaOH. If emitted to the aquatic compartment, sorption to sediment particles will be negligible.</p> <p>Significant emissions to air are not expected (due to the very low vapour pressure of NaOH). If emitted to air as an aerosol, aqueous NaOH will be rapidly neutralised as a result of its reaction with CO₂ (or other acids).</p> <p>Significant emissions to the terrestrial environment are not expected either. The sludge application route is not relevant for the emission to agricultural soil, as no sorption of NaOH to particulate matter will occur in STPs/WWTPs. If emitted to soil, sorption to soil particles will be negligible. Depending on the buffer capacity of the soil, OH⁻ will be neutralised in the soil pore water or the pH may increase.</p> |

Substances
Sodium hydroxide

CAS Number
1310-73-2

Revision Number: 14

Revision Date: 28-Jan-2016

Worker exposure

| Substances | Route of exposure and type of effects | Exposure estimate PROC4 | Assessment Method | RCR |
|------------------|--|-------------------------|--------------------------|------|
| Sodium hydroxide | Long-term exposure - Local effects, Inhalation mg/m ³ | 0.33 | No information available | 0.33 |

| Substances | Route of exposure and type of effects | Exposure estimate PROC8b | Assessment Method | RCR |
|------------------|--|--------------------------|--------------------------|------|
| Sodium hydroxide | Long-term exposure - Local effects, Inhalation mg/m ³ | 0.33 | No information available | 0.33 |

| Substances | Route of exposure and type of effects | Exposure estimate PROC15 | Assessment Method | RCR |
|------------------|--|--------------------------|--------------------------|------|
| Sodium hydroxide | Long-term exposure - Local effects, Inhalation mg/m ³ | 0.33 | No information available | 0.33 |

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

Scaling method

For scaling see: <http://www.ecetoc.org/tra>, ECETOC TRA worker v2.3, modified version.

Scaling parameters

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his implemented risk management measures are adequate.