HALLIBURTON

# SAFETY DATA SHEET

**according to Regulation (EC) No. 453/2010**

# BA-2 BUFFERING AGENT

**Revision Date:** 08-Sep-2015 **Revision Number:** 11

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

**1.1. Product Identifier**

**Product Name** BA-2 BUFFERING AGENT
**Internal ID Code** HM000094

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

**Recommended Use** Buffer

**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

| **Emergency telephone - §45 - (EC)1272/2008** | |
|---|---|
| **Europe** | **112** |
| **Croatia** | Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health) |
| **Cyprus** | +210 7793777 |
| **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 |
| **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**

| | |
|---|---|
| Acute Oral Toxicity | Category 4 - H302 |
| Skin Corrosion / irritation | Category 1 C - H314 |
| Serious Eye Damage / Eye Irritation | Category 1 - H318 |
| Chronic Aquatic Toxicity | Chronic 3 - H412 |

**2.2. Label Elements**

**Hazard Pictograms**

**Signal Word** **Danger**

**Hazard Statements**
H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H412 - Harmful to aquatic life with long lasting effects

**Precautionary Statements - EU (§28, 1272/2008)**
P280 - Wear protective gloves/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 to fresh air and keep at rest in a position 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
P310 - Immediately call a POISON CENTER or doctor/physician

**Contains**

| **Substances** | **CAS Number** |
|---|---|
| Sulfamic acid | 5329-14-6 |

**2.3. Other Hazards**
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

## SECTION 3: Composition/information on Ingredients

**3.1. Substances** Substance

| Substances | EINECS | CAS Number | PERCENT (w/w) | EU - CLP Substance Classification | REACH No. |
|---|---|---|---|---|---|
| Sulfamic acid | 226-218-8 | 5329-14-6 | 60 - 100% | Acute Tox. 4 (H302)<br>Skin Corr. 1C (H314)<br>Eye Corr. 1 (H318)<br>Aquatic Chronic 3 (H412) | No data available |

**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** Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.

**Skin** In case of contact, immediately flush skin with plenty of soap and water for at least 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately.

**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**4.2. Most Important symptoms and effects, both acute and delayed**
Harmful if swallowed. Causes severe skin burns and eye damage.

**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**
Water fog, carbon dioxide, foam, dry chemical.
**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**
Decomposition in fire may produce harmful gases. Do not allow runoff to enter waterways.

**5.3. Advice for firefighters**
**Special Protective Equipment for Fire-Fighters**
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 creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Evacuate all persons from the area.
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**
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**
Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.
**Hygiene Measures**
Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**
Store away from alkalis. Store in a cool, dry location.

**7.3. Specific End Use(s)**
**Exposure Scenario** No information available
**Other Guidelines** No information available

## SECTION 8: Exposure Controls/Personal Protection

**8.1. Control parameters**
**Exposure Limits**

| Substances | CAS Number | EU | UK | Netherlands | France |
|---|---|---|---|---|---|
| Sulfamic acid | 5329-14-6 | Not applicable | Not applicable | Not applicable | Not applicable |

| Substances | CAS Number | Germany | Spain | Portugal | Finland |
|---|---|---|---|---|---|
| Sulfamic acid | 5329-14-6 | Not applicable | Not applicable | Not applicable | Not applicable |

| Substances | CAS Number | Austria | Ireland | Switzerland | Norway |
|---|---|---|---|---|---|
| Sulfamic acid | 5329-14-6 | Not applicable | Not applicable | Not applicable | Not applicable |

| Substances | CAS Number | Italy | Poland | Hungary | Czech Republic |
|---|---|---|---|---|---|
| Sulfamic acid | 5329-14-6 | Not applicable | Not applicable | Not applicable | Not applicable |

| Substances | CAS Number | Denmark | Romania | Croatia | Cyprus |
|---|---|---|---|---|---|
| Sulfamic acid | 5329-14-6 | Not applicable | Not applicable | Not applicable | Not applicable |

**Derived No Effect Level (DNEL)** No information available.

**Worker**

**General Population**

**Predicted No Effect Concentration (PNEC)** No information available.

**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** | Dust/mist respirator. (N95, P2/P3) |
| **Hand Protection** | Impervious rubber gloves. |
| **Skin Protection** | Rubber apron. |
| **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:** Solid **Color:** White
**Odor:** Odorless **Odor Threshold:** No information available

| Property<br>Remarks/ - Method | Values |
|---|---|
| **pH:** | 1.18 |
| **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** | 2.125 |
| **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**

| | |
|---|---|
| **Molecular Weight** | 97.1 |
| **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**
Keep away from heat, sparks and flame.
**10.5. Incompatible Materials**
Strong alkalis. Strong oxidizers. Chlorine. Sulfides. Nitrites. Nitrates. Carbonates of alkalis.
**10.6. Hazardous Decomposition Products**
Oxides of sulfur. Oxides of nitrogen. Ammonia. Carbon monoxide and carbon dioxide.

## SECTION 11: Toxicological Information

**11.1. Information on Toxicological Effects**

**Acute Toxicity**

| | |
|---|---|
| **Inhalation** | May cause respiratory irritation. |
| **Eye Contact** | Causes severe eye burns. May cause permanent eye damage. |
| **Skin Contact** | Causes severe burns. |
| **Ingestion** | Causes burns of the mouth, throat and stomach. May cause abdominal pain, vomiting, nausea, and diarrhea. Harmful if swallowed. |

**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 |
|---|---|---|---|---|
| Sulfamic acid | 5329-14-6 | 1450 mg/kg (Rat)<br>1600 mg/kg (Rat)<br>3160 mg/kg (Rat)<br>2065 mg/kg (Rat) | > 2000 mg/kg (Rat) | No data available |

| Substances | CAS Number | Skin corrosion/irritation |
|---|---|---|
| Sulfamic acid | 5329-14-6 | Skin, rabbit: Causes burns |

| Substances | CAS Number | Eye damage/irritation |
|---|---|---|
| Sulfamic acid | 5329-14-6 | Eye, rabbit: Causes serious eye damage |

| Substances | CAS Number | Skin Sensitization |
|---|---|---|
| Sulfamic acid | 5329-14-6 | Not regarded as a sensitizer. |

| Substances | CAS Number | Respiratory Sensitization |
|---|---|---|
| Sulfamic acid | 5329-14-6 | No information available |

| Substances | CAS Number | Mutagenic Effects |
|---|---|---|
| Sulfamic acid | 5329-14-6 | In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects. |

| Substances | CAS Number | Carcinogenic Effects |
|---|---|---|
| Sulfamic acid | 5329-14-6 | No information available. |

| Substances | CAS Number | Reproductive toxicity |
|---|---|---|
| Sulfamic acid | 5329-14-6 | No information available |

| Substances | CAS Number | STOT - single exposure |
|---|---|---|
| Sulfamic acid | 5329-14-6 | No data of sufficient quality are available. |

| Substances | CAS Number | STOT - repeated exposure |
|---|---|---|
| Sulfamic acid | 5329-14-6 | No data of sufficient quality are available. |

| Substances | CAS Number | Aspiration hazard |
|---|---|---|

| | | |
|---|---|---|
| Sulfamic acid | 5329-14-6 | Not applicable |

## SECTION 12: Ecological Information

### 12.1. Toxicity

**Ecotoxicity Effects**

| Substances | CAS Number | Toxicity to Algae | Toxicity to Fish | Toxicity to Microorganisms | Toxicity to Invertebrates |
|---|---|---|---|---|---|
| Sulfamic acid | 5329-14-6 | EC50 (72h) 48 mg/L (Desmodesmus subspicatus) EC50 (72h) 1801.43 mg/L (Skeletonema costatum) | LC50 (96h) 70.3 mg/L (Pimephales promelas) LC50 (96h) >602 mg/L (Scophthalmus maximus) | EC50 (3h) >200 mg/L (Activated sludge) | EC50 (48h) 71.6 mg/L (Daphnia magna) LC50 (48h) 602 mg/L (Acartia tonsa) |

### 12.2. Persistence and degradability

| Substances | CAS Number | Persistence and Degradability |
|---|---|---|
| Sulfamic acid | 5329-14-6 | (0% @ 28d) |

### 12.3. Bioaccumulative potential

| Substances | CAS Number | Log Pow |
|---|---|---|
| Sulfamic acid | 5329-14-6 | No information available |

### 12.4. Mobility in soil

| Substances | CAS Number | Mobility |
|---|---|---|
| Sulfamic acid | 5329-14-6 | No information available |

### 12.5. Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

| Substances | PBT and vPvB assessment |
|---|---|
| Sulfamic acid | Not PBT/vPvB |

### 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 Method** Bury in a licensed landfill according to federal, state, and local regulations.

**Contaminated Packaging** This bag may contain residue of a hazardous material. Some authorities may regulate such containers as hazardous waste. Dispose of container according to national or local regulations.

## SECTION 14: Transport Information

**IMDG/IMO**

**UN Number:** UN2967
**UN Proper Shipping Name:** Sulfamic Acid
**Transport Hazard Class(es):** 8
**Packing Group:** III
**Environmental Hazards:** Not applicable

**RID**

**UN Number:** UN2967
**UN Proper Shipping Name:** Sulfamic Acid
**Transport Hazard Class(es):** 8

**Packing Group:** III
**Environmental Hazards:** Not applicable

**ADR**

**UN Number:** UN2967
**UN Proper Shipping Name:** Sulfamic Acid
**Transport Hazard Class(es):** 8
**Packing Group:** III
**Environmental Hazards:** Not applicable

**IATA/ICAO**

**UN Number:** UN2967
**UN Proper Shipping Name:** Sulfamic Acid
**Transport Hazard Class(es):** 8
**Packing Group:** III
**Environmental Hazards:** Not applicable

**14.1. UN Number:** UN2967

**14.2. UN Proper Shipping Name:** Sulfamic Acid

**14.3. Transport Hazard Class(es):** 8

**14.4. Packing Group:** III

**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 Inventory** | This product, and all its components, complies with EINECS |
| **US TSCA Inventory** | All components listed on inventory or are exempt. |
| **Canadian DSL Inventory** | 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)** WGK 1: Low hazard to waters.

**15.2. Chemical Safety Assessment**
No information available

## SECTION 16: Other Information

**Full text of H-Statements referred to under sections 2 and 3**
H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage
H412 - Harmful to aquatic life with long lasting effects

**Key or legend to abbreviations and acronyms**
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:** 08-Sep-2015
**Revision Note**
SDS sections updated: 1

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

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**End of Safety Data Sheet**