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

1.1 Product identifier
- **Product name**: Acetic Acid
- **Other means of identification**: Acetic Acid Chemically Pure
- **Proper shipping name**: Acetic acid
- **Product code**: 0000001037
- **SDS no.**: 0000001037
- **Historic SDS no.**: 11001 (BP), 0000000794, 5130
- **EC number**: 200-580-7
- **CAS number**: 64-19-7
- **REACH Registration number**: 01-219475328-30-0000
- **Product type**: Liquid

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

<table>
<thead>
<tr>
<th>Identified uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacture of the substance or use as an intermediate or a process chemical or extraction agent.</td>
</tr>
<tr>
<td>Distribution of substance</td>
</tr>
<tr>
<td>Formulation and (re)packing of substances and mixtures</td>
</tr>
<tr>
<td>Use in Agrochemicals uses - Professional</td>
</tr>
<tr>
<td>Use in Cleaning Agents - Industrial</td>
</tr>
<tr>
<td>Use in Cleaning Agents - Professional</td>
</tr>
<tr>
<td>Use as laboratory reagent - Industrial</td>
</tr>
<tr>
<td>Use as laboratory reagent - Professional</td>
</tr>
<tr>
<td>Use in Oil and Gas field drilling and production operations</td>
</tr>
<tr>
<td>Water treatment chemicals - Industrial</td>
</tr>
<tr>
<td>Water treatment chemicals - Professional</td>
</tr>
</tbody>
</table>

1.3 Details of the supplier of the safety data sheet

**Supplier**: BP Chemicals Ltd
- Saltend
- Hull
- HU12 8DS
- United Kingdom
- Tel: +44 (0) 1482 896251

**E-mail address**: MSDSadvice@bp.com

1.4 Emergency telephone number

**EMERGENCY TELEPHONE NUMBER**: Carechem: +44 (0) 1235 239 670 (24/7)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

**Product definition**: Mono-constituent substance

**Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]**
- Flam. Liq. 3, H226
- Skin Corr. 1A, H314

**Classification according to Directive 67/548/EEC [DSD]**
- R10
- C; R35

See Section 16 for the full text of the R phrases or H statements declared above.

See sections 11 and 12 for more detailed information on health effects and symptoms and environmental hazards.

2.2 Label elements

**Hazard pictograms**

**Signal word**: Danger

**Hazard statements**: Flammable liquid and vapour, Causes severe skin burns and eye damage.

**Precautionary statements**

<table>
<thead>
<tr>
<th>Product name</th>
<th>Product code</th>
<th>Version</th>
<th>Date of issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic Acid</td>
<td>0000001037</td>
<td>1</td>
<td>11 February 2011</td>
</tr>
</tbody>
</table>
SECTION 2: Hazards identification

Prevention

Response
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage
Not applicable.

Disposal
Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements
Not applicable.

Special packaging requirements
Containers to be fitted with child-resistant fastenings
Not applicable.

Tactile warning of danger
Not applicable.

2.3 Other hazards
Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
No.

Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
No.

SECTION 3: Composition/information on ingredients

Substance/mixture
Mono-constituent substance

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Identifiers</th>
<th>%</th>
<th>Classification</th>
<th>Regulation (EC) No. 1272/2008 [CLP]</th>
<th>Type</th>
</tr>
</thead>
</table>

See Section 16 for the full text of the R-phrases declared above.
See Section 16 for the full text of the H statements declared above.

Type
[A] Constituent
[B] Impurity
[C] Stabilising additive

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician. Get medical attention immediately.

Skin contact
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Drench contaminated clothing with water before removing. This is necessary to avoid the risk of sparks from static electricity that could ignite contaminated clothing. Contaminated clothing is a fire hazard. Contaminated leather, particularly footwear, must be discarded. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation
If inhaled, remove to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention immediately.

Ingestion
Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Chemical burns must be treated promptly by a physician. Get medical attention immediately. If swallowed, rinse mouth with water (only if the person is conscious). If affected person is conscious, give plenty of water to drink.

Protection of first-aiders
No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
SECTION 4: First aid measures

4.2 Most important symptoms and effects, both acute and delayed
See Section 11 for more detailed information on health effects and symptoms.

4.3 Indication of any immediate medical attention and special treatment needed
Notes to physician
Treatment should in general be symptomatic and directed to relieving any effects.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing media
Use dry chemical, CO₂, water spray (fog) or foam. (alcohol-resistant foam)

Unsuitable extinguishing media
Do not use water jet.

5.2 Special hazards arising from the substance or mixture
Harmful fire-fighting hazards
Combustion products may include the following: carbon oxides (CO, CO₂) [carbon monoxide, carbon dioxide]

5.3 Advice for firefighters
Special precautions for fire-fighters
DO NOT FIGHT FIRE WHEN IT REACHES MATERIAL. Withdraw from fire and let it burn. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
For non-emergency personnel
Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Eliminate all ignition sources. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spill material. Floors may be slippery; use care to avoid falling. No flares, smoking or flames in hazard area. Do not breathe vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment.

For emergency responders
Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

6.2 Environmental precautions
Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up
Small spill
Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres.

Large spill
Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spill product. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections
See Section 1 for emergency contact information.
See Section 5 for firefighting measures.
See Section 8 for information on appropriate personal protective equipment.
See Section 12 for environmental precautions.
See Section 13 for additional waste treatment information.
SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Do not reuse container. Empty containers retain product residue and can be hazardous.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Keep away from heat and direct sunlight. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store and use only in equipment/containers designed for use with this product. Do not store in unlabelled containers. Protect from freezing.

7.3 Specific end use(s)

Recommendations

See section 1.2 and Exposure scenarios in annex, if applicable.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>EU OEL (Europe).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TWA: 25 mg/m³ 8 hour(s). Issued/Revised: 7/1991</td>
</tr>
<tr>
<td></td>
<td>TWA: 10 ppm 8 hour(s). Issued/Revised: 7/1991</td>
</tr>
<tr>
<td>ACGIH TLVs</td>
<td>ACGIH TLV (United States).</td>
</tr>
<tr>
<td>Acetic acid</td>
<td>STEL: 37 mg/m³ 15 minute(s). Issued/Revised: 9/1994</td>
</tr>
<tr>
<td></td>
<td>STEL: 15 ppm 15 minute(s). Issued/Revised: 9/1994</td>
</tr>
<tr>
<td></td>
<td>TWA: 25 mg/m³ 8 hour(s). Issued/Revised: 9/1994</td>
</tr>
<tr>
<td></td>
<td>TWA: 10 ppm 8 hour(s). Issued/Revised: 9/1994</td>
</tr>
</tbody>
</table>

For information and guidance, the ACGIH values are included. For further information on these please consult your supplier. Whilst specific OELs for certain components may be shown in this section, other components may be present in any mist, vapour or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be 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.

Derived No Effect Level

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Type</th>
<th>Exposure</th>
<th>Value</th>
<th>Population</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>DNEL</td>
<td>Short term</td>
<td>-</td>
<td>25 mg/m³</td>
<td>Workers Local</td>
</tr>
<tr>
<td></td>
<td>DNEL</td>
<td>Long term</td>
<td>Inhalation</td>
<td>25 mg/m³</td>
<td>Workers Local</td>
</tr>
<tr>
<td></td>
<td>DNEL</td>
<td>Short term</td>
<td>Inhalation</td>
<td>25 mg/m³</td>
<td>Consumers Local</td>
</tr>
<tr>
<td></td>
<td>DNEL</td>
<td>Long term</td>
<td>Inhalation</td>
<td>25 mg/m³</td>
<td>Consumers Local</td>
</tr>
</tbody>
</table>

Predicted No Effect Concentration

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Type</th>
<th>Compartiment Detail</th>
<th>Value</th>
<th>Method Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>PNEC</td>
<td>Fresh water sediment</td>
<td>11.36 mg/kg dwt</td>
<td>Equilibrium Partitioning</td>
</tr>
<tr>
<td></td>
<td>PNEC</td>
<td>Marine water sediment</td>
<td>1.136 mg/kg dwt</td>
<td>Equilibrium Partitioning</td>
</tr>
<tr>
<td></td>
<td>PNEC</td>
<td>Marine</td>
<td>0.3085 mg/l</td>
<td>Assessment Factors</td>
</tr>
<tr>
<td></td>
<td>PNEC</td>
<td>Fresh water</td>
<td>3.058 mg/l</td>
<td>Assessment Factors</td>
</tr>
<tr>
<td></td>
<td>PNEC</td>
<td>Intermittent release.</td>
<td>30.58 mg/l</td>
<td>Assessment Factors</td>
</tr>
<tr>
<td></td>
<td>PNEC</td>
<td>Soil</td>
<td>0.478 mg/kg dwt</td>
<td>EquilibriumPartitioning</td>
</tr>
<tr>
<td></td>
<td>PNEC</td>
<td>Sewage Treatment Plant</td>
<td>85 mg/l</td>
<td>Assessment Factors</td>
</tr>
</tbody>
</table>
SECTION 8: Exposure controls/personal protection

8.2 Exposure controls

Appropriate engineering controls

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits. All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.

Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.

The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Individual protection measures

Hand protection

In case of insufficient ventilation, wear suitable respiratory equipment. The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Recommended: Gas filter suitable for gases and vapours. Filter type: A

Eye/face protection

Recommended: Chemical splash goggles.

Face shield.

Skin protection

Skin and body

Recommended: Butyl rubber gloves.

Recommended: Hard hat.

Chemical resistant boots.

Chemical resistant apron

Full chemical protective suit with a hood.

Chemical protective suit consisting of a jacket and trousers. The jacket should be buttoned up to the neck, sleeves sealed at the gloves, and trouser legs worn outside the boots. These precautions are required to prevent the clothing from accidentally trapping product against the skin.

Use of protective clothing is good industrial practice.

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.

Recommended: Hard hat.

Chemical resistant boots.

Chemical resistant apron

Full chemical protective suit with a hood.

Chemical protective suit consisting of a jacket and trousers. The jacket should be buttoned up to the neck, sleeves sealed at the gloves, and trouser legs worn outside the boots. These precautions are required to prevent the clothing from accidentally trapping product against the skin.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state: Liquid.

Colour: Clear Colourless.

Odour: Vinegar [Strong]

Odour threshold: Not available.

pH: 2.4 [Conc. (% w/w): 6.006%]
SECTION 9: Physical and chemical properties

Melting point/freezing point: May start to solidify at the following temperature: 16.64°C (62°F)
Initial boiling point and boiling range: 117.9°C (244.2°F)
Flash point: Closed cup: 39°C (102.2°F) [Pensky-Martens.]
Evaporation rate: Not available.
Flammability (solid, gas): Not applicable. Endpoint waived according to REACH Annex VII, IX or XI
Upper/lower flammability or explosive limits: Lower: 4%
Vapour pressure: 2.079 kPa (15.635 mm Hg) at 25°C
Vapour density: 2.1 [Air = 1]
Relative density: Not available.
Density: 1044.6 kg/m³ (1.045 g/cm³) at 25°C
Solubility(ies): Miscible in water. (100%)
Partition coefficient: n-octanol/water: -0.17
Auto-ignition temperature: 463°C (865.4°F)
Decomposition temperature: Not applicable. Endpoint waived according to REACH Annex VII, IX or XI
Viscosity: Kinematic: 1.011 mm²/s (1.011 cSt) at 25°C
Explosive properties: Not applicable. Endpoint waived according to REACH Annex VII, IX or XI
Oxidising properties: Not applicable. Endpoint waived according to REACH Annex VII, IX or XI

9.2 Other information
No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity
No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.

10.2 Chemical stability
The product is stable.

10.3 Possibility of hazardous reactions
Under normal conditions of storage and use, hazardous reactions will not occur.
Under normal conditions of storage and use, hazardous polymerisation will not occur.

10.4 Conditions to avoid
Keep away from heat, sparks and flame. This product should be stored away from oxidising materials and strong bases.

10.5 Incompatible materials
Reactive with metals, oxidising materials, reducing agents, alkalis and alcohols.

10.6 Hazardous decomposition products
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result / Route</th>
<th>Test authority / Number</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid.</td>
<td>LD50 Oral</td>
<td>not guideline</td>
<td>Mouse</td>
<td>4960 mg/kg</td>
<td>-</td>
<td>Based on sodium acetate</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral</td>
<td>not guideline</td>
<td>Rat</td>
<td>3530 mg/kg</td>
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<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral</td>
<td>not guideline</td>
<td>Rat</td>
<td>3310 mg/kg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LC50 Inhalation Vapour</td>
<td>not guideline</td>
<td>Rat</td>
<td>&gt;16000 ppm</td>
<td>4 hours</td>
<td>-</td>
</tr>
<tr>
<td>LC50 Vapour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LC50 Inhalation Vapour</td>
<td>not guideline</td>
<td>Mouse</td>
<td>5620 ppm</td>
<td>1 hours</td>
<td>-</td>
</tr>
<tr>
<td>RD50 Inhalation Vapour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Irritation/Corrosion

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test authority / Test number</th>
<th>Species</th>
<th>Route / Result</th>
<th>Test concentration</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name</td>
<td>Acetic Acid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Version</td>
<td>Date of issue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**SECTION 11: Toxicological information**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test authority / Test number</th>
<th>Cell type</th>
<th>Type</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>OECD 476</td>
<td>Experiment: In vitro</td>
<td>Subject: Mammal - species unspecified</td>
<td>Negative</td>
<td>Based on Acetic anhydride</td>
</tr>
<tr>
<td></td>
<td>OECD 473</td>
<td>Experiment: In vitro</td>
<td>Subject: Mammal - species unspecified</td>
<td>Negative</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>OECD 471</td>
<td>Experiment: In vitro</td>
<td>Subject: Non-mammalian species unspecified</td>
<td>Negative</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>OECD 474</td>
<td>Experiment: In vivo</td>
<td>Subject: Unspecified</td>
<td>Negative</td>
<td>Based on Acetic anhydride</td>
</tr>
</tbody>
</table>

**Conclusion/Summary**

Acetic acid:

**Reproductive toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test authority / Test number</th>
<th>Species</th>
<th>Route</th>
<th>Exposure</th>
<th>Developmental toxicity</th>
<th>Maternal toxicity</th>
<th>Fertility</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>EU B.31</td>
<td>Rabbit</td>
<td>Oral</td>
<td>13 days</td>
<td>Negative</td>
<td>-</td>
<td>-</td>
<td>no effects observed (Based on Vinegar (5% Acetic acid.))</td>
</tr>
<tr>
<td></td>
<td>EU B.31</td>
<td>Rat</td>
<td>Oral</td>
<td>10 days</td>
<td>Negative</td>
<td>-</td>
<td>-</td>
<td>no effects observed (Based on Vinegar (5% Acetic acid.))</td>
</tr>
<tr>
<td></td>
<td>EU B.31</td>
<td>Mouse</td>
<td>Oral</td>
<td>10 days</td>
<td>Negative</td>
<td>-</td>
<td>-</td>
<td>no effects observed (Based on Vinegar (5% Acetic acid.))</td>
</tr>
</tbody>
</table>

**Conclusion/Summary**

- Development: Not classified. Based on available data, the classification criteria are not met.
- Fertility: Not classified. Based on available data, the classification criteria are not met.
- Assessment was by using a weight of evidence approach.

**Aspiration hazard**

- Not classified. Based on available data, the classification criteria are not met.
- Routes of entry anticipated: Dermal, Inhalation.

**Potential acute health effects**

- Inhalation: May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.
- Ingestion: Causes burns to mouth, throat and stomach.
- Skin contact: Causes severe burns.
- Eye contact: Causes serious eye damage.

**Symptoms related to the physical, chemical and toxicological characteristics**

- **Inhalation**: Adverse symptoms may include the following: respiratory tract irritation, coughing
- **Ingestion**: Adverse symptoms may include the following: stomach pains
SECTION 11: Toxicological information

Skin contact
Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eye contact
Adverse symptoms may include the following:
pain
watering
redness

Potential chronic health effects
General
No known significant effects or critical hazards.

Other chronic toxicity data
Acetic Acid: Humans unacclimatized to acetic acid vapors experience extreme eye and nasal irritation at concentrations above 25 ppm. Air concentrations of 50 ppm are considered intolerable, causing intense lacrimation (eye weeping), nose, and throat irritation. Repeated exposures to high concentrations in man can cause eye conjunctival lesions, blackening of the hands, hyperkeratosis (thickening) of the skin, teeth erosion, congestion and edema of the pharynx, bronchial constriction, and respiratory tract irritation.

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

Mutagenicity
No known significant effects or critical hazards.

Developmental effects
No known significant effects or critical hazards.

Fertility effects
No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test authority / Test number</th>
<th>Species</th>
<th>Type / Result</th>
<th>Exposure</th>
<th>Effects</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid.</td>
<td>OECD 202</td>
<td>Daphnia</td>
<td>Acute EC50 &gt;300.82 mg/l Nominal Fresh water</td>
<td>48 hours</td>
<td>Mobility</td>
<td>Based on Acetate ion</td>
</tr>
<tr>
<td></td>
<td>ISO 10253</td>
<td>Algae</td>
<td>Acute EC50 &gt;300.82 mg/l Nominal Marine water</td>
<td>72 hours</td>
<td>(growth rate)</td>
<td>Based on Acetate ion</td>
</tr>
<tr>
<td></td>
<td>OECD 203</td>
<td>Fish</td>
<td>Acute LC50 &gt;300.82 mg/l Nominal Fresh water</td>
<td>96 hours</td>
<td>Mortality</td>
<td>Based on Acetate ion</td>
</tr>
<tr>
<td></td>
<td>not guideline</td>
<td>Micro-organism</td>
<td>Acute NOEC 850 mg/l Nominal Fresh water</td>
<td>16 hours</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>ISO 10253</td>
<td>Algae</td>
<td>Acute NOEC 300.82 mg/l Nominal Marine water</td>
<td>72 hours</td>
<td>(growth rate)</td>
<td>Based on Acetate ion</td>
</tr>
</tbody>
</table>

Environmental hazards
Not classified as dangerous

12.2 Persistence and degradability

Readily biodegradable

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test authority / Test number</th>
<th>Result - Exposure</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid.</td>
<td>not guideline</td>
<td>96 % - Readily - 20 days</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>not guideline</td>
<td>50 % - 26.7 days</td>
<td>Phototransformation in Air</td>
</tr>
<tr>
<td></td>
<td>not guideline</td>
<td>50 % - 2 days</td>
<td>Biodegradation in Soil</td>
</tr>
</tbody>
</table>

12.3 Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogPow</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid.</td>
<td>-0.17</td>
<td>3.16</td>
<td>low</td>
</tr>
</tbody>
</table>

12.4 Mobility in soil

Soil/water partition coefficient (Koc)
Not available.

Mobility
This product may move with surface or groundwater flows because its water solubility is: 100% Miscible in water.

12.5 Results of PBT and vPvB assessment

PBT
No.

vPvB
No.

12.6 Other adverse effects

No known significant effects or critical hazards.
SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal
The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers.

Hazardous waste

Packaging

Methods of disposal
Where possible, arrange for product to be recycled. Dispose of via an authorised person/licensed waste disposal contractor in accordance with local regulations.

Special precautions
This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Empty containers represent a fire hazard as they may contain flammable product residues and vapour. Never weld, solder or braze empty containers. Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

<table>
<thead>
<tr>
<th>ADR/RID</th>
<th>ADN/ADNR</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1 UN number</td>
<td>UN 2789</td>
<td>UN 2789</td>
<td>UN 2789</td>
</tr>
<tr>
<td>14.2 UN proper shipping name</td>
<td>Acetic acid, glacial or Acetic acid solution, more than 80 per cent acid, by mass acid solution</td>
<td>Acetic acid, glacial or Acetic acid solution, more than 80 per cent acid, by mass acid solution</td>
<td>Acetic acid, glacial or Acetic acid solution, more than 80 per cent acid, by mass acid solution</td>
</tr>
<tr>
<td>14.3 Transport hazard class(es)</td>
<td>8 (3)</td>
<td>8 (3)</td>
<td>8 (3)</td>
</tr>
<tr>
<td>14.4 Packing group</td>
<td>II</td>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>14.5 Environmental hazards</td>
<td>No.</td>
<td>No.</td>
<td>No.</td>
</tr>
<tr>
<td>14.6 Special precautions for user</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional information</th>
<th>Hazard identification number</th>
<th>Remarks</th>
<th>Emergency schedules (EmS)</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>83</td>
<td>Table C Danger: 8 + 3</td>
<td>F-E, S-C</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

UK Emergency Action Code: 2P
ADR/RID Classification code: CF1
ADN/ADNR Classification code: CF1

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

Proper shipping name | Acetic acid.
Ship type | 3
Pollution category | Z

SECTION 15: Regulatory information

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

EU Regulation (EC) No. 1907/2006 (REACH)
Annex XIV - List of substances subject to authorisation
Substances of very high concern
None of the components are listed.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Other regulations

REACH Status

The company, as identified in Section 1, sells this product in the EU in compliance with the current requirements of REACH.

United States inventory (TSCA 8b)

All components are listed or exempted.

Australia inventory (AICS)

All components are listed or exempted.

Canada inventory

All components are listed or exempted.

China inventory (IECSC)

All components are listed or exempted.

Japan inventory (ENCS)

All components are listed or exempted.

Korea inventory (KECI)

All components are listed or exempted.

Philippines inventory (PICCS)

All components are listed or exempted.

15.2 Chemical Safety Assessment

Complete.

SECTION 16: Other information

Abbreviations and acronyms

ADN/ADNR = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS = Chemical Abstracts Service
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
CSA = Chemical Safety Assessment
CSR = Chemical Safety Report
DNEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
DPD = Dangerous Preparations Directive [1999/45/EC]
DSD = Dangerous Substances Directive [87/548/EEC]
EINECS = European Inventory of Existing Commercial chemical Substances
ES = Exposure Scenario
EUH statement = CLP-specific Hazard statement
EWC = European Waste Catalogue
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
OECD = Organisation for Economic Co-operation and Development
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
RRN = REACH Registration Number
SADT = Self-Accelerating Decomposition Temperature
SVHC = Substances of Very High Concern
STOT-RE = Specific Target Organ Toxicity - Repeated Exposure
STOT-SE = Specific Target Organ Toxicity - Single Exposure
TWA = Time weighted average
UN = United Nations
UVCB = Complex hydrocarbon substance
VOC = Volatile Organic Compound
vPvB = Very Persistent and Very Bioaccumulative

Full text of abbreviated H statements

H226 Flammable liquid and vapour.
H314 Causes severe skin burns and eye damage.

Full text of classifications [CLP/GHS]

Flam. Liq. 3, H226 FLAMMABLE LIQUIDS - Category 3
Skin Corr. 1A, H314 SKIN CORROSION/IRRITATION - Category 1A

Full text of abbreviated R phrases

R10- Flammable.
R35- Causes severe burns.
C - Corrosive

Full text of classifications [DSD/DPD]

History

Date of issue/ Date of revision

11/02/2011.

Date of previous issue

No previous validation.

Prepared by

Product Stewardship
Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from us.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken.
Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

**Product definition**: Mono-constituent substance

**Code**: 0000001037

**Product name**: Acetic Acid

Section 1: Title

**Short title of the exposure scenario**: Acetic Acid Distribution of Substance - Industrial

**List of use descriptors**

- **Identified use name**: Distribution of substance
- **Process Category**: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC09, PROC15
- **Sector of end use**: SU01, SU02a, SU02b, SU03, SU04, SU05, SU06a, SU06b, SU07
- **Subsequent service life relevant for that use**: No.

**Environmental Release Category**: ERC01, ERC02

**Processes and activities covered by the exposure scenario**: Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.

**Assessment Method**: See Section 3

Section 2: Operational conditions and risk management measures

**Section 2.1 Control of worker exposure**

**Concentration of substance in product**: Covers daily exposures up to 8 hours (unless stated differently).

**Physical state**: Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

**Amounts used**: Not applicable.

**Frequency and duration of use**: Covers daily exposures up to 8 hours (unless stated differently).

**Human factors not influenced by risk management**: Not applicable.

**Other operational conditions affecting worker exposure**: Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

**Contribution scenarios: Operational conditions and risk management measures**

General exposures (closed systems) Use in contained batch processes: Handle substance within a closed system. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour.

General exposures (closed systems) Batch process with sample collection: Provide extract ventilation to points where emissions occur.

Process sampling: Sample via a closed loop or other system to avoid exposure.

Laboratory activities: Handle in a fume cupboard or under extract ventilation.

Bulk transfers (closed systems): Clear transfer lines prior to de-coupling. Provide extract ventilation to points where emissions occur, or if above technical/organisational control measures are not feasible, then adopt following PPE: Wear a respirator conforming to EN140 with Type A filter or better. and Wear suitable gloves tested to EN374.

Bulk transfers (open systems): Provide extract ventilation to points where emissions occur, or if above technical/organisational control measures are not feasible, then adopt following PPE: Wear a respirator conforming to EN140 with Type A filter or better. and Wear suitable gloves tested to EN374.

Drum and small package filling: Provide extract ventilation to points where emissions occur.

Equipment cleaning and maintenance: Drain down and flush system prior to equipment break-in or maintenance. Wear suitable gloves tested to EN374.

Storage With occasional controlled exposure: Store substance within a closed system. Locate bulk storage outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Section 2.2: Control of environmental exposure
In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was identified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary.

Section 3: Exposure estimation

<table>
<thead>
<tr>
<th>Exposure estimation and reference to its source - Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure assessment (environment):</td>
</tr>
<tr>
<td>No exposure estimation and risk characterization required</td>
</tr>
<tr>
<td>Exposure estimation:</td>
</tr>
<tr>
<td>Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure estimation and reference to its source - Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure assessment (human):</td>
</tr>
<tr>
<td>When the recommended risk management measures (RMMs) and</td>
</tr>
<tr>
<td>operational conditions (OCs) are observed, exposures are</td>
</tr>
<tr>
<td>not expected to exceed the predicted DNELs and the resulting</td>
</tr>
<tr>
<td>risk characterisation ratios are expected to be less than 1.</td>
</tr>
<tr>
<td>Exposure estimation:</td>
</tr>
<tr>
<td>Not available.</td>
</tr>
</tbody>
</table>

Section 4: Guidance to check compliance with the exposure scenario

<table>
<thead>
<tr>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>No exposure estimation and risk characterization required</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirm that RMMs and OCs are as described or of equivalent efficiency.</td>
</tr>
</tbody>
</table>
Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition: Mono-constituent substance
Code: 0000001037
Product name: Acetic Acid

List of use descriptors

Identified use name: Formulation and (re)packing of substances and mixtures
Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC14, PROC15
Sector of end use: SU03, SU10
Subsequent service life relevant for that use: No.
Environmental Release Category: ERC02

Processes and activities covered by the exposure scenario

Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

Assessment Method

See Section 3

Section 1: Title

Short title of the exposure scenario: Acetic Acid Formulation and (Re)packaging of Substances and Mixtures - Industrial

List of use descriptors

Section 2: Operational conditions and risk management measures

Section 2.1 Control of worker exposure

Concentration of substance in product: Covers percentage substance in the product up to 100% (unless stated differently).
Physical state: Liquid, vapour pressure > 10 kPa at STP.
Amounts used: Not applicable.
Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management: Not applicable.
Other operational conditions affecting worker exposure: Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

Contributing scenarios: Operational conditions and risk management measures

General exposures (closed systems): Handle substance within a closed system.

General exposures (closed systems) with sample collection With occasional controlled exposure: Handle substance within a closed system. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

General exposures (closed systems) Use in contained batch processes: Handle substance within a closed system. Provide extract ventilation to points where emissions occur.

General exposures (open systems) Batch process with sample collection With potential for aerosol generation: Provide extract ventilation to points where emissions occur.

Batch processes at elevated temperatures: Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 1 hour.

Process sampling: Sample via a closed loop or other system to avoid exposure.
Laboratory activities: Handle in a fume cupboard or under extract ventilation.
Bulk transfers: Ensure material transfers are under containment or extract ventilation.
Mixing operations (open systems) With potential for aerosol generation: Provide extract ventilation to points where emissions occur.
Manual Transfer from/pouring from containers: Provide extract ventilation to points where emissions occur.
Drum/batch transfers: Provide extract ventilation to points where emissions occur.
Production of preparation or articles by tablleting, compression, extrusion or pelletisation: Provide extract ventilation to points where emissions occur.
Drum and small package filling: Ensure material transfers are under containment or extract ventilation.
Equipment cleaning and maintenance: Drain down and flush system prior to equipment break-in or maintenance. Wear suitable gloves tested to EN374.
Storage Product sampling: Locate bulk storage outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Acetic Acid

Acetic Acid Formulation and (Re)packaging of Substances and Mixtures - Industrial

Date of issue/Date of revision: ES Revision date) 14/33
Section 2.2: Control of environmental exposure

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was indentified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary.

Section 3: Exposure estimation

### Exposure estimation and reference to its source - Environment

<table>
<thead>
<tr>
<th>Exposure assessment (environment):</th>
<th>No exposure estimation and risk characterization required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure estimation:</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

### Exposure estimation and reference to its source - Workers

<table>
<thead>
<tr>
<th>Exposure assessment (human):</th>
<th>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less then 1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure estimation:</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

Section 4: Guidance to check compliance with the exposure scenario

<table>
<thead>
<tr>
<th>Environment</th>
<th>No exposure estimation and risk characterization required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>Confirm that RMMs and OCs are as described or of equivalent efficiency.</td>
</tr>
</tbody>
</table>
Identification of the substance or mixture

Product definition: Mono-constituent substance
Code: 0000001037
Product name: Acetic Acid

Section 1: Title

Short title of the exposure scenario: Acetic Acid Manufacture of Substance - Industrial
List of use descriptors:
- Identified use name: Manufacture of the substance or use as an intermediate or a process chemical or extraction agent.
- Process Category: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC15
- Sector of end use: SU03, SU08, SU09
- Subsequent service life relevant for that use: No.
- Environmental Release Category: ERC01, ERC04, ERC06a

Processes and activities covered by the exposure scenario: Manufacture of the substance or use as an intermediate or a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

Assessment Method: See Section 3

Section 2: Operational conditions and risk management measures

Section 2.1 Control of worker exposure

Concentration of substance in product: Covers daily exposures up to 8 hours (unless stated differently).
Physical state: Liquid, vapour pressure > 10 kPa at STP.
Amounts used: Not applicable.
Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management: Not applicable.
Other operational conditions affecting worker exposure: Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

Contributing scenarios: Operational conditions and risk management measures

General exposures (closed systems): Handle substance within a closed system.
General exposures (closed systems) with sample collection: With occasional controlled exposure: Handle substance within a closed system. Ensure material transfers are under containment or extract ventilation.
General exposures (closed systems) Use in contained batch processes: Handle substance within a closed system. Ensure material transfers are under containment or extract ventilation.
General exposures (open systems) Batch process with sample collection: Ensure material transfers are under containment or extract ventilation.
Process sampling: Ensure material transfers are under containment or extract ventilation.
Laboratory activities: Handle in a fume cupboard or under extract ventilation.
Bulk transfers (open systems) With potential for aerosol generation: Ensure material transfers are under containment or extract ventilation.
Bulk transfers (closed systems): Ensure material transfers are under containment or extract ventilation.
Equipment cleaning and maintenance: Drain down and flush system prior to equipment break-in or maintenance. Wear suitable gloves tested to EN374.
Storage: Product sampling: Store substance within a closed system. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Section 2.2: Control of environmental exposure

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was identified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary.
Section 3: Exposure estimation

<table>
<thead>
<tr>
<th>Exposure estimation and reference to its source - Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure assessment (environment):</td>
</tr>
<tr>
<td>When the recommended risk management measures (RMMs) and</td>
</tr>
<tr>
<td>operational conditions (OCs) are observed, exposures are</td>
</tr>
<tr>
<td>not expected to exceed the predicted PNECs and the resulting</td>
</tr>
<tr>
<td>risk characterisation ratios are expected to be less then 1.</td>
</tr>
<tr>
<td>Exposure estimation:</td>
</tr>
<tr>
<td>Not available.</td>
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</tbody>
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<table>
<thead>
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<tr>
<td>operational conditions (OCs) are observed, exposures are</td>
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<tr>
<td>not expected to exceed the predicted DNELs and the resulting</td>
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<td>risk characterisation ratios are expected to be less then 1.</td>
</tr>
<tr>
<td>Exposure estimation:</td>
</tr>
<tr>
<td>Not available.</td>
</tr>
</tbody>
</table>

Section 4: Guidance to check compliance with the exposure scenario

<table>
<thead>
<tr>
<th>Environment</th>
<th>No exposure estimation and risk characterization required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>Confirm that RMMs and OCs are as described or of equivalent</td>
</tr>
<tr>
<td></td>
<td>efficiency.</td>
</tr>
</tbody>
</table>
Annex to the extended Safety Data Sheet (eSDS)

Section 1: Title

Short title of the exposure scenario: Acetic Acid Use of Substance in Agrochemicals - Professional
List of use descriptors:

- Process Category: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC15
- Sector of end use: SU03, SU10
- Subsequent service life relevant for that use: No.
- Environmental Release Category: ERC01

Processes and activities covered by the exposure scenario:

- Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal.

Assessment Method: See Section 3

Section 2: Operational conditions and risk management measures

Section 2.1 Control of worker exposure

- Concentration of substance in product:
  Covers percentage substance in the product up to 100% (unless stated differently).
- Physical state:
  Liquid, vapour pressure > 10 kPa at STP.
- Amounts used:
  Not applicable.
- Frequency and duration of use:
  Covers daily exposures up to 8 hours (unless stated differently).
- Human factors not influenced by risk management:
  Not applicable.
- Other operational conditions affecting worker exposure:
  Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

Contributing scenarios: Operational conditions and risk management measures

- Transfer from/pouring from containers: Use drum pumps or carefully pour from container. Avoid carrying out operation for more than 4 hours. Wear suitable gloves tested to EN374.
- Mixing in containers: Ensure material transfers are under containment or extract ventilation. Avoid carrying out operation for more than 4 hours. Wear suitable gloves tested to EN374.
- Spraying/fogging by manual application: Limit the substance content in the product to 5%. Avoid carrying out activities involving exposure for more than 1 hour. Wear chemical-resistant gloves (tested to EN374) in combination with ‘basic’ employee training. Wear a respirator conforming to EN140 with Type A filter or better.
- Spraying/fogging by machine application: Limit the substance content in the product to 5%. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 (professional use) Avoid carrying out operation for more than 4 hours. Wear suitable gloves tested to EN374.
- Ad hoc manual application via trigger sprays, dipping etc.: Limit the substance content in the product to 5%. Avoid carrying out activities involving exposure for more than 1 hour.
- Clean-down and maintenance of equipment Non-dedicated facility: Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5%. Avoid carrying out operation for more than 4 hours. Retain drain-downs in sealed storage pending disposal or for subsequent recycle.
- Disposal of waste Non-dedicated facility: Limit the substance content in the product to 5%. Ensure operation is undertaken outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour.
- Storage: Ensure operation is undertaken outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Store substance within a closed system.
- Storage Product sampling: Store substance within a closed system. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 4 hours.
Section 2.2: Control of environmental exposure
In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was identified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary.

Section 3: Exposure estimation

<table>
<thead>
<tr>
<th>Exposure estimation and reference to its source - Environment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure assessment (environment):</td>
<td>No exposure estimation and risk characterization required</td>
</tr>
<tr>
<td>Exposure estimation:</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure estimation and reference to its source - Workers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure assessment (human):</td>
<td>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less then 1.</td>
</tr>
<tr>
<td>Exposure estimation:</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

Section 4: Guidance to check compliance with the exposure scenario

| Environment | No exposure estimation and risk characterization required |
| Health      | Confirm that RMMs and OCs are as described or of equivalent efficiency. |
### Identification of the substance or mixture

<table>
<thead>
<tr>
<th>Code</th>
<th>Product name</th>
<th>Product definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000001037</td>
<td>Acetic Acid</td>
<td>Mono-constituent substance</td>
</tr>
</tbody>
</table>

### Section 1: Title

**Short title of the exposure scenario:** Acetic Acid Use of Substance in Cleaning Agents - Industrial

**List of use descriptors:**
- Identified use name: Use in Cleaning Agents - Industrial
- Process Category: PROC02, PROC03, PROC04, PROC07, PROC08a, PROC08b, PROC10, PROC13
- Sector of end use: SU03, SU05, SU06a, SU06b
- Subsequent service life relevant for that use: No.
- Environmental Release Category: ERC04

**Processes and activities covered by the exposure scenario:**
Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.

**Assessment Method:** See Section 3

### Section 2: Operational conditions and risk management measures

#### Section 2.1: Control of worker exposure

<table>
<thead>
<tr>
<th>Physical state:</th>
<th>Concentration of substance in product:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapour pressure &gt; 10 kPa at STP.</td>
<td>Covers percentage substance in the product up to 100% (unless stated differently).</td>
</tr>
</tbody>
</table>

**Amounts used:** Not applicable.

**Frequency and duration of use:** Covers daily exposures up to 8 hours (unless stated differently).

**Human factors not influenced by risk management:** Not applicable.

**Other operational conditions affecting worker exposure:** Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

#### Contributing scenarios: Operational conditions and risk management measures

- **Bulk transfers:** Ensure material transfers are under containment or extract ventilation.
- **Automated process with (semi) closed systems Use in contained systems:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- **Automated process with (semi) closed systems Use in contained systems Drum/batch transfers Use in contained systems:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour.
- **Application of cleaning products in closed systems:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- **Filling/preparation of equipment from drums or containers. Dedicated facility:** Ensure material transfers are under containment or extract ventilation. Use in contained batch processes Treatment by heating: Ensure material transfers are under containment or extract ventilation. Avoid carrying out operation for more than 4 hours.
- **Degreasing small objects in cleaning station:** Provide extract ventilation to points where emissions occur.
- **Cleaning with low-pressure washers:** Limit the substance content in the product to 5%. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.
- **Cleaning with high-pressure washers:** Limit the substance content in the product to 5%. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). or Ensure operation is undertaken outdoors. Avoid carrying out activities involving exposure for more than 1 hour. Wear suitable gloves tested to EN374.
- **Manual Surfaces Cleaning no spraying:** Limit the substance content in the product to 5%. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). or Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 4 hours.
- **Equipment cleaning and maintenance:** Drain down and flush system prior to equipment break-in or maintenance. Wear suitable gloves tested to EN374.
- **Storage With occasional controlled exposure:** Locate bulk storage outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Section 2.2: Control of environmental exposure
In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was identified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary.

Section 3: Exposure estimation

| Exposure estimation and reference to its source - Environment | | |
|---|---|
| Exposure assessment (environment): | No exposure estimation and risk characterization required |
| Exposure estimation: | Not available. |

| Exposure estimation and reference to its source - Workers | | |
|---|---|
| Exposure assessment (human): | When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less then 1. |
| Exposure estimation: | Not available. |

Section 4: Guidance to check compliance with the exposure scenario

| Environment | No exposure estimation and risk characterization required |
| Health | Confirm that RMMs and OCs are as described or of equivalent efficiency. |
Annex to the extended Safety Data Sheet (eSDS)

**Identification of the substance or mixture**

- **Product definition**: Mono-constituent substance
- **Code**: 0000001037
- **Product name**: Acetic Acid

**Section 1: Title**

- **Short title of the exposure scenario**: Acetic Acid Use of Substance in Cleaning Agents - Professional
- **List of use descriptors**:
  - **Identified use name**: Use in Cleaning Agents - Professional
  - **Process Category**: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC10, PROC11, PROC13
  - **Sector of end use**: SU22
  - **Subsequent service life relevant for that use**: No.
  - **Environmental Release Category**: ERC08a, ERC08d

**Processes and activities covered by the exposure scenario**

Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand).

**Assessment Method**

See Section 3

---

**Section 2: Operational conditions and risk management measures**

**Section 2.1 Control of worker exposure**

- **Concentration of substance in product**: Covers percentage substance in the product up to 100% (unless stated differently).
- **Physical state**: Liquid, vapour pressure > 10 kPa at STP.
- **Amounts used**: Not applicable.
- **Frequency and duration of use**: Covers daily exposures up to 8 hours (unless stated differently).
- **Human factors not influenced by risk management**: Not applicable.
- **Other operational conditions affecting worker exposure**: Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

**Contributing scenarios: Operational conditions and risk management measures**

- **Filling/preparation of equipment from drums or containers. Dedicated facility**: Limit the substance content in the product to 25%. Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour) Wear suitable gloves tested to EN374.

- **Automated process with (semi) closed systems Use in contained systems**: Limit the substance content in the product to 25%. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear suitable gloves tested to EN374.

- **Automated process with (semi) closed systems Drum/batch transfers**: Limit the substance content in the product to 25%. Avoid carrying out operation for more than 4 hours. Wear suitable gloves tested to EN374.

- **Semi-automated process, (e.g.: Semi-automatic application of floor care and maintenance products)**: Limit the substance content in the product to 25%. Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour) Wear suitable gloves tested to EN374.

- **Filling/preparation of equipment from drums or containers. Outdoor**: Limit the substance content in the product to 25%. Ensure operation is undertaken outdoors. Avoid carrying out activities involving exposure for more than 1 hour. Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training.

- **Manual Cleaning Surfaces Dipping, immersion and pouring**: Limit the substance content in the product to 5%. Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour) Wear suitable gloves tested to EN374.

- **Cleaning with low-pressure washers Rolling, Brushing no spraying**: Limit the substance content in the product to 5%. Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour) Wear suitable gloves tested to EN374.

- **Cleaning with high-pressure washers Spraying Indoor**: Limit the substance content in the product to 5%. Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour) Wear suitable gloves tested to EN374. Wear a respirator conforming to EN140 with Type A filter or better.

- **Cleaning with high-pressure washers Spraying Outdoor**: Limit the substance content in the product to 5%. Ensure operation is undertaken outdoors. Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear a respirator conforming to EN140 with Type A filter or better.

- **Manual Surfaces Cleaning Spraying**: Limit the substance content in the product to 5%. Ensure operation is undertaken outdoors. Or provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours. Wear suitable gloves tested to EN374.

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Acetic Acid Use of Substance in Cleaning Agents - Professional

**Date of issue/Date of revision**: ES Revision date) 22/33
Ad hoc manual application via trigger sprays, dipping etc. Rolling, Brushing: Limit the substance content in the product to 5%. Provide extract ventilation to points where emissions occur.

Application of cleaning products in closed systems Outdoor.: Limit the substance content in the product to 5%. Ensure operation is undertaken outdoors.

Cleaning of medical devices: Limit the substance content in the product to 25%. Provide extract ventilation to points where emissions occur.

Equipment cleaning and maintenance: Limit the substance content in the product to 25%. Drain down and flush system prior to equipment break-in or maintenance. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear suitable gloves tested to EN374.

Storage With occasional controlled exposure: Limit the substance content in the product to 25%. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). or Ensure operation is undertaken outdoors.

Section 2.2: Control of environmental exposure

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was indentified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary.

Section 3: Exposure estimation

<table>
<thead>
<tr>
<th>Exposure estimation and reference to its source - Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure assessment (environment): No exposure estimation and risk characterization required</td>
</tr>
<tr>
<td>Exposure estimation: Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure estimation and reference to its source - Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure assessment (human): When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less then 1.</td>
</tr>
<tr>
<td>Exposure estimation: Not available.</td>
</tr>
</tbody>
</table>

Section 4: Guidance to check compliance with the exposure scenario

<table>
<thead>
<tr>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>No exposure estimation and risk characterization required</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirm that RMMs and OCs are as described or of equivalent efficiency.</td>
</tr>
</tbody>
</table>
Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition: Mono-constituent substance
Code: 0000001037
Product name: Acetic Acid

Section 1: Title
Short title of the exposure scenario: Acetic Acid Use of Substance in Laboratory Reagents - Industrial
List of use descriptors:
- Identified use name: Use as laboratory reagent - Industrial
- Process Category: PROC10, PROC15
- Sector of end use: SU03, SU10
- Subsequent service life relevant for that use: No.
- Environmental Release Category: ERC04

Processes and activities covered by the exposure scenario:
- Use of the substance within laboratory settings, including material transfers and equipment cleaning.
Assessment Method:
- See Section 3

Section 2: Operational conditions and risk management measures

Section 2.1 Control of worker exposure
- Concentration of substance in product: Covers percentage substance in the product up to 100% (unless stated differently).
- Physical state: Liquid, vapour pressure > 10 kPa at STP.
- Amounts used: Not applicable.
- Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).
- Human factors not influenced by risk management: Not applicable.
- Other operational conditions affecting worker exposure: Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

Contributing scenarios: Operational conditions and risk management measures
- Laboratory activities small scale Handling small quantities (<1000ml) for more than 4 hours/days - inside fume cupboard: Handle in a fume cupboard or under extract ventilation.
- Cleaning Rolling, Brushing Vessel and container cleaning Cleaning equipment, glassware etc under general ventilation for 15 min - 1 hour/day: Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour) Avoid carrying out activities involving exposure for more than 1 hour. Wear suitable gloves tested to EN374.

Section 2.2: Control of environmental exposure
In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was indentified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary.

Section 3: Exposure estimation
Exposure estimation and reference to its source - Environment
- Exposure assessment (environment): No exposure estimation and risk characterization required
- Exposure estimation: Not available.
Exposure estimation and reference to its source - Workers
- Exposure assessment (human): When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less then 1.
- Exposure estimation: Not available.

Section 4: Guidance to check compliance with the exposure scenario
- Environment: No exposure estimation and risk characterization required

Acetic Acid
Acetic Acid Use of Substance in Laboratory Reagents - Industrial
Date of issue/Date of revision: ES Revision date) 24/33
Health

Confirm that RMMs and OCs are as described or of equivalent efficiency.
### Identification of the substance or mixture

<table>
<thead>
<tr>
<th>Product definition</th>
<th>Mono-constituent substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
<td>0000001037</td>
</tr>
<tr>
<td>Product name</td>
<td>Acetic Acid</td>
</tr>
</tbody>
</table>

### Section 1: Title

<table>
<thead>
<tr>
<th>Short title of the exposure scenario</th>
<th>Acetic Acid Use of Substance in Laboratory Reagents - Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of use descriptors</td>
<td>Identified use name: Use as laboratory reagent - Professional</td>
</tr>
<tr>
<td></td>
<td>Process Category: PROC10, PROC15</td>
</tr>
<tr>
<td></td>
<td>Sector of end use: SU22</td>
</tr>
<tr>
<td></td>
<td>Subsequent service life relevant for that use: No.</td>
</tr>
<tr>
<td></td>
<td>Environmental Release Category: ERC08a</td>
</tr>
</tbody>
</table>

### Processes and activities covered by the exposure scenario

- Use of small quantities within laboratory settings, including material transfers and equipment cleaning.

### Assessment Method

See Section 3

---

### Section 2: Operational conditions and risk management measures

#### Section 2.1 Control of worker exposure

| Concentration of substance in product: | Covers percentage substance in the product up to 100% (unless stated differently). |
| Physical state:                       | Liquid, vapour pressure > 10 kPa at STP. |
| Amounts used:                         | Not applicable. |
| Frequency and duration of use:        | Covers daily exposures up to 8 hours (unless stated differently). |
| Human factors not influenced by risk management: | Not applicable. |
| Other operational conditions affecting worker exposure: | Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented. |

#### Contributing scenarios: Operational conditions and risk management measures

- Laboratory activities small scale Fume-cupboard Activity Handling small quantities (<1000ml) for more then 4 hours/days - inside fume cupboard: Hand in a fume cupboard or under extract ventilation. Provide extract ventilation to points where emissions occur.
- Cleaning Rolling, Brushing Vessel and container cleaning Cleaning equipment, glassware etc under general ventilation for 15 min - 1 hour/day: Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour) Avoid carrying out activities involving exposure for more than 1 hour. Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training.

---

### Section 2.2: Control of environmental exposure

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/vPvB Assessment) no hazard was indentified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary.

---

### Section 3: Exposure estimation

| Exposure estimation and reference to its source - Environment |
| Exposure assessment (environment):                           | When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less then 1. |
| Exposure estimation:                                         | Not available. |

| Exposure estimation and reference to its source - Workers    |
| Exposure assessment (human):                                 | When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less then 1. |
| Exposure estimation:                                         | Not available. |

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### Section 4: Guidance to check compliance with the exposure scenario
<table>
<thead>
<tr>
<th>Environment</th>
<th>No exposure estimation and risk characterization required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>Confirm that RMMs and OCs are as described or of equivalent efficiency.</td>
</tr>
</tbody>
</table>
Annex to the extended Safety Data Sheet (eSDS)

### Identification of the substance or mixture

<table>
<thead>
<tr>
<th>Product definition</th>
<th>Mono-constituent substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
<td>000001037</td>
</tr>
<tr>
<td>Product name</td>
<td>Acetic Acid</td>
</tr>
</tbody>
</table>

### Section 1: Title

#### Short title of the exposure scenario
Acetic Acid Use of Substance in Oil Field Drilling- Industrial

#### List of use descriptors

- Identified use name: Use in Oil and Gas field drilling and production operations
- Process Category: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC15
- Sector of end use: SU03, SU10
- Subsequent service life relevant for that use: No.
- Environmental Release Category: ERC01

#### Processes and activities covered by the exposure scenario
Manufacture of the substance or use as an intermediate or a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

#### Assessment Method
See Section 3

### Section 2: Operational conditions and risk management measures

#### Section 2.1 Control of worker exposure

| Concentration of substance in product: | Covers percentage substance in the product up to 100% (unless stated differently). |
| Physical state: | Liquid, vapour pressure > 10 kPa at STP. |
| Amounts used: | Not applicable. |
| Frequency and duration of use: | Covers daily exposures up to 8 hours (unless stated differently). |
| Human factors not influenced by risk management: | Not applicable. |

#### Other operational conditions affecting worker exposure:
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

#### Contributing scenarios: Operational conditions and risk management measures

**Bulk transfers:** Ensure material transfers are under containment or extract ventilation.

- Filling/preparation of equipment from drums or containers: Use drum pumps. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear suitable gloves tested to EN374.
- Drill floor operations: Limit the substance content in the product to 25%. Ensure operation is undertaken outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.
- Drill floor operations: Limit the substance content in the product to 25%. Ensure operation is undertaken outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear suitable gloves tested to EN374.
- Operation of solids filtering equipment - vapour exposures: Ensure material transfers are under containment or extract ventilation.
- Operation of solids filtering equipment - aerosol exposures: Ensure material transfers are under containment or extract ventilation.
- Operation of solids filtering equipment: Ensure material transfers are under containment or extract ventilation.
- Treatment and disposal of filtered solids: Ensure material transfers are under containment or extract ventilation.
- Process sampling: Use a sampling system designed to control exposure. Ensure operation is undertaken outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for more than 15 minutes.
- General exposures (closed systems): Handle substance within a closed system.
- Pouring from small containers: Ensure operation is undertaken outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for more than 15 minutes. Wear suitable gloves tested to EN374.
- General exposures (open systems): Ensure operation is undertaken outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours. Wear suitable gloves tested to EN374.
- Equipment cleaning and maintenance: Ensure operation is undertaken outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for
more than 1 hour. Wear suitable gloves tested to EN374.

Batch process: Handle substance within a closed system.

Batch process Product sampling: Handle substance within a closed system. Provide extract ventilation to points where emissions occur.

### Section 2.2: Control of environmental exposure

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was indentified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary.

### Section 3: Exposure estimation

| Exposure estimation and reference to its source - Environment |  
|--------------------------------------------------------------|--------------------------------------------------|
| Exposure assessment (environment):                           | No exposure estimation and risk characterization required |
| Exposure estimation:                                         | Not available.                                   |

| Exposure estimation and reference to its source - Workers    |  
|--------------------------------------------------------------|--------------------------------------------------|
| Exposure assessment (human):                                 | When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1. |
| Exposure estimation:                                         | Not available.                                   |

### Section 4: Guidance to check compliance with the exposure scenario

| Environment |  
|-------------|--------------------------------------------------|
|             | No exposure estimation and risk characterization required |

| Health      |  
|-------------|--------------------------------------------------|
|             | Confirm that RMMs and OCs are as described or of equivalent efficiency. |
Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition: Mono-constituent substance
Code: 0000001037
Product name: Acetic Acid

Section 1: Title
Short title of the exposure scenario: Acetic Acid Use of Substance in Water Treatment - Industrial

List of use descriptors
Identified use name: Water treatment chemicals - Industrial
Process Category: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC15
Sector of end use: SU03, SU08, SU09
Subsequent service life relevant for that use: No.
Environmental Release Category: ERC01

Processes and activities covered by the exposure scenario: Covers the use of the substance for the treatment of water at industrial facilities in open and closed systems.
Assessment Method: See Section 3

Section 2: Operational conditions and risk management measures

Section 2.1 Control of worker exposure
Concentration of substance in product: Covers percentage substance in the product up to 100% (unless stated differently).
Physical state: Liquid, vapour pressure > 10 kPa at STP.
Amounts used: Not applicable.
Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).
Human factors not influenced by risk management: Not applicable.
Other operational conditions affecting worker exposure: Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

Contributing scenarios: Operational conditions and risk management measures
Bulk transfers With occasional controlled exposure: Avoid carrying out operation for more than 4 hours.

Drum/batch transfers Dedicated facility: Use drum pumps. Avoid spillage when withdrawing pump. Avoid carrying out operation for more than 4 hours. Wear suitable gloves tested to EN374.

General exposures (closed systems) Batch process: Ensure operation is undertaken outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour.

General exposures (open systems): Ensure operation is undertaken outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours. Wear suitable gloves tested to EN374.

Pouring from small containers Treatment by dipping and pouring: Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Provide extract ventilation to points where emissions occur. Wear suitable gloves tested to EN374.

Equipment maintenance: Ensure operation is undertaken outdoors. or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Drain or remove substance from equipment prior to break-in or maintenance. Wear suitable gloves tested to EN374.

Storage: Store substance within a closed system.

Section 2.2: Control of environmental exposure
In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBfPvB Assessment) no hazard was indentified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary.
Section 3: Exposure estimation

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<tr>
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Section 4: Guidance to check compliance with the exposure scenario

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Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition: Mono-constituent substance
Code: 0000001037
Product name: Acetic Acid

Section 1: Title

Short title of the exposure scenario: Acetic Acid Use of Substance in Water Treatment - Professional
List of use descriptors:
- Identified use name: Water treatment chemicals - Professional
- Process Category: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC15
- Sector of end use: SU03, SU08, SU09
- Subsequent service life relevant for that use: No.
- Environmental Release Category: ERC01

Processes and activities covered by the exposure scenario: Covers the use of the substance for the treatment of water in open and closed systems.
Assessment Method: See Section 3

Section 2: Operational conditions and risk management measures

Section 2.1 Control of worker exposure

Concentration of substance in product: Covers percentage substance in the product up to 100% (unless stated differently).
Physical state: Liquid, vapour pressure > 10 kPa at STP.
Amounts used: Not applicable.
Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Not applicable.
Other operational conditions affecting worker exposure: Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

Contributing scenarios: Operational conditions and risk management measures

Drum/batch transfers: Dedicated facility: Use drum pumps. Ensure operation is undertaken outdoors, or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear suitable gloves tested to EN374.
General exposures (closed systems): Batch process: Ensure operation is undertaken outdoors, or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour.
General exposures (open systems): Ensure operation is undertaken outdoors, or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour. Wear suitable gloves tested to EN374.
Pouring from small containers: Treatment by dipping and pouring: Ensure operation is undertaken outdoors, or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours. Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training.
Equipment maintenance: Non-dedicated facility: Drain down and flush system prior to equipment break-in or maintenance. Ensure operation is undertaken outdoors, or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training.
Storage: Handle substance within a closed system.

Section 2.2: Control of environmental exposure

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