SECTION 1: IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY/UNDERTAKING.

1.1 Product identifier.

Product Name: Benzethonium chloride
Product Code: 117230
Chemical Name: Benzethonium chloride
CAS No: 121-54-0
EC No: 204-479-9
Registration No: N/D

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

For manufacturing, processing, laboratory or repacking use only

Uses advised against:
Uses other than those recommended.

1.3 Details of the supplier of the safety data sheet.

Company: DC FINE CHEMICALS Ltd.
Address: Hill Top, 88
City: NW11 6DY London (United Kingdom)
Telephone: +44 (20) 7586 6800
Fax: +44 (20) 7504 1701
E-mail: info@dcfinechemicals.com
Web: www.dcfinechemicals.com

1.4 Emergency telephone number: (Only available during office hours)

SECTION 2: HAZARDS IDENTIFICATION.

2.1 Classification of the substance.

In accordance with Regulation (EU) No 1272/2008:
   Acute Tox. 4 : Harmful if swallowed.
   Aquatic Chronic 1 : Very toxic to aquatic life with long lasting effects.
   Skin Corr. 1B : Causes severe skin burns and eye damage.

2.2 Label elements.

Labelling in accordance with Regulation (EU) No 1272/2008:

Pictograms:

Signal Word: Danger

H statements:
   H302 Harmful if swallowed.
   H314 Causes severe skin burns and eye damage.
   H410 Very toxic to aquatic life with long lasting effects.

P statements:
   P273 Avoid release to the environment.
   P280 Wear protective gloves/protective clothing/eye protection/face protection.
   P310 Immediately call a POISON CENTER/doctor.
   P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
   P301+P330+P311 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
   P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Contains:
Benzethonium chloride

2.3 Other hazards.
In normal use conditions and in its original form, the product itself does not involve any other risk for health and the environment. PBT Substance (Persistent, Bioaccumulative and Toxic) and vPvB (very Persistent and very Bioaccumulative).

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS.

3.1 Substances.
Chemical Name: [2] [3] Benzethonium chloride
CAS No: 121-54-0
CE No: 204-479-9
Registration No: N/D
[3] vPvB Substance (very Persistent and very Bioaccumulative).

3.2 Mixtures.
Not Applicable.

SECTION 4: FIRST AID MEASURES.

4.1 Description of first aid measures.
In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious.

Inhalation.
If breathing is irregular or stops, perform artificial respiration. Do not administer anything orally. If unconscious, place them in a suitable position and seek medical assistance.

Eye contact.
If wearing contact lenses, remove them. Wash eyes with plenty of clean and cool water for at least 10 minutes while pulling eyelids up, and seek medical assistance.

Skin contact.
Remove contaminated clothing. Wash skin vigorously with water and soap or a suitable skin cleaner. NEVER use solvents or thinners.

Ingestion.
If accidentally ingested, seek immediate medical attention. Keep calm. NEVER induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed.
Corrosive Product, contact with eyes or skin can cause burns; ingestion or inhalation can cause internal damage, if this occurs immediate medical assistance is required.

4.3 Indication of any immediate medical attention and special treatment needed.
In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious.

SECTION 5: FIREFIGHTING MEASURES.

5.1 Extinguishing media.
Recommended extinguishing methods.
Extinguisher powder or CO₂. In case of more serious fires, also alcohol-resistant foam and water spray. Do not use a direct stream of water to extinguish.

5.2 Special hazards arising from the substance.
Special risks.
Fire can cause thick, black smoke. As a result of thermal decomposition, dangerous products can form: carbon monoxide, carbon dioxide. Exposure to combustion or decomposition products can be harmful to your health.

5.3 Advice for firefighters.
Use water to cool tanks, cisterns, or containers close to the heat source or fire. Take wind direction into account. Prevent the products used to fight the fire from going into drains, sewers, or waterways.

Fire protection equipment.
According to the size of the fire, it may be necessary to use protective suits against the heat, individual breathing equipment, gloves, protective goggles or facemasks, and gloves.

SECTION 6: ACCIDENTAL RELEASE MEASURES.

6.1 Personal precautions, protective equipment and emergency procedures.
For exposure control and individual protection measures, see section 8.

6.2 Environmental precautions.
Product Dangerous for the environment, in case of large spills or if the product contaminates lakes, rivers, or sewers, inform the responsible authorities according to local legislation. Prevent the contamination of drains, surface or subterranean waters, and the ground.

6.3 Methods and material for containment and cleaning up.
The contaminated area should be immediately cleaned with an appropriate de-contaminator. Pour the decontaminator on the remains in an opened container and let it act various days until no further reaction is produced.

6.4 Reference to other sections.
For exposure control and individual protection measures, see section 8.
For later elimination of waste, follow the recommendations under section 13.

SECTION 7: HANDLING AND STORAGE.

7.1 Precautions for safe handling.
For personal protection, see section 8. Never use pressure to empty the containers. They are not pressure-resistant containers. In the application area, smoking, eating, and drinking must be prohibited. Follow legislation on occupational health and safety.
Keep the product in containers made of a material identical to the original.

7.2 Conditions for safe storage, including any incompatibilities.
Store according to local legislation. Observe indications on the label. Keep far away from ignition points. Keep away from oxidising agents and from highly acidic or alkaline materials. Do not smoke. Prevent the entry of non-authorised persons. Once the containers are open, they must be carefully closed and placed vertically to prevent spills.
Classification and threshold amount of storage in accordance with Annex I to Directive 2012/18/EU (SEVESO III):

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Lower-tier requirements</th>
<th>Upper-tier requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>ENVIRONMENTAL HAZARDS - Hazardous to the Aquatic Environment in Category Acute 1 or Chronic 1</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

7.3 Specific end use(s).

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION.

8.1 Control parameters.
The product does NOT contain substances with Professional Exposure Environmental Limit Values. The product does NOT contain substances with Biological Limit Values.
8.2 Exposure controls.

**Measures of a technical nature:**
Provide adequate ventilation, which can be achieved by using good local exhaust-ventilation and a good general exhaust system.

<table>
<thead>
<tr>
<th>Concentration:</th>
<th>100 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses:</td>
<td>For manufacturing, processing, laboratory or repacking use only</td>
</tr>
</tbody>
</table>

**Breathing protection:**
If the recommended technical measures are observed, no individual protection equipment is necessary.

**Hand protection:**
- **PPE:** Non-disposable protective gloves against chemicals.
- **Characteristics:** «CE» marking, category III. Check the list of chemicals for which the glove has been tested.
- **CEN standards:** EN 374-1, EN 374-2, EN 374-3, EN 420
- **Maintenance:** A schedule for the periodical replacement of gloves should be established in order to guarantee their replacement before pollutants permeate them. The use of contaminated gloves could be more dangerous than not using gloves, since the pollutant can gradually accumulate in the glove's material.
- **Observations:** They are to be replaced whenever tears, cracks or deformations are observed or when exterior dirt could reduce their strength.

<table>
<thead>
<tr>
<th>Material:</th>
<th>PVC (polyvinyl chloride)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakthrough time</td>
<td>&gt; 480</td>
</tr>
<tr>
<td>(min.):</td>
<td></td>
</tr>
<tr>
<td>Material thickness</td>
<td>0,35</td>
</tr>
</tbody>
</table>

**Eye protection:**
If the product is handled correctly, no individual protection equipment is necessary.

**Skin protection:**
- **PPE:** Chemical protective clothing
- **Characteristics:** «CE» marking, category III. Clothing should fit properly. The level of protection must be set according to a test parameter called BT (Breakthrough Time), which indicates how long it takes for the chemical to pass through the material.
- **CEN standards:** EN 464, EN 340, EN 943-1, EN 943-2, EN ISO 6529, EN ISO 6530, EN 13034
- **Maintenance:** In order to guarantee uniform protection, follow the washing and maintenance instructions provided by the manufacturer.
- **Observations:** The protective clothing's design should facilitate correct positioning, staying in place without moving for the period of use expected, bearing in mind environmental factors as well as any movement or position the user might adopt while carrying out the activity.

- **PPE:** Anti-static safety footwear against chemicals.
- **Characteristics:** «CE» marking, category III. Check the list of chemicals against which the footwear is resistant.
- **CEN standards:** EN ISO 13287, EN 13832-1, EN 13832-2, EN 13832-3, EN ISO 20344, EN ISO 20345
- **Maintenance:** For correct maintenance of this kind of safety footwear, it is necessary to observe the instructions specified by the manufacturer. The footwear should be replaced as soon as any sign of damage is observed.
- **Observations:** The footwear should be cleaned regularly and dried when damp, although it should not be placed too close to a source of heat in order to avoid any sharp changes in temperature.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES.**

**9.1 Information on basic physical and chemical properties.**
- Appearance: Solid
- Colour: N.A./N.A.
- Odour: N.A./N.A.
- Odour threshold: N.A./N.A.
- pH: 5,0-6,5 (1%, 20°C)
- Melting point: 166 °C
- Boiling Point: N.A./N.A.
- Flash point: N.A./N.A.
- Evaporation rate: N.A./N.A.
- Inflammability (solid, gas): N.A./N.A.
- Lower Explosive Limit: N.A./N.A.
- Upper Explosive Limit: N.A./N.A.
- Vapour pressure: N.A./N.A.
- Vapour density: N.A./N.A.
- Relative density: N.A./N.A.
Solubility: N.A./N.A.
Liposolubility: N.A./N.A.
Hydrosolubility: N.A./N.A.
Partition coefficient (n-octanol/water): 1,08 (log Pow)
Auto-ignition temperature: 380ºC
Decomposition temperature: 164ºC
Viscosity: N.A./N.A.
Explosive properties: N.A./N.A.
Oxidizing properties: N.A./N.A.
N.A./N.A. = Not Available/Not Applicable due to the nature of the product

9.2. Other information.

10.1 Reactivity.
The product does not present hazards by their reactivity.

10.2 Chemical stability.
Unstable in contact with:
- Bases.

10.3 Possibility of hazardous reactions.
Neutralization can occur on contact with bases.

10.4 Conditions to avoid.
- Avoid contact with bases.

10.5 Incompatible materials.
Avoid the following materials:
- Bases.

10.6 Hazardous decomposition products.
Depending on conditions of use, can be generated the following products:
- Corrosive vapors or gases.

SECTION 11: TOXICOLOGICAL INFORMATION.

11.1 Information on toxicological effects.
Repeated or prolonged contact with the product can cause the elimination of oil from the skin, giving rise to non-allergic contact dermatitis and absorption of the product through the skin.

Toxicological information.

<table>
<thead>
<tr>
<th>Name</th>
<th>Acute toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzethonium chloride</td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>DL50</td>
</tr>
<tr>
<td>Rat</td>
<td>295 mg/kg</td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
</tr>
</tbody>
</table>

a) acute toxicity;
Product classified:
Acute toxicity (Oral), Category 4: Harmful if swallowed.

b) skin corrosion/irritation;
Product classified:
Skin Corrosive, Category 1B: Causes severe skin burns and eye damage.

c) serious eye damage/irritation;
Not conclusive data for classification.
d) respiratory or skin sensitisation; 
Not conclusive data for classification.

e) germ cell mutagenicity; 
Not conclusive data for classification.

f) carcinogenicity; 
Not conclusive data for classification.

g) reproductive toxicity; 
Not conclusive data for classification.

h) STOT-single exposure; 
Not conclusive data for classification.

i) STOT-repeated exposure; 
Not conclusive data for classification.

j) aspiration hazard; 
Not conclusive data for classification.

SECTION 12: ECOLOGICAL INFORMATION.

12.1 Toxicity.

<table>
<thead>
<tr>
<th>Name</th>
<th>Ecotoxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type</td>
</tr>
<tr>
<td>Benzethonium chloride</td>
<td>Fish</td>
</tr>
<tr>
<td>CAS No: 121-54-0 EC No: 204-479-9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic plants</td>
</tr>
</tbody>
</table>

12.2 Persistence and degradability.
PBT Substance (Persistent, Bioaccumulative and Toxic) and vPvB (very Persistent and very Bioaccumulative).

12.3 Bioaccumulative potential.
Information about the bioaccumulation.

<table>
<thead>
<tr>
<th>Name</th>
<th>Bioaccumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Log Pow</td>
</tr>
<tr>
<td>Benzethonium chloride</td>
<td></td>
</tr>
<tr>
<td>N. CAS: 121-54-0 EC No: 204-479-9</td>
<td>1,08</td>
</tr>
</tbody>
</table>

12.4 Mobility in soil.
No information is available about the mobility in soil.
The product must not be allowed to go into sewers or waterways.
Prevent penetration into the ground.

12.5 Results of PBT and vPvB assessment.
PBT Substance (Persistent, Bioaccumulative and Toxic) and vPvB (very Persistent and very Bioaccumulative), according to assessment made in the Chemical Safety Report, substance meets criteria to be considered PBT and vPvB.
12.6 Other adverse effects.
No information is available about other adverse effects for the environment.

SECTION 13 DISPOSAL CONSIDERATIONS.

13.1 Waste treatment methods.
Do not dump into sewers or waterways. Waste and empty containers must be handled and eliminated according to current, local/national legislation.

SECTION 14: TRANSPORT INFORMATION.

Transport following ADR rules for road transport, RID rules for railway, ADN for inner waterways, IMDG for sea, and ICAO/IATA for air transport.

**Land:** Transport by road: ADR, Transport by rail: RID.
Transport documentation: Consignment note and written instructions

**Sea:** Transport by ship: IMDG.
Transport documentation: Bill of lading

**Air:** Transport by plane: ICAO/IATA.
Transport document: Airway bill.

14.1 UN number.
UN No: UN2923

14.2 UN proper shipping name.
Description: UN 2923, CORROSIVE SOLID, TOXIC, N.O.S. (CONTAINS BENZETHONIUM CHLORIDE), 8 (6.1), PG III, (E)

14.3 Transport hazard class(es).
Class(es): 8

14.4 Packing group.
Packing group: III

14.5 Environmental hazards.
Marine pollutant: Yes

Dangerous for the environment

14.6 Special precautions for user.
Labels: 8, 6.1

Hazard number: 86
ADR LQ: 5 kg

Provisions concerning carriage in bulk ADR:
VC1 Carriage in bulk in sheeted vehicles, sheeted containers or sheeted bulk containers is permitted.
VC2 Carriage in bulk in closed vehicles, closed containers or closed bulk containers is permitted.
AP7 Carriage in bulk shall only be as a full load.
Transport by ship, FEm – Emergency sheets (F – Fire, S – Spills): F-A,S-B

-Continued on next page.-
Proceed in accordance with point 6.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code.
The product is not transported in bulk.

SECTION 15: REGULATORY INFORMATION.

15.1 Safety, health and environmental regulations/legislation specific for the substance.
Product classification according to Annex I of Directive 2012/18/EU (SEVESO III): E1
The product is not affected by Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products.
The product is not affected by the procedure established Regulation (EU) No 649/2012, concerning the export and import of dangerous chemicals.

15.2 Chemical safety assessment.
There has been no evaluation a chemical safety assessment of the product.

SECTION 16: OTHER INFORMATION.

Classification codes:
Acute Tox. 4 [Oral] : Acute toxicity (Oral), Category 4
Aquatic Acute 1 : Acute toxicity to the aquatic environment, Category 1
Aquatic Chronic 1 : Chronic effect to the aquatic environment, Category 1
Skin Corr. 1B : Skin Corrosive, Category 1B

Sections changed compared with the previous version:
1,2,3,4,8,9,11,12,14,16

It is advisable to carry out basic training with regard to health and safety at work in order to handle this product correctly.

Labelling in accordance with Directive 67/548/EEC:

Symbols:

Corrosive

Dangerous for the environment

R Phrases:
R22 Harmful if swallowed.
R34 Causes burns.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S Phrases:
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61 Avoid release to the environment. Refer to special instructions/safety data sheets.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Contains:
Benzethonium chloride

-Continued on next page.-
Abbreviations and acronyms used:
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
BCF: Bioconcentration factor.
CEN: European Committee for Standardization.
EC50: Half maximal effective concentration.
PPE: Personal protection equipment.
IATA: International Air Transport Association.
LC50: Lethal concentration, 50%.
LD50: Lethal dose, 50%.
Log Pow: Logarithm of the partition octanol-water.
NOEC: No observed effect concentration.
RID: Regulations Concerning the International Transport of Dangerous Goods by Rail.

Key literature references and sources for data:
http://eur-lex.europa.eu/homepage.html
http://echa.europa.eu/


The information in this Safety Data Sheet on the Preparation is based on current knowledge and on current EC and national laws, as far as the working conditions of the users is beyond our knowledge and control. The product must not be used for purposes other than those that are specified without first having written instructions on how to handle. It is always the responsibility of the user to take the appropriate measures in order to comply with the requirements established by current legislation. The information contained in this Safety Data Sheet only states a description of the safety requirements for the preparation, and it must not be considered as a guarantee of its properties.