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

1.1 Product identifier

Trade name : RELYON VIRKON TABLETS

Product code : 57804632

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

Use of the Substance/Mixture : Disinfectants, Cleaning agent

1.3 Details of the supplier of the safety data sheet

Supplier : Antec International Limited
Windham Road
Chilton Industrial Estate
CO10 2XD Sudbury / Suffolk, United Kingdom

Telephone : +4922188852288

1.4 Emergency telephone number

0870 190 6777. National Chemical Emergency Centre

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
<th>Hazard statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin irritation</td>
<td>Category 2</td>
<td>H315: Causes skin irritation.</td>
</tr>
<tr>
<td>Serious eye damage</td>
<td>Category 1</td>
<td>H318: Causes serious eye damage.</td>
</tr>
<tr>
<td>Long-term (chronic) aquatic hazard</td>
<td>Category 3</td>
<td>H412: Harmful to aquatic life with long lasting effects.</td>
</tr>
</tbody>
</table>

2.2 Labeling elements

Labelling (REGULATION (EC) No 1272/2008)

<table>
<thead>
<tr>
<th>Hazard pictograms</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal word</td>
<td>Danger</td>
</tr>
<tr>
<td>Hazard statements</td>
<td>H315 Causes skin irritation.</td>
</tr>
<tr>
<td>H318 Causes serious eye damage.</td>
<td></td>
</tr>
<tr>
<td>H412 Harmful to aquatic life with long lasting effects.</td>
<td></td>
</tr>
</tbody>
</table>
Precautionary statements:

**Prevention:**
P264 Wash skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/eye protection/face protection.

**Response:**
P302 + P352 IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P332 + P313 If skin irritation occurs: Get medical advice/attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.

**Disposal:**
P501 Dispose of contents/container to an approved waste disposal plant.

Hazardous components which must be listed on the label:
pentapotassium bis(peroxymonosulphate) bis(sulphate)
Benzenesulfonic acid, C10-13-alkyl derivs., sodium salts
potassium hydrogen sulphate
dipotassium disulphate

**Additional Labelling**
EUH208 Contains dipotassium peroxodisulphate. May produce an allergic reaction.

2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**SECTION 3: Composition/information on ingredients**

3.2 Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Registration number</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pentapotassium bis(peroxymonosulphate) bis(sulphate)</td>
<td>70693-62-8</td>
<td>274-778-7</td>
<td>01-2119485567-22</td>
<td>Acute Tox. 4; H302 Skin Corr. 1B; H314 Eye Dam. 1; H318 Aquatic Chronic 3; H412</td>
<td>&gt;= 30 - &lt; 50</td>
<td></td>
</tr>
<tr>
<td>malic acid</td>
<td>6915-15-7</td>
<td>230-022-8</td>
<td>01-2119006954-31</td>
<td>Eye Irrit. 2; H319</td>
<td>&gt;= 20 - &lt; 30</td>
<td></td>
</tr>
</tbody>
</table>
### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

**General advice:** Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance. Do not leave the victim unattended.

**If inhaled:** If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.

**In case of skin contact:** If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

**In case of eye contact:** Small amounts splashed into eyes can cause irreversible tissue damage and blindness.

- In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- Continue rinsing eyes during transport to hospital.
- Remove contact lenses.
- Protect unharmed eye.
- Keep eye wide open while rinsing.
- If eye irritation persists, consult a specialist.

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Hazard Classifications</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphamidic acid</td>
<td>Skin Irrit. 2; H315</td>
<td>&gt;= 2.5 - &lt; 10</td>
</tr>
<tr>
<td></td>
<td>Eye Irrit. 2; H319</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic Chronic 3; H412</td>
<td></td>
</tr>
<tr>
<td>Benzenesulfonic acid, C10-13-alkyl derivs., sodium salts</td>
<td>Acute Tox. 4; H302</td>
<td>&gt;= 3 - &lt; 10</td>
</tr>
<tr>
<td></td>
<td>Skin Irrit. 2; H315</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eye Dam. 1; H318</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic Chronic 3; H412</td>
<td></td>
</tr>
<tr>
<td>Potassium hydrogensulphate</td>
<td>Skin Corr. 1B; H314</td>
<td>&gt;= 1 - &lt; 3</td>
</tr>
<tr>
<td></td>
<td>Eye Dam. 1; H318</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STOT SE 3; H335; Respiratory system</td>
<td></td>
</tr>
<tr>
<td>Dipotassium disulphate</td>
<td>Acute Tox. 3; H331</td>
<td>&gt;= 1 - &lt; 3</td>
</tr>
<tr>
<td></td>
<td>Skin Corr. 1A; H314</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eye Dam. 1; H318</td>
<td></td>
</tr>
<tr>
<td>Dipotassium peroxodisulphate</td>
<td>Ox. Sol. 3; H272</td>
<td>&gt;= 0.1 - &lt; 1</td>
</tr>
<tr>
<td></td>
<td>Acute Tox. 4; H302</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin Irrit. 2; H315</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eye Irrit. 2; H319</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resp. Sens. 1; H334</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin Sens. 1; H317</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STOT SE 3; H335; Respiratory system</td>
<td></td>
</tr>
</tbody>
</table>

For explanation of abbreviations see section 16.
If swallowed

Keep respiratory tract clear.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.

4.2 Most important symptoms and effects, both acute and delayed

None known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment

No special measures required.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

In case of fire, use water spray (fog), foam or dry chemical.

Unsuitable extinguishing media

Carbon dioxide (CO2)
High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting

Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products

Sulphur oxides
Metal oxides
Carbon dioxide (CO2)
Carbon monoxide
Nitrogen oxides (NOx)
Halogenated compounds

5.3 Advice for firefighters

Special protective equipment for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

Further information

Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions

Use personal protective equipment.
Avoid dust formation.
Avoid breathing dust.

6.2 Environmental precautions

Environmental precautions:
- Prevent product from entering drains.
- Prevent further leakage or spillage if safe to do so.
- If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up:
- Neutralize with chalk, alkali solution or ammonia.
- Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For personal protection see section 8.
For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling:
- Protect from moisture.
- Avoid formation of respirable particles.
- Do not breathe vapours/dust.
- Avoid contact with skin and eyes.
- For personal protection see section 8.
- Smoking, eating and drinking should be prohibited in the application area.
- Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion:
- Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed.

Hygiene measures:
- When using do not eat or drink. When using do not smoke.
- Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers:
- Protect from moisture.
- Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully re-sealed and kept upright to prevent leakage. Electrical installations / working materials must comply with the technological safety standards.

Advice on common storage:
- Do not store near acids.

Further information on storage:
- Keep in a dry place. No decomposition if stored and applied
7.3 Specific end use(s)
Specific use(s): No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

**Occupational Exposure Limits**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>magnesium carbonate</td>
<td>546-93-0</td>
<td>TWA (inhalable dust)</td>
<td>10 mg/m³</td>
<td>GB EH40</td>
</tr>
</tbody>
</table>

Further information: For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust. The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m⁻³ 8-hour TWA of inhalable dust or 4 mg.m⁻³ 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit. Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed ‘inhalable’ and ‘respirable’. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/3. Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with. Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used.

| TWA (Respirable dust) | 4 mg/m³ | GB EH40 |

Further information: For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust. The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m⁻³ 8-hour TWA of inhalable dust or 4 mg.m⁻³ 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit. Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate
of any particular particle after entry into the human respiratory system and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhala-
ble' and 'respirable'. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/3. Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with. Where no specific short-term exposure limit is listed, a figure three times the long-term exposure limit should be used.

### 8.2 Exposure controls

**Engineering measures**  
This information is not available.

**Personal protective equipment**

**Eye protection**:  
- Eye wash bottle with pure water  
- Tightly fitting safety goggles  
- Wear face-shield and protective suit for abnormal processing problems.

**Hand protection**

- **Material**: Butyl rubber - IIR  
- **Wearing time**: < 60 min

**Remarks**:  
The suitability for a specific workplace should be discussed with the producers of the protective gloves. After contamination with product change the gloves immediately and dispose of them according to relevant national and local regulations.

**Skin and body protection**:  
- Dust impervious protective suit  
- Choose body protection according to the amount and concentration of the dangerous substance at the work place.

**Respiratory protection**:  
- Dust-protection mask if there is a risk of dust formation.

### SECTION 9: Physical and chemical properties

#### 9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>powder</td>
</tr>
<tr>
<td>Colour</td>
<td>pink</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>2.6 - 3.2</td>
</tr>
<tr>
<td></td>
<td>Concentration: 10%</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

RELYON VIRKON TABLETS

Version: 1.0
Revision Date: 07.08.2018
SDS Number: 103000008494
Country / Language: GB / EN(GB)

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point.boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Water solubility: 65 g/l</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2 Other information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No dangerous reaction known under conditions of normal use.

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
Hazardous reactions: Under normal conditions of storage and use, hazardous reactions will not occur.
Stable under recommended storage conditions.
No hazards to be specially mentioned.

Dust may form explosive mixture in air.

10.4 Conditions to avoid

Conditions to avoid : Exposure to moisture

10.5 Incompatible materials

Materials to avoid : Strong bases
Combustible substances

10.6 Hazardous decomposition products

Hazardous decomposition products : Chlorine
Sulphur oxides
Hypochlorites

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product:

Acute oral toxicity : LD50 (Rat, male and female): 4.123 mg/kg
Method: OECD Test Guideline 401
GLP: yes

Acute inhalation toxicity : LC50 (Rat, male and female): > 3.7 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: the particle size measurements of the product indicate that it is not respirable and therefore not bioavailable by the inhalation route.

Acute dermal toxicity : LD50 (Rat, male and female): > 5.000 mg/kg
Remarks: Extrapolation according to Regulation (EC) No. 440/2008

Components:

pentapotassium bis(peroxymonosulphate) bis(sulphate):

Acute oral toxicity : LD50 (Rat, male and female): 500 mg/kg
Method: OECD Test Guideline 423

Acute inhalation toxicity : LC0 (Rat, male): > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: Highest producible concentration.

**Acute dermal toxicity**
LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 402
Remarks: Extrapolation according to Regulation (EC) No. 440/2008

### malic acid:

**Acute oral toxicity**
LD50 (Rat, male and female): 3,500 mg/kg
Method: OECD Test Guideline 401
GLP: no

**Acute inhalation toxicity**
LC0 (Rat, male and female): > 1,306 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Remarks: Highest producible concentration.

**Acute dermal toxicity**
LD50 (Rabbit, female): > 5,000 mg/kg
Method: OECD Test Guideline 401
GLP: no

### sulphamidic acid:

**Acute oral toxicity**
LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 401

**Acute dermal toxicity**
LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 402
GLP: yes
Remarks: Extrapolation according to Regulation (EC) No. 440/2008

### Benzenesulfonic acid, C10-13-alkyl derivs., sodium salts:

**Acute oral toxicity**
LD50 (Rat, male and female): 1.220 mg/kg
Method: OECD Test Guideline 401

**Acute dermal toxicity**
LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 402
GLP: yes
Remarks: Extrapolation according to Regulation (EC) No. 440/2008

### potassium hydrogensulphate:

**Acute oral toxicity**
LD50 (Rat): 2.340 mg/kg
**dipotassium disulphate:**

**Acute oral toxicity**
LD50 (Rat, male): 2.140 mg/kg  
Method: OECD Test Guideline 401  
Remarks: Test results on an analogous product

**Acute inhalation toxicity**
Assessment: Corrosive to the respiratory tract.

**dipotassium peroxodisulphate:**

**Acute oral toxicity**
LD50 (Rat): 700 mg/kg  
Acute toxicity estimate: 500 mg/kg  
Method: Converted acute toxicity point estimate

**Acute inhalation toxicity**
LC0 (Rat): > 2.95 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Remarks: Highest producible concentration.

**Acute dermal toxicity**
LD50 (Rabbit): > 10.000 mg/kg

**Skin corrosion/irritation**

**Product:**
Species: Rabbit  
Method: OECD Test Guideline 404  
Result: Irritating to skin.

**Components:**

**pentapotassium bis(peroxymonosulphate) bis(sulphate):**
Species: Rabbit  
Method: OECD Test Guideline 404  
Result: Causes burns.

**malic acid:**
Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation

**sulphamidic acid:**
Species: Rabbit  
Method: OECD Test Guideline 404  
Result: Irritating to skin.

**Benzenesulfonic acid, C10-13-alkyl derivs., sodium salts:**
Species: Rabbit
Method: OECD Test Guideline 404
Result: Irritating to skin.

**potassium hydrogen sulphate:**
Assessment: Causes burns.

**dipotassium disulphate:**
Assessment: Causes severe burns.

**dipotassium peroxodisulphate:**
Species: Rabbit
Method: OECD Test Guideline 404
Result: Irritating to skin.

**Serious eye damage/eye irritation**

**Components:**

**pentapotassium bis(peroxymonosulphate) bis(sulphate):**
Species: Rabbit
Method: OECD Test Guideline 405
Result: Risk of serious damage to eyes.

**malic acid:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: Irritating to eyes.

**sulphamidic acid:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: Irritating to eyes.

**Benzenesulfonic acid, C10-13-alkyl derivs., sodium salts:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: Risk of serious damage to eyes.

**dipotassium disulphate:**
Assessment: Risk of serious damage to eyes.

**dipotassium peroxodisulphate:**
Result: Irritating to eyes.
Respiratory or skin sensitisation

**Product:**
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Did not cause sensitisation on laboratory animals.

Exposure routes: Inhalation
Species: Mammal - species unspecified
Method: Expert judgement
Result: Does not cause respiratory sensitisation.

**Components:**

pentapotassium bis(peroxymonosulphate) bis(sulphate):
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.

malic acid:
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Did not cause sensitisation on laboratory animals.
GLP: yes

sulphamidic acid:
Result: Did not cause sensitisation on laboratory animals.

Benzenesulftonic acid, C10-13-alkyl derivs., sodium salts:
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Did not cause sensitisation on laboratory animals.

dipotassium peroxodisulphate:
Exposure routes: Inhalation
Species: Mammal - species unspecified
Result: May cause sensitisation by inhalation.

Exposure routes: Skin contact
Species: Mouse
Method: OECD Test Guideline 429
Result: May cause sensitisation by skin contact.
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

RELYON VIRKON TABLETS

Germ cell mutagenicity

Components:

pentapotassium bis(peroxymonosulphate) bis(sulphate):

Genotoxicity in vitro:
Test system: Mammalian-Animal
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: positive
GLP: yes

Test system: Bacteria
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

Test system: Mammalian-Human
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: positive
GLP: yes

Genotoxicity in vivo:
Species: Mammalian-Animal
Application Route: Oral
Method: OECD Test Guideline 474
Result: negative

malic acid:

Genotoxicity in vitro:
Remarks: Not mutagenic in a standard battery of genetic toxicological tests.

sulphamidic acid:

Genotoxicity in vitro:
Test system: Mammalian-Human
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
Result: negative
GLP: yes

Test system: Mammalian-Animal
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Test system: Bacteria
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Benzenesulfonic acid, C10-13-alkyl derivs., sodium salts:

Genotoxicity in vitro:
Test Type: Ames test
Test system: Bacteria
Metabolic activation: with and without metabolic activation
Result: negative

Genotoxicity in vivo
: Test Type: Cytogenetic assay
Species: Mouse
Application Route: Oral
Result: negative

dipotassium peroxodisulphate:
Genotoxicity in vitro
: Remarks: Not mutagenic in a standard battery of genetic toxicological tests.

Carcinogenicity

Components:

Benzenesulfonic acid, C10-13-alkyl derivs., sodium salts:
Species: Rat
Application Route: Oral
Exposure time: 2 Years
Result: negative

Reproductive toxicity

Components:

pentapotassium bis(peroxymonosulphate) bis(sulphate):
Effects on foetal development
: Remarks: No teratogenic or foetotoxic effects were found at all dose levels tested.

malic acid:
Effects on foetal development
: Remarks: No known significant effects or critical hazards.

Benzenesulfonic acid, C10-13-alkyl derivs., sodium salts:
Effects on foetal development
: Species: Rat, female
Application Route: Oral
Dose: 600 milligram per kilogram
Duration of Single Treatment: 15 d
Remarks: No known significant effects or critical hazards.

STOT - single exposure

Components:

potassium hydrogensulphate:
Assessment: May cause respiratory irritation.
dipotassium peroxodisulphate:
Assessment: May cause respiratory irritation.

Repeated dose toxicity

Components:

pentapotassium bis(peroxymonosulphate) bis(sulphate):
Species: Rat, male and female
LOAEL: > 1.000 mg/kg
Application Route: Oral
Exposure time: 28 d
Number of exposures: 7 days/week
Method: OECD Test Guideline 407
Remarks: Subacute toxicity

Species: Rat, male and female
LOAEL: 600 mg/kg
Application Route: Oral
Exposure time: 90 d
Number of exposures: 7 days/week
Method: OECD Test Guideline 408
Remarks: Subchronic toxicity

malic acid:
Remarks: No known significant effects or critical hazards.

Benzenesulphonic acid, C10-13-alkyl derivs., sodium salts:
Species: Rat, male and female
NOAEL: 50 mg/kg
Application Route: Oral
Exposure time: 84 d
Remarks: Subchronic toxicity

Further information

Product:
Remarks: No data available

SECTION 12: Ecological information

12.1 Toxicity

Product:
Toxicity to fish : LC50 (Salmo salar (Atlantic salmon)): 24,6 mg/l
Exposure time: 96 h
Remarks: Fresh water
Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 6,5 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Remarks: Fresh water

Toxicity to algae: NOEC (Desmodesmus subspicatus (green algae)): 6,25 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Fresh water

Components:

pentapotassium bis(peroxymonosulphate) bis(sulphate):

Toxicity to fish: LC50 (Oncorhynchus mykiss (rainbow trout)): 53 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
GLP: yes
Remarks: Fresh water

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 3,5 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
GLP: yes
Remarks: Fresh water

Toxicity to algae: EC50 (Pseudokirchneriella subcapitata (microalgae)): > 1 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
GLP: yes
Remarks: Fresh water

NOEC (Pseudokirchneriella subcapitata (microalgae)): 0,5 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
GLP: yes
Remarks: Fresh water

malic acid:

Toxicity to fish: LC50 (Danio rerio (zebra fish)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
GLP: yes
Remarks: Fresh water

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 240 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
GLP: yes
Remarks: Fresh water

Toxicity to algae: EC50 (algae): > 100 mg/l
Exposure time: 72 h  
Method: OECD Test Guideline 201  
GLP: yes  
Remarks: Fresh water

NOEC (algae): 100 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
GLP: yes  
Remarks: Fresh water

**sulphamidic acid:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 70,3 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203  
GLP: no  
Remarks: Fresh water

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 71,6 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
GLP: yes  
Remarks: Fresh water

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 48 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
GLP: yes  
Remarks: Fresh water

NOEC (Desmodesmus subspicatus (green algae)): 18 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
GLP: yes  
Remarks: Fresh water

Toxicity to microorganisms : EC50: > 200 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209  
GLP: yes  
Remarks: Fresh water

Toxicity to fish (Chronic toxicity) : NOEC: >= 60 mg/l  
Exposure time: 34 d  
Species: Danio rerio (zebra fish)  
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 19 mg/l  
Exposure time: 21 d  
Species: Daphnia magna (Water flea)  
Method: OECD Test Guideline 211
Benzenesulfonic acid, C10-13-alkyl derivs., sodium salts:

Toxicity to fish: \( \text{LC50} \) (Lepomis macrochirus (Bluegill sunfish)): 1.67 mg/l
Exposure time: 96 h
Method: OPPTS 850.1075

Toxicity to daphnia and other aquatic invertebrates: \( \text{EC50} \) (Daphnia magna (Water flea)): 2.9 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
GLP: yes
Remarks: Fresh water

Toxicity to algae: \( \text{EC50} \) (Desmodesmus subspicatus (green algae)): 10 - 100 mg/l
Exposure time: 72 h
NOEC (Chlorella vulgaris (Fresh water algae)): 3.1 mg/l
Exposure time: 15 d

Toxicity to fish (Chronic toxicity): NOEC: 1 mg/l
Exposure time: 28 d
Species: Lepomis macrochirus (Bluegill sunfish)
Method: OECD Test Guideline 204
GLP: no
Remarks: Fresh water

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC: 1.18 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211
GLP: no
Remarks: Fresh water

dipotassium disulphate:

Toxicity to fish: \( \text{LC50} \) (Pimephales promelas (fathead minnow)): 680 mg/l
Exposure time: 96 h
Remarks: Fresh water

Toxicity to daphnia and other aquatic invertebrates: \( \text{EC50} \) (Daphnia magna (Water flea)): 720 mg/l
Exposure time: 48 h
Remarks: Fresh water

Toxicity to algae: \( \text{EC50} \) (Pseudokirchneriella subcapitata (microalgae)): 1.492 mg/l
Exposure time: 96 h
Remarks: Fresh water

EC10 (Pseudokirchneriella subcapitata (microalgae)): 656 mg/l
Exposure time: 96 h
Remarks: Fresh water

Toxicity to fish (Chronic toxicity): NOEC: > 595 mg/l
EXPOSURE LIMIT VALUES

Exposure time: 7 Days
Species: Pimephales promelas (fathead minnow)
Remarks: Fresh water

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):
NOEC: 790 mg/l
Exposure time: 7 Days
Species: Ceriodaphnia dubia (Water flea)
Remarks: Fresh water

Dipotassium peroxodisulphate:
LC50 (Oncorhynchus mykiss (rainbow trout)): 76.3 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates:
EC50 (Daphnia magna (Water flea)): 120 mg/l
Exposure time: 48 h

Toxicity to algae:
EC50 (Pseudokirchneriella subcapitata (microalgae)): 83.7 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

ECOTOXICOLOGY ASSESSMENT

Long-term (chronic) aquatic hazard:
This product has no known ecotoxicological effects.

12.2 Persistence and degradability

Components:

Pentapotassium bis(peroxymonosulphate) bis(sulphate):
Biodegradability: Result: The methods for determining the biological degradability are not applicable to inorganic substances.

Malic acid:
Biodegradability: Test Type: aerobic
Result: Readily biodegradable.
Biodegradation: 67.5 %
Exposure time: 28 d
Method: OECD Test Guideline 301B
GLP: yes

Sulphamidic acid:
Biodegradability: Result: The methods for determining the biological degradability are not applicable to inorganic substances.

Benzenesulfonic acid, C10-13-alkyl derivs., sodium salts:
Biodegradability: Test Type: aerobic
Inoculum: activated sludge
Concentration: 34.3 mg/l
Result: Readily biodegradable.
Biodegradation: 83 %
Exposure time: 28 d
Method: OECD Test Guideline 301B
GLP: yes

**dipotassium disulphate:**
Biodegradability : Result: The methods for determining the biological degradability are not applicable to inorganic substances.

**dipotassium peroxodisulphate:**
Biodegradability : Result: The methods for determining the biological degradability are not applicable to inorganic substances.

### 12.3 Bioaccumulative potential

**Components:**

**pentapotassium bis(peroxymonosulphate) bis(sulphate):**
Partition coefficient: n-octanol/water : log Pow: < 0,3
Method: OECD Test Guideline 117

**malic acid:**
Partition coefficient: n-octanol/water : log Pow: -1,26

**sulphamidic acid:**
Partition coefficient: n-octanol/water : log Pow: -4,34

**Benzenesulphonic acid, C10-13-alkyl derivs., sodium salts:**
Partition coefficient: n-octanol/water : log Pow: 1,4
Method: OECD Test Guideline 123

### 12.4 Mobility in soil
No data available

### 12.5 Results of PBT and vPvB assessment

**Product:**
Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

### 12.6 Other adverse effects

**Product:**
### SECTION 13: Disposal considerations

13.1 Waste treatment methods

**Product**: The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

**Contaminated packaging**: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

### SECTION 14: Transport information

14.1 UN number

Not regulated as a dangerous good

14.2 UN proper shipping name

Not regulated as a dangerous good

14.3 Transport hazard class(es)

Not regulated as a dangerous good

14.4 Packing group

Not regulated as a dangerous good

14.5 Environmental hazards

Not regulated as a dangerous good

14.6 Special precautions for user / Additional advice

Not applicable

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable for product as supplied.

### SECTION 15: Regulatory information

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

- International Chemical Weapons Convention (CWC) Schedules of Toxic Chemicals and Precursors: Not applicable
- REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances: Not applicable
preparations and articles (Annex XVII)

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).
REACH - List of substances subject to authorisation (Annex XIV)
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer
Regulation (EC) No 850/2004 on persistent organic pollutants
Not applicable

15.2 Chemical safety assessment
not applicable

SECTION 16: Other information

Full text of H-Statements
H272 : May intensify fire; oxidizer.
H302 : Harmful if swallowed.
H314 : Causes severe skin burns and eye damage.
H315 : Causes skin irritation.
H317 : May cause an allergic skin reaction.
H318 : Causes serious eye damage.
H319 : Causes serious eye irritation.
H331 : Toxic if inhaled.
H334 : May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 : May cause respiratory irritation.
H412 : Harmful to aquatic life with long lasting effects.

Full text of other abbreviations
Acute Tox. : Acute toxicity
Aquatic Chronic : Long-term (chronic) aquatic hazard
Eye Dam. : Serious eye damage
Eye Irrit. : Eye irritation
Ox. Sol. : Oxidizing solids
Resp. Sens. : Respiratory sensitisation
Skin Corr. : Skin corrosion
Skin Irrit. : Skin irritation
Skin Sens. : Skin sensitisation
STOT SE : Specific target organ toxicity - single exposure
GB EH40 : UK. EH40 WEL - Workplace Exposure Limits
GB EH40 / TWA : Long-term exposure limit (8-hour TWA reference period)
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals

Further information
Classification of the mixture: 

<table>
<thead>
<tr>
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<th>Classification procedure:</th>
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<tbody>
<tr>
<td>Skin Irrit. 2</td>
<td>H315 Based on product data or assessment</td>
</tr>
<tr>
<td>Eye Dam. 1</td>
<td>H318 Calculation method</td>
</tr>
<tr>
<td>Aquatic Chronic 3</td>
<td>H412 Calculation method</td>
</tr>
</tbody>
</table>

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet and its Annex (if required according to Regulation (EC) 1907/2006 (REACH)) is to describe the products in terms of their safety requirements. The given details do not imply any guarantee concerning the composition, properties or performance.