Material Safety Data Sheet

**Virkon® S**

Version 2.0

Revision Date 05/26/2010 Ref. 130000093734

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

**SECTION 1. PRODUCT AND COMPANY IDENTIFICATION**

- **Product name**: Virkon® S
- **MSDS Number**: 130000093734
- **Product Use**: Disinfectant, Cleaning agent
- **Manufacturer**: DuPont
  
  1007 Market Street  
  Wilmington, DE 19898

- **Product Information**: 1-800-441-7515 (outside the U.S. 1-302-774-1000)
- **Medical Emergency**: 1-800-441-3637 (outside the U.S. 1-302-774-1139)
- **Transport Emergency**: CHEMTREC: 1-800-424-9300 (outside the U.S. 1-703-527-3887)

**SECTION 2. HAZARDS IDENTIFICATION**

- **Potential Health Effects**
  - **Skin**: Irritating to skin.
  - **Eyes**: Risk of serious damage to eyes.
  - **Inhalation**:  
    - Potassium peroxymonosulfate: Causes respiratory tract irritation.
    - Sulfamic acid: Inhaled corrosive substances can lead to a toxic oedema of the lungs. Harmful if inhaled and may cause delayed lung injury. Liquid aerosols may cause: Oedema.
  - **Ingestion**:  
    - Potassium peroxymonosulfate: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.
    - Sulfamic acid: Burning sensation Abdominal pain
Sodium chloride : Gastrointestinal discomfort Vomiting, Diarrhoea.
Target Organs
Potassium peroxymonosulfate : Eyes
Primary Routes of Entry : Eye contact, Skin contact
Carcinogenicity
None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium peroxymonosulfate</td>
<td>10058-23-8</td>
<td>21.41 %</td>
</tr>
<tr>
<td>Sulfamic acid</td>
<td>5329-14-6</td>
<td>4 - 6 %</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>7647-14-5</td>
<td>1.5 %</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

Skin contact : In case of contact, immediately flush skin with plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Consult a physician if necessary.
Eye contact : Rinse immediately with plenty of water and seek medical advice.
Inhalation : Move to fresh air. Consult a physician if necessary.
Ingestion : Call a poison control center or doctor for treatment advice. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Do not give anything by mouth to an unconscious person.

SECTION 5. FIRE-FIGHTING MEASURES

Flammable Properties
Flash point : does not flash

Suitable extinguishing media : Water spray, Dry powder, Alcohol-resistant foam

Unsuitable extinguishing media : Carbon dioxide (CO2)

Firefighting Instructions : Wear self-contained breathing apparatus (SCBA). Wear suitable protective equipment. Evacuate personnel to safe areas. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel) : Wear suitable protective equipment. Wear respiratory protection.

Spill Cleanup : Sweep up and shovel into suitable containers for disposal. Avoid dust formation. After cleaning, flush away traces with water.

Accidental Release Measures : Prevent material from entering sewers, waterways, or low areas. Dispose of in accordance with local regulations.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel) : Avoid contact with skin, eyes and clothing. Do not get on clothing. Wash off with plenty of water. Wash clothing after use. Do not breathe dust. Avoid dust formation in confined areas. For personal protection see section 8.
When using do not eat, drink or smoke.

Storage:
- Keep out of the reach of children. Keep away from food, drink and animal feedingstuffs. Keep containers tightly closed in a dry, cool and well-ventilated place. Store in original container.
- Keep away from: Combustible material
- Stable under recommended storage conditions.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls:
- Provide local exhaust ventilation when handling material in bulk. Ensure adequate ventilation.

Personal protective equipment:
- Respiratory protection:
  - Provide adequate ventilation. Wear NIOSH approved respiratory protection as appropriate.

Hand protection:
- Material: Impervious gloves

Eye protection:
- Wear coverall chemical splash goggles and face shield when the possibility exists for eye and face contact due to splashing or spraying of material.

Skin and body protection:
- Where there is potential for skin contact, have available and wear as appropriate, impervious gloves, apron, pants, jacket, hood and boots.

Exposure Guidelines

<table>
<thead>
<tr>
<th>Substance</th>
<th>Exposure Limit Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentapotassium bis(peroxymonosulphate) bis(sulphate)</td>
<td>AEL * (DUPONT) 1 mg/m3 8 &amp; 12 hr. TWA Total dust.</td>
</tr>
<tr>
<td>Sulfamic acid</td>
<td>AEL * (DUPONT) 0.5 mg/m3 8 &amp; 12 hr. TWA</td>
</tr>
<tr>
<td></td>
<td>AEL * (DUPONT) 1.5 mg/m3 15 minute TWA</td>
</tr>
<tr>
<td>Dipotassium peroxodisulphate</td>
<td>TLV (ACGIH) 0.1 mg/m3 TWA as persulfate</td>
</tr>
</tbody>
</table>
Potassium sulfate

AEL * (DUPONT) 10 mg/m3 8 hr. TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form : powder
Color : yellow
Odor : pleasant, sweet
pH : 2.4 - 2.7
Specific Gravity : 1.07
Water solubility : 65 g/l at 20 °C (68 °F)

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid : Protect from moisture.
Incompatibility : Strong bases combustibles, Acids, oxidizers, Brass, Copper, Halogenated compounds, Cyanides, Heavy metal salts
Hazardous decomposition products : Sulphur dioxide, Chlorine

SECTION 11. TOXICOLOGICAL INFORMATION

Virkon® S
Inhalation 4 h LC50 : 3.7 mg/l, rat
Dermal LD50 : 2,200 mg/kg, rabbit
Oral LD50 : 4,123 mg/kg, rat
Skin irritation : Moderate skin irritation
Eye irritation : Risk of serious damage to eyes.
Sensitisation : Animal test did not cause sensitization by skin contact, guinea pig
Potassium peroxymonosulfate
  Repeated dose toxicity : Inhalation
  Target Organs: Eyes
  Pathologic changes, Eyes, corneal damage, Information given is
  based on data obtained from similar substances.

  Oral - gavage
  rat
  Reduced body weight gain, Gastrointestinal effects, Information given
  is based on data obtained from similar substances.

Mutagenicity : Genetic damage in cultured mammalian cells was observed in some
  laboratory tests but not in others.
  Did not cause genetic damage in animals.
  Did not cause genetic damage in cultured bacterial cells.
  Information given is based on data obtained from similar substances.

Teratogenicity : Animal testing showed effects on embryo-foetal development at levels
  equal to or above those causing maternal toxicity.
  Information given is based on data obtained from similar substances.

Sodium chloride
  Mutagenicity : Did not cause genetic damage in cultured bacterial cells.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity
  Potassium peroxymonosulfate
  96 h LC50 : Oncorhynchus mykiss (rainbow trout) 53 mg/l
  Information given is based on data obtained from similar substances.

  72 h EC50 : Pseudokirchneriella subcapitata (green algae) 0.97 mg/l
  Information given is based on data obtained from similar substances.

  48 h EC50 : Daphnia magna (Water flea) 3.5 mg/l
  Information given is based on data obtained from similar substances.

  Sulfamic acid
  96 h LC50 : Pimephales promelas (fathead minnow) 14.2 mg/l
Sodium chloride  
LC50  
: Pimephales promelas (fathead minnow) 7,650 mg/l

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal  
: In accordance with local and national regulations. Do not flush into surface water or sanitary sewer system. Do not contaminate water, food or feed by disposal.

SECTION 14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

SECTION 15. REGULATORY INFORMATION

TSCA Status  
: On the inventory, or in compliance with the inventory

EPA Reg. No.  
: 71654-6

SECTION 16. OTHER INFORMATION

HMIS

Health  
: 3

Flammability  
: 0

Reactivity/Physical hazard  
: 0

PPE  
: Personal Protection rating to be supplied by user depending on use conditions.

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Do not use for medical-clinical purposes.

Contact person : MSDS Coordinator, DuPont Chemicals and Fluoroproducts, Wilmington, DE
19898, (800) 441-7515

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