410 Ammonium Persulphate
MG Chemicals UK Limited

Chemwatch Hazard Alert Code: 2

Version No: 1.6
Safety Data Sheet (Conforms to Regulations (EC) No 2015/830)

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1. Product Identifier

<table>
<thead>
<tr>
<th>Product name</th>
<th>410 Ammonium Persulphate</th>
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<tbody>
<tr>
<td>Chemical Name</td>
<td>ammonium persulfate</td>
</tr>
<tr>
<td>Synonyms</td>
<td>SDS Code: 410; 410-1KG, 410-25KG</td>
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<tr>
<td>Proper shipping name</td>
<td>AMMONIUM PERSULPHATE</td>
</tr>
<tr>
<td>Other means of identification</td>
<td>Not Available</td>
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<tr>
<td>EC number</td>
<td>231-786-5</td>
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1.2. Relevant identified uses of the substance or mixture and uses advised against

<table>
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<tr>
<th>Relevant identified uses</th>
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<tr>
<td>Uses advised against</td>
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1.3. Details of the supplier of the safety data sheet

<table>
<thead>
<tr>
<th>Registered company name</th>
<th>MG Chemicals UK Limited</th>
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<tbody>
<tr>
<td>Address</td>
<td>Heame House, 23 Bilston Street, Sedgely Dudley DY3 1JA United Kingdom</td>
</tr>
<tr>
<td>Telephone</td>
<td>+44 1663 362888</td>
</tr>
<tr>
<td>Fax</td>
<td>Not Available</td>
</tr>
<tr>
<td>Website</td>
<td>Not Available</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:sales@mgchemicals.com">sales@mgchemicals.com</a></td>
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<th>Association / Organisation</th>
<th>CHEMTREC</th>
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<td>Emergency telephone numbers</td>
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<tr>
<td>Other emergency telephone numbers</td>
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1.4. Emergency telephone number

<table>
<thead>
<tr>
<th>Emergency telephone numbers</th>
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<tr>
<td>Other emergency telephone numbers</td>
<td>+1 800 708 9888</td>
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SECTION 2 HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

<table>
<thead>
<tr>
<th>Classification according to regulation (EC) No 1272/2008 [CLP] [1]</th>
<th>Acute Toxicity (Oral) Category 4, Acute Toxicity (Inhalation) Category 4, Skin Corrosion/ Irritation Category 2, Skin Sensitizer Category 1, Eye Irritation Category 2, Respiratory Sensitizer Category 1B, Specific target organ toxicity - single exposure Category 3 (respiratory tract irritation), Oxidizing Liquid Category 3</th>
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2.2. Label elements

<table>
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<th>CLP label elements</th>
<th>![Danger Symbol]</th>
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<table>
<thead>
<tr>
<th>SIGNAL WORD</th>
<th>DANGER</th>
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Hazard statement(s)

<table>
<thead>
<tr>
<th>Hazard statement(s)</th>
<th>H302 Harmful if swallowed</th>
</tr>
</thead>
</table>
H332 Harmful if inhaled
H315 Causes skin irritation
H317 May cause an allergic skin reaction
H319 Causes serious eye irritation
H34 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335 May cause respiratory irritation
H272 May intensify fire; oxidizer

Supplementary statement(s)
Not Applicable

Precautionary statement(s) Prevention

| P210 | Keep away from heat/sparks/open flames/hot surfaces. No smoking. |
| P221 | Take any precaution to avoid mixing with combustibles/organic material. |
| P261 | Avoid breathing dust/fume/gas/mist/vapours/spray. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P284 | [In case of inadequate ventilation] wear respiratory protection. |
| P220 | Keep/Store away from clothing/organic material/combustible materials. |
| P270 | Do not eat, drink or smoke when using this product. |
| P272 | Contaminated work clothing should not be allowed out of the workplace. |

Precautionary statement(s) Response

| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P342+P311 | If experiencing respiratory symptoms: Call a POISON CENTER/doctor/physician/first aider. |
| P370+P378 | In case of fire: Use water jets to extinguish. |
| P302+P352 | IF ON SKIN: Wash with plenty of water and soap. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P333+P313 | If skin irritation or rash occurs: Get medical advice/attention. |
| P337+P313 | If eye irritation persists: Get medical advice/attention. |
| P362+P364 | Take off contaminated clothing and wash it before reuse. |
| P301+P312 | IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider/if you feel unwell. |
| P310 | Rinse mouth. |

Precautionary statement(s) Storage

| P405 | Store locked up. |
| P403+P233 | Store in a well-ventilated place. Keep container tightly closed. |

Precautionary statement(s) Disposal

| P501 | Dispose of contents/container in accordance with local regulations. |

2.3. Other hazards
Cumulative effects may result following exposure*

REACH - Art 57-59: The mixture does not contain Substances of Very High Concern (SVHC) at the SDS print date.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

3.1. Substances
See ‘Composition on ingredients’ in Section 3.2

3.2. Mixtures

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Name</th>
<th>Classification according to regulation (EC) No 1272/2008 [CLP]</th>
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<tr>
<td>7727-54-0</td>
<td>ammonium persulfate</td>
<td>Oxidizing Solid Category 3, Acute Toxicity (Oral) Category 4, Eye Irritation Category 2, Specific target organ toxicity - single exposure Category 3 (respiratory tract irritation), Skin Corrosion/Irritation Category 2, Respiratory Sensitizer Category 1, Skin Sensitizer Category 1; H272, H302, H319, H335, H315, H334, H317</td>
</tr>
</tbody>
</table>


SECTION 4 FIRST AID MEASURES

Continued...
4.1. Description of first aid measures

**General**

If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear.
- Wash out immediately with fresh running water.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor, without delay.
- If SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
- For advice, contact a Poisons Information Centre or a doctor.
- Urgent hospital treatment is likely to be needed.
- In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
- If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist.
- If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the SDS.

Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
- INDUCE vomiting with fingers down the back of the throat. ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

**NOTE:** Wear a protective glove when inducing vomiting by mechanical means.

**Eye Contact**

If this product comes in contact with the eyes:
- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Seek medical attention without delay: if pain persists or recur seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor, without delay.
- If SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
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**NOTE:** Wear a protective glove when inducing vomiting by mechanical means.

**Skin Contact**

If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear.
- Wash out immediately with fresh running water.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
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**NOTE:** Wear a protective glove when inducing vomiting by mechanical means.

**Inhalation**

- IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
- For advice, contact a Poisons Information Centre or a doctor.
- Urgent hospital treatment is likely to be needed.
- In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
- If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist.
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Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
- INDUCE vomiting with fingers down the back of the throat. ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

**NOTE:** Wear a protective glove when inducing vomiting by mechanical means.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

Toxic myocarditis may follow ingestion of oxidizing agents such as peroxides.

**BASIC TREATMENT**

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- Monitor and treat, where necessary, for pulmonary oedema.
- Monitor and treat, where necessary, for shock.
- Anticipate seizures.
- DO NOT use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.
- DO NOT attempt neutralisation as exothermic reaction may occur.

**Skin burns should be covered with dry, sterile bandages, following decontamination.**
ADVANCED TREATMENT

Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

SECTION 5 FIREFIGHTING MEASURES

5.1. Extinguishing media
FOR SMALL FIRE:
- USE FLOODING QUANTITIES OF WATER.
- DO NOT use dry chemical, CO2, foam or halogenated type extinguishers.
FOR LARGE FIRE
- Flood fire area with water from a protected position

5.2. Special hazards arising from the substrate or mixture

<table>
<thead>
<tr>
<th>Fire Incompatibility</th>
<th>Avoid storage with reducing agents.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous</td>
</tr>
</tbody>
</table>

5.3. Advice for firefighters

**Fire Fighting**
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.
- Fight fire from a safe distance, with adequate cover.
- Extinguishers should be used only by trained personnel.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- Avoid spraying water onto liquid pools.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- If fire gets out of control withdraw personnel and warn against entry.
- Equipment should be thoroughly decontaminated after use.

**Fire/Explosion Hazard**
- Will not burn but increases intensity of fire.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- Heat affected containers remain hazardous.
- Contact with combustibles such as wood, paper, oil or finely divided metal may produce spontaneous combustion or violent decomposition.
- May emit irritating, poisonous or corrosive fumes.
- Decomposition may produce toxic fumes of: nitrogen oxides (NOx), sulfur oxides (SOx)

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
See section 8

6.2. Environmental precautions
See section 12

6.3. Methods and material for containment and cleaning up

**Minor Spills**
- Clean up all spills immediately.
- No smoking, naked lights, ignition sources.
- Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials, as ignition may result.
- Avoid breathing dust or vapours and all contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.
- Contain and absorb spill with dry sand, earth, inert material or vermiculite.
- DO NOT use sawdust as fire may result.
- Scoop up solid residues and seal in labelled drums for disposal.
- Neutralise/decontaminate area.

**Major Spills**
- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus and protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.
- No smoking, flames or ignition sources.
- Increase ventilation.
- Contain spill with sand, earth or other clean, inert materials.
- NEVER USE organic absorbents such as sawdust, paper or cloth.
- Use spark-free and explosion-proof equipment.
- Collect any recoverable product into labelled containers for possible recycling.
- Avoid contamination with organic matter to prevent subsequent fire and explosion.
- DO NOT mix fresh with recovered material.
- Collect residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.

Continued...
6.4. Reference to other sections

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

7.1. Precautions for safe handling

- Avoid personal contact and inhalation of dust, mist or vapours.
- Provide adequate ventilation.
- Always wear protective equipment and wash off any spillage from clothing.
- Keep material away from light, heat, flammables or combustibles.
- Keep cool, dry and away from incompatible materials.
- Avoid physical damage to containers.
- DO NOT repack or return unused portions to original containers. Withdraw only sufficient amounts for immediate use.
- Use only minimum quantity required.
- Avoid using solutions of peroxides in volatile solvents. Solvent evaporation should be controlled to avoid dangerous concentration of the peroxide.
- DO NOT allow peroxides to contact iron or compounds of iron, cobalt, or copper, metal oxide salts, acids or bases.
- DO NOT use metal spatulas to handle peroxides.
- DO NOT use glass containers with screw cap lids or glass stoppers.
- Store peroxides at the lowest possible temperature, consistent with their solubility and freezing point.
- CAUTION: DO NOT store liquids or solutions of peroxides at a temperature below that at which the peroxide freezes or precipitates. Peroxides in this form are extremely shock and heat-sensitive. Refrigerated storage of peroxides must ONLY be in explosion-proof units.
- The hazards and consequences of fires and explosions during synthesis and use of peroxides is widely recognised; spontaneous or induced decomposition may culminate in a variety of ways, ranging from moderate gassing to spontaneous ignition or explosion. The heat released from spontaneous decomposition of an energy-rich compound causes a rise in the surrounding temperature; the temperature will rise until thermal balance is established or until the material heats to decomposition,
- The most effective means for minimising the consequences of an accident is to limit quantities to a practical minimum. Even gram-scale explosions can be serious. Once ignited the burning of peroxides cannot be controlled and the area should be evacuated.
- Unless there is compelling reason to do otherwise, peroxide concentration should be limited to 10% (or less with vigorous reactants). Peroxide concentration is rarely as high as 1% in the reaction mixture of polymerisation or other free-radical reactions,
- Peroxides should be added slowly and cautiously to the reaction medium. This should be completed prior to heating and with good agitation.
- Addition of peroxide to the hot monomer is extremely dangerous. A violent reaction (e.g., fire or explosion) can result from inadvertent mixing of promoters (frequently used with peroxides in polymerisation systems) with full-strength peroxide
- Organic peroxides are very sensitive to contamination (especially heavy-metal compounds, metal oxide salts, alkaline materials including amines, strong acids, and many varieties of dust and dirt). This can initiate rapid, uncontrolled decomposition of peroxides and possible generation of intense heat, fire or explosion. The consequences of accidental contamination from returning withdrawn material to the storage container can be disastrous.
- When handling NEVER smoke, eat or drink.
- Always wash hands with soap and water after handling.
- Use only good occupational work practice.
- Observe manufacturer’s storage and handling recommendations contained within this SDS.

Fire and explosion protection

- Store in original containers.
- Keep containers securely sealed as supplied.
- Store in a cool, well-ventilated area.
- Keep dry.
- Store under cover and away from sunlight.
- Store away from flammable or combustible materials, debris and waste. Contact may cause fire or violent reaction.
- Store away from incompatible materials and foodstuffs containers.
- DO NOT stack on wooden floors or pallets.
- Protect containers from physical damage.
- Check regularly for leaks.
- Observe manufacturer’s storage and handling recommendations contained within this SDS.

Other information

In addition, Goods of Class 5.1, packing group III should be stored in packages and be separated from buildings, tanks, and compounds containing other dangerous goods in tanks, and from property boundaries by a distance of at least 5 metres.

7.2. Conditions for safe storage, including any incompatibilities

Suitable container

- DO NOT repack. Use containers supplied by manufacturer only.
- For low viscosity materials
  - Drums and jerricans must be of the non-removable head type.
  - Where a can is to be used as an inner package, the can must have a screwed enclosure.
  - For materials with a viscosity of at least 2680 cSt, (23 deg. C) and solids:
    - Removable head packaging and
    - Cans with friction closures may be used.
- Where combination packages are used, and the inner packages are of glass, there must be sufficient inert cushioning material in contact with inner and outer packages *.
- In addition, where inner packages are glass and contain liquids of packing group I and II there must be sufficient inert absorbent to absorb any spillage *.
- * unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic.

Storage incompatibility

- Inorganic peroxide compounds are potent oxidisers that pose fire or explosive hazards when in contact with ordinary combustible materials.
- Inorganic peroxides react with organic compounds to generate organic peroxide and hydrogen peroxide products that react violently with reducing agents.
- Inorganic oxidising agents can react with reducing agents to generate heat and products that may be gaseous (causing pressurisation of closed containers). The products may themselves be capable of further reactions (such as combustion in the air).
- Organic compounds in general have some reducing power and can in principle react with compounds in this class. Actual reactivity varies greatly with the identity of the organic compound.
- Inorganic oxidising agents can react violently with active metals, cyanides, esters, and thiocyanates.
- Peroxides, in contact with inorganic cobalt and copper compounds, iron and iron compounds, acetone, metal oxide salts and acids and bases can react with...
7.3. Specific end use(s)
See section 1.2

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

DERIVED NO EFFECT LEVEL (DNEL)
Not Available

PREDICTED NO EFFECT LEVEL (PNEC)
Not Available

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

<table>
<thead>
<tr>
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<th>Ingredient</th>
<th>Material name</th>
<th>TWA</th>
<th>STEL</th>
<th>Peak</th>
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<tbody>
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EMERGENCY LIMITS

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<th>TEEL-2</th>
<th>TEEL-3</th>
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<tbody>
<tr>
<td>ammonium persulfate</td>
<td>Ammonium persulfate</td>
<td>0.3 mg/m³</td>
<td>15 mg/m³</td>
<td>90 mg/m³</td>
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<table>
<thead>
<tr>
<th>Ingredient</th>
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<th>Revised IDLH</th>
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<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

MATERIAL DATA
Persulfates produce irritation of the respiratory tract.

8.2. Exposure controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:
- Process controls which involve changing the way a job activity or process is done to reduce the risk.
- Enclosure and/or isolation of emission source which keeps a selected hazard ‘physically’ away from the worker and ventilation that strategically ‘adds’ and ‘removes’ air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.
- Process controls which involve changing the way a job activity or process is done to reduce the risk.

Employers may need to use multiple types of controls to prevent employee overexposure.

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.

An approved self contained breathing apparatus (SCBA) may be required in some situations.
Provide adequate ventilation in warehouse or closed storage area. Air contaminants generated in the workplace possess varying ‘escape’ velocities which, in turn, determine the ‘capture velocities’ of fresh circulating air required to effectively remove the contaminant.

<table>
<thead>
<tr>
<th>Type of Contaminant</th>
<th>Air Speed:</th>
</tr>
</thead>
<tbody>
<tr>
<td>solvent, vapours, degreasing etc., evaporating from tank (in still air)</td>
<td>0.25-0.5 m/s (50-100 f/min.)</td>
</tr>
<tr>
<td>aerosols, fumes from pouring operations, intermittent container filling, low speed conveyor transfers, welding, spray drift, plating acid fumes, picking (released at low velocity into zone of active generation)</td>
<td>0.5-1 m/s (100-200 f/min.)</td>
</tr>
<tr>
<td>direct spray, spray painting in shallow booths, drum filling, conveyor loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)</td>
<td>1-2.5 m/s (200-500 f/min.)</td>
</tr>
</tbody>
</table>

410 Ammonium Persulfate

BRETHERRICK L.: Handbook of Reactive Chemical Hazards

- Inorganic reducing agents react with oxidizing agents to generate heat and products that may be flammable, combustible, or otherwise reactive. Their reactions with oxidizing agents may be violent.
- Incidents involving interaction of active oxidants and reducing agents, either by design or accident, are usually very energetic and examples of so-called redox reactions. For persulfate salts:
  - Segregate from organics and other readily oxidisable materials.
  - Segregate from powdered metals, phosphorous, hydrides, halogens, acids and alkalis.
  - Avoid contact with combustibles, organic matter.
  - Avoid reaction with acids, alkalis, halides, heavy metals and combustible material (wood, cloth).
  - Contact with metals such as lead, silver, copper, magnesium, zinc, cadmium, nickel, iron and cobalt can lead to catalytic decomposition.
  - An explosion hazard when mixed with finely powdered organic matter, metal powders such as aluminium, or reducing agents.
  - Avoid reaction with alkaline hydroxide and water.
  - Reacts vigorously with hydrazine.
  - Dry material may decomposes rapidly above 100 deg C liberating oxygen.
  - Wet material may decomposes at 50 deg C with decomposition.
  - Liberates oxygen on decomposition.

A vigorous self-sustaining fire resulted from the contact of two flakes of moist potassium hydroxide with potassium persulfate. The fire was extinguished with water but not CO2 or dry powder.

- Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous
- Avoid storage with reducing agents.
- Many of the salts of persoxoacids are unstable or explosive and are capable of initiation by heat, friction or impact, and all are powerful oxidants.
Upper end of the range
Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound. Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.

Wear cotton or cotton-backed gloves.

Powered Air Respirator

Full-Face Respirator

See Hand protection below

Eye and face protection

Wear chemical protective gloves, e.g. PVC.
Wear safety footwear or safety gumboots, e.g. Rubber

NOTE:

The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).

When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.

When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.

Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.

Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

DO NOT wear cotton or cotton-backed gloves.

DO NOT wear leather gloves.

Promptly hose all spills off leather shoes or boots or ensure that such footwear is protected with PVC over-shoes.

Body protection

See Other protection below

Overall.
PVC Apron.
PVC protective suit may be required if exposure severe.
Eyewash unit.
Ensure there is ready access to a safety shower.

Other protection

Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.

For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets).

Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot as shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds. Electrical resistance must range between 0 to 500,000 ohms. Conductive shoes should be stored in lockers close to the room in which they are worn. Personnel who have been issued conductive footwear should not wear them from their place of work to their homes and return.

Thermal hazards

Not Available

Respiratory protection

Particulate. (AS/NZS 1716 & 1715, EN 143:000 & 149:001, ANSI Z88 or national equivalent)

<table>
<thead>
<tr>
<th>Required Minimum Protection Factor</th>
<th>Half-Face Respirator</th>
<th>Full-Face Respirator</th>
<th>Powered Air Respirator</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 10 x ES</td>
<td>P1</td>
<td>-</td>
<td>PAPR-P1</td>
</tr>
<tr>
<td>up to 50 x ES</td>
<td>Air-line*</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Air-line**</td>
<td>P2</td>
<td>PAPR-P2</td>
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</table>

Continued...
8.2.3. Environmental exposure controls
See section 12

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>White powder</td>
</tr>
<tr>
<td>Physical state</td>
<td>Divided Solid</td>
</tr>
<tr>
<td>Relative density (Water = 1)</td>
<td>1.98</td>
</tr>
<tr>
<td>Odour</td>
<td>Not Available</td>
</tr>
<tr>
<td>Partition coefficient n-octanol / water</td>
<td>Not Available</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Not Available</td>
</tr>
<tr>
<td>Auto-ignition temperature (°C)</td>
<td>Not Available</td>
</tr>
<tr>
<td>pH (as supplied)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not Available</td>
</tr>
<tr>
<td>Melting point / freezing point (°C)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Viscosity (cSt)</td>
<td>Not Available</td>
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<tr>
<td>Initial boiling point and boiling range (°C)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Molecular weight (g/mol)</td>
<td>Not Available</td>
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<tr>
<td>Flash point (°C)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not Available</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not Available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>Not Available</td>
</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Surface Tension (dyn/cm or mN/m)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Volatile Component (%vol)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Vapour pressure (kPa)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Gas group</td>
<td>Not Available</td>
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<tr>
<td>Solubility in water (g/L)</td>
<td>Miscible</td>
</tr>
<tr>
<td>pH as a solution (1%)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Vapour density (Air = 1)</td>
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</tr>
<tr>
<td>VOC g/L</td>
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</tr>
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</table>

9.2. Other information
Not Available

SECTION 10 STABILITY AND REACTIVITY

10.1. Reactivity
See section 7.2

10.2. Chemical stability
- Unstable in the presence of incompatible materials.
- Product is considered stable under normal handling conditions.
- Prolonged exposure to heat.
- Hazardous polymerisation will not occur.
- Many of the salts of persacids are unstable or explosive and are capable of initiation by heat, friction or impact, and all are powerful oxidants.

BREHERICK L.: Handbook of Reactive Chemical Hazards

10.3. Possibility of hazardous reactions
See section 7.2

10.4. Conditions to avoid
See section 7.2

10.5. Incompatible materials
See section 7.2

10.6. Hazardous decomposition products
See section 5.3

SECTION 11 TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Inhaled
Inhalation of dusts, generated by the material, during the course of normal handling, may be harmful.
Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system, in a substantial number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system.
Clinical signs in persulfate salt inhalation studies include ocular and nasal discharge and respiratory distress.
Persulfates also can be irritating to the respiratory track of occupationally exposed individuals such as hairdressers.
Acute dermal, oral, and inhalation toxicity studies are available, but only the latter are remarkable, with gross lesions observed in the lungs, liver, stomach, and spleen. Short-term inhalation toxicity was observed when rats were exposed to aerosolized ammonium persulfate at concentrations of 4 mg/m³ and greater.
Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive
concentrations of particulate are inhaled. If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.

**Ingestion**

Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. In short-term and subchronic feeding studies the results were mixed; some studies found no evidence of toxicity and others found local damage to the mucous membrane in the gastrointestinal tract, but no other systemic effects. Following ingestion, persulfate salts are likely to decompose to hydrogen peroxide and sulfate. The hydrogen peroxide will be rapidly converted to oxygen and water by various enzymes.

**Skin Contact**

Evidence exists, or practical experience predicts, that the material either induces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis. The material may accentuate any pre-existing dermatitis condition. Studies in humans indicate that aqueous solutions of 5% persulfate or higher can cause skin irritation. Persulfates may be irritating to skin of occupationally exposed individuals such as hairdressers. Open cuts, abrasions or irritated skin should not be exposed to this material. Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

**Eye**

Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/lotionation may occur. Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems. Practical evidence shows that inhalation of the material is capable of inducing a sensitisation reaction in a substantial number of individuals at a greater frequency than would be expected from the response of a normal population. Pulmonary sensitisation, resulting in hyperactive airway dysfunction and pulmonary allergy may be accompanied by fatigue, malaise and aching. Significant symptoms of exposure may persist for extended periods, even after exposure ceases. Symptoms can be activated by a variety of non-specific environmental stimuli such as automobile exhaust, perfumes and passive smoking. Practical experience shows that skin contact with the material is capable either of inducing a sensitisation reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals. Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

**Chronic**

Long-term exposure to high dust concentrations may cause changes in lung function (i.e. pneumonconiosis) caused by particles less than 0.5 micron penetrating and remaining in the lung. A prime symptom is breathlessness. Lung shadows show on X-ray. Persulfate allergy is not uncommon and manifests itself in the form of a skin rash, eczema and respiratory conditions such as asthma. Allergy may develop after repeated exposures. Asthmatic complaints (persulfate asthma) have been described following use of persulfate salts particularly amongst hairdressers. Furthermore the ammonium persulfate contained in bleaching powder is one of the most important contact allergens in the hairdressing profession. It has been suggested that the development of sensitisation is due to an IgE-induced allergic pathomechanism. Wbildy R et al. Int. Arch. Occup. Environ. Health (1995) 67:413-477

A variety of central nervous system effects can occur following prolonged exposure to oxygen at partial pressures in excess of 200 kPa: these include dizziness, impaired coordination, visual and hearing disturbances, and seizures. Prolonged exposure at or normal elevated pressure may cause severe thickening and scarring of tissue.

### Ammonium Persulphate

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

### ammonium persulfate

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>dermal (rat) LD50: &gt;2000 mg/kg</td>
<td>Nil reported</td>
</tr>
<tr>
<td>inhalation (rat) LC50: &gt;42.9 mg/ml</td>
<td></td>
</tr>
<tr>
<td>Oral (rat) LD50: 689 mg/kgp</td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**

1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.
2. Value obtained from manufacturer’s SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of Chemical Substances

### Ammonium Persulphate

The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke’s oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be more important than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

Allergic reactions which develop in the respiratory passages as bronchial asthma or rhinoconjunctivitis, are mostly the result of reactions of the allergen with
**SECTION 12 ECOLOGICAL INFORMATION**

12.1. Toxicity

<table>
<thead>
<tr>
<th>Acute Toxicity</th>
<th>Carcinogenicity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skin Irritation/Corrosion</th>
<th>Reproductivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Serious Eye Damage/Inflammation</th>
<th>STOT - Single Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respiratory or Skin sensitisation</th>
<th>STOT - Repeated Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mutagenicity</th>
<th>Aspiration Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**AMMONIUM PERSULFATE**

The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

Allergic reactions which develop in the respiratory passages as bronchial asthma or rhinoconjunctivitis, are mostly the result of reactions of the allergen with specific antibodies of the IgE class and belong in their reaction rates to the manifestation of the immediate type. In addition to the allergen-specific potential for causing respiratory sensitisation, the amount of the allergen, the exposure period and the genetically determined disposition of the exposed person are likely to be decisive. Factors which increase the sensitvity of the mucosa may play a role in predisposing a person to allergy. They may be genetically determined or acquired, for example, during infections or exposure to irritant substances. Immunologically the low molecular weight substances become complete allergens in the organism either by binding to peptides or proteins (haptens) or after metabolism (prohaptens).

Particular attention is drawn to so-called atopic diathesis which is characterised by an increased susceptibility to allergic rhinitis, allergic bronchial asthma and atopic eczema (neurodermatitis) which is associated with increased IgE synthesis. Exogenous allergic alveolitis is induced essentially by allergen specific immune-complexes of the IgG type; cell-mediated reactions (T lymphocytes) may be involved. Such allergy is of the delayed type with onset up to four hours following exposure.

<table>
<thead>
<tr>
<th>Inhalation (rat) TCL0</th>
<th>3.8 mg/m3/23H/7D-I</th>
</tr>
</thead>
</table>

**Legend:**
- Data available but does not fill the criteria for classification
- Data required to make classification available
- Data Not Available to make classification
## 12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Endpoint</th>
<th>Test Duration (hr)</th>
<th>Species</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>ammonium persulfate</td>
<td>LC50</td>
<td>96</td>
<td>Fish</td>
<td>76.3mg/L</td>
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<tr>
<td>ammonium persulfate</td>
<td>EC50</td>
<td>120</td>
<td>Crustacea</td>
<td>11mg/L</td>
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<td>ammonium persulfate</td>
<td>EC50</td>
<td>48</td>
<td>Crustacea</td>
<td>21.22mg/L</td>
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<td>ammonium persulfate</td>
<td>NOEC</td>
<td>120</td>
<td>Crustacea</td>
<td>5mg/L</td>
<td>2</td>
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<tr>
<td>ammonium persulfate</td>
<td>EC50</td>
<td>72</td>
<td>Algae or other aquatic plants</td>
<td>83.7mg/L</td>
<td>2</td>
</tr>
</tbody>
</table>

### Legend:
- Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPWP Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

## 12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Bioaccumulation</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>ammonium persulfate</td>
<td>No Data available for all ingredients</td>
<td></td>
</tr>
</tbody>
</table>

**Extracted from:**
- IUCLID Toxicity Data
- Europe ECHA Registered Substances - Ecotoxicological Information
- Aquatic Toxicity
- EPWP Suite V3.12 - Aquatic Toxicity Data (Estimated)
- US EPA, Ecotox database - Aquatic Toxicity Data
- ECETOC Aquatic Hazard Assessment Data
- NITE (Japan) - Bioconcentration Data
- METI (Japan) - Bioconcentration Data
- Vendor Data
12.4. Mobility in soil

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Data available for all ingredients</td>
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</table>

12.5. Results of PBT and vPvB assessment

<table>
<thead>
<tr>
<th>Relevant available data</th>
<th>P</th>
<th>B</th>
<th>T</th>
</tr>
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<tbody>
<tr>
<td>Not Available</td>
<td>Not Available</td>
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<td></td>
</tr>
<tr>
<td>PBT Criteria fulfilled?</td>
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<td>Not Available</td>
<td></td>
</tr>
</tbody>
</table>

12.6. Other adverse effects
No data available

SECTION 13 DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

- Containers may still present a chemical hazard/danger when empty. Return to supplier for reuse/recycling if possible.
- If container cannot be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
- Where possible retain label warnings and SDS and observe all notices pertaining to the product.
- Waste persulfate solids or solutions will be treated to decompose the material into innocuous metal sulfates or diluted to levels where they are no longer hazardous.
- Used product containers and residual (waste) persulfate solutions will either be diluted and sent to a wastewater treatment facility or sent into a domestic waste system. Under these conditions the product is expected to be diluted and to degrade into sulfate or bisulfate salts.
- Large quantities of persulfate waste materials are usually collected in appropriate containers and disposed of as hazardous waste.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. In most instances the supplier of the material should be consulted.

- DO NOT allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.
- Recycle containers if possible, or dispose of in an authorised landfill.

<table>
<thead>
<tr>
<th>Waste treatment options</th>
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<tbody>
<tr>
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SECTION 14 TRANSPORT INFORMATION

Labels Required

LIMITED QUANTITY: 410-1KG

Land transport (ADR)

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<tr>
<th>14.1.DE number</th>
<th>1444</th>
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<tbody>
<tr>
<td>14.2. Packing group</td>
<td>III</td>
</tr>
<tr>
<td>14.3. UN proper shipping name</td>
<td>AMMONIUM PERSULPHATE</td>
</tr>
<tr>
<td>14.4. Environmental hazard</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>14.5. Transport hazard class(es)</td>
<td>Class 5.1</td>
</tr>
</tbody>
</table>
14.6. Special precautions for user

| Hazard identification (Kemler) | 50 |
| Classification code | O2 |
| Hazard Label | 5.1 |
| Special provisions | Not Applicable |
| Limited quantity | 5 kg |

Air transport (ICAO-IATA / DGR)

14.1. UN number | 1444 |
14.2. Packing group | III |
14.3. UN proper shipping name | Ammonium persulphate |
14.4. Environmental hazard | Not Applicable |
14.5. Transport hazard class(es) | ICAO/IATA Class | 5.1 |
| ICAO / IATA Subrisk | Not Applicable |
| ERG Code | 5L |
14.6. Special precautions for user

| Special provisions | Not Applicable |
| Cargo Only Packing Instructions | 563 |
| Cargo Only Maximum Qty / Pack | 100 kg |
| Passenger and Cargo Packing Instructions | 569 |
| Passenger and Cargo Maximum Qty / Pack | 25 kg |
| Passenger and Cargo Limited Quantity Packing Instructions | Y546 |
| Passenger and Cargo Limited Maximum Qty / Pack | 10 kg |

Sea transport (IMDG-Code / GGVSee)

14.1. UN number | 1444 |
14.2. Packing group | III |
14.3. UN proper shipping name | AMMONIUM PERSULPHATE |
14.4. Environmental hazard | Not Applicable |
14.5. Transport hazard class(es) | IMDG Class | 5.1 |
| IMDG Subrisk | Not Applicable |
14.6. Special precautions for user

| EMS Number | F-A, S-Q |
| Special provisions | Not Applicable |
| Limited Quantities | 5 kg |

Inland waterways transport (ADN)

14.1. UN number | 1444 |
14.2. Packing group | III |
14.3. UN proper shipping name | AMMONIUM PERSULPHATE |
14.4. Environmental hazard | Not Applicable |
14.5. Transport hazard class(es) | 5.1 Not Applicable |
14.6. Special precautions for user

| Classification code | O2 |
| Special provisions | Not Applicable |
| Limited quantity | 5 kg |
| Equipment required | PP |
| Fire cones number | 0 |

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable
SECTION 15 REGULATORY INFORMATION

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

**AMMONIUM PERSULFATE (7727-54-0) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

- European Customs Inventory of Chemical Substances (ECICS) (English)
- European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)


15.2. Chemical safety assessment

For further information please look at the Chemical Safety Assessment and Exposure Scenarios prepared by your Supply Chain if available.

**ECHA SUMMARY**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS number</th>
<th>Index No</th>
<th>ECHA Dossier</th>
</tr>
</thead>
<tbody>
<tr>
<td>ammonium persulfate</td>
<td>7727-54-0</td>
<td>016-060-00-6</td>
<td>01-2119485973-19-0001</td>
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</tbody>
</table>

**Harmonisation (C&L Inventory)**

<table>
<thead>
<tr>
<th>Harmonisation</th>
<th>Hazard Class and Category Code(s)</th>
<th>Pictograms Signal Word Code(s)</th>
<th>Hazard Statement Code(s)</th>
</tr>
</thead>
</table>

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

**National Inventory**

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia - AICS</td>
<td>Y</td>
</tr>
<tr>
<td>Canada - DSL</td>
<td>Y</td>
</tr>
<tr>
<td>Canada - NDSL</td>
<td>Y (ammonium persulfate)</td>
</tr>
<tr>
<td>China - IECSC</td>
<td>Y</td>
</tr>
<tr>
<td>Europe - EINEC/ELINCS/NLP</td>
<td>Y</td>
</tr>
<tr>
<td>Japan - ENCS</td>
<td>Y</td>
</tr>
<tr>
<td>Korea - KECI</td>
<td>Y</td>
</tr>
<tr>
<td>New Zealand - NZIoC</td>
<td>Y</td>
</tr>
<tr>
<td>Philippines - PICCS</td>
<td>Y</td>
</tr>
<tr>
<td>USA - TSCA</td>
<td>Y</td>
</tr>
</tbody>
</table>

**Legend:**

Y = All ingredients are on the inventory
N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing (see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

**Full text Risk and Hazard codes**

- H271 May cause fire or explosion; strong oxidizer
- H312 Harmful in contact with skin

**Other information**

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references. A list of reference resources used to assist the committee may be found at:

[www.chemwatch.net](http://www.chemwatch.net)

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:

EN 166 Personal eye-protection
EN 340 Protective clothing
EN 374 Protective gloves against chemicals and micro-organisms
EN 13832 Footwear protecting against chemicals
EN 133 Respiratory protective devices

**Definitions and abbreviations**

- PC — TWA: Permissible Concentration-Time Weighted Average
- PC — STEL: Permissible Concentration-Short Term Exposure Limit
- IARC: International Agency for Research on Cancer
- ACGIH: American Conference of Governmental Industrial Hygienists
- STEL: Short Term Exposure Limit

Continued...
TEEL: Temporary Emergency Exposure Limit,
IDLH: Immediately Dangerous to Life or Health Concentrations
OSF: Odour Safety Factor
NOAEL: No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index