

# Ultrastick 4010

## Product review by Chemwatch

Version No: 0.2

Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

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

### Product Identifier

Product name	Ultrastick 4010
Synonyms	Not Available
Other means of identification	Not Available

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

Relevant identified uses	Use according to manufacturer's directions.
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### Details of the manufacturer or supplier of the safety data sheet

Registered company name	Product review by Chemwatch
Address	Australia
Telephone	Not Available
Fax	Not Available
Website	Not Available
Email	Not Available

### Emergency telephone number

Association / Organisation	CHEMWATCH EMERGENCY RESPONSE (24/7)
Emergency telephone numbers	+61 1800 951 288
Other emergency telephone numbers	+61 3 9573 3188

## SECTION 2 HAZARDS IDENTIFICATION

### Classification of the substance or mixture

Poisons Schedule	Not Applicable
Classification <sup>[1]</sup>	Gases Under Pressure (Dissolved Gas), Skin Corrosion/Irritation Category 1A, Serious Eye Damage/Eye Irritation Category 1, Acute Toxicity (Inhalation) Category 4, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3, Germ Cell Mutagenicity Category 2, Carcinogenicity Category 1A, Reproductive Toxicity Category 2, Specific Target Organ Toxicity - Repeated Exposure Category 2
Legend:	1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI

### Label elements

Hazard pictogram(s)	
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SIGNAL WORD	<b>DANGER</b>
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### Hazard statement(s)

H280	Contains gas under pressure; may explode if heated.
H314	Causes severe skin burns and eye damage.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.

### Precautionary statement(s) Prevention

P201	Obtain special instructions before use.
P260	Do not breathe gas.
P264	Wash all exposed external body areas thoroughly after handling.

<b>P271</b>	Use only outdoors or in a well-ventilated area.
<b>P280</b>	Wear protective gloves, protective clothing, eye protection and face protection.

Precautionary statement(s) Response

<b>P301+P330+P331</b>	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
<b>P303+P361+P353</b>	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
<b>P305+P351+P338</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
<b>P308+P313</b>	IF exposed or concerned: Get medical advice/ attention.
<b>P310</b>	Immediately call a POISON CENTER/doctor/physician/first aider.
<b>P363</b>	Wash contaminated clothing before reuse.
<b>P304+P340</b>	IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Precautionary statement(s) Storage

<b>P405</b>	Store locked up.
<b>P410+P403</b>	Protect from sunlight. Store in a well-ventilated place.
<b>P403+P233</b>	Store in a well-ventilated place. Keep container tightly closed.

Precautionary statement(s) Disposal

<b>P501</b>	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.
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SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
75-07-0	20	acetaldehyde
16389-88-1	20	dolomite
1318-00-9	20	vermiculite
7664-93-9	20	sulfuric acid
7778-18-9	20	calcium sulfate

**Legend:** 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; \* EU IOELVs available

SECTION 4 FIRST AID MEASURES

Description of first aid measures

<b>Eye Contact</b>	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>Immediately hold eyelids apart and flush the eye continuously with running water.</li> <li>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.</li> <li>Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.</li> <li>Transport to hospital or doctor without delay.</li> <li>Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>
<b>Skin Contact</b>	<p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> <li>Immediately flush body and clothes with large amounts of water, using safety shower if available.</li> <li>Quickly remove all contaminated clothing, including footwear.</li> <li>Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.</li> <li>Transport to hospital, or doctor.</li> </ul>
<b>Inhalation</b>	<ul style="list-style-type: none"> <li>If fumes or combustion products are inhaled remove from contaminated area.</li> <li>Lay patient down. Keep warm and rested.</li> <li>Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.</li> <li>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.</li> <li>Transport to hospital, or doctor, without delay.</li> </ul>
<b>Ingestion</b>	<ul style="list-style-type: none"> <li>For advice, contact a Poisons Information Centre or a doctor at once.</li> <li>Urgent hospital treatment is likely to be needed.</li> <li>If swallowed do <b>NOT</b> induce vomiting.</li> <li>If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> <li>Observe the patient carefully.</li> <li>Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.</li> <li>Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.</li> <li>Transport to hospital or doctor without delay.</li> <li>If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.</li> </ul>

Indication of any immediate medical attention and special treatment needed

Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically. Mechanical means should be used if it is considered necessary to evacuate the stomach contents; these include gastric lavage after endotracheal intubation. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours.

Treat symptomatically.

For acute or short term repeated exposures to strong acids:

- Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
- Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling
- Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the dessicating action of the acid on proteins in specific tissues.

- INGESTION:
- Immediate dilution (milk or water) within 30 minutes post ingestion is recommended.
  - **DO NOT attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.**
  - Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
  - Charcoal has no place in acid management.
  - Some authors suggest the use of lavage within 1 hour of ingestion.
- SKIN:
- Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
  - Deep second-degree burns may benefit from topical silver sulfadiazine.
- EYE:
- Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjunctival cul-de-sacs. Irrigation should last at least 20-30 minutes. **DO NOT use neutralising agents or any other additives.** Several litres of saline are required.
  - Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
  - Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).
- [Ellenhorn and Barceloux: Medical Toxicology]
- For acute or short-term repeated exposures to formaldehyde:
- INGESTION:
- Patients present early with severe corrosion of the gastro-intestinal tract and systemic effects.
  - Inflammation and ulceration may progress to strictures.
  - Severe acidosis results from rapid conversion of formaldehyde to formic acid. Coma, hypotension, renal failure and apnoea complicate ingestion.
  - Decontaminate by dilution with milk or water containing ammonium acetate; vomiting should be induced. Follow with gastric lavage using a weak ammonia solution (converts formaldehyde to relatively inert pentamethylenetetramine)
  - Gastric lavage is warranted only in first 15 minutes following ingestion.
- SKIN:
- Formaldehyde can combine with epidermal protein to produce a hapten-protein couple capable of sensitising T-lymphocytes. Subsequent exposures cause a type IV hypersensitivity reaction (i.e allergic contact dermatitis). [Ellenhorn & Barceloux: Medical Toxicology]

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog - Large fires only.

Special hazards arising from the substrate or mixture

Fire Incompatibility	• Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result
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Advice for firefighters

Fire Fighting	<ul style="list-style-type: none"><li>• Alert Fire Brigade and tell them location and nature of hazard.</li><li>• Wear breathing apparatus plus protective gloves.</li><li>• Prevent, by any means available, spillage from entering drains or water courses.</li><li>• Use water delivered as a fine spray to control fire and cool adjacent area.</li><li>• <b>DO NOT</b> approach containers suspected to be hot.</li><li>• Cool fire exposed containers with water spray from a protected location.</li><li>• If safe to do so, remove containers from path of fire.</li><li>• Equipment should be thoroughly decontaminated after use.</li></ul>
Fire/Explosion Hazard	<p><b>WARNING:</b> In use may form flammable/ explosive vapour-air mixtures.</p> <ul style="list-style-type: none"><li>• When silica dust is dispersed in air, firefighters should wear inhalation protection as hazardous substances from the fire may be adsorbed on the silica particles.</li><li>• When heated to extreme temperatures, (&gt;1700 deg.C) amorphous silica can fuse.</li><li>• Combustible.</li><li>• Slight fire hazard when exposed to heat or flame.</li><li>• Acids may react with metals to produce hydrogen, a highly flammable and explosive gas.</li><li>• Heating may cause expansion or decomposition leading to violent rupture of containers.</li><li>• May emit acrid smoke and corrosive fumes.</li></ul> <p>Combustion products include: carbon monoxide (CO) carbon dioxide (CO2) sulfur oxides (SOx) silicon dioxide (SiO2) other pyrolysis products typical of burning organic material. May emit poisonous fumes. May emit corrosive fumes.</p> <p><b>WARNING:</b> Long standing in contact with air and light may result in the formation of potentially explosive peroxides.</p>
HAZCHEM	Not Applicable

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	<p>Environmental hazard - contain spillage.</p> <ul style="list-style-type: none"><li>• Clean up all spills immediately.</li><li>• Avoid breathing vapours/ aerosols/ or dusts and avoid contact with skin and eyes.</li><li>• Control personal contact with the substance, by using protective equipment.</li><li>• Contain and absorb spill with sand, earth, inert material or vermiculite.</li></ul>
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	<ul style="list-style-type: none"><li>• Place in a suitable, labelled container for waste disposal.</li></ul>
Major Spills	<p>Environmental hazard - contain spillage.</p> <ul style="list-style-type: none"><li>• Clear area of personnel and move upwind.</li><li>• Alert Fire Brigade and tell them location and nature of hazard.</li><li>• Wear breathing apparatus plus protective gloves.</li><li>• Prevent, by any means available, spillage from entering drains or water course.</li><li>• Stop leak if safe to do so.</li><li>• Contain spill with sand, earth or vermiculite.</li><li>• Collect recoverable product into labelled containers for recycling.</li><li>• Neutralise/decontaminate residue (see Section 13 for specific agent).</li><li>• Collect solid residues and seal in labelled drums for disposal.</li><li>• Wash area and prevent runoff into drains.</li><li>• After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.</li><li>• If contamination of drains or waterways occurs, advise emergency services.</li></ul>

Reference to other sections

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

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	<ul style="list-style-type: none"><li>• Avoid all personal contact, including inhalation.</li><li>• Wear protective clothing when risk of exposure occurs.</li><li>• Use in a well-ventilated area.</li><li>• Prevent concentration in hollows and sumps.</li><li>• <b>DO NOT enter confined spaces until atmosphere has been checked.</b></li><li>• <b>DO NOT allow material to contact humans, exposed food or food utensils.</b></li><li>• Avoid contact with incompatible materials.</li><li>• <b>When handling, DO NOT eat, drink or smoke.</b></li><li>• Keep containers securely sealed when not in use.</li><li>• Avoid physical damage to containers.</li><li>• Always wash hands with soap and water after handling.</li><li>• Work clothes should be laundered separately. Launder contaminated clothing before re-use.</li><li>• Use good occupational work practice.</li><li>• Observe manufacturer's storage and handling recommendations contained within this SDS.</li><li>• Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.</li></ul>
Other information	

Conditions for safe storage, including any incompatibilities

Suitable container	<ul style="list-style-type: none"><li>• Lined metal can, lined metal pail/ can.</li><li>• Plastic pail.</li><li>• Polyliner drum.</li><li>• Packing as recommended by manufacturer.</li><li>• Check all containers are clearly labelled and free from leaks.</li></ul>
Storage incompatibility	<p>Calcium sulfate:</p> <ul style="list-style-type: none"><li>• reacts violently with reducing agents, acrolein, alcohols, chlorine trifluoride, diazomethane, ethers, fluorine, hydrazine, hydrazinium perchlorate, hydrogen peroxide, finely divided aluminium or magnesium, peroxyfuroic acid, red phosphorus, sodium acetylde</li><li>• sensitises most organic azides which are unstable shock- and heat- sensitive explosives</li><li>• may form explosive materials with 1,3-di(5-tetrazolyl)triazene</li><li>• is incompatible with glycidol, isopropyl chlorocarbonate, nitrosyl perchlorate, sodium borohydride</li><li>• is hygroscopic; reacts with water to form gypsum and Plaster of Paris</li></ul> <p>The substance may be or contains a "metalloid"</p> <p>The following elements are considered to be metalloids: boron,silicon, germanium, arsenic, antimony, tellurium and (possibly) polonium</p> <p>The electronegativities and ionisation energies of the metalloids are between those of the metals and nonmetals, so the metalloids exhibit characteristics of both classes. The reactivity of the metalloids depends on the element with which they are reacting. For example, boron acts as a nonmetal when reacting with sodium yet as a metal when reacting with fluorine.</p> <p>Unlike most metals, most metalloids are amphoteric- that is they can act as both an acid and a base. For instance, arsenic forms not only salts such as arsenic halides, by the reaction with certain strong acid, but it also forms arsenites by reactions with strong bases.</p> <p>Most metalloids have a multiplicity of oxidation states or valences. For instance, tellurium has the oxidation states +2, -2, +4, and +6. Metalloids react like non-metals when they react with metals and act like metals when they react with non-metals.</p> <ul style="list-style-type: none"><li>• Inorganic acids are generally soluble in water with the release of hydrogen ions. The resulting solutions have pH's of less than 7.0.</li><li>• Inorganic acids neutralise chemical bases (for example: amines and inorganic hydroxides) to form salts - neutralisation can generate dangerously large amounts of heat in small spaces.</li><li>• The dissolution of inorganic acids in water or the dilution of their concentrated solutions with additional water may generate significant heat.</li><li>• The addition of water to inorganic acids often generates sufficient heat in the small region of mixing to cause some of the water to boil explosively. The resulting "bumping" can spatter the acid.</li><li>• Inorganic acids react with active metals, including such structural metals as aluminum and iron, to release hydrogen, a flammable gas.</li><li>• Inorganic acids can initiate the polymerisation of certain classes of organic compounds.</li><li>• Inorganic acids react with cyanide compounds to release gaseous hydrogen cyanide.</li><li>• Inorganic acids generate flammable and/or toxic gases in contact with dithiocarbamates, isocyanates, mercaptans, nitrides, nitriles, sulfides, and strong reducing agents. Additional gas-generating reactions occur with sulfites, nitrites, thiosulfates (to give H2S and SO3), dithionites (SO2), and even carbonates.</li><li>• Acids often catalyse (increase the rate of) chemical reactions.</li><li>• Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air.</li></ul> <p>Acetic acid:</p> <ul style="list-style-type: none"><li>• vapours forms explosive mixtures with air (above 39 C.)</li><li>• reacts violently with bases such as carbonates and hydroxides (giving off large quantities of heat), oxidisers, organic amines, acetaldehyde, potassium tert-butoxide</li><li>• reacts (sometimes violently), with strong acids, aliphatic amines, alkanolamines, alkylene oxides, epichlorohydrin, acetic anhydride, 2-aminoethanol, ammonia, ammonium nitrate, bromine pentafluoride, chlorosulfonic acid, chromic acid, chromium trioxide, ethylenediamine, ethyleneimine, hydrogen peroxide, isocyanates, oleum, perchloric acid, permanganates, phosphorus isocyanate, phosphorus trichloride, sodium peroxide, xylene</li><li>• attacks cast iron, stainless steel and other metals, forming flammable hydrogen gas</li><li>• attacks many forms of rubber, plastics and coatings</li></ul> <p><b>WARNING: Acetaldehyde is oxidised rapidly and exothermically, by air, to peroxyacetic acid.</b></p> <ul style="list-style-type: none"><li>• Acetaldehyde oxidises readily in air to form unstable peroxides which may explode spontaneously.</li><li>• In one incident, oxygen leaked into free space above acetaldehyde in a storage tank normally purged with nitrogen. An accelerating exothermic oxidation led to detonation. The self-ignition temperature of acetaldehyde-oxygen mixtures depends on the dimensions of the reactor and the partial pressure of peroxyacetic acid accumulated on the walls. Spontaneous ignition temperatures of 71-93 deg. C. were observed</li></ul>

	<ul style="list-style-type: none"> <li>Heat, pressure, shock may destabilise acetaldehyde (containing minor impurities) and result in explosion.</li> <li>Mixtures of 30-60% acetaldehyde vapour with air or with 60-80% oxygen may ignite on surfaces at 176 and 105 deg. C, respectively, owing to the formation and subsequent violent decomposition of peroxyacetic acid.</li> <li>Acetaldehyde is extremely or violently reactive with acid anhydrides, alcohols, halogens, ketones, phenols, amines, anhydrous ammonia, alkalis, isocyanates, phosphorus, hydrogen cyanide or hydrogen sulfide.</li> <li>Oxygenation of acetaldehyde in the presence of cobalt acetate at -20 deg. C. caused precipitation of 1-hydroxyethyl peroxyacetate (acetaldehyde hemi-peracetate) which exploded violently on heating. Ozone or UV light catalyses the autooxidation.</li> <li>Reaction with acetic acid produces exothermic polymerisation.</li> <li>Some of the products of interaction of acetaldehyde and mercury(II) chlorate are highly explosive and extremely shock sensitive.</li> <li>The impure material polymerises readily in the presence of trace metals (iron) or acids.</li> <li>Decomposition above 400 deg. C. produces methane and carbon monoxide.</li> <li>Flammable and/or toxic gases are generated by the combination of aldehydes with azo, diazo compounds, dithiocarbamates, nitrides, and strong reducing agents.</li> <li>Many aldehydes are incompatible with strong acids, amines, strong oxidisers, and alkaline materials.</li> <li>Several medium range aldehydes ignite in air, particularly if exposure is increased by sorption on paper or cloth - ignition often occurs within 2 hours</li> <li>Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous</li> </ul> <p>Sulfuric acid :</p> <ul style="list-style-type: none"> <li>is a strong oxidiser</li> <li>reacts with water or steam</li> <li>reacts violently with many substances including reducing agents, combustible materials, organic substances, alkalis, ammonium tetrahydroxochromate, aniline, 1,2-ethanediamine, ethanolamine, isoprene, mesityl oxide, endo--norbanecarboxylic acid ethyl ester, perchlorates, sodium carbonate, zinc chlorate</li> <li>reacts, possibly causing ignition or explosion, with many substances, including non-oxidising mineral acids, organic acids, bases, reducing agents, acetic anhydride, acetone cyanohydrin, acetonitrile, acrolein, acrylates, acrylonitrile, alcohols, aldehydes, alkylene oxides, allyl alcohol, allyl chloride, substituted allyls, 2-aminoethanol, ammonium hydroxide, bromine pentafluoride, n-butyraldehyde, caprolactam solution, carbides, caesium acetylene carbide, chlorine trifluoride, chlorates, chlorosulfonic acid, cresols, cuprous nitride, diisobutylene, ethylene cyanohydrin, ethylene diamine, ethylene glycol, ethyleneimine, fulminates, glycols, hydrochloric acid, iodine heptafluoride, iron, isocyanates, ketones, lithium silicide, mercuric nitride, 2-methylacetonitrile, powdered metals, nitric acid, p-nitrotoluene, pentasilver trihydroxydianinophosphate, perchloric acid, phenols, phosphorus, picrates, potassium chlorate, potassium permanganate, beta-propiolactone, propylene oxide, pyridine, rubidium acetylene, silver permanganate, sodium, sodium chlorate, sodium hydroxide, styrene monomer, zinc phosphide</li> <li>increases the explosive sensitivity of nitromethane</li> <li>incompatible with 2-amino-5-nitrothiazole, 2-aminothiazole, ammonia, aliphatic amines, alkanolamines, amides, organic anhydrides, isocyanate, vinyl acetate, alkylene oxides, epichlorohydrin</li> <li>attacks some plastics, rubber and coatings</li> <li>reacts with metals to produce flammable hydrogen gas</li> <li>Avoid reaction with oxidising agents</li> </ul>
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## SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

### Control parameters

#### OCCUPATIONAL EXPOSURE LIMITS (OEL)

#### INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	sulfuric acid	Sulphuric acid	1 mg/m3	3 mg/m3	Not Available	Not Available
Australia Exposure Standards	calcium sulfate	Calcium sulphate	10 mg/m3	Not Available	Not Available	(a) This value is for inhalable dust containing no asbestos and < 1% crystalline silica.

#### EMERGENCY LIMITS

Ingredient	TEEL-1	TEEL-2	TEEL-3
vermiculite	32 mg/m3	360 mg/m3	2,200 mg/m3
sulfuric acid	Not Available	Not Available	Not Available


Ingredient	Original IDLH	Revised IDLH
acetaldehyde	Not Available	Not Available
dolomite	Not Available	Not Available
vermiculite	Not Available	Not Available
sulfuric acid	15 mg/m3	Not Available
calcium sulfate	Not Available	Not Available

#### OCCUPATIONAL EXPOSURE BANDING

Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
acetaldehyde	E	≤ 0.1 ppm
Notes:	Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.	

### Exposure controls

Appropriate engineering controls	<p>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:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>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.</p> <p>Employers may need to use multiple types of controls to prevent employee overexposure.</p> <p>Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate</p>
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	<p>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.</p> <p>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.</p> <table> <tr> <th>Type of Contaminant:</th><th>Air Speed:</th></tr> <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 conveyer transfers, welding, spray drift, plating acid fumes, pickling (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, conveyer 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> <tr> <td>grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).</td><td>2.5-10 m/s (500-2000 f/min.)</td></tr> </table> <p>Within each range the appropriate value depends on:</p> <table> <tr> <th>Lower end of the range</th><th>Upper end of the range</th></tr> <tr> <td>1: Room air currents minimal or favourable to capture</td><td>1: Disturbing room air currents</td></tr> <tr> <td>2: Contaminants of low toxicity or of nuisance value only.</td><td>2: Contaminants of high toxicity</td></tr> <tr> <td>3: Intermittent, low production.</td><td>3: High production, heavy use</td></tr> <tr> <td>4: Large hood or large air mass in motion</td><td>4: Small hood-local control only</td></tr> </table> <p>Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.</p>	Type of Contaminant:	Air Speed:	solvent, vapours, degreasing etc., evaporating from tank (in still air).	0.25-0.5 m/s (50-100 f/min.)	aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)	direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min.)	grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5-10 m/s (500-2000 f/min.)	Lower end of the range	Upper end of the range	1: Room air currents minimal or favourable to capture	1: Disturbing room air currents	2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity	3: Intermittent, low production.	3: High production, heavy use	4: Large hood or large air mass in motion	4: Small hood-local control only
Type of Contaminant:	Air Speed:																				
solvent, vapours, degreasing etc., evaporating from tank (in still air).	0.25-0.5 m/s (50-100 f/min.)																				
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)																				
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min.)																				
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5-10 m/s (500-2000 f/min.)																				
Lower end of the range	Upper end of the range																				
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents																				
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity																				
3: Intermittent, low production.	3: High production, heavy use																				
4: Large hood or large air mass in motion	4: Small hood-local control only																				
<b>Individual protection measures, such as personal protective equipment</b>																					
<b>Eye and face protection</b>	<ul style="list-style-type: none"> <li>Safety glasses with unperforated side shields may be used where continuous eye protection is desirable, as in laboratories; spectacles are not sufficient where complete eye protection is needed such as when handling bulk-quantities, where there is a danger of splashing, or if the material may be under pressure.</li> <li>Chemical goggles whenever there is a danger of the material coming in contact with the eyes; goggles must be properly fitted.</li> <li>Full face shield (20 cm, 8 in minimum) may be required for supplementary but never for primary protection of eyes; these afford face protection.</li> <li>Alternatively a gas mask may replace splash goggles and face shields.</li> <li>Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]</li> </ul>																				
<b>Skin protection</b>	See Hand protection below																				
<b>Hands/feet protection</b>	<ul style="list-style-type: none"> <li>Elbow length PVC gloves</li> </ul> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>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.</li> <li>Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.</li> </ul>																				
<b>Body protection</b>	See Other protection below																				
<b>Other protection</b>	<ul style="list-style-type: none"> <li>Overalls.</li> <li>P.V.C apron.</li> <li>Barrier cream.</li> <li>Skin cleansing cream.</li> <li>Eye wash unit.</li> </ul>																				

## Respiratory protection

Type EAX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content.
- The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
- Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

Appearance	Not Available		
Physical state	Dissolved Gas	Relative density (Water = 1)	Not Available
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	Not Available	Decomposition temperature (°C)	Not Available
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	Not Available

<b>Initial boiling point and boiling range (°C)</b>	Not Available	<b>Molecular weight (g/mol)</b>	Not Available
<b>Flash point (°C)</b>	Not Available	<b>Taste</b>	Not Available
<b>Evaporation rate</b>	Not Available	<b>Explosive properties</b>	Not Available
<b>Flammability</b>	Not Available	<b>Oxidising properties</b>	Not Available
<b>Upper Explosive Limit (%)</b>	Not Available	<b>Surface Tension (dyn/cm or mN/m)</b>	Not Available
<b>Lower Explosive Limit (%)</b>	Not Available	<b>Volatile Component (%vol)</b>	Not Available
<b>Vapour pressure (kPa)</b>	Not Available	<b>Gas group</b>	Not Available
<b>Solubility in water</b>	Not Applicable	<b>pH as a solution (1%)</b>	Not Available
<b>Vapour density (Air = 1)</b>	Not Available	<b>VOC g/L</b>	Not Available

## SECTION 10 STABILITY AND REACTIVITY

<b>Reactivity</b>	See section 7
<b>Chemical stability</b>	Product is considered stable and hazardous polymerisation will not occur.
<b>Possibility of hazardous reactions</b>	See section 7
<b>Conditions to avoid</b>	See section 7
<b>Incompatible materials</b>	See section 7
<b>Hazardous decomposition products</b>	See section 5

## SECTION 11 TOXICOLOGICAL INFORMATION

### Information on toxicological effects

<b>Inhaled</b>	<p>The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Corrosive acids can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage. There may be dizziness, headache, nausea and weakness.</p> <p>Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.</p> <p>Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce severe damage to the health of the individual. Relatively small amounts absorbed through the lungs may prove fatal.</p> <p>The irritating effects of the vapour may provide adequate warning of exposure to acetaldehyde. Exposure is limited by the intense irritation of mucous membranes and conjunctiva.</p>
<b>Ingestion</b>	<p>Ingestion of acidic corrosives may produce burns around and in the mouth, the throat and oesophagus. Immediate pain and difficulties in swallowing and speaking may also be evident.</p> <p>The material is not thought to produce adverse health effects following ingestion (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum.</p> <p>Ingestion of acetaldehyde may depress the central nervous system, with symptoms similar to alcohol intoxication. Large doses may produce breathing paralysis.</p> <p>Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733)</p>
<b>Skin Contact</b>	<p>Skin contact with the material may be harmful; systemic effects may result following absorption.</p> <p>Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue.</p> <p>Four students received severe hand burns whilst making moulds of their hands with dental plaster substituted for Plaster of Paris. The dental plaster known as "Stone" was a special form of calcium sulfate hemihydrate containing alpha-hemihydrate crystals that provide high compression strength to the moulds. Beta-hemihydrate (normal Plaster of Paris) does not cause skin burns in similar circumstances.</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>Entry into the blood-stream, through, for example, cuts, abrasions 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.</p> <p>Prolonged dermal exposure to acetaldehyde can cause erythema and burns in humans; repeat contact may result in dermatitis.</p>
<b>Eye</b>	<p>Direct eye contact with acid corrosives may produce pain, tears, sensitivity to light and burns. Mild burns of the epithelia generally recover rapidly and completely.</p> <p>If applied to the eyes, this material causes severe eye damage.</p> <p>Irritation of the eyes may produce a heavy secretion of tears (lachrymation).</p> <p>Eye contact with liquid acetaldehyde may produce a painful burning sensation, excessive tear secretion, and blurred vision. At higher doses, there is reddening of the eyes with some eye discharge.</p>
<b>Chronic</b>	<p>Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and/or ulceration of mouth lining. Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs.</p> <p>Studies show that inhaling this substance for over a long period (e.g. in an occupational setting) may increase the risk of cancer.</p> <p>Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems.</p> <p>Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.</p> <p>There is ample evidence to presume that exposure to this material can cause genetic defects that can be inherited.</p> <p>Based on experiments and other information, there is ample evidence to presume that exposure to this material can cause genetic defects that can be inherited.</p> <p>Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.</p> <p>This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects.</p> <p>Ample evidence exists from experimentation that reduced human fertility is directly caused by exposure to the material.</p> <p>Long term exposure to vermiculite usually causes few hazards in low concentration and does not cause cancer. Over years, scarring of the lungs may develop; however tuberculosis does not occur.</p> <p>Amorphous silicas generally are less hazardous than crystalline silicas, but the former can be converted to the latter on heating and subsequent cooling. Inhalation of dusts containing crystalline silicas may lead to silicosis, a disabling lung disease that may take years to develop.</p> <p>Soluble silicates do not exhibit sensitizing potential. Testing in bacterial and animal experiments have not shown any evidence of them causing mutations or birth defects.</p> <p>There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.</p> <p>Chronic exposure to acetaldehyde may produce kidney and liver damage, delirium, hallucinations and mental deterioration.</p> <p>Animal experiments found that acetaldehyde increased the incidence of cancers in the nose and larynx of mouse and hamsters.</p> <p>Repeated or long-term occupational exposure is likely to produce cumulative health effects involving organs or biochemical systems.</p>



Ultrastick 4010	TOXICITY	IRRITATION
	Not Available	Not Available
acetaldehyde	TOXICITY	IRRITATION
	Not Available	Eye (human): 50 ppm/15min
		Eye (rabbit): 40 mg SEVERE
		Skin (rabbit): 500 mg open mild
dolomite	TOXICITY	IRRITATION
	Not Available	Not Available
vermiculite	TOXICITY	IRRITATION
	Not Available	Not Available
sulfuric acid	TOXICITY	IRRITATION
	Inhalation(Mouse) LC50; 0.85 mg/l4h <sup>[1]</sup>	Eye (rabbit): 1.38 mg SEVERE
	Oral (Rat) LD50; 2140 mg/kg <sup>[2]</sup>	Eye (rabbit): 5 mg/30sec SEVERE
calcium sulfate	TOXICITY	IRRITATION
	Inhalation(Rat) LC50; >3.26 mg/l4h <sup>[1]</sup>	Not Available
	Oral (Rat) LD50; >1581 mg/kg <sup>[1]</sup>	
<b>Legend:</b>	1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances	

dolomite	No significant acute toxicological data identified in literature search.
Ultrastick 4010	<p>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.</p> <p>For silica amorphous: Derived No Adverse Effects Level (NOAEL) in the range of 1000 mg/kg/d. In humans, synthetic amorphous silica (SAS) is essentially non-toxic by mouth, skin or eyes, and by inhalation. Epidemiology studies show little evidence of adverse health effects due to SAS. Repeated exposure (without personal protection) may cause mechanical irritation of the eye and drying/cracking of the skin.</p> <p>When experimental animals inhale synthetic amorphous silica (SAS) dust, it dissolves in the lung fluid and is rapidly eliminated. If swallowed, the vast majority of SAS is excreted in the faeces and there is little accumulation in the body. Following absorption across the gut, SAS is eliminated via urine without modification in animals and humans. SAS is not expected to be broken down (metabolised) in mammals.</p> <p>After ingestion, there is limited accumulation of SAS in body tissues and rapid elimination occurs. Intestinal absorption has not been calculated, but appears to be insignificant in animals and humans. SASs injected subcutaneously are subjected to rapid dissolution and removal. There is no indication of metabolism of SAS in animals or humans based on chemical structure and available data. In contrast to crystalline silica, SAS is soluble in physiological media and the soluble chemical species that are formed are eliminated via the urinary tract without modification.</p> <p>Both the mammalian and environmental toxicology of SASs are significantly influenced by the physical and chemical properties, particularly those of solubility and particle size. SAS has no acute intrinsic toxicity by inhalation. Adverse effects, including suffocation, that have been reported were caused by the presence of high numbers of respirable particles generated to meet the required test atmosphere. These results are not representative of exposure to commercial SASs and should not be used for human risk assessment. Though repeated exposure of the skin may cause dryness and cracking, SAS is not a skin or eye irritant, and it is not a sensitiser.</p> <p>Repeated-dose and chronic toxicity studies confirm the absence of toxicity when SAS is swallowed or upon skin contact.</p> <p>Long-term inhalation of SAS caused some adverse effects in animals (increases in lung inflammation, cell injury and lung collagen content), all of which subsided after exposure.</p> <p>Numerous repeated-dose, subchronic and chronic inhalation toxicity studies have been conducted with SAS in a number of species, at airborne concentrations ranging from 0.5 mg/m<sup>3</sup> to 150 mg/m<sup>3</sup>. Lowest-observed adverse effect levels (LOAELs) were typically in the range of 1 to 50 mg/m<sup>3</sup>. When available, the no-observed adverse effect levels (NOAELs) were between 0.5 and 10 mg/m<sup>3</sup>. The difference in values may be explained by different particle size, and therefore the number of particles administered per unit dose. In general, as particle size decreases so does the NOAEL/LOAEL.</p> <p>Neither inhalation nor oral administration caused neoplasms (tumours). SAS is not mutagenic in vitro. No genotoxicity was detected in in vivo assays. SAS does not impair development of the foetus. Fertility was not specifically studied, but the reproductive organs in long-term studies were not affected.</p> <p>For Synthetic Amorphous Silica (SAS) Repeated dose toxicity Oral (rat), 2 weeks to 6 months, no significant treatment-related adverse effects at doses of up to 8% silica in the diet.</p> <p>Inhalation (rat), 13 weeks, Lowest Observed Effect Level (LOEL) = 1.3 mg/m<sup>3</sup> based on mild reversible effects in the lungs. Inhalation (rat), 90 days, LOEL = 1 mg/m<sup>3</sup> based on reversible effects in the lungs and effects in the nasal cavity.</p> <p>For silane treated synthetic amorphous silica: Repeated dose toxicity: oral (rat), 28-d, diet, no significant treatment-related adverse effects at the doses tested.</p> <p>There is no evidence of cancer or other long-term respiratory health effects (for example, silicosis) in workers employed in the manufacture of SAS. Respiratory symptoms in SAS workers have been shown to correlate with smoking but not with SAS exposure, while serial pulmonary function values and chest radiographs are not adversely affected by long-term exposure to SAS.</p> <p>For acid mists, aerosols, vapours Test results suggest that eukaryotic cells are susceptible to genetic damage when the pH falls to about 6.5. Cells from the respiratory tract have not been examined in this respect. Mucous secretion may protect the cells of the airway from direct exposure to inhaled acidic mists (which also protects the stomach lining from the hydrochloric acid secreted there).</p>
acetaldehyde	<p>Laboratory (in vitro) and animal studies show, exposure to the material may result in a possible risk of irreversible effects, with the possibility of producing mutation.</p> <p>The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.</p> <p><b>WARNING:</b> This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans. Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen [National Toxicology Program: U.S. Dep. of Health &amp; Human Services 2002]</p>
sulfuric acid	<p>Occupational exposures to strong inorganic acid mists of sulfuric acid: <b>WARNING:</b> For inhalation exposure <u>ONLY</u>: This substance has been classified by the IARC as Group 1: <b>CARCINOGENIC TO HUMANS</b></p>



<b>Ultrastick 4010 &amp; acetaldehyde &amp; sulfuric acid</b>		Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. 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. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production.	
Acute Toxicity	✓	Carcinogenicity	✓
Skin Irritation/Corrosion	✓	Reproductivity	✗
Serious Eye Damage/Irritation	✓	STOT - Single Exposure	✓
Respiratory or Skin sensitisation	✗	STOT - Repeated Exposure	✓
Mutagenicity	✓	Aspiration Hazard	✗
<b>Legend:</b> ✗ – Data either not available or does not fill the criteria for classification ✓ – Data available to make classification			

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Ultrastick 4010	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available
acetaldehyde	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available
dolomite	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available
vermiculite	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available
sulfuric acid	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	EC50	72h	Algae or other aquatic plants	>100mg/l	2
	EC50	48h	Crustacea	42.5mg/l	1
	ErC50	72h	Algae or other aquatic plants	>100mg/l	2
	LC50	96h	Fish	8mg/l	1
	NOEC(ECx)	1560h	Fish	0.025mg/l	2
calcium sulfate	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	NOEC(ECx)	0.25h	Fish	75mg/l	4
	EC50	72h	Algae or other aquatic plants	>79mg/l	2
	LC50	96h	Fish	>79mg/l	2
<b>Legend:</b>		Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 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			

On the basis of available evidence concerning either toxicity, persistence, potential to accumulate and or observed environmental fate and behaviour, the material may present a danger, immediate or long-term and /or delayed, to the structure and/ or functioning of natural ecosystems.

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

**Ecotoxicity:**

The tolerance of water organisms towards pH margin and variation is diverse. Recommended pH values for test species listed in OECD guidelines are between 6.0 and almost 9.

Acute testing with fish showed 96h-LC50 at about pH 3.5

For Inorganic Sulfate:

Environmental Fate - Sulfates can produce a laxative effect at concentrations of 1000 - 1200 mg/liter, but no increase in diarrhea, dehydration or weight loss. The presence of sulfate in drinking-water can also result in a noticeable taste. Sulfate may also contribute to the corrosion of distribution systems. No health-based guideline value for sulfate in drinking water is proposed.

Atmospheric Fate: Sulfates are removed from the air by both dry and wet deposition processes. Wet deposition processes including rain-out (a process that occurs within the clouds) and washout (removal by precipitation below the clouds) which contribute to the removal of sulfate from the atmosphere.

Terrestrial Fate: Soil - In soil, the inorganic sulfates can adsorb to soil particles or leach into surface water and groundwater. Plants - Sodium sulfate is not very toxic to terrestrial plants however; sulfates can be taken up by plants and be incorporated into the parenchyma of the plant. Some plants (e.g. corn and Kochia Scoparia) are capable of accumulating sulfate to concentrations that are potentially toxic to ruminants. Jack pine are the most sensitive plant species.

Aquatic Fate: Sulfate in water can also be reduced by sulfate bacteria (Thiobacilli) which use them as a source of energy. In anaerobic environments sulfate is biologically reduced to (hydrogen) sulfide by sulfate reducing bacteria, or incorporated into living organisms as source of sulfur. Sodium sulfate is not reactive in aqueous solution at room temperature. Sodium sulfate will completely dissolve, ionize and distribute across the entire planetary "aquasphere". Some sulfates may eventually be deposited with the majority of sulfates participating in the sulfur cycle in which natural and industrial sodium sulfates are not distinguishable.

Ecotoxicity: Significant bioconcentration or bioaccumulation is not expected. Algae are the most sensitive to sodium sulfate and toxicity occurs in bacteria from 2500mg/L. Sulfates are not acutely toxic to fish or invertebrates. Daphnia magna water fleas and fathead minnow appear to be the least sensitive species. Activated sludge showed a very low sensitivity to sodium sulfate. Overall it can be concluded that sodium sulfate has no acute adverse effect on aquatic and sediment dwelling organisms. No data were found for long term toxicity.

Environmental fate: Acetaldehyde may be released into the environment through air or wastewater streams as a result of its production and use by industries. In addition, acetaldehyde also occurs in nature as an intermediate product in respiration of higher plants and can be found in ripened fruits e.g. apples.

Terrestrial fate: If released to soil, acetaldehyde is expected to volatilize rapidly from moist and dry soil surfaces based upon its physico-chemical properties. Acetaldehyde is highly mobile in soil thus may possibly leach into groundwater. Screening test results show that biodegradation may be a significant environmental fate process of the compound in soil.

Acetaldehyde has no adsorptive potential to soils, other than that containing montmorillonite clay.

Aquatic fate: If released to water, acetaldehyde is not expected to adsorb to suspended particles and sediment in the water column but will undergo volatilization from water surfaces based upon its physico-chemical properties. Study shows that biodegradation may be a significant fate process in water. The compound is not expected to undergo hydrolysis due to its lack of hydrolysable functional group.

Atmospheric fate: The model of gas/particle partitioning of semi-volatile organic compounds in the atmosphere demonstrates that acetaldehyde will exist solely as a gas in the ambient atmosphere. Gas-phase acetaldehyde will be degraded in the atmosphere by reaction with photochemically produced hydroxyl radicals. Acetaldehyde can also react with several atmospheric species such as nitrogen dioxide and nitrate radicals. In addition, acetaldehyde can absorb UV light at environmental spectrum indicating potential for photolysis.

Ecotoxicity: Toxicity test results show that acetaldehyde is moderately toxic to aquatic organisms.

Fish LC50 (96h): fathead minnow 37.2 mg/l; bluegill sunfish 53 mg/l

For Sulfuric Acid:

Environmental Fate: Large discharges of sulfuric acid may contribute to the acidification of water and be fatal to aquatic life and soil micro-organisms, and may contribute to the acidification of effluent treatment systems and injure sewage treatment organisms. The substance will react violently with a variety of other chemicals, as well as water.

Atmospheric Fate: Sulfuric acid is removed from the air by dry/wet deposition. In the stratosphere, sulfuric acid aerosols have lifetimes of about 14 and 2.4 days, at altitudes of 15 and 20 km, respectively. At cloud level, the residence time is about 6 days, with shorter residence times in surface air. The substance will react with atmospheric water, (hygroscopic). The substance is a strong oxidizer, (reacts with oxygen), and is highly corrosive to stainless steel.

Terrestrial Fate: Soil - In soil, the ions from sulfuric acid can adsorb to soil particles or leach into surface water and groundwater. The ions, (sulfate, hydrogen), can adsorb to soil particles or be converted to gases. Low oxygen bacteria in sediments and soil can reduce sulfate to sulfur and hydrogen sulfide. Plants - Sulfates can be taken up by plants and be incorporated into the parenchyma of the plant.

Aquatic Fate: In water, sulfuric acid breaks apart into less complex groups of atoms, (dissociates), and the negatively charges sulfate atoms may combine with other positively charges atoms. Sulfuric acid will react violently in alcohol and water, especially if water is added to the product.

Ecotoxicity: Short term degradation products are not likely. However, long term degradation products may arise. The products of degradation are less toxic than the product itself.

Sulfuric acid is moderately toxic to bluegill/sunfish, Aesop shrimp, and western mosquitofish.

**DO NOT** discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
calcium sulfate	HIGH	HIGH

Bioaccumulative potential

Ingredient	Bioaccumulation
calcium sulfate	LOW (LogKOW = -2.2002)

Mobility in soil

Ingredient	Mobility
calcium sulfate	LOW (KOC = 6.124)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal	<ul style="list-style-type: none"><li><b>DO NOT</b> allow wash water from cleaning or process equipment to enter drains.</li><li>It may be necessary to collect all wash water for treatment before disposal.</li><li>In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.</li><li>Where in doubt contact the responsible authority.</li><li>Recycle wherever possible or consult manufacturer for recycling options.</li><li>Consult State Land Waste Authority for disposal.</li><li>Bury or incinerate residue at an approved site.</li><li>Recycle containers if possible, or dispose of in an authorised landfill.</li></ul>
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SECTION 14 TRANSPORT INFORMATION

Labels Required

Marine Pollutant	NO
HAZCHEM	Not Applicable

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

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

Not Applicable

14.8. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
acetaldehyde	Not Available
dolomite	Not Available
vermiculite	Not Available
sulfuric acid	Not Available
calcium sulfate	Not Available

14.9. Transport in bulk in accordance with the IGC Code

Product name	Ship Type
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Product name	Ship Type
acetaldehyde	Not Available
dolomite	Not Available
vermiculite	Not Available
sulfuric acid	Not Available
calcium sulfate	Not Available

SECTION 15 REGULATORY INFORMATION

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

- ACETALDEHYDE IS FOUND ON THE FOLLOWING REGULATORY LISTS
  - Not Applicable
- DOLOMITE IS FOUND ON THE FOLLOWING REGULATORY LISTS
  - Not Applicable
- VERMICULITE IS FOUND ON THE FOLLOWING REGULATORY LISTS
  - Australian Inventory of Industrial Chemicals (AIIC)
- SULFURIC ACID IS FOUND ON THE FOLLOWING REGULATORY LISTS
  - Australian Inventory of Industrial Chemicals (AIIC)
  - Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
  - Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
  - Chemical Footprint Project - Chemicals of High Concern List
  - International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 1: Carcinogenic to humans
  - International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
- CALCIUM SULFATE IS FOUND ON THE FOLLOWING REGULATORY LISTS
  - Australian Inventory of Industrial Chemicals (AIIC)

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	Yes
Canada - DSL	Yes
Canada - NDSL	No (acetaldehyde, sulfuric acid)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	No (dolomite)
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	Yes
Vietnam - NCI	Yes
Russia - FBEPH	Yes
Legend:	Yes = All CAS declared ingredients are on the inventory No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.

SECTION 16 OTHER INFORMATION

Revision Date	07/03/2024
Initial Date	07/03/2024

SDS Version Summary

Version	Issue Date	Sections Updated
0.2	07/03/2024	Name

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.

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.

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TEL (+61 3) 9572 4700.