

## Safety Data Sheet

### Section 1. Identification

**Product name** : Alumibond™ 1200  
**Product code** : 424301  
**Uses advised against** : Consumer, private households, general public  
**Product type** : Powder.  
**Validation date** : 1/23/2014.

Manufacturer - Supplier	Telephone no.:	Fax no.	Emergency phone:
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Cookson Enthone Chemistry Trading (Shanghai) Co., Ltd. Rm 201, No.388 of Muhua North Road, Fengxian District, Shanghai	Tel: 86-21-6390 0600	Fax: 86-21-50912810	Tel: 0532-8388 9090 (24- hour)
Enthone Chemistry A Division of Cookson Singapore Pte Ltd 26 Tuas West Road Singapore 638382	Tel: (65) 6861 1773	Fax: (65) 68611145	Tel: (65) 6861 1773
ENTHONE SDN. BHD. Lot 34 & 36 Lorong IKS Juru 7 Taman Perindustrian Ringan Juru 14100 Simpang Ampat Seberang Perai Selatan Penang, Malaysia	Tel: 60 - 4 507 7787	Fax: 60 4 507 0621	Tel: 60 4 507 7787
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Alent Japan Company - Enthone 480-28 Higashitoyoda, Hiratsuka, Kanagawa 254-0082, Japan	Tel: 81-463-51-4330	Fax: 81-463-55-2588	Tel: 81-(0)463-51-4330
Enthone India A Division of Cookson India Pte. Ltd Developed Plot no 16, North Phase, SIDCO Industrial estate, Ambattur, Chennai - 600098.	Tel: 91-44-26252666	Fax: 91-44-26258627	Tel: 91-44-26252666

### Section 2. Hazards identification

**Classification of the substance or mixture** : OXIDIZING SOLIDS - Category 2  
 ACUTE TOXICITY: ORAL - Category 3  
 SKIN CORROSION/IRRITATION - Category 1A  
 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1  
 RESPIRATORY SENSITIZATION - Category 1  
 SKIN SENSITIZATION - Category 1  
 GERM CELL MUTAGENICITY - Category 2

Continued on next page

## Section 2. Hazards identification

CARCINOGENICITY - Category 1A  
TOXIC TO REPRODUCTION [Fertility] - Category 2  
TOXIC TO REPRODUCTION [Unborn child] - Category 2  
SPECIFIC TARGET ORGAN TOXICITY [respiratory tract] - Category 1  
SPECIFIC TARGET ORGAN TOXICITY [heart, kidneys, liver and nervous system]  
- Category 2  
AQUATIC TOXICITY (ACUTE) - Category 1

### GHS label elements

#### Symbol

:



#### Signal word

: Danger

#### Hazard statements

: May intensify fire; oxidizer.  
Toxic if swallowed.  
Causes severe skin burns and eye damage.  
May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
May cause an allergic skin reaction.  
May cause cancer.  
Suspected of causing genetic defects.  
Suspected of damaging fertility or the unborn child.  
Causes damage to organs. (respiratory tract)  
May cause damage to organs. (heart, kidneys, liver, nervous system)  
Very toxic to aquatic life.

THIS PRODUCT CONTAINS A CYANIDE COMPOUND. AVOID INHALATION AND SKIN EXPOSURE. SEEK MEDICAL ATTENTION IMMEDIATELY IF EXPOSURE IS SUSPECTED. THIS PRODUCT CONTAINS A FLUORIDE COMPOUND. SYMPTOMS MAY BE DELAYED. AVOID EXPOSURE. SEEK MEDICAL ATTENTION IMMEDIATELY IF EXPOSURE IS SUSPECTED.

### Precautionary statements

#### Prevention

: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust or mist. Wash thoroughly after handling. Use personal protective equipment as required. Wear protective gloves. Wear protective clothing. Wear eye/face protection. In case of inadequate ventilation wear respiratory protection. Keep away from heat. Take any precaution to avoid mixing with incompatibles. Avoid release to the environment. Keep out of reach of children. Do not eat, drink or smoke when using this product. Do not breathe dust. Contaminated work clothing should not be allowed out of the workplace. If medical advice is needed, have product container or label at hand.

#### Response

: CYANIDES: MAY BE FATAL IF ABSORBED THROUGH THE SKIN IF SWALLOWED OR INHALED. IMMEDIATELY CONTACT EMERGENCY RESPONSE PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY. IN ADDITION TO THE BASIC FIRST AID PROCEDURES OUTLINED BELOW, IT IS HIGHLY RECOMMENDED THAT PROCEDURES BE ESTABLISHED BY YOUR COMPANY'S PHYSICIAN, CONCERNING FIRST AID AND MEDICAL TREATMENT TO BE USED IN CASE OF CYANIDE POISONING. SUCH PROCEDURE MAY INCLUDE THE ADMINISTRATION OF OXYGEN, ACTIVATED CHARCOAL, OR ANTIDOTES SUCH AS AMYL NITRATE, SODIUM THIOSULFATE, SODIUM NITRITE, OR METHYLENE BLUE. MEDICAL MANAGEMENT GUIDELINES FOR CYANIDE COMPOUNDS ARE AVAILABLE FROM THE CENTERS FOR DISEASE CONTROL, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, AT WWW.ATSDR.CDC.GOV OR BY PHONE AT 1-888-422-8737. Fluoride Compounds: SYMPTOMS MAY BE DELAYED: Clinical signs and symptoms may not appear for up to 24 hours. Concentrations as low as 2% may cause symptoms with prolonged skin contact. When exposure is suspected, immediate medical attention is critical to minimize

## Section 2. Hazards identification

damage May be fatal if absorbed through the skin, inhaled or ingested. Immediately contact emergency response personnel. Get medical attention immediately. In addition to the basic first aid procedures outlined below, it is highly recommended that emergency procedures be established by your company's physician, to be used in case of fluorine poisoning. This procedures may include the administration by qualified personnel of antidotes such as Aqueous Hyamine, Zephiran Chloride, or Calcium Gluconate Solutions for treating affected skin, as well as use of Pontocaine Hydrochloride Solution for eye application.

Immediately call a POISON CENTER or doctor/physician. IF SWALLOWED: Rinse mouth. Do not induce vomiting unless directed to do so by medical personnel. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash with plenty of soap and water. Wash contaminated clothing before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. IF exposed or concerned: Call a POISON CENTER or doctor/physician. Get medical attention/advice. Collect spillage.

- Storage** : Store locked up. Store away from combustibles.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.

**Other hazards which do not result in classification** : Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

## Section 3. Composition/information on ingredients

**Substance/mixture** : Mixture

Ingredient name	%	CAS number
chromium (VI) trioxide	50-60	1333-82-0
Fluoride salt.	10-20	-
tripotassium hexacyanoferrate	10-20	13746-66-2
Fluoride salt.	1-10	-

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in section 8.

## Section 4. First aid measures

### Description of necessary first aid measures

- Inhalation** : Sensitizer to lungs Sensitized persons may subsequently show asthmatic symptoms when exposed to atmospheric concentrations well below the OEL. In the event of any complaints or symptoms, avoid further exposure. Get medical attention immediately. If it is suspected that mists are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Move exposed person to fresh air. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Keep person warm and at rest. If unconscious, place in recovery position and get medical attention immediately. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

## Section 4. First aid measures

**Ingestion** : Get medical attention immediately. Chemical burns must be treated promptly by a physician. Move exposed person to fresh air. Wash out mouth with water. Keep person warm and at rest. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Remove dentures if any. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Never give anything by mouth to an unconscious person. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs.

Follow company first aid procedures for fluoride exposure which may include having victim drink a 10% calcium gluconate solution with 8 to 10 oz. Of water for dilution of material in stomach.

**Skin contact** : Get medical attention immediately. Chemical burns must be treated promptly by a physician. Provide a readily-accessible eyewash facility and quick-drench safety shower. In case of contact, immediately flush skin with plenty of water for at least 30 minutes while removing contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Remove contaminated clothing and shoes. Sensitizer to skin Sensitization may result in dermatitis. In the event of any complaints or symptoms, avoid further exposure. Wash contaminated clothing before reuse. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Follow company first aid procedures for fluoride exposure which may include soaking the affected area with iced 0.2% water solution of hyamine 1622 or iced 0.13% solution of zepharin. If soaking is not possible, compresses soaked in one of these solutions may be applied, changing them every 2 minutes. For sensitive areas (lips, mouth, etc.) A 2.5% calcium gluconate jelly may be used. Seek immediate medical attention.

**Eye contact** : Get medical attention immediately. Chemical burns must be treated promptly by a physician. Check for and remove any contact lenses. Immediately flush eyes with running water for at least 30 minutes, keeping eyelids open. Washing eyes within several seconds of exposure is essential to minimize damage. Follow company first aid procedures for fluoride exposure which may include applying one or two drops of a 0.5% pontocaine hydrochloride solution into the affected eye(s) if a physician is not immediately available. Do not use any skin treatment preparations for burns to the eye(s).

### Over-exposure signs/symptoms

See section 11 for more detailed information on health effects and symptoms.

### Indication of immediate medical attention and special treatment needed, if necessary

**Specific treatments** : **CYANIDES: MAY BE FATAL IF ABSORBED THROUGH THE SKIN IF SWALLOWED OR INHALED. IMMEDIATELY CONTACT EMERGENCY RESPONSE PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY. IN ADDITION TO THE BASIC FIRST AID PROCEDURES OUTLINED BELOW, IT IS HIGHLY RECOMMENDED THAT PROCEDURES BE ESTABLISHED BY YOUR COMPANY'S PHYSICIAN, CONCERNING FIRST AID AND MEDICAL TREATMENT TO BE USED IN CASE OF CYANIDE POISONING. SUCH PROCEDURE MAY INCLUDE THE ADMINISTRATION OF OXYGEN, ACTIVATED CHARCOAL, OR ANTIDOTES SUCH AS AMYL NITRATE, SODIUM THIOSULFATE, SODIUM NITRITE, OR METHYLENE BLUE. MEDICAL MANAGEMENT GUIDELINES FOR CYANIDE COMPOUNDS ARE AVAILABLE FROM THE CENTERS FOR DISEASE CONTROL, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, AT WWW.ATSDR.CDC.GOV OR BY PHONE AT 1-888-422-8737. Fluoride Compounds: SYMPTOMS MAY BE DELAYED: Clinical signs and symptoms may not appear for up to 24 hours. Concentrations as low as 2% may cause symptoms with prolonged skin contact. When exposure is suspected, immediate medical attention is critical to minimize damage. May be fatal if absorbed through the skin, inhaled or ingested. Immediately contact emergency response personnel. Get medical attention immediately. In**

## Section 4. First aid measures

In addition to the basic first aid procedures outlined below, it is highly recommended that emergency procedures be established by your company's physician, to be used in case of fluorine poisoning. This procedure may include the administration by qualified personnel of antidotes such as Aqueous Hyamine, Zephiran Chloride, or Calcium Gluconate Solutions for treating affected skin, as well as use of Pontocaine Hydrochloride Solution for eye application.

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that mists are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Personnel should wear protective clothing. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

## Section 5. Fire-fighting measures

### Extinguishing media

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Specific hazards arising from the chemical** : Oxidizing material. May intensify fire. This material is very toxic to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
nitrogen oxides  
halogenated compounds  
metal oxide/oxides
- Special precautions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Remark** : Not available.

## Section 6. Accidental release measures

- Personal precautions, protective equipment and emergency procedures** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

### Methods and materials for containment and cleaning up



## Section 6. Accidental release measures

- Small spill** : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

## Section 7. Handling and storage

- Precautions for safe handling** : Avoid exposure - obtain special instructions before use. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Put on appropriate personal protective equipment (see section 8). Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. May cause sensitization by inhalation. Skin sensitizer Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure during pregnancy. Do not breathe dust. Do not ingest. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Be sure area is equipped with all necessary emergency equipment including fire extinguishers, and spill response materials. Keep away from combustible materials. Empty containers retain product residue and can be hazardous. Do not reuse product container. Avoid breathing dust. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. Avoid release to the environment.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Separate from reducing agents and combustible materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

## Section 8. Exposure controls/personal protection

### Control parameters

Ingredient name	Exposure limits
chromium (VI) trioxide	<b>ACGIH TLV (United States, 9/2004). Notes: Substance identified by other sources as a suspected or confirmed human carcinogen. NOC = not otherwise classified. 1994-1995 Adoption Substances for which the TLV is higher than the OSHA Permissible Exposure Limit (PEL) and/or the NIOSH Recommended Exposure Limit (REL). See CFR 58(124) :36338-33351, June 30, 1993, for revised OSHA PEL. Identifies substances identified in the BEI documentation for Methemoglobin inducers (for which methemoglobin is the principle toxicity) and organophosphorous cholinesterase inhibitors are part of this notation. Refers</b>

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## Section 8. Exposure controls/personal protection

Fluoride salt.	to Appendix A -- Carcinogens. TWA: 0.05 mg/m <sup>3</sup> 8 hour(s). Form: Soluble <b>ACGIH TLV (United States, 3/2012). Notes: measured as Cr</b> TWA: 0.05 mg/m <sup>3</sup> , (measured as Cr) 8 hour(s). Form: Soluble
tripotassium hexacyanoferrate	<b>ACGIH TLV (United States, 3/2012).</b> TWA: 5 mg/m <sup>3</sup> , (as Zr) 8 hour(s). STEL: 10 mg/m <sup>3</sup> , (as Zr) 15 minute(s).
Fluoride salt.	<b>ACGIH TLV (United States, 3/2012).</b> TWA: 1 mg/m <sup>3</sup> , (as Fe) 8 hour(s). <b>ACGIH TLV (United States, 3/2012).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hour(s).

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

**Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

**Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### Individual protection measures

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

**Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. The user must check that the final choice of type of glove selected for handling this product is the most appropriate and takes into account the particular conditions of use, as included in the user's risk assessment.

**Eye protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If operating conditions cause high dust concentrations to be produced, use dust goggles. Avoid contact with eyes.

**Skin protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Avoid contact with skin and clothing. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

## **Section 9. Physical and chemical properties**

<b>Physical state</b>	: Solid. [Powder.]
<b>Color</b>	: Reddish-Orange
<b>Odor</b>	: Pungent.
<b>Odor threshold</b>	: Not available.
<b>pH</b>	: 1.81 [Conc. (% w/w): 1%]
<b>Melting point</b>	: Not available.
<b>Boiling point</b>	: Not available.
<b>Flash point</b>	: Not available.
<b>Burning time</b>	: Not available.
<b>Burning rate</b>	: Not available.
<b>Evaporation rate</b>	: Not available.
<b>Flammability (solid, gas)</b>	: Not available.
<b>Lower and upper explosive (flammable) limits</b>	: Not available.
<b>Vapor pressure</b>	: Not available.
<b>Vapor density</b>	: Not available.
<b>Relative density</b>	: Not available.
<b>Solubility</b>	: Easily soluble in the following materials: cold water and hot water.
<b>Octanol/water partition coefficient</b>	: Not available.
<b>Decomposition temperature</b>	: Not available.
<b>Auto-ignition temperature</b>	: Not available.
<b>Viscosity</b>	: Not available.

## **Section 10. Stability and reactivity**

<b>Chemical stability</b>	: The product is stable.
<b>Possibility of hazardous reactions</b>	: Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following: contact with combustible materials Reactions may include the following: risk of causing or intensifying fire
<b>Conditions to avoid</b>	: Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Avoid release to the environment.
<b>Incompatibility with various substances</b>	: Reactive with oxidizing agents, organic materials, acids. avoid oil, grease, copper nitrates, Ammonia. and Sodium nitrate
<b>Hazardous decomposition products</b>	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
<b>Other Hazardous decomposition products</b>	: hydrogen fluoride, Potassium fluoride, hydrogen cyanide
<b>Hazardous polymerization</b>	: Under normal conditions of storage and use, hazardous polymerization will not occur.



## Section 11. Toxicological information

**Routes of entry** : Dermal contact. Eye contact. Inhalation. Ingestion.

### Potential health effects

**Remarks** : Cyanide is a chemical asphyxiant that blocks the body from using oxygen. Exposure to a small amount of cyanide by inhalation, absorption through skin or ingestion can cause the following symptoms within minutes: rapid breathing, restlessness, dizziness, weakness, headache, nausea and vomiting, rapid heart rate. Exposure to a large amount of cyanide by any route can cause: convulsions, low blood pressure, slow heart rate, lung injury, respiratory failure, loss of consciousness, possible death.

**Inhalation** : May cause damage to organs following a single exposure if inhaled. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. Adverse symptoms may include the following: respiratory tract irritation coughing Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. Sensitized persons may subsequently show asthmatic symptoms when exposed to atmospheric concentrations well below the OEL. May cause cancer if inhaled. Risk of cancer depends on duration and level of exposure.

**Ingestion** : Toxic if swallowed. May cause burns to mouth, throat and stomach. May cause cancer if swallowed. Risk of cancer depends on duration and level of exposure. May cause damage to organs through prolonged or repeated exposure if swallowed. Fluoride Compounds: Symptoms include: necrotic lesions, hemorrhagic gastritis, pancreatitis

**Skin** : Causes severe burns. Skin Sensitizer: May cause an allergic skin reaction. Fluoride compounds are highly corrosive and readily penetrates the skin causing destruction of deep tissue layers, including bone. Pain may be delayed for up to 24 hours following exposure to concentrations of 1-50% and is often not reported until tissue damage is extreme. Concentrations greater than 50% cause immediate burning, redness and tissue damage. Without immediate medical attention, tissue destruction may continue for days and result in limb loss or death. The extent of burns depends on the concentration, temperature and duration of contact with the acid. Systemic fluoride toxicity can cause hypocalcemia, hypomagnesemia, hyperkalemia, pulmonary edema, metabolic acidosis, ventricular arrhythmias and possible death.

**Eyes** : Causes serious eye damage. Direct contact with the eyes can cause irreversible damage, including blindness.

### Chronic toxicity

**Carcinogenicity** : May cause cancer. Risk of cancer depends on duration and level of exposure.

**Mutagenicity** : Contains material which can cause heritable genetic effects.

**Teratogenicity** : Suspected of damaging the unborn child.

**Fertility effects** : May damage fertility or the unborn child.

### Specific target organ toxicity

Name	Category	Route of exposure	Target organs
chromium (VI) trioxide Fluoride salt.	Category 1	Not determined	respiratory tract heart, kidneys, liver, nervous system and respiratory tract
	Category 1	Not determined	
	Category 2	Not determined	bones and teeth

### Numerical measures of toxicity

## Section 11. Toxicological information

### Acute toxicity estimates

Route	ATE value
Oral	72.55 mg/kg

Product/ingredient name	Result	Species	Dose	Exposure
chromium (VI) trioxide	LD50 Oral	Rat	52 mg/kg	-
	LD50 Oral	Rat	80 mg/kg	-
Fluoride salt.	LD50 Oral	Rat	2500 mg/kg	-
Fluoride salt.	LD50 Oral	Mouse	57 mg/kg	-
	LD50 Oral	Rabbit	200 mg/kg	-
	LD50 Oral	Rat	31 mg/kg	-
	LD50 Oral	Rat	52 mg/kg	-
	LDLo Dermal	Mouse	300 mg/kg	-
	LDLo Oral	Human	71 mg/kg	-
	LDLo Oral	Human	75 mg/kg	-
	LDLo Oral	Woman	90 mg/kg	-

### Additional information:

#### Mutagenicity

Product/ingredient name	Test	Experiment	Result
chromium (VI) trioxide	-	In vitro; Bacteria	Positive
	-	In vitro; Mammalian-Human; Somatic	Positive
Fluoride salt.	-	In vivo; Mammalian-Animal	Positive
	-	In vitro; Mammalian-Human; Somatic	Positive
	-	Mammalian-Animal; Somatic	Positive

## Section 12. Ecological information

**Ecotoxicity** : This material is very toxic to aquatic life.

### Aquatic and terrestrial toxicity

Product/ingredient name	Test	Result		
chromium (VI) trioxide	-	Acute EC50 0.76 mg/L	Daphnia	48 hours
	-	Acute IC50 1.54 mg/L Fresh water	Algae - Algae - Dictyosphaerium chlorelloides - Exponential growth phase	72 hours
	-	Acute LC50 145 ug/L Fresh water	Crustaceans - Water flea - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
	-	Acute LC50 162 to 200 ug/L Fresh water	Daphnia - Water flea - Daphnia magna - 6 to 24 hours	48 hours
	-	Acute LC50 28 mg/L	Fish	96 hours
	-	Acute LC50 44 mg/L	Fish	96 hours
	-	Acute LC50 21000 ug/L Fresh	Fish - Giant gourami - Colisa	96 hours

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## Section 12. Ecological information

tripotassium hexacyanoferrate	-	water	fasciata - Adult - 5.12 g	
	-	Acute EC50 127 ug/L Marine water	Algae - Diatom - Nitzschia closterium - Exponential growth phase - 5 days	72 hours
	-	Acute LC50 549000 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
Fluoride salt.	-	Acute LC50 2800 ug/L	Fish - Guppy - Poecilia reticulata	96 hours
	-	Acute EC50 >1000 mg/L	Algae	48 hours
	-	Acute EC50 181000 ug/L Marine water	Algae - Diatom - Skeletonema costatum	96 hours
	-	Acute EC50 850000 ug/L Fresh water	Algae - Green algae - Scenedesmus subspicatus - Exponential growth phase	72 hours
	-	Acute EC50 98 mg/L	Daphnia	48 hours
	-	Acute EC50 >120 mg/L	Daphnia	48 hours
	-	Acute LC50 120000 to 340000 ug/L Fresh water	Crustaceans - Water flea - Ceriodaphnia dubia	48 hours
	-	Acute LC50 51 mg/L	Fish	96 hours
	-	Acute LC50 107.5 mg/L	Fish	96 hours
	-	Acute LC50 128 mg/L	Fish	96 hours
	-	Chronic NOEC 14000 ug/L Fresh water	Daphnia - Water flea - Daphnia magna - <=24 hours	21 days
	-	Chronic NOEC 30 mg/L Fresh water	Fish - Snake-head catfish - Channa punctata - 25 g	90 days

**Conclusion/Summary** : Not available.

### Persistence/degradability

Product/ingredient name	Test	Result
Not available.		

**Conclusion/Summary** : Not available.

Product/ingredient name	Aquatic half-life	Photolysis
Not available.		

### Bioaccumulative potential

**Continued on next page**

## Section 12. Ecological information

Product/ingredient name	LogP <sub>ow</sub>	BCF
Not available.		










**Mobility** : Not available.

**Other adverse effects** : No known significant effects or critical hazards.

## Section 13. Disposal considerations




**Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG* Label	Additional information
<b>DOT Classification</b>	UN3085	OXIDIZING SOLID, CORROSIVE, N.O.S. (chromium (VI) trioxide, Fluoride salt.). Marine pollutant (tripotassium hexacyanoferrate)	5.1 (8)	II   	ERG#140 Marine pollutant
<b>IMDG Class</b>	UN3085	OXIDIZING SOLID, CORROSIVE, N.O.S. (chromium (VI) trioxide, Fluoride salt.). Marine pollutant (chromium (VI) trioxide, tripotassium hexacyanoferrate)	5.1 (8)	II   	-
<b>IATA-DGR Class</b>	UN3085	OXIDIZING SOLID, CORROSIVE, N.O.S. (chromium (VI) trioxide, Fluoride salt.)	5.1 (8)	II   	-

Continued on next page

## Section 14. Transport information

<b>UN Class</b>	UN3085	OXIDIZING SOLID, CORROSIVE, N.O.S. (chromium (VI) trioxide, Fluoride salt.)	5.1 (8)	II	  	-
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PG\* : Packing group

## Section 15. Regulatory information

### China

#### List of Toxic Chemicals Severely Restricted for Importing & Exporting by China

None of the components are listed.

### Korea

#### a. Regulation according to ISHA

**ISHA Article 37** : The following components are listed: Chromium(6+) compounds and its mixture containing more than 0.1%

**ISHA Article 38** : None of the components are listed.

#### b. Regulation according to TCCA

**TCCA Toxic chemicals** : Toxic

**TCCA Observational chemicals** : None of the components are listed.

**TCCA Article 32 (Banned)** : None of the components are listed.

**TCCA Article 32 (Restricted)** : The following components are listed: Chromium(6+) compounds and its mixture containing more than 0.1%

c. **Dangerous Materials Control Act** : Not available.

### Europe

**Safety, health and environmental regulations specific for the product** : No known specific national and/or regional regulations applicable to this product (including its ingredients).

### Japan

#### Poisonous and Deleterious Substances

##### **Ingredient name**

tripotassium hexacyanoferrate  
chromium (VI) trioxide

##### **Status**

Poisonous  
Deleterious

### ISHL

**ISHL Class** : Class 2

**Working Conditions Act; Health and Safety Act** : Article 57.

**ISHL Prevention of Tetraalkyl Lead Poisoning** : Not listed

**ISHL Harmful Substances Subject to Obtaining Permission for Manufacturing** : Not listed

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## Section 15. Regulatory information

**ISHL Harmful Substances, Prohibited for Manufacturing** : Not listed

**ISHL Chemicals requiring notification** : Listed

**ISHL Dangerous Substances** : Not listed

**List of Specially Controlled Industrial Waste** : Listed

**Pollutant Release and Transfer Registers (PRTR)** : Class 1

**Fire Service Law - Obstructive materials** : Not listed

### Taiwan

**List of chemicals for which manufacturing or handling is defined as "work specially hazardous to health"** : This product contains substances "Specially hazardous to health": chromium (VI) trioxide.

**List of chemicals reputed to be a "threat of imminent danger"** : This product contains substances considered to be a "Threat of imminent danger": chromium (VI) trioxide, tripotassium hexacyanoferrate, Fluoride salt..

**LSHL Article 21** : This product contains substances listed on "LSHL Article 21": chromium (VI) trioxide.

### International lists

**China inventory (IECSC)** : All components are listed or exempted.

**Europe inventory** : All components are listed or exempted.

**Australia inventory (AICS)** : All components are listed or exempted.

**Japan inventory (ENCS)** : All components are listed or exempted.

**Korea inventory (KECI)** : All components are listed or exempted.

**Philippines inventory (PICCS)** : All components are listed or exempted.

**United States TSCA** : **TSCA 5(a)2 proposed significant new use rules:** No products were found.

**TSCA 5(a)2 final significant new use rules:** No products were found.

**TSCA 12(b) one-time export:** No products were found.

**TSCA 12(b) annual export notification:** chromium (VI) trioxide

TSCA 12(b) export notification requirements for this chemical apply only when used in water treatment. Refer to 59 Federal Register 42773 and 40 CFR 749.68.

**United States inventory (TSCA 8b)** : All components are listed or exempted.

## Section 16. Other information

### History

**Validation date** : 1/23/2014.  
**Supersedes Date** : 3/28/2013.  
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## **Section 16. Other information**

### [Notice to reader](#)

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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