



# MATERIAL SAFETY DATA SHEET

Hazardous According to Criteria of Worksafe Australia

**READ AND UNDERSTAND THIS MSDS THOROUGHLY BEFORE USING THIS PRODUCT**

**PRODUCT: ALUMINIUM CLEANER**

## SECTION 1 – PRODUCT IDENTIFICATION

**Trade Name: ALUMINIUM CLEANER**

### Description

Use: Aluminium Deoxidiser and Brightener, Metal Deruster

Distributor: Sierra (Aust) Pty Ltd  
Emergency Phone No: 07 3216 5099  
Regular Phone No: 07 3216 5099  
Address: 17 Delta Street  
Geebung  
Qld

## SECTION 2 – HAZARDS IDENTIFICATION

UN No: 2922                      PACKAGING GROUP: II  
CLASS: 8                         HAZCHEM: 2PE  
SUB-RISK 6.1(a)                POISONS SCHEDULE: S7

### Hazard Category

VERY TOXIC CORROSIVE

### Risk Phrases

R26/27/28 Very toxic by inhalation, in contact with skin and if swallowed.

R35 Causes severe burns.

R41 Risk of serious damage to eyes.

### Safety Phrases

S7/9 Keep container tightly closed and in a well ventilated place.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37 Wear suitable protective clothing and gloves.

S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible).

## SECTION 3 – INGREDIENTS

MATERIAL/COMPONENT	Wt%	CAS NUMBER
Hydrofluoric Acid (HF)	<10%	7664-39-3
Sulphuric Acid	>10<30%	7664-93-9
Other products not classified as hazardous	to 100%	

## SECTION 4 -EMERGENCY AND FIRST AID PROCEDURES

**It is important that any person who has been contaminated by hydrofluoric acid should have immediate first aid, then see a medical practitioner as soon as possible. Even with minor accidents, the full extent of the injuries may not be obvious for several hours.**

*Swallowed* Do not give anything by mouth if victim is losing consciousness or is unconscious or convulsing. Rinse mouth of victim thoroughly with water and spit out rinse water. **DO NOT INDUCE VOMITING.** Give 500 ml of water containing four tablets (500 mg of calcium) or two (1000 mg of calcium) of effervescent calcium gluconate every two hours until admitted to hospital. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Obtain medical attention immediately.

*Eye* **SPEED IS ESSENTIAL.** Immediately flush the contaminated eye(s) with gently flowing water for 15 minutes, by the clock, holding the eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. Continue irrigation with normal saline solution or water until the severe pain of the burn is relieved. Instill several drops of sterile calcium gluconate (1% solution). Obtain medical attention immediately. NOTE: do not use any of the skin treatment preparation for burns of the eye.

*Skin* First aid personnel should avoid contact with this chemical. Wear impervious gloves when assisting patient. Immediately flush contaminated skin area with gently running water for at least 20 minutes. While washing with water remove contaminated clothing, footwear and leather goods (e.g. watchbands, belts). Wearing protective gloves the first aid person should gently apply the 2.5% calcium gluconate gel to the affected area and leave on the skin until 15 minutes after the pain has subsided. If gel not readily available, continue washing with water. For burns on the skin affecting more than 65 cm<sup>2</sup> (approximately the area of the palm of the hand), give six tablets of effervescent calcium gluconate in water by mouth every two hours until admitted to hospital. Obtain medical attention immediately.

*Inhaled* Rescuer should wear appropriate personal protection to avoid skin contamination and breathing hydrogen fluoride fumes. Move patient from area, resuscitate if necessary. Administer nebulised gluconate (4ml of 2.5% calcium gluconate solution [made by mixing 1 part 10% calcium gluconate with 3 parts N saline solution] with oxygen). Give six (6) effervescent calcium gluconate tablets in water by mouth and repeat at 2 hourly intervals until admitted to hospital. Seek medical attention as potentially fatal systemic effects are likely. Transfer promptly to a hospital for possible intensive care.

*Advice to Doctor* Urine fluoride levels of greater than 4mg/litre are considered unacceptable. Levels below this are not considered to cause chronic bone defects such as fluoridosis. Increases in bone density due to fluoride deposition can be detected by x-ray. Hydrofluoric acid penetrates rapidly and deeply below fat layers binding and depleting tissue calcium. Failure to commence the correct medical treatment promptly may be fatal. There is a major risk of systemic toxicity following inhalation, ingestion and skin burns. A skin burn involving more than 5% of body area with any concentration of this product may be associated with systemic effects. Treatment with IV Calcium Gluconate should commence.

*First Aid Facilities* Safety shower and eyewash stations conforming to ANSI Z3581, immediately accessible to the workplace where HF is being used.  
Calcium gluconate tablets each containing 400mg calcium gluconate/20mg ascorbic acid.  
Calcium gluconate gel 2.5% by wt  
Calcium gluconate sterile solutions (10% w/w).  
Nebuliser.  
Eyedroppers.  
Polycarbonate tumblers, 150 or 200 ml capacity.  
Measuring cylinders and stock bottles.  
Protective gloves for use by first aid personnel.  
Positive pressure self-contained breathing apparatus for use by first aid personnel.  
Isotonic saline and/or sterile water supply.  
Blankets and hot water bottles to treat patient for shock.

## SECTION 5 – FIRE AND EXPLOSION DATA

*Flash Point:* Not flammable under normal conditions of use.

*Flammability Limits in Air (% Volume)*

*Lower:* Not applicable

*Method:* Not applicable

*Upper:* Not applicable

*Fire Extinguishing Media* Use dry agents if hydrofluoric acid in a fire. If water used there may be a danger of violent hydrofluoric acid splashing. Hydrofluoric acid is not flammable, but if stored in metal containers flammable hydrogen gas may be produced. Firefighters should wear full self-contained breathing apparatus and full body protective clothing.

*Special Fire Fighting Procedures:* Use water spray to cool containers. Wear self-contained breathing apparatus and full protective clothing. Wash acid away from metal surfaces.

*Unusual Fire and Explosion Hazards:* If heated acid will produce choking fumes of hydrogen fluoride, sulphuric acid fume and sulphur dioxide. Although not flammable, hydrogen gases may be evolved in contact with most metals. Potential sources of ignition should be excluded from these areas. Material is stable under normal conditions of temperature and pressure. Avoid contact with bases (e.g. caustic soda) - can react violently. The acid will dissolve glass, ceramics, metals containing silica, natural gum rubber and leather. Fluorine gas reacts vigorously with this material, and may burst into flames. Reaction with arsenic trioxide can be extremely hot. Hazardous polymerisation has not been reported. Can dissolve metals containing silica giving off potentially explosive hydrogen gas. Wax, lead and platinum are not corroded. Hydrofluoric acid does not burn but will produce toxic and or corrosive fumes of anhydrous hydrogen fluoride fumes upon heating. The hydrogen fluoride and Sulphuric acids may react with metals to form flammable hydrogen gas. Runoff may pollute waterways, drains or sewers.

## SECTION 6 – ACCIDENTAL RELEASE MEASURES

*Spills* **DO NOT** contaminate the surrounding materials. Keep away from metals. If possible also keep combustibles (wood, paper, clothing, oil etc) away from spilled material. Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind and keep out of low areas. Isolate for 100m in all directions if tank, rail car or tanker is involved in fire. Shut off ignition sources, no flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Water spray may reduce vapour, but may not prevent ignition in closed spaces. Wear self-contained breathing apparatus and full protective clothing.

For small spills - Neutralise with lime (Calcium hydroxide) if possible. Take up with sand, dirt or vermiculite. DO NOT use sawdust. Use non-sparking tools. Place into labelled drum(s) for later disposal. For large spills - notify Emergency Services (Police or Fire Brigade). Tell them location, nature and any information that would be helpful. Contain spill. Remove all ignition sources and safely stop flow of spill. Bund area. Avoid contact with spill. Trained personnel should wear personal protective gear as highlighted in this MSDS. Blanket spill with dry sand or dry chemical powder. Consult an expert regarding disposal of this product. For large spill or tank rupture consider further evacuation to 200 m in all directions. If available consider using water spray to disperse vapours.

*Disposal* Whatever cannot be saved for recovery or recycling should be handled as hazardous waste by an approved waste agency. The waste must be neutralised with lime in order to immobilise the fluoride as calcium fluoride. Processing, use or contamination of this product may change the waste management options. Dispose of container and unused contents in accordance with federal, state and local requirements.

## SECTION 7 HANDLING AND STORAGE

*Handling & Storage:* Use with great caution in mixing with water due to heat evolution that causes violent spattering. Always add the acid to water, NEVER ADD WATER TO THE ACID. For further information refer AS3780.8-1990 (The Storage & Handling of Chemical Substances Pt.8: Class 8 Substances - Corrosive Substances). Keep containers closed at all times - check regularly for leaks. Protect storage containers

from heat or direct sunlight. The storage area should have adequate, independent, ventilation and have no sources of heat or sparks. Fans or other electrical equipment should be spark-resistant. In some containers may degrade to produce flammable hydrogen gas. When opening containers ensure that no sparks or sources of ignition are present and that the work area is well ventilated. Use extreme caution in all procedures involving HF. Open containers of HF should not be left unattended. When splash or inhalation exposure is possible, appropriate protective clothing must be worn. Not to be loaded with Class 1, 4.3, 5.1, 5.2, 6\*, 7, Foodstuff and foodstuff empties (\* Where the Class 6 substance is a cyanide and Class 8 substance is an acid). Avoid contact with incompatible materials such as strong alkalis, acids, nitrates and oxidising agents. Avoid heat conditions. When heated above 50 deg C product will start to emit a large amount of Hydrogen Fluoride fumes which are highly toxic, corrosive and environmental hazard.

<i>Road Transport:</i>	UN No: 2922	PACKAGING GROUP: II
	CLASS: 8	HAZCHEM: 2PE
	SUB-RISK 6.1(a)	POISONS SCHEDULE: S6

*Other:*

## SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

*Engineering Controls:* Toxic and corrosive liquid. Single significant exposure may cause death. Maintain adequate ventilation at all times. Prevent accumulation of gases in hollows or sumps. Eliminate any sources of ignition. DO NOT enter room unless monitored by another person (i.e. buddy-buddy system). Sampling of the atmosphere if possible should be conducted automatically instead of human operator and any leaks discovered should then be directed digitally to a command centre where the event can be acted upon, with all appropriate procedures being implemented and including any protective equipment.

*Personal Protection:* Skin protection - Wear PVC, nitrile, natural rubber or any type of apron or splash suit as recommended by the suit manufacturer for exposure to 35% hydrofluoric acid. Wear Teflon or butyl rubber gloves for > 4 hours exposure and neoprene, natural rubber, Viton or polyethylene gloves for 1-4 hours exposure. All gloves should be tested from pin-holes by immersion in water, inflating with air and checking for bubbles. Eye protection - Wear chemical goggles or face shield to protect eyes. Respiratory protection - Avoid breathing of gases. Select and use respirators in accordance with AS/NZS 1715/1716. When gases exceed the exposure standards then the use of an atmosphere-supplied positive pressure demand self-contained or airline breathing apparatus supplied air respirator complying with the requirements of AS/NZS 1715 is recommended. Filter capacity and respirator type depends on exposure levels. If entering spaces where the airborne concentration of a contaminant is unknown then the use of a self-contained breathing apparatus with positive air supply complying with AS/NZS 1715-1716 is recommended.

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

<i>Boiling Point (C):</i>	Not available	<i>Volatiles:</i>	Not available
<i>Melting Point(C):</i>	Not applicable	<i>Press@20C mm Hg:</i>	Not available
<i>Specific Gravity:</i>	1.2 @ 20°C	<i>VAP Density:</i>	Not available
<i>Sol In Water (g/l):</i>	Miscible with water	<i>pH at Use Dilution:</i>	12.5-13.5
<i>Appearance:</i>	Clear yellow liquid	<i>pH:</i>	12.5-13.5 @ 20°C
<i>Evaporation Rate (nButyl Acetate=1)</i>	Not available		

## SECTION 10 – STABILITY AND REACTIVITY DATA

*Stability:* Stable

*Conditions to avoid:* Keep out of direct sun and away from sources of heat. Keep away from strong alkalis and oxidising agents. Protect containers from mechanical damage.

*Incompatibilities:* Highly corrosive to glass and other siliceous materials. Reacts with most materials generating flammable hydrogen gas. Reacts with acids, bases and many organic materials.

*Hazardous decomposition products:* Hydrogen fluoride, hydrogen in contact with metals.

*Hazardous polymerisation:* Will not occur.

## SECTION 11 - TOXICOLOGICAL INFORMATION

*Oral LD50 (RAT):* Not determined.  
*Dermal LD50 (RABBIT)* Not determined.  
*TLV:* 2ppm.  
*Odour Threshold:* Not determined.  
*Inhalation LC50:* 50ppm/30min (man) 4970 ppm, as HF (rat, 5 min) = 1310 ppm, as HF (rat, 1 hr) = 1774 ppm, as HF (monkey, 1 hr) HF acid as liquid or vapour is extremely corrosive and toxic Concentrations in excess of 10ppm are intolerable to breath. Concentrations of 25ppm may be fatal.

The following exposure standard is recommended by Worksafe Australia:

Hydrogen fluoride (as F):	TWA 3 ppm (2.6 mg/m <sup>3</sup> )	Peak limitation
	TWA	STEL
	ppm mg/m <sup>3</sup>	ppm mg/m <sup>3</sup>
Sulfuric acid	- 1	- 3

Carcinogenicity: No specific data is available. There is no evidence of an association between human cancer and exposure to inorganic fluorides.

Teratogenicity and Embryotoxicity: There is inconclusive data from animal studies suggesting possible reproductive effects. There are no reports of effects on humans.

Toxicological Synergistic Materials: Insufficient information.

Mutagenicity: Insufficient data. There is a potential for fluoride to be stored in the bone, but it may be eliminated over a number of years.

#### HEALTH EFFECTS

*Swallowed:* Very toxic if swallowed. Will cause severe burns to the mouth, mucous membranes, throat, oesophagus and stomach with effects including spontaneous vomiting with diarrhoea and possible bloody stools. Small quantities (approximately 300 - 500 ml) swallowed may cause death.

*Eyes:* Hydrogen fluoride vapours can dissolve in the moisture on the surface of the eyes and cause irritation. Splashing into the eyes may cause severe and irreversible damage with possible corneal scarring. Liquid and vapour are severe irritants and exposure may result in permanent or prolonged visual defects or total destruction of the eyes.

*Skin:* Very toxic by skin contact. Will cause severe burns with effects including redness, blistering, localised pain, dermatitis and deep burns. Burns from solutions of 10 -100% may not be felt for several hours. Serious skin splashes have caused death.

*Inhalation:* Very toxic if inhaled. Weak vapour concentrations of a few mg/L can produce irritation of the nose, throat and respiratory system with effects including dizziness, headache, loss of coordination, chest pains, coughing, respiratory paralysis and or failure. High vapour concentrations can cause severe burns to the lips, mouth, throat and lungs. Fluid accumulation in lungs may occur and can lead to death. Strong irritant Inhalation of vapour may cause ulcers of the upper respiratory tract, pulmonary inflammation and congestion. Effects may be delayed for 24 hours.

*Chronic:* The major health hazards of hydrogen fluoride exposure are related to its irritant and corrosive properties during short-term acute exposures. There is less risk associated with its possible long-term exposure effect.  
FLUORIDOSIS: fluoride tends to accumulate in the bones and excessive amounts will produce weakening and degeneration of the bone structure (osteosclerosis). There may also be heart, nerve, and intestinal problems. The disease is called fluoridosis. Fluoridosis may be slowly and partially reversible.  
POTENTIAL FOR ACCUMULATION: fluoride is stored in the bone, but may be eliminated over a number of years. Fluoridosis, blackening of nails, mottling of teeth.

#### SECTION 12 - ECOLOGICAL INFORMATION

Environmental pollutant. Highly corrosive, toxic. Causes very severe burns to skin, eyes and mucus membranes. Corrosive to glass. Attacks most metals evolving hydrogen gas (explosive and flammable).

*Other Information:* Insufficient data are available to evaluate or predict the short-term effects of hydrogen fluoride to aquatic life, plants, birds, or land animals. Hydrogen fluoride is highly soluble in water. Concentrations of 1000 milligrams and more will mix with a litre of water. Small quantities of hydrogen fluoride will be neutralised by the alkalinity in aquatic systems, but larger quantities can lower the pH for extended periods of time. The concentration of fluoride in edible tissues of most aquatic species that are consumed by humans will probably be about the same as the average concentration that was present in the water from which the fish were taken. This substance may cause long-term adverse effects in the environment due to fluoride pollution and due to acid pH effects.

#### SECTION 13 - DISPOSAL CONSIDERATIONS

*Spills and Disposal:* Whatever cannot be saved for recovery or recycling should be handled as hazardous waste by an approved waste agency. The waste must be neutralised with lime in order to immobilise the fluoride as calcium fluoride. Processing, use or contamination of this product may change the waste management options. Dispose of container and unused contents in accordance with federal, state and local requirements.

#### SECTION 14 TRANSPORT INFORMATION

UN No: 2922  
PACKAGING GROUP: II  
CLASS: 8  
HAZCHEM: 2PE  
SUB-RISK: 6.1(a)  
POISONS SCHEDULE: S7

*Other:* Environmental pollutant. Highly corrosive, toxic. Causes very severe burns to skin, eyes and mucus membranes. Corrosive to glass. Attacks most metals evolving hydrogen gas (explosive and flammable).

*Segregation Dangerous Goods:* Not to be loaded with Class 1, 4.3, 5.1, 5.2, 6\*, 7, Foodstuff and foodstuff empties (\* Where the Class 6 substance is a cyanide and Class 8 substance is an acid). Keep away from metals (steel, copper, aluminium) and glass. Contact with these metals or chemicals such as sulphides, carbonates & cyanides can evolve toxic, flammable or asphyxiating gases. Reaction with alkaline substance will generate great heat.

## SECTION 15 REGULATORY INFORMATION

## SECTION 16 OTHER INFORMATION

### CONTACT POINTS

<b>ORGANISATION</b>	<b>TELEPHONE</b>	<b>ASK FOR</b>
Poisons Information Centre – Australia Wide	131126	
Sierra (Aust) Pty Ltd	07 3216 5099	Glyn McDonald
Fire Brigade	000	Fire Brigade
Police	000	Police

Every endeavor has been made to ensure that the information contained in this publication is reliable and offered in good faith. It is meant to describe the safety requirements of our products and should not be construed as guaranteeing specific properties. Customers are encouraged to conduct their own tests as end user suitability of the product for particular uses is beyond our control. The information is not intended as an inducement to bargain and no warranty expressed or implied is made as to its accuracy, reliability or completeness. Sierra (Aust) Pty Ltd accepts no liability for loss, injury or damage arising from reliance upon the information contained in this data sheet except in conjunction with the proper use of the product to which it refers. Due care should be taken that the use and disposal of this product is in compliance with appropriate Federal, State and Local Government regulations.

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