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CI/SfB	Yq1	(U47)

# Health and Safety data sheet



## Health & Safety guidelines for the use of: Calcium Sulfo-Aluminate

## 1. Identification of substance

Material Name: Castle Calcium Sulfo-Aluminate.  
Specific Chemical Name: Calcium sulfo-aluminate.  
An odourless white to brown/grey powder almost insoluble in water. When water is added it becomes a binder for construction applications.

## 2. Supplier/manufacturer

Castle Cement Limited  
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## 3. Composition/information on ingredients

### 3.1 Chemical description

The principle constituents are calcium sulfo-aluminate CAS: 12004-14-7, dicalcium silicate CAS: 10034-77-2, tetra calcium alumino ferrite CAS: 12068-35-8 and calcium titanate CAS: 12049-50-2.

Also small amounts of calcium sulphate CAS: 14798-04-0, calcium aluminate CAS: 12042-68-1 and dicalcium alumino silicate CAS: 12252-33-4 together with trace amount of lime, alkalis, chlorides and chromium compounds.

### 3.2 Hazardous ingredients

- a) The lime, calcium silicates and alkalis within the calcium sulfo-aluminate are partially soluble and when mixed with water will give rise to a potentially hazardous alkaline solution.
- b) Hexavalent chromium salts are soluble and when mixed with water will give rise to a potentially hazardous solution.

## 4. Hazards identification

The material contains less potential alkali than Portland cement, but should be treated similarly.

4.1 When calcium sulfo-aluminate is mixed with water, or when calcium sulfo-aluminate becomes damp, a strong alkali solution is produced. If this comes into contact with the eyes or skin it may cause serious burns and ulceration. The eyes are particularly vulnerable and damage will increase with contact time. Strong alkali solutions in contact with the skin tend to damage the nerve endings first before damaging the skin, therefore chemical burns can develop without pain being felt at the time.

4.2 Calcium sulfo-aluminate mixed with water may, until set, cause dermatitis:

- Irritant contact dermatitis is due to a combination of the wetness, alkalinity and abrasiveness of the constituent materials.
- Allergic dermatitis is caused mainly by the sensitivity of an individual's skin to soluble chromium (VI).

## 5. First aid measures

### 5.1 Eye contact

A speedy response is essential in order to avoid permanent damage to the eyes. Wash eyes immediately with plenty of clean water for at least 15 minutes and seek medical advice without delay.

### 5.2 Skin contact

Wash the affected area thoroughly with soap and water before continuing. If irritation, pain or other skin trouble occurs, seek medical advice. Clothing contaminated by wet calcium sulfo-aluminate should be removed and washed thoroughly before use.

### 5.3 Ingestion

Do not induce vomiting. Wash out mouth with water and give patient plenty of water to drink.

### 5.4 Inhalation

If irritation occurs, move to fresh air. If nose or airways become inflamed seek medical advice.

## 6. Fire-fighting measures

6.1 Calcium sulfo-aluminate is not flammable and will not facilitate combustion with other materials.

## 7. Accidental release measures

### 7.1 Personal precautions

See 9.3

### 7.2 Cleaning up

Recover the spillage in a dry state if possible. Minimise generation of airborne dust. The product can be slurried by the addition of water but will subsequently set as a hard material. Keep children away from clean up operation.

## 8. Storage and handling

### 8.1 Storage

The material will react with water. Bulk calcium sulfo-aluminate must be stored in silos that are waterproof, clean and protected from contamination, and dry (internal condensation minimised).

Packed products must be stored in unopened bags clear of the ground in cool, dry conditions and protected from excessive draught.

Bags should be stacked in a safe and stable manner.

### 8.2 Handling

When handling calcium sulfo-aluminate bags, due regard should be paid to the risks outlined in the Manual Handling Operations Regulations. Some bags may have a small amount of calcium sulfo-aluminate on the outer surface. Appropriate personal protective clothing (see 9.3) should therefore be used whilst handling.

## 9. Exposure controls/personal protection

### 9.1 Workplace Exposure Limit (WEL)

WEL 8hr Time Weighted Average (TWA)

10mg/m<sup>3</sup> inhalable dust

4mg/m<sup>3</sup> respirable dust

### 9.2 Engineering measures

Where reasonably practicable dust exposures should be controlled by engineering methods.

### 9.3 Personal protective equipment

- a) Respiratory protection – suitable respiratory protection should be worn to ensure that personal exposure is less than the WEL.
- b) Hand and skin protection – protective clothing should be worn which ensures that calcium sulfo-aluminate, or any mixture of calcium sulfo-aluminate and water, does not come into contact with the skin. In some circumstances waterproof trousers and wellingtons may be necessary. If wet calcium sulfo-aluminate gets inside boots, gloves or other protective clothing then this protective clothing should be immediately removed, the skin thoroughly washed and the protective clothing/footwear washed before reuse.
- c) Eye protection – dust-proof goggles should be worn wherever there is a risk of calcium sulfo-aluminate powder or any mixture of calcium sulfo-aluminate and water entering the eye.

## 10. Physical/chemical properties

### 10.1 Physical data

Physical state	Particulate
Mean particle size	5-30 microns
Odour	Faint earthy smell
pH	Wet CSA 10.5–11.5
Viscosity	N/A
Freezing point	N/A
Boiling point	N/A
Melting point	>1350°
Flash point	N/A (not flammable)
Explosive properties	N/A (not explosive)
Density	1000~1200kg/m <sup>3</sup>
Solubility	<10 g/litre

### 10.2 Chemical compounds

Mainly a mixture of the following mineral compounds:

Calcium sulfo-aluminate CaO-3Al <sub>2</sub> O <sub>3</sub> -CaSO <sub>4</sub>	71 – 75%
Tetra calcium aluminoferrite 4CaO-Al <sub>2</sub> O <sub>3</sub> -Fe <sub>2</sub> O <sub>3</sub>	4 – 7%
Dicalcium silicate 2CaO-SiO <sub>2</sub>	14 – 18%
Calcium titanate CaO-TiO <sub>2</sub>	2 – 4%

With small amounts of:

Calcium sulfate CaSO<sub>4</sub>  
Calcium aluminate CaO-Al<sub>2</sub>O<sub>3</sub>  
Dicalcium aluminate silicate 2CaO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>  
Contains less than 1% microcrystalline silica

## 11. Stability and reactivity

Conditions contributing to chemical instability:	none
Hazardous decomposition products:	none
Special precautions:	none

## 12. Toxicological information

### 12.1 Short-term effects

- a) Eye contact – calcium sulfo-aluminate is a severe eye irritant. Mild exposure can cause soreness. Gross exposures or untreated mild exposures can lead to chemical burning and ulceration of the eye.
- b) Skin contact – calcium sulfo-aluminate powder or any mixture of calcium sulfo-aluminate and water may cause chemical burns and/or irritant and allergic dermatitis.
- c) Ingestion – the swallowing of small amounts of calcium sulfo-aluminate or any calcium sulfo-aluminate/water mixtures is unlikely to cause any significant reaction. Larger doses may result in irritation to the gastrointestinal tract.
- d) Inhalation – calcium sulfo-aluminate powder may cause inflammation of mucous membranes.

### 12.2 Chronic effects

Skin exposure may cause allergic dermatitis.

## 13. Ecological information

### 13.1 Aquatic toxicity rating

LC50 aquatic toxicity rating not determined. The addition of calcium sulfo-aluminate to water will, however, cause the pH to rise and may therefore be toxic to aquatic life in some circumstances.

### 13.2 Biological Oxygen Demand (BOD)

Not applicable.

## 14. Disposal considerations

Dispose of empty bags or surplus calcium sulfo-aluminate to a place authorised to accept builders' waste. Keep out of the reach of children.

## 15. Transport information

Classification for conveyance – not required

## 16. Regulatory information

### 16.1 The Chemicals (Hazard Information & Packaging) Regulations

Classification – Irritant

## 16.2 Risk/safety phrases

### Risk phrases

- Risk of serious damage to eyes.
- Contact with wetted calcium sulfo-aluminate may cause irritation, dermatitis or burns.
- Contact between calcium sulfo-aluminate powder and body fluids (e.g. sweat and eye fluid) may also cause skin and respiratory irritation, dermatitis or burns.
- Contains chromium (VI). May produce an allergic reaction.

### Safety phrases

- Avoid eye and skin contact by wearing suitable eye protection, waterproof clothing, waterproof footwear and waterproof gloves.
- Clothing contaminated by wetted calcium sulfo-aluminate should be removed immediately and washed before re-use.
- Avoid breathing dust.
- Keep out of reach of children.
- On contact with eyes or skin, rinse immediately with plenty of clean water. Seek medical advice after eye contact.

## 17. Legislation and other information

- Health and Safety at Work etc Act 1974
- Control of Substances Hazardous to Health (Regulations)
- HSE Guidance Notes EH26 (Occupational Skin Diseases Health and Safety Precautions)
- HSE Guidance Notes EH40 (Workplace Exposure Limits)
- Any authorised manual on First Aid by St. John's/St. Andrew's/Red Cross
- Manual Handling Operations Regulations
- Environment Protection Act

### For further information please contact:

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### Technical Helpline:

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