

CAC CRETE™

Hybrid Calcium Aluminate Rehabilitation Mortar

SAFETY DATA SHEET

Document reference	Issue / Revision	Compiled under	Replaces
SAAM-CACCRETE-SDS-001	Issue 1, 2025	SANS 11014 / GHS Rev. 9	Not applicable

SECTION 1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE SUPPLIER

1.1 Product identifier

Product name: CAC CRETE™

Product description: Hybrid calcium aluminate / Portland cement repair mortar with integral crystalline waterproofing, antimicrobial and shrinkage-reducing admixtures

Product type: Factory pre-blended cementitious dry mortar

Product code: SAAM-CACCRETE

1.2 Relevant identified uses and uses advised against

Identified uses: Wet-shotcrete rehabilitation and corrosion protection of concrete and masonry sewer infrastructure (manholes, pipes, pump stations, wet wells, wastewater treatment structures)

Uses advised against: Continuously immersed potable water service; structural use other than as a sprayed protective lining; mixing with Portland cement, lime or other cementitious materials on site

1.3 Details of the supplier of the safety data sheet

Manufacturer: Shotcrete Africa Advanced Materials

Technical contact: Jaco du Plessis (B.Eng Civil), Concrete Technologist, Go Consult

Telephone: 082 554 3694 – 079 495 4337

E-mail (SDS queries): dustin@shotcrete.co.za

1.4 Emergency telephone number

South Africa Poisons Information Helpline (Tygerberg): 0861 555 777 (24 hours)

Site emergency contact: [Site-specific number to be entered by user]

SECTION 2 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 (CLP) and SANS 10234 (GHS):

Skin Irrit. 2 Skin irritation, Category 2

Skin Sens. 1B Skin sensitisation, Category 1B (cement constituents)

Eye Dam. 1 Serious eye damage, Category 1

STOT SE 3 Specific target organ toxicity (single exposure), respiratory irritation, Category 3

STOT RE 1 Specific target organ toxicity (repeated exposure), Category 1 — lungs (respirable crystalline silica)

Carc. 1A Carcinogenicity, Category 1A — by inhalation (respirable crystalline silica, IARC Group 1)

2.2 Label elements

Pictograms (GHS)	GHS05 (corrosion) · GHS07 (exclamation mark) · GHS08 (health hazard)
Signal word	DANGER

Hazard statements

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

- H318** Causes serious eye damage.
H335 May cause respiratory irritation.
H350i May cause cancer by inhalation.
H372 Causes damage to lungs through prolonged or repeated exposure by inhalation.

Precautionary statements

- P102** Keep out of reach of children.
P260 Do not breathe dust, fume or mist.
P264 Wash hands and exposed skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves, protective clothing, eye and face protection, and respiratory protection.
P302+P352 IF ON SKIN: Wash with plenty of water and soap.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor.
P314 Get medical advice/attention if you feel unwell.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents and container in accordance with local, national and international regulations.

2.3 Other hazards

- Wet mortar develops a strongly alkaline pH (>11). Prolonged skin contact with wet, plastic mortar may cause severe burns without immediate sensation of pain.
- Dust from dry product or from cutting/abrading cured product may cause irritation to the respiratory tract and may, with prolonged inhalation exposure, cause silicosis and lung cancer (respirable crystalline silica).
- The product is not classified as PBT or vPvB.
- Calcium aluminate cement reacts exothermically with water during hydration; heat generation under poorly ventilated conditions or in large unhydrated masses may be significant.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This product is a mixture. Hazardous components, with their classification under Regulation (EC) No. 1272/2008, are listed below. Exact proportions of certain components are proprietary; ranges are given where required for hazard communication.

Component	CAS / EC No.	% w/w	Classification (CLP)
Calcium aluminate cement	65997-16-2	15 – 20	Skin Irrit. 2; Eye Dam. 1; STOT SE 3; H315, H318, H335
Portland cement (clinker)	65997-15-1	5 – 10	Skin Irrit. 2; Skin Sens. 1B; Eye Dam. 1; STOT SE 3; H315, H317, H318, H335
Dolomite (calcium magnesium carbonate)	16389-88-1	45 – 55	Not classified as hazardous; nuisance dust
Quartz (crystalline silica) — present in silica filler sand	14808-60-7	15 – 25	Carc. 1A; STOT RE 1; H350i, H372 (respirable fraction)
Penetron Admix (proprietary crystalline waterproofing admixture)	Mixture	< 1.0	Refer to Penetron Admix SDS issued by Penetron International / Penetron South Africa
Penetron BioMIC (proprietary antimicrobial admixture)	Mixture	< 0.5	EPA-registered biocidal product. Refer to Penetron BioMIC SDS
Chryso Optima 100 (polycarboxylate superplasticiser)	Mixture	< 1.0	Refer to Chryso Optima 100 SDS issued by Chryso Southern Africa
Chryso Serenis (shrinkage-reducing admixture)	Mixture	< 1.0	Refer to Chryso Serenis SDS issued by Chryso Southern Africa

Notes on composition

- Portland cement supplied for CAC CRETE™ shall be compliant with the chromium (VI) reduction requirement (≤ 2 mg/kg water-soluble chromium VI on total dry cement mass) as per Regulation (EC) No. 1907/2006 (REACH) Annex XVII Entry 47 and equivalent SA Hazardous Chemical Substances Regulations.
- The full text of each H-statement referenced above is given in Section 16.
- Supplier Safety Data Sheets for Penetron Admix, Penetron BioMIC, Chryso Optima 100 and Chryso Serenis form part of the full safety information for this product and shall be obtained from the respective admixture suppliers.

SECTION 4 FIRST-AID MEASURES**4.1 Description of first-aid measures****General**

Remove the affected person from the source of exposure to a well-ventilated area. Remove contaminated clothing and footwear. Seek medical advice if symptoms persist.

Inhalation

Move the affected person to fresh air. Keep the person warm and at rest. If breathing is irregular, difficult, or has stopped, administer artificial respiration or oxygen by trained personnel. Seek immediate medical attention.

Skin contact

Brush off dry dust. Wash skin with copious quantities of cool water and pH-neutral soap. Do not use solvents or thinners. If wet mortar has been in prolonged contact with skin, wash immediately and seek medical attention — alkaline cement burns may not be felt at the time of exposure but can be severe.

Eye contact

Do NOT rub eyes. Rinse immediately and continuously with copious clean water (preferably with a sterile eye-wash solution) for at least 20 minutes, holding the eyelids open. Remove contact lenses if present and easy to do. Seek immediate ophthalmological attention.

Ingestion

Do NOT induce vomiting. Rinse the mouth with water. Give small quantities of water to drink if the person is conscious and able to swallow. Seek immediate medical attention. Show this Safety Data Sheet to the medical practitioner.

4.2 Most important symptoms and effects, both acute and delayed

- Acute: skin irritation, redness, dermatitis; eye irritation up to and including severe burns and permanent damage; respiratory tract irritation; coughing.
- Delayed / chronic: allergic skin reaction (sensitisation); silicosis, chronic obstructive pulmonary disease, and lung cancer following long-term inhalation of respirable crystalline silica dust.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically. Cement burns require careful washing and may need surgical debridement. Suspected silica exposure should be investigated by occupational health practitioner with chest radiography and lung function testing.

SECTION 5 FIRE-FIGHTING MEASURES**5.1 Extinguishing media**

Suitable: Use extinguishing media appropriate for the surrounding fire (dry chemical, foam, carbon dioxide, water mist or water spray). The product itself is non-combustible.

Unsuitable: None known. Avoid high-pressure water jets in confined spaces, which may disperse cement dust.

5.2 Special hazards arising from the substance or mixture

CAC CRETE™ is non-combustible and does not support combustion. Hazardous combustion products are not anticipated. Exposure to fire may, in extreme heat, decompose carbonate aggregates and release carbon dioxide.

5.3 Advice for firefighters

- Wear self-contained breathing apparatus and full protective equipment when fighting fires involving cementitious dust.
- Prevent runoff from fire-fighting from entering watercourses, drains or stormwater systems — high alkalinity may harm aquatic life.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

- Evacuate non-essential personnel from the area of release.
- Wear personal protective equipment as specified in Section 8 — dust mask or respirator, eye protection, alkali-resistant gloves and overalls.
- Prevent generation of airborne dust. Do not use compressed air for cleaning.

6.2 Environmental precautions

- Prevent product from entering drains, sewers or watercourses. The alkalinity of wetted cement is harmful to aquatic life.
- Notify the local environmental authority in the event of release to a watercourse.

6.3 Methods and material for containment and cleaning up

- Dry product: Collect mechanically using vacuum equipment fitted with a HEPA filter, or by careful sweeping while damping down with water mist. Place in clearly labelled containers for disposal or, where uncontaminated, for re-use.
- Wet mortar: Allow to set, then break out and dispose of as inert construction waste in accordance with Section 13.
- Avoid dry sweeping which generates respirable dust.

6.4 Reference to other sections

See Section 8 for personal protection, Section 13 for disposal.

SECTION 7 HANDLING AND STORAGE

7.1 Precautions for safe handling

- Use only in well-ventilated areas. Where mechanical ventilation is not practical, provide local exhaust extraction at the point of dust generation.
- Avoid generating airborne dust. Open bags carefully to minimise dust release.
- Wear appropriate PPE at all times during handling, mixing, application and clean-up (see Section 8).
- Do not eat, drink or smoke when handling the product.
- Wash hands and exposed skin thoroughly before breaks and at the end of the work shift.
- Do not mix the product with Portland cement, lime, accelerators or other cementitious materials on site. The product is supplied as a complete factory-blended system.
- Heat is generated when the product reacts with water. Avoid contact with skin during the early hydration phase.

7.2 Conditions for safe storage, including any incompatibilities

- Store in original sealed packaging, in a dry, cool, well-ventilated area, off the ground, and out of direct sunlight.
- Protect from moisture, water ingress and freezing.
- Keep separated from acids, oxidising agents and incompatible materials.
- Shelf life: 12 months from manufacture in original sealed packaging.
- Keep out of reach of children.

7.3 Specific end use(s)

Wet-shotcrete protective lining of concrete and masonry wastewater infrastructure. See the CAC CRETE™ Product Data Sheet (SAAM-CACCRETE-PDS-001) for full application guidance.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limits (OEL) applicable in South Africa under the Hazardous Chemical Substances Regulations and equivalent international references:

Substance	TWA (mg/m ³)	STEL (mg/m ³)	Source
Cement dust (Portland and CAC), inhalable	10	—	SA DoEL OEL-RL
Cement dust, respirable	3	—	SA DoEL OEL-RL
Crystalline silica (quartz), respirable	0.1	—	SA OEL-RL (action level 0.05)
Calcium carbonate (dolomite), inhalable	10	—	SA DoEL OEL-RL (nuisance dust)

Operators must not be exposed above the respirable crystalline silica OEL. Employers shall conduct exposure monitoring under the supervision of an Approved Inspection Authority where dust generation is anticipated.

8.2 Exposure controls

Engineering controls

- Use the product in well-ventilated areas. Where applied in confined spaces (manholes, sewers), provide forced mechanical ventilation.
- Use local exhaust ventilation at the point of dust generation (bag opening, mixing) where reasonably practicable.
- Use wet methods (water suppression) when cutting, abrading or drilling cured product to suppress respirable dust.
- Wet-shotcrete application is preferred to dry application as it dramatically reduces airborne dust generation.

Personal protective equipment

Respiratory protection	FFP3-class disposable respirator (EN 149) as a minimum during dry handling, mixing and application. Half-face or full-face air-purifying respirator with P3 particulate filter where exposure limits may be exceeded or for prolonged operation. Powered air-purifying respirator (PAPR) for confined-space application
Eye / face protection	Chemical safety goggles (EN 166) at all times during handling, mixing and application. Full face shield where splashing of wet mortar is foreseeable
Hand protection	Alkali-resistant gloves (EN 374), nitrile rubber or PVC, of sufficient length to protect the forearm. Inspect gloves regularly and replace immediately if damaged or contaminated internally
Skin / body protection	Full-cover overalls or chemical-resistant suit, long sleeves and trousers. Waterproof boots in wet work. Trouser legs worn outside the boots to prevent mortar entering. Knee pads where work involves kneeling
Hygiene measures	Wash hands and exposed skin with pH-neutral soap and water before breaks and after work. Do not eat, drink or smoke in the work area. Remove and launder contaminated clothing before re-use. Provide eye-wash stations and emergency showers

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Property	Value (as supplied, dry powder)
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Physical state	Solid, fine powder
Colour	Grey to light grey
Odour	Odourless to slight characteristic cement odour
pH (10% aqueous suspension)	11 – 12 (strongly alkaline)
Melting / freezing point	Not applicable (mineral mixture)
Boiling point	Not applicable
Flash point	Not applicable (non-combustible)
Flammability (solid, gas)	Non-flammable
Explosive properties	Not explosive
Oxidising properties	Not oxidising
Bulk density (dry powder)	Approx. 1 100 – 1 400 kg/m ³
Density (cured mortar)	2 200 – 2 350 kg/m ³
Solubility in water	Reacts with water (hydration); partially soluble. Forms a stiff plastic mortar at w/b ≤ 0.45
Partition coefficient (n-octanol/water)	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature	Carbonate aggregates begin to decompose above approximately 800 °C
Viscosity	Not applicable (dry powder)

SECTION 10 STABILITY AND REACTIVITY

10.1 Reactivity

CAC CRETE™ reacts with water through hydraulic hydration to form a hardened mortar. The reaction is exothermic. Once cured, the product is chemically stable under normal conditions of use.

10.2 Chemical stability

Stable under normal storage conditions in original sealed packaging. Reacts with water; protect from moisture during storage.

10.3 Possibility of hazardous reactions

Wetted product is strongly alkaline (pH 11–12) and will react with acids with effervescence and heat generation. Avoid contact with strong acids.

10.4 Conditions to avoid

- Contact with moisture during storage
- Generation of airborne dust
- Contact with strong acids
- Contact with Portland cement or lime in uncontrolled quantities (will cause uncontrolled flash set if mixed on site)

10.5 Incompatible materials

- Strong acids (mineral and organic)
- Aluminium and aluminium alloys (slow generation of hydrogen gas in wet alkaline contact)
- Ammonium salts (release of ammonia under alkaline conditions)
- Site addition of other cements, lime or accelerators (chemistry of the formulation will be compromised)

10.6 Hazardous decomposition products

None under normal conditions. Under extreme heat (>800 °C), thermal decomposition of carbonate aggregates may release carbon dioxide.

SECTION 11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

- Oral LD₅₀ (cement, rat): > 2 000 mg/kg — not classified
- Dermal LD₅₀: not applicable (mixture, no test data)
- Inhalation LC₅₀: not classified by acute inhalation toxicity

Skin corrosion / irritation

Causes skin irritation. Wet cement is strongly alkaline and may cause alkaline burns, sometimes without immediate sensation of pain. Repeated or prolonged contact may cause severe dermatitis.

Serious eye damage / irritation

Causes serious eye damage. Direct contact with dust or wet mortar may cause severe alkali burns, conjunctivitis and corneal damage that may be permanent.

Respiratory or skin sensitisation

May cause an allergic skin reaction (contact dermatitis) due to chromium VI content in Portland cement. Chromium VI is required to be reduced to ≤ 2 mg/kg in cement sold in the EU and in South Africa; compliance shall be verified with the cement supplier.

Germ cell mutagenicity

No data indicates mutagenic effects for the principal components. Crystalline silica is not classified as a germ cell mutagen.

Carcinogenicity

Respirable crystalline silica (quartz) is classified by IARC as Group 1 (carcinogenic to humans, by inhalation) and is classified as Carc. 1A under CLP. Long-term occupational exposure to respirable crystalline silica is associated with silicosis, chronic obstructive pulmonary disease and lung cancer. Inhalation exposure must be controlled.

Reproductive toxicity

Not classified. No evidence of reproductive toxicity from the principal components at normal use concentrations.

STOT — single exposure

May cause respiratory irritation (H335) from inhalation of dust.

STOT — repeated exposure

Causes damage to lungs through prolonged or repeated exposure by inhalation (H372 — respirable crystalline silica).

Aspiration hazard

Not classified.

SECTION 12 ECOLOGICAL INFORMATION

12.1 Toxicity

Wetted product is strongly alkaline (pH 11–12) and may be harmful to aquatic life if released to watercourses. Cured product is essentially inert under normal environmental conditions.

12.2 Persistence and degradability

The mineral components are not biodegradable. They are stable and persistent in the environment but in their cured form pose negligible environmental risk.

12.3 Bioaccumulative potential

Not bioaccumulative.

12.4 Mobility in soil

Dry powder may be dispersed by wind. Cured product is immobile.

12.5 Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6 Other adverse effects

Discharge of wet or dry cementitious material to drains, sewers or watercourses must be avoided. High pH may harm aquatic life and disrupt sewage treatment processes.

SECTION 13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

- Cured CAC CRETE™ may be disposed of as inert construction and demolition waste in accordance with the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) and applicable provincial / municipal waste classifications.
- Uncontaminated unused dry product should be returned to the supplier where possible, or wetted, allowed to set, and disposed of as inert waste.
- Empty bags must not be re-used for other purposes. Dispose of as general waste once shaken empty in a controlled manner that minimises dust release.
- Do not dispose of unhardened wet mortar to drains, sewers, stormwater systems or watercourses.
- European Waste Catalogue (EWC) code (reference): 17 01 01 (concrete) for cured product disposal — confirm code with local waste contractor.

SECTION 14 TRANSPORT INFORMATION

The product is not classified as a dangerous good for transport under any of the following:

- United Nations Recommendations on the Transport of Dangerous Goods (UN Model Regulations)
- International Maritime Dangerous Goods Code (IMDG)
- International Civil Aviation Organisation Technical Instructions (ICAO-TI / IATA-DGR)
- European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)
- South African National Standard SANS 10228 — Identification and classification of dangerous goods for transport

14.1 UN number

Not applicable.

14.2 UN proper shipping name

Not applicable. Transport as general cargo: "Cementitious mortar, factory pre-blended."

14.3 Transport hazard class(es)

Not applicable.

14.4 Packing group

Not applicable.

14.5 Environmental hazards

Not classified as marine pollutant. Avoid release to the environment during transport.

14.6 Special precautions for user

Protect packaging from moisture, rupture and damage during transport. Stack as per supplier's pallet specification.

SECTION 15 REGULATORY INFORMATION

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

South Africa

- Occupational Health and Safety Act, 1993 (Act 85 of 1993)
- Hazardous Chemical Substances Regulations, 1995, under the OHS Act
- Asbestos Abatement Regulations, 2020 (not applicable — product is asbestos-free)
- National Environmental Management Act, 1998 (Act 107 of 1998)
- National Environmental Management: Waste Act, 2008 (Act 59 of 2008)
- National Water Act, 1998 (Act 36 of 1998)
- SANS 10234 — Globally Harmonised System of classification and labelling of chemicals (GHS)
- SANS 11014 — Safety data sheet for chemical products — content and order of sections
- SANS 10228 — Identification and classification of dangerous goods for transport

International

- Regulation (EC) No. 1907/2006 (REACH), Annex XVII Entry 47 — chromium VI in cement
- Regulation (EC) No. 1272/2008 (CLP) — classification, labelling and packaging
- OSHA 29 CFR 1910.1053 — Respirable Crystalline Silica Standard (US reference)

15.2 Chemical safety assessment

A chemical safety assessment (CSA) has not been carried out for the mixture. Hazard classification is based on the published classifications of the component substances and on supplier information for the proprietary admixture components.

SECTION 16 OTHER INFORMATION**16.1 Full text of H-statements referenced in Sections 2 and 3**

- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H335 May cause respiratory irritation.
- H350i May cause cancer by inhalation.
- H372 Causes damage to lungs through prolonged or repeated exposure by inhalation.

16.2 Abbreviations

- CAC: Calcium Aluminate Cement
- CLP: Classification, Labelling and Packaging (Regulation EC 1272/2008)
- DoEL: Department of Employment and Labour
- GHS: Globally Harmonised System
- IARC: International Agency for Research on Cancer
- OEL: Occupational Exposure Limit
- OEL-RL: Occupational Exposure Limit — Recommended Limit (South Africa)
- OPC: Ordinary Portland Cement
- PAPR: Powered Air-Purifying Respirator
- PBT: Persistent, Bioaccumulative and Toxic
- PPE: Personal Protective Equipment
- SANS: South African National Standard
- STEL: Short-Term Exposure Limit
- STOT: Specific Target Organ Toxicity
- TWA: Time-Weighted Average
- vPvB: very Persistent, very Bioaccumulative

16.3 Key literature references and sources of data

- Component classifications: Annex VI of Regulation (EC) No. 1272/2008 (CLP harmonised classifications)
- IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 100C: Silica dust, crystalline, in the form of quartz or cristobalite
- Supplier safety data sheets for Penetron Admix, Penetron BioMIC, Chryso Optima 100 and Chryso Serenis
- Sydney Water SS 208: Rehabilitation and Corrosion Protection of Sewers using Calcium Aluminate Cement Mortar (referenced for product performance, not for hazard classification)

16.4 Issue, revision and disclaimer

- This Safety Data Sheet has been prepared in accordance with SANS 11014 and the GHS format (Rev. 9).
- This is Issue 1 (2025) of the document. It supersedes no previous issue.
- This Safety Data Sheet must be made available to all workers handling the product and to emergency services on request.
- Users must satisfy themselves that the information is suitable and complete for their specific use of the product. Shotcrete Africa Advanced Materials accepts no liability for any loss or damage that may arise from the use of this information.

Important

The information in this Safety Data Sheet relates only to the specific product designated herein and is based on current knowledge at the date of issue. It does not constitute a guarantee of any specific property of the product. Users are responsible for determining the suitability of the product for their particular purpose and for ensuring compliance with all applicable laws and regulations. Compliance with the precautions described in this document does not relieve the user of any other safety obligations.

— End of Safety Data Sheet —