CHEMICAL-RESISTANT CASTABLE NO. 35SG (Structural Grade)

Typical industry applications:

Linings in fire training towers, jet engine test cells, and other areas where a high temperature foundation is required.

Protection of concrete floors in molten aluminum dross areas.

Sauereisen Chemical-Resistant Castable No. 35SG is a hydraulically-setting, calcium aluminate cement. No. 35SG is recommended for protection of concrete and steel surfaces from high temperatures, thermal shock, abrasion and chemical attack by mild acids or alkalies.

No. 35SG can eliminate costly firebrick or tile linings and is equally effective for new construction or rehabilitation projects. With No. 35SG, construction proceeds rapidly. At 70-80°F full operation can resume in 48 hours.

As a structural grade material, Sauereisen No. 35SG exhibits mixing and installation qualities similar to standard concrete.

CHARACTERISTICS

- ☐ Resists mild acids/alkalies over a pH range of 3.5 to 11.0.
- ☐ Withstands temperatures to 2100°F (1149°C)
- ☐ Hydraulic set, simply mix with potable water - does not require any special binder.
- ☐ Low shrinkage, high strength.
- ☐ Non-corrosive - may be used in direct contact with steel, iron, lead and most other materials.
- ☐ Good thermal shock resistance.
- ☐ Safe to use - does not emit noxious or hazardous fumes or odors during mixing, application or setting.
- ☐ Abrasion Resistant

PHYSICAL PROPERTIES

Compressive strength @ 1 day (ASTM C-109)	8,000 psi (562.40 kg/cm^2)
Coefficient of thermal expansion	
68° - 1040°F (20° - 560°C)	1.21 x 10^{-5}/F° (2.18 x 10^{-5}/C°)
1085° -1832°F (585° - 1000°C)	2.4 x 10^{-5}/F° (4.33 x 10^{-5}/C°)
Density(ASTM C-905)	137 pcf (2.2 gm/cm^3)
Flexural Modulus @ 7 day	2.5e05
Flexural Strength @ 7 days	1000 psi
Maximum service temperature (ASTM D-648)	2100°F (1149°C)
Mix ratio (Powder:Liquid, by weight)	7.2:1
Modulus of elasticity (ASTM C-580)	2.5 x 10^5 psi (1.72 x 10^5 kg/cm^2)
Modulus of rupture	1000 psi (70.3 kg/cm^2)
Recommended pH range of use	3.5-11.0
Shrinkage (ASTM C 157) @ 7 days	-0.053%
Thermal conductivity (C-1117)	5.9-4.9 BTU•in/ft^2•hr•°F
200° - 1100°F (93° - 593°C)	(2.05 x 10^{-3} - 1.5 x 10^{-3} Cal•cm/cm^2•sec°C)

Physical properties determined using applicable ASTM procedures. Field conditions may vary and yield different results; therefore, data are subject to reasonable deviation.

AREA PREPARATION

Temperature of Working Area

Maintain a temperature of 50 - 90 °F on air, substrate, potable water, and No. 35SG Powder throughout mixing, application, and cure.

Surface Preparation

Where operating parameters and substrate conditions permit, No. 35SG should be used with an appropriate chemical-resistant membrane applied over the substrate and anchors.

Anchoring System

When No. 35SG is applied on vertical surfaces it must be anchored and applied at a minimum thickness of 2 inches. For horizontal applications, an anchoring system may be required, depending on specific project conditions. Consult Sauereisen for recommendations.

"T" type anchors are preferred to secure the No. 35SG. Anchors can be used for all operating temperature ranges. For concrete substrates, the Anchors Unlimited CA5, or similar, is preferred to wire or expanded metal mesh alternatives. Abrasive blasting should be completed before anchor and membrane installation when applying No. 35SG over concrete.

When applying No. 35SG over steel surfaces, abrasive blast and apply membrane after affixing the anchoring system. The anchor specification for steel should be similar to the Anchors Unlimited CA5-Special. Consult Sauereisen for appropriate membrane recommendations.

The anchors are to be placed in a diamond-shaped pattern. Tine direction should be randomly oriented using the following guideline for placement:

Location	Distance Between Centerlines
Overheads	6 - 8 inches
Walls	8 - 12 inches
Floors	12 - 16 inches

The distance of the spread of the tines from tip to tip should be 4 to 5 inches. The centerline of the tine should be held at a minimum distance of 5/8 inch from the substrate, with this distance increased as the thickness of the applied lining increases.

The tines of the studs must have a minimum 1 inch coverage of No. 35SG over their highest point. The tines shall be held essentially parallel to the substrate. The anchoring system should also receive a chemical-resistant membrane.

Concrete
Concrete surfaces which do not receive a membrane must be kept damp with water at least six hours prior to installation of No. 35SG. Remove any standing water before application of the No. 35SG.

Surfaces should be made free of oil, grease, and other contaminants that may inhibit bond. This can be achieved by chemical cleansing or blasting with dry ice or soda.

New Concrete - All structures must be properly designed and capable of withstanding imposed loads. Abrasive blast or high-pressure water blast to remove laitance and obtain uniform surface texture exposing fine aggregate resembling coarse sandpaper.

Old Concrete - Concrete must be firm and structurally sound as specified by the architect/engineer. Abrasive blast or high-pressure water blast to obtain uniform sound substrate with uniform surface texture similar to sandpaper.

Brick - Abrasive blast or high-pressure water blast all foreign particles and attacked or unsound mortar from the joints to a depth of 1/2 inch. Loose brickwork should be regrouted with appropriate Sauereisen mortar to ensure structural integrity.

APPLICATION

Mixing
Mixing should be done mechanically with a slow-speed mortar mixer or drill motor with a "Jiffy" type mixer blade to obtain a uniform consistency. The mixing equipment must be clean and free of Portland cement or other contaminants. The size of the batch will be governed by the area to be covered, the number of workers applying the material, temperature of the area and the speed with which it can be placed.

Sauereisen recommends that Powder and water ratios are accurately weighed prior to mixing. The recomended mixing ratio is 7.2 parts powder to 1 part water, by weight.

Pour the entire amount of potable water into the mixing container and add the Powder slowly, mixing continuously to avoid entrapped air. Mix slowly and thoroughly for at least 5 minutes until uniform consistency. Inadequate mixing or addition of more water will decrease physical properties.

Do not add sand, gravel, Portland cement or other additives to No. 35SG material. Remove entire batch from the mixer when mixing is completed to prevent build-up in the equipment. While pouring one batch, another should be mixed in order to eliminate delays and permit continuous operation.

COVERAGE

QUANTITIES* REQUIRED PER SQUARE FOOT

Thickness (Inches)	Approximate Amount (Pounds.)
1	11.4
2	22.8

* Quantities do not include losses incurred during application or normal density variations.

Installation

When casting No. 35SG, forms should be constructed of firmly braced wood or metal, which has been given a light coating of release agent. The release agent will prevent No. 35SG from adhering to the screeds or forms, but should not leave a residue on the freshly cast material.

The forms are to be completely sealed and rendered watertight with heavy consistency pliable caulking. Seal forms placed over horizontal rough surfaces. Do not apply over any standing water.

All form and screed systems should be strong enough to retain No. 35SG in place without deformation. Tamping methods or pencil vibration are suitable for distributing the material. Use a trowel or screed board to level the material flush with the top of the form. If necessary, trowel finish within 15 minutes after mixing.

FINISHING

No. 35SG hardens with a hydraulic-setting action. Troweling after the initial set will break up the partially set material and damage the surface.

CLEAN-UP

All equipment should be cleaned by scrubbing with a stiff brush and water at the end of each working period, or when buildup becomes pronounced. If removal is required after cure, consult Sauereisen for recommendations.

SETTING/CURING

The No. 35SG Structural Grade will take an initial set in fifteen hours at 70°F. Proper curing of No. 35SG is critical to the serviceability of the completed structure; therefore the substrate and the material temperatures should not be allowed to fall below 50°F until final cure has been achieved. Do not allow water or chemicals on the material surface for a minimum of 48 hours. For temperatures below 70°F, cure a minimum of 72 hours prior to water or chemical exposure.

PACKAGING

50 pound moisture-resistant bags on plastic-wrapped pallets.

SHELF LIFE

Sauereisen No. 35SG Powder has a shelf life of twelve (12) months when stored in unopened, tightly sealed containers in a dry location at 70°F. If there is a doubt as to the quality of the materials, consult a Sauereisen representative.

CAUTION

Consult Material Safety Data Sheets and container label Caution Statements for hazards in handling these materials.

WARRANTY

We warrant that our goods will conform to the description contained in the order, and that we have good title to all goods sold. WE GIVE NO WARRANTY, WHETHER OF MERCHANTABILITY, FITNESS FOR PURPOSE OR OTHERWISE, EXPRESS OR IMPLIED, OTHER THAN AS EXPRESSLY SET FORTH HEREIN. We are glad to offer suggestions or to refer you to customers using Sauereisen cements and compounds for a similar application. Users shall determine the suitability of the product for intended application before using, and users assume all risk and liability whatsoever in connection therewith regardless of any suggestions as to application or construction. In no event shall we be liable hereunder or otherwise for incidental or consequential damages. Our liability and your exclusive remedy hereunder or otherwise, in law or in equity, shall be expressly limited to our replacement of nonconforming goods at our factory or, at our sole option, to repayment of the purchase price of nonconforming goods.

- **Distributors and agents in major cities throughout the world. Consult manufacturer for locations.**
- **Information concerning government safety regulations available upon request.**
- **Sauereisen also produces inorganic compounds for assembling, sealing, electrically insulating and grouting.**

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