

METZ SAUEREISEN 54SG

STRUCTURAL GRADE ACID PROOF CONCRETE



DESCRIPTION:

Metz Sauereisen 54SG is a potassium silicate based structural grade acid proof concrete for chemical resistant construction. Metz Sauereisen 54SG is fast setting and high strength, and can eliminate the requirement for Portland Cement concrete in new construction and maintenance applications. Metz Sauereisen 54SG provides outstanding performance in the most severe acidic environments, i.e. in any concentration of sulphuric, nitric or phosphoric acids etc.

FEATURES AND BENEFITS:

- **Excellent Acid Resistance**
Resistance to all acids in all concentrations (over a pH range of 0.0 - 7.0), except hydrofluoric acid and fluoride salts. Resistance for all concentrations of nitric, hydrochloric and sulphuric acids. Also resistant to most solvents and oils. Refer Metz Chemical Resistance Chart.
- **100% Potassium Silicate bonded**
- **High Service Temperature** - withstands temperatures to 758°C
- **Fast Chemical Set** - less down time required
- **May be applied over damp, acid-attacked concrete**
- **Needs no further protection** - once it is laid and cured it is ready for service
- **200mm Slump** - relatively easy to place. Wash up with water.

RECOMMENDED:

For chemical resistant construction of:

- Floors
- Bunds
- Plinths
- Sumps
- Pits
- Trenches
- Walls
- Ramps
- Covers
- Drains

and other structural support columns and bases in:

- Acid plants
- Oil refineries
- Fertiliser plants
- Chemical plants

NOT RECOMMENDED:

- For alkalis in any form - generally any solution with pH above 7.0 depending on concentration and degree of exposure.
- For hydrofluoric acid or fluoride salts.

PHYSICAL PROPERTIES:

(Typical Values)

| | |
|---|---------------------------------------|
| Density | 2.25 - 2.35 g/cm ³ |
| Maximum Service Temperature: | 758°C |
| Shrinkage | 0.2% |
| Compressive Strength | 24 hours - 14 MPa and 7 days - 28 MPa |
| Modulus of elasticity | 1.19 x 10 ⁴ MPa |
| Water Absorption | 3% |
| Tensile Strength | 4.5 MPa |
| Coefficient of Thermal Expansion (20°C-200°C) | 10 x 10 ⁻⁶ per °C |

COVERAGE:

Theoretical coverage (allow for wastage). Quantities do not include losses during application or normal density variations.

| Thickness | Quantity required per sq. metre |
|-----------|---------------------------------|
| 50mm | 115kgs |
| 75mm | 173kgs |
| 100mm | 230kgs |

or 2300 kgs per cubic metre

APPLICATION TEMPERATURE:

The recommended temperature range for Metz Sauereisen 54SG is 10°-32°C. At temperatures below 10°C, the application becomes more difficult, and curing may be retarded. At temperatures above 32°C, working time decreases and setting rates may be affected. If necessary, consult Metz.



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INSTRUCTIONS FOR USE

1. Temperature of Working Area

Maintain a temperature of 10-32°C on air, substrate, liquid and powder components during mixing, application and cure. At temperatures below 10°C, Metz Sauereisen 54SG will not cure properly. At temperatures above 32°C, the material will set too quickly.

2. Reinforcement and Anchors

When casting Metz Sauereisen 54SG appropriate reinforcement similar to that used with Portland cement concrete can be incorporated. In severely aggressive environments, corrosion resistant reinforcement should be used.

Mechanical anchors are recommended, consult Metz for details.

3. Surface Preparation

Where operating parameters and substrate conditions permit, Metz Sauereisen 54SG should be applied in conjunction with an appropriate chemical resistant membrane. Consult Metz for recommendations.

Foundation Construction:

Foundation base should be constructed with appropriate materials to support load of engineered design. Metz Sauereisen 54SG should not be applied over standing water or loose soil.

New Concrete:

Remove oil, grease, water and other contaminants by chemical cleaning. Abrasive blast, high-pressure water blast, or scabble concrete to remove laitance and provide a mechanical key, with a profile of 3-4mm.

New concrete should be at least 28 days old. Anchors are required for many applications. Consult Metz for details.

Old Concrete:

Concrete must be firm, dry and sound otherwise proceed as for new concrete.

Brick:

Remove oil, grease, water and other contaminants from surface. Abrasive blast or hydroblast to remove all loose material and provide a clean, firm surface.

If chemical cleaning is utilised to remove contaminants, substrate must be neutralised. If abrasive or highpressure water blasting is used as the method of surface preparation, all sand and/or debris must be removed by thorough vacuuming of the area. If surface does not have desired finish, repeat surface preparation procedure.

4. Expansion/Control Joints

Toppings:

Joints in toppings are to be provided at 4.5 metre centres, around all fixed objects, perimeters of rooms and over all points of movement in the base slab. Use Metz Acid Resistant Waterstop beneath all such joints. The joints should then be filled with the appropriate expansion joint filler. Consult Metz for recommendations.

5. Mixing

(i) *Mixing Equipment:*

A slow speed mortar mixer or continuous mixer should be used. The mixing equipment must be clean and free of Portland cement or other contaminants. The liquid may separate in the container upon standing undisturbed for a long period of time. Therefore, it is essential that it be thoroughly remixed prior to use.

Mixing Proportions:

The recommended mixing proportions are:

By weight:

| | |
|--------|-----------|
| Liquid | 1.0 parts |
| Powder | 6.5 parts |

By volume:

| |
|------------------------------|
| 3.08 kgs (2.2 litres) Liquid |
| 20 kgs bag Powder |

The completed mix should have a slump of approximately 200mm.

Mixing Procedure:

The mix ratio should not be altered as this will affect the cured properties of the material.

Mix slowly and thoroughly for at least 3 minutes until mixture is a uniform consistency. Avoid air entrapment. Do not add sand, water, gravel or Portland cement or any other additive.

Remove the entire batch from the mixer when mixing is complete to prevent build-up in the equipment. While pouring one batch, another should be mixed in order to eliminate delays and permit continuous operation.

(ii) *Pot Life*

| | |
|------|---|
| 20°C | 35 minutes |
| 30°C | 20 minutes |
| 40°C | pot life will be too short for material to be successfully used |

(iii) *Clean Up*

All equipment should be cleaned by scrubbing with a stiff brush and water, or by using a gerni at the end of each working period or when build-up becomes pronounced.

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6. Installation

When casting Metz Sauereisen 54SG, forms should be constructed of firmly braced wood or metal, which has been given a light coating of release agent, and be watertight. The release agent will prevent Metz Sauereisen 54SG from adhering to screeds or forms, but should not leave a residue on the freshly cast material.

Do not apply Metz Sauereisen 54SG over any standing water.

The form system should be strong enough to retain Metz Sauereisen 54SG in place without deformation. Forms may be removed after set has occurred and Metz Sauereisen 54SG has sufficient strength to support itself.

To ensure proper compaction, it may be advisable to apply vibration to the external formwork. Pencil vibrators are not effective.

Metz Sauereisen 54SG is quickly screeded and then tamped into place. Do not overwork the surface by trowelling - it is not possible to achieve a fine floated surface with this industrial product.

Do not impose loads until final set has been achieved.

Cold joints should be avoided if possible. Where this is not possible they require a liberal priming with Metz Sauereisen 54SG liquid.

7. Setting/Curing

Initial Set: 5 hours at 20°C
3 hours at 30°C

Full Cure: 48 hours at 20°C
24 hours at 30°C

For temperatures below 20°C a longer curing time should be allowed.

Note: Do not allow substrate or material temperature to fall below 10°C until cure achieved. Do not allow water or chemicals on materials surface for a minimum of 48 hours.

It is recommended to acid wash the surface after full cure. Use 10% Hydrochloric Acid solution and dampen the entire surface. Do not wash off, let dry.

Do not use curing compounds.

If it is necessary to cover the material during setting and curing, the cover should not be allowed to contact the surface of the material.

8. Storage

Store in original sealed containers in a cool, dry place. Under these conditions, shelf life is minimum of 6 months.

9. Safety Precautions

Liquid:

Avoid any contact with eyes. Wear safety glasses when mixing.

If contact occurs, wash with copious amounts of water.

Seek medical attention.

Avoid contact with skin.

Wear protective gloves.

Powder:

Avoid breathing dust

Ensure adequate ventilation.

For full safety precautions, refer to the Material Safety Data Sheets for each component.

