



METZ SAUEREISEN 35

CHEMICAL RESISTANT CASTABLE



DESCRIPTION:

METZ SAUEREISEN 35 is a calcium aluminate cement based castable concrete which can be gunned or cast to provide protection against high temperatures, thermal shock, abrasion and chemical attack by mild acids and alkalis.

FEATURES AND BENEFITS:

- **High Service Temperature**
Maximum service temperature 1150°C.
- **Unaffected by water or steam**
- **Low Shrinkage**
- **Fast Set**
Fully operational after 48 hours at 20-25°C.
- **High Strength**
- **Excellent Thermal Shock Resistance**
- **Resists mild acid/alkalis** in the pH range 4.5 - 12

RECOMMENDED:

As a monolithic lining in -

- Chimneys
- Ducts
- Jet engine test cells
- Molten aluminium dross areas

NOT RECOMMENDED:

For areas subjected to concentrated acids. (Refer Metz Sauereisen 54 range)

PHYSICAL PROPERTIES:

(Typical Values)

Density	2.0 - 2.2 g/cm ³
Maximum Service Temperature:	1150°C
Compressive Strength	20 MPa
Modulus of elasticity	1.7 x 10 ⁻⁴ MPa (19,000MPa)
Modulus of Rupture	7MPa
Thermal conductivity (90°C-600°C)	0.85 - 0.7 w/mK
Thermal expansion (20°C-540°C)	2.8 x 10 ⁻⁵ /°C
(540°C-870°C)	4.3 x 10 ⁻⁵ / °C

COVERAGE:

Theoretical coverage (allow for wastage).

2.1 kgs per sq. metre per millimetre of thickness.

Note - this does not include losses during application (e.g. rebound) or normal density variations.

APPLICATION TEMPERATURE:

The recommended temperature range for METZ SAUEREISEN 35 is 10°-32°C.

At temperatures below 10°C, curing may be inhibited and final technical properties may be affected.

At temperatures above 32°C consistency and setting rates may be affected.

If necessary, consult METZ.



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INSTRUCTIONS FOR USE

Application

Maintain a temperature of 10°C-32°C on METZ SAUEREISEN 35 Powder, water, air and substrate during mixing, application and cure.

1. Surface Preparation

a) *Chemical resistant membrane:*

The use of a suitable membrane (such as METZ SAUEREISEN 89) is recommended on metal or concrete. Consult METZ for recommendations.

b) *Concrete:*

Concrete surfaces which do not receive a membrane must be kept damp with water at least 6 hours prior to installation on the METZ SAUEREISEN 35. Remove any standing water before application of METZ SAUEREISEN 35.

Concrete must be firm and structurally sound. Surfaces should be made free of laitence, oil grease and other contaminants by abrasive blasting, scabbling, or chemical cleaning.

c) *Metal:*

Metal surfaces which do not receive a membrane should be abrasive blasted to AS1627.4-Class 2 ½ minimum

d) *Brick:*

Abrasive blast or hydroblast mortar joints to a 12 mm depth to remove all loose material and provide a clean, firm surface with no oil or grease present. Obtain a firm surface on the brick by blast cleaning the face of the brick.

2. Anchoring System

When METZ SAUEREISEN 35 is applied by gunite method, or cast on vertical or overhead surfaces, it must be anchored and applied at a minimum thickness of 40 mm. For horizontal applications, an anchoring system may be required, dependent on specific project conditions. Consult METZ for recommendations.

Longhorn or 'T' type anchors are preferred to secure the METZ SAUEREISEN 35 lining. The anchor design for steel should be similar to Anchors Unlimited CA5 Special. Consult METZ for anchor design recommendations and before wire or expanded metal mesh is used.

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

	Distance between centrelines
Overheads	150mm - 200mm
Walls	200mm - 300mm
Floors	300mm - 400mm

The distance of the spread of the tines from tip to tip should be a minimum of 100mm. The centreline of the tine should be held at a minimum distance of 15mm from the substrate, with the distance increased as the thickness of the applied lining increases. The tines of the studs must have a minimum 25mm coverage of METZ SAUEREISEN 35 over their highest point. The tines shall be held essentially parallel to the substrate. The anchoring system should also receive a chemical resistant membrane where applicable.

3. Cast Application

a) *Mixing*

- Mixing Equipment - mixing should be done mechanically with a slow speed mortar mixer or paddle mixer.
- Mixing ratio - is 5 parts METZ SAUEREISEN 35 Powder to 1 part potable water by weight, or 4 litres of water per 20kg bag of powder.
- Mixing procedure - pour the entire amount of water into the mixer and add the powder, stirring continuously to reduce entrapment of air. Mix slowly and thoroughly until a uniform consistency is achieved.
- Fibre addition - in certain applications, such as areas subjected to high thermal shock, vibration and abrasion, it is recommended that steel fibres be added to the mix. Consult METZ for details.

b) *Installation*

After mixing, place the METZ SAUEREISEN 35 on properly prepared substrate to the specified thickness. METZ SAUEREISEN 35 can be cast into place, however, it can also be pumped with standard concrete pumps capable of handling a fibered mixture.

Material should be moved into place using a trowel and rodded, or vibrated, depending on the application. The thickness of METZ SAUEREISEN 35 should be maintained with formwork. A straight edge should be used to level between the forms. Forms must be securely anchored and leakproof, and must not be disturbed until the METZ SAUEREISEN 35 has reached its final set. Forms should be a wood or metal and be given a light coating of form release agent. METZ SAUEREISEN 35 should be worked into the forms to avoid entrapment of air.

c) *Expansion/Movement Joints*

Appropriate chemical resistant expansion joints should be placed in the same manner as with ordinary concrete floors. Consult METZ for recommendations.

d) *Finishing*

Finishing must be done immediately as the METZ SAUEREISEN 35 hardens with a rapid chemical setting action. Later trowelling will break up partially set cement and damage the surface.



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INSTRUCTIONS FOR USE

e) Setting:

Initial Set:	3 - 6 hours at 20°C
Final Set:	5-8 hours at 20°C
Fully Operational:	48 hours at 20°C - 25°C

f) Curing

As soon as the METZ SAUEREISEN 35 has reached its initial set (3 - 6 hours) apply a curing compound to the surface. Consult METZ for recommendations. If curing compounds are not used, other methods of maintaining moisture in the METZ SAUEREISEN 35 for a minimum of 24 hours must be employed e.g. covering with plastic or wet hessian.

4. Gunite Application

a) Predampening

METZ SAUEREISEN 35 Powder should be preampened. Use 0.5 litre of potable water for predampening 20kgs of METZ SAUEREISEN 35 Powder. This can be achieved by mixing in a paddle mixer equipped with a water meter. The predampened METZ SAUEREISEN 35 Powder must be gunited within 10 minute period after mixing. Avoid overdampening.

b) Installation

METZ SAUEREISEN 35 should be applied with a standard double-tank or rotary-type gun, or approved similar model. Potable water should be pumped through a piston-primed, airless pump to assure a constant pressure of 80 p.s.i. at the nozzle.

Adjustments may be made by the operator to achieve correct proportions for good adhesion without slumping or too much rebound.

The mixing ratio should be 9 parts to 1 part water by weight.

No material should be placed over rebound. All rebound and other loose material on surfaces already gunited must be carefully removed without damage to the membrane or lining. Do not reuse rebound.

Cold joints require a liberal priming of previously placed METZ SAUEREISEN 35 with potable water. Fresh material should be applied while the surface is still damp.

Consult METZ for recommendation on the required material thickness to protect the substrate against service conditions.

5. Finishing

METZ SAUEREISEN 35 hardens with a hydraulic setting action. Leave as an 'off gun' finish or strike off with a trowel. As trowelling may break up the partially set material and damage the surface, do not attempt to achieve a smooth trowel finish.

6. Clean up

Equipment, tools, etc should be cleaned with water prior to the initial set of the METZ SAUEREISEN 35.

7. Setting/Curing

Proper curing of METZ SAUEREISEN 35 is critical to the serviceability of the completed installation. Refer the curing details under (3) Cast Application. A cure of 24-48 hours is needed at a minimum of 20°C. After this time, controlled drying is required to ensure that all moisture is removed from the lining to eliminate the potential of lining failure due to steam spalling when the unit is brought to operating temperature.

The following cure schedule is recommended: -

- 1) 24-48 hours at ambient temperature (20°C)
- 2) 6 hours at 65°C
- 3) 6 hours at 93°C
- 4) 12 hours at 100°C
- 5) Heat to maximum service temperature at a rate not exceeding 50°C per hour.

8. Coverage

Theoretical coverage (allow for wastage)

2.10 kgs per sq. metre per mm of thickness - this does not include losses during application (e.g., rebound) or normal density variations.

9. Safety Precautions

Avoid breathing dust.
Ensure adequate ventilation.

For full safety precautions refer to the Material Safety Data Sheet for this product.



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