

MAXSEAL®

CEMENT-BASED WATERPROOF COATING FOR CONCRETE AND MASONRY

Description

MAXSEAL is a cement-based mortar with special additives and controlled aggregates. Once cured, it becomes a suitable waterproof coating for use on concrete, brick, concrete block, masonry substrates.



Uses

- Waterproofing and coating of drinking water tanks.
- Waterproofing of swimming pools.
- Waterproofing of tunnels, galleries, basements and elevator pits subjected to high water pressure.
- Waterproofing and protection of concrete in water treatment plants, setting tanks, etc.
- Coating for waterproofing of dams and retaining walls.
- Waterproof coating for façades and wall faces, concrete blocks and prefabricated panels.
- Restoration and waterproofing of channels.
- Waterproofing and decorative finish for silos and cooling towers in thermal power plants.

Advantages

- Excellent waterproofing properties. Withstands both positive and negative hydrostatic pressures.
- Allows application on wet substrates.
- The coating allows the substrate to breathe and thereby it does not form a water vapour barrier.
- Final layer of **MAXSEAL** can work as a decorative finish, saving further enhancing paint costs.
- Easy to use and no maintenance required.
- Resistant to aggressive environment such as seacoasts and zones with atmospheric pollution.
- It resists weathering and freeze/thaw cycles, longer lasting than paints and other coatings.
- Very good adherence to substrate. It fills and seals all porous of the surface and also becomes part of the structure of the surface.
- Suitable for use in contact with drinking water.
- Once **MAXSEAL** is cured, it can be covered with protective or fixing mortars, such as **CONCRESEAL PLASTERING** (Technical Bulletin n° 06) and **MAXKOLA** (Technical Bulletin n°32).
- Environmentally friendly.



Surface preparation

Do not apply onto gypsum substrates. Surface to be treated must be clean, sound and free of paints, efflorescence, greases, oils, demoulding agents, dust, gypsum, etc. If the surface has been previously coated then at least 80% of the coating must be removed by water pressure cleaning, sand blasting etc.

Before the application of **MAXSEAL**, all holes and cracks must be opened up at least 1,5 cm and then, patched with **MAXREST**. If water leaks are present, **MAXPLUG** should be used. In case of superficial non-structural bars are present, these must be cut at least 2 cm and then, prior to the application of **MAXSEAL**, area should be patched with **MAXREST** or **MAXPLUG**.

Once surface has been repaired, the entire surface to be coated should be thoroughly saturated with clean water. Allow excess water to drain away before applying **MAXSEAL**. Do not leave free-standing or pooled water on the surface.

Surface

- The surface to be coated must be solid and clean, free of all traces of paint, efflorescence, loose particles, grease, form-stripping oils, dust, gypsum plaster, etc.
- If the surface has previously been painted with whitewash, paint or other such treatment, remove at least 80% of them.
- All cracks must be at least 1,5 centimetres deep and must be sealed with Maxrest if there is no water or with Maxplug if there is water penetration. All non-structural surface iron must be cut to a depth of 2 centimetres then patch with Maxrest or Maxplug.
- Wash the surface with water before coating.
- Do not apply the coating on a gypsum plaster base.
- **IT IS THE RESPONSIBILITY** of the applicator to determine whether a structure contains any form of **efflorescence** **PRIOR TO APPLICATION**. Any traces of efflorescence in negative waterproofing should be high pressure water blasted and **SILOXANE CLEAR** introduced with two coats of **MAXSEAL FLEX**.



Mixing

Three parts of clean water are poured into a clean container in order to produce a mixing liquid to which **MAXSEAL** is added. Mixing is best done by mechanical means such as a slow speed mixing drill (400-600 rpm). Small quantities may be mixed manually with a trowel. When mixing manually care must be taken to ensure product is mixed thoroughly. Mix until a thick creamy paste free of lumps is achieved (mixing time about 1 to 2 minutes). Allow the mixture to rest for 5 minutes and then remix briefly prior to application.

A 25 kg bag requires from 6.25 to 7. l of mixing liquid , optimum, temperature range from 15 °C to 28 °C.

Application

In order to fill and cover properly all pores and voids, **MAXSEAL** should be applied by means of a fibre brush or a nylon fibre broom, such as **MAXBRUSH** or **MAXBROOM** respectively.

Apply the product to surface in a thick layer, making up a homogeneous and continuous coating. Do not spread the product as if it were a paint. Once **MAXSEAL** has been spread, it must not be brushed again. **A second layer must be applied in the perpendicular direction of the first one, with a waiting-time of 12-16 hours between layers.** This second layer may be applied by either roller or trowel to achieve decorative finishes.

MAXSEAL can be applied also by spray equipment. However, in order to ensure complete and uniform coverage and proper sealing of all voids etc, the freshly sprayed product should be brushed or broomed.

If **MAXSEAL** is going to be rendered on vertical surfaces, it is advisable to apply the second layer horizontally. For pipelines, a second layer should be applied in the direction of the water flow.

Application conditions



Tools

MAXSEAL is applied with a fibre type brush, or a shorthaired nylon fibre brush, which makes it easier for the coating to fill all pores and cavities. With a maxbrush apply a thick layer to form a continuous and uniform coating; do not spread as if it were paint, apply only in one direction, the second coat should be spread in the opposite direction. After the work is finished clean the brushes with water and store for further use.

The optimum temperature range for application is from 15 °C to 28 °C.

Do not apply **MAXSEAL** if rain is expected within 4-6 hours after the application.

In winter, do not apply **MAXSEAL** below 5 °C or if such temperatures are expected within 24 hours after application. Do not apply the coating on frozen or frosted surfaces.

For applications during hot temperatures and windy conditions, i.e. summer time, the surface must be wet with plenty of water. Once **MAXSEAL** has been applied, if product appears to be drying out too quickly spray the surface lightly with a fine mist of water. Applications must be protected against direct sunlight exposure and/or strong winds during high temperature conditions.

Application Temperature

For summer temperatures, wet the surface with plenty of water. You may water the surface even after maxseal has been applied if you notice that the drying process is too fast.

In winter, do not apply when temperature is below 5° or if such temperatures are expected within 24 hours of application.

Do not apply on frozen or frosted surfaces.

The ideal working temperature is 15°-28°C.

Do not apply on outdoor surfaces if rain is expected within four to six hours of application.

Curing

Allow **MAXSEAL** to cure for at least **for 7 days at 28 °C and 50% of relative humidity prior to immersion in water**. Lower temperatures and higher relative humidity increase the curing time.

Cleaning

Before product hardens, all tools and equipment must be cleaned immediately with water. Cured material only can be cleaned by mechanical means.

Technical data

Characteristics for mixed product, placement and setting	
Mixing liquid (liquid weight/product weight, %)	25-28
Optimum application conditions T(°C)	15-20
Time between layers at 20°C (h)	12-16
Curing time at 20 °C and 50% R.H. (days)	7
Characteristics for hardened product	
<i>a) Physical Properties</i>	
Flexural Strength, EN 1015-11 (MPa)	
7 days	4,90
28 days	7,55
Compressive Strength, EN 1015-11 (MPa)	
7 days	33,0
28 days	40,7
Adhesion resistance, EN 1015-12, (MPa)	2,47
b) Properties of waterproof ness and chemical resistances	
Waterproofing behaviour:	
Pressure negative condition (180 min with 35 MPa)	No passage of water
Permeability to rainwater (120 l/m ² with wind, 4 h)	No water or dampness
Water vapour transmission, Swedish standard SS 02 15 82 d H ₂ O (m/s) / S (m, air barrier)	0,1578·10 ⁻³ / 0,16
Frost resistance. Freeze-thaw and heat-ice cycles test Swedish standard SS 1372 44 method IVB (56 cycles)	Very good resistance Scaling: 0,02 kg/m ²
Suitability for coating in direct contact with drinking water	Approved
<i>c) Heat properties</i>	
Flammability rating, UNE 23727:1990	M0
Consumption	
Consumption per layer/per total application (kg/m ²)	1-1,5 / 2-3

Test Data

Permeability to water under pressure conditions.

After 180 mins. from 3,5 Kp/cm² pressure was applied, there was no passage of water through maxseal - lined surface. Test was interrupted by breaking of test-pieces. Test No. 14.943 I.E.T.C.E. (1)

Toxicity.

Maxseal is suitable as internal lining from drinking water tanks. It is not toxic. Test No 14.343 I.E.T.C.C. and Analysis No 44.643, from National Food and Nutrition Centre. Ministry of Health and Consumer. Test No 5.211-5.212 Lebensmittel-Versuchsanstalt, Vienna (Austria).

Permeability to rain-water.

A water flow, 120 l/m² X h, with wind, is applied on the surface of MAXSEAL - lined wall. After 4 hours

of testing, no water or dampness is seen to seep through the wall. Test No 1.031/82-M INCE (2).

Permeability to steam.

MAXSEAL allows to breathe to support which is applied on. Test No 15.816 I.E.T.C.C.

Accelerated ageing. Freeze-thaw and heat-ice cycles.

After 1000 hours of testing, there was no deterioration, loss of adhesion, cracking or colour changes. Test No 15.269 I.E.T.C.C.

Mechanical Resistances.

AGE	Ultimate Strength, KP/cm2 (psi)	
	FLEXOTRACTION	COMPRESSION
3 days	54 (767)	210 (2985)
7 days	73 (1038)	344 (4890)
28 days	104 (1478)	429 (6100)

Test No 15.269 I.E.T.C.C.

Water Absorption

CONDITION	Percent absorption		
	5 hours	48 hours	7 days
Immersion at 20† C=2† C	0	3,5%	4,1%
Boiling	2,6%	0	0

Adhesion. Adherence by perpendicular traction.

Adhesive strength: 2,1 Kp/cm2

After 1000 hours exposure in water/ice cycles and heat/ice cycles equivalent to 42 cycles with 1 day duration, adhesive strength is 2,2 Kp/cm2 and 1,6 Kp/cm2, respectively.

Test No 15.269 I.E.T.C.C.

(1) I.E.T.C.C.: Eduardo Torroja Institute for the Construction and Cement. Member of European Union for Construction Technical Agreement. (2) I.N.C.E.: National Institute for Quality in Construction.

Consumption

MAXSEAL is applied in two layers. The recommended coverage is 1-1,5 kg/m² per layer with a total coverage of 2-3 kg/m².

Application requirements

- Do not use onto gypsum plaster surfaces.
- Do not add cements, additives or aggregates to **MAXSEAL**.
- Do not use **MAXSEAL** in contact with very soft water. If sulphates are present in water, use **MAXSEAL ANTISULFAT**.
- In case of doubt related to the water to be in contact with MAXSEAL or further information, consult our Technical Department.

Application Requirements

Type of Application	kg/m2	kg/m2	kg/m2	Procedure
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	1st Coat	2nd Coat	total	2nd Layer		
				1st Layer brush	roller	brush
Exterior walls, partition walls	1,3	0,7	2	•	•	•
Exposed concrete	1	0,5	1,5	•	•	•
Bricks:						
Double hollow for later mortar coating	1,5	-	1,5	•	•	•
Brick	1,8	1	2,8	•	•	•
Swimming pools	1,5	1	2,5	•		•
Basements:						
Damp	1,5	1	2,5	•		•
With water pressure	2	1	3	•		•
Tunnels and shafts	2	1	3	•		•
Sewers	1,5	1	2,5	•		•
Water treatment plants	1,5	1	2,5	•		•
Drinking water tanks	1,5	1	2,5	•		•
Irrigation canals	1,5	1	2,5	•		•

The above requirements are based on normal conditions. Consult your supplier for extreme problems.

Colours

MAXSEAL comes in standard grey cement, white and other pastel colours manufactured on request.



Packaging

MAXSEAL is supplied in 25 kg bags and drums, and 5 kg cans. MAXSEAL is available in standard grey, white and pearl grey. Other special light colours, MAXSEAL DECOR are manufactured by request.

MAXSEAL White is also supplied in 14 kg handipak.

Storage

Twelve months or twenty four months in its original unopened bag or drums respectively. It must be stored in a dry and covered place, protected from freezing, and temperatures above 5 °C.

Safety and health

As all cementitious products, MAXSEAL is an abrasive compound and both protective rubber gloves and goggles must be used to prepare and apply the mixture. In case of eye contact, rinse thoroughly with clean water, but do not rub. In case of skin contact, wash affected areas with soap and water. If irritation continues, seek medical attention.

Disposal of the product and its empty containers must be made according to official regulations. This disposal must be made by the final user.

Guarantee

The information contained in this leaflet is based on our experience and technical knowledge, obtained through laboratory testing and from bibliographic material. **DRIZORO** reserves the right to introduce changes without prior price. Any use of this data beyond the purposes expressly specified in the leaflet will not be the Company's responsibility unless authorised by us. The data shown on consumptions, measurement and yields are for guidance only and based on our experience. These data are subject to variation due to the specific atmospheric and jobsite conditions so reasonable variations from the data may be experienced. In order to know the real data, a test on the jobsite must be done, and it will be carried out under the client responsibility. We shall not accept responsibility exceeding the value of the purchased product. For any other doubt, consult our Technical Department. This version of bulletin replaces the previous one.

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