

MASTERSEAL[®] 345

Elastic, waterproofing membrane for spray application in a sandwich structure with sprayed or cast in-situ concrete

Product description

MASTERSEAL[®] 345 is a sprayable membrane for the waterproofing of concrete structures. MASTERSEAL[®] 345 is spray applied in a sandwich construction between layers of sprayed or cast concrete. It has good bond strength characteristics to the substrates on both sides of the membrane and behaves elastically.

As a fully bonded system, this promotes excellent watertightness characteristics to the underground structure, preventing the development of water migration on both concrete-membrane interfaces.

MASTERSEAL[®] 345 undergoes a chemical hardening between 4 and 6 hours (depending on environmental conditions) sufficient to allow a further structural sprayed concrete lining to be placed, thereby preventing disruption to standard construction sequences.

As with all spray applied products, it is not possible to seal against active water ingress through the substrate. In such cases the MASTERSEAL[®] DR1 drainage system is recommended to be used in combination with MASTERSEAL[®] 345, or local management using drainage pipes. Please refer to the MASTERSEAL[®] DR1 Technical Data Sheet for details. However, MASTERSEAL[®] 345 can be applied to damp and wet (no running water) substrate.

Steel fibre reinforced sprayed concrete can be used on both sides of the MASTERSEAL[®] 345 membrane.

Fields of application

- Sprayed concrete structures
- Replacement of waterproofing sheet membranes
- In sandwich structures (concrete / membrane / concrete)
- Single shell permanent tunnel linings constructed of sprayed concrete
- Underground structures with complex profiles and geometry
- Drill and blast substrates, saving the smoothing layer of sprayed concrete required for sheet membranes
- Can be applied directly over steel insertions, such as rock anchor heads, starter-bars for internal structures and ventilation supports

Features and benefits

- No toxic components
- No classification needed for transport
- Ready for use
- Fast curing
- Application by spraying using simple equipment
- Elasticity 80% to 140% between -20°C and +20°C
- Two-sided bond with sprayed concrete allowing monolithic behaviour and providing excellent watertightness properties

Packaging

MASTERSEAL[®] 345 is available in 25kg bags

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*Technical data

Form	Powder
Colour	light brown
Water pressure resistance (max)	15 bar
Bulk density (+20°C)	590 g/l ± 100 g/l
Theoretical consumption per mm per m ²	0.72kg
Application thickness	3 to 10mm
Application temperature	+5°C to +40°C
Failure stress (at +20°C, at 28 days)	1.5 to 3.5 MPa
Failure strain (at +20°C, at 28 days)	> 100%
Bond strength to concrete (28 days)	1.2 ± 0.2 MPa
Shore hardness	80 ±5
Flammability	self-extinguishing (in accordance with DIN 4102-B2)

Compatibility

MASTERSEAL[®] 345 can be applied onto all types of concrete, provided that the surface is clean and without loose particles. Sprayed concrete and cast concrete with or without steel fibres may be placed against the applied membrane surface, once it has cured.

MASTERSEAL[®] 345 can also be applied in combination with traditional waterproofing sheet membrane systems.

Application procedure

MASTERSEAL[®] 345 should be applied by the dry spraying method with a MEYCO[®] Piccola or similar, with the following additional equipment:

- Rotor 12 round hole 90 mm high
- Rotor base 90 mm coupling
- Rotor dust collector 90 mm high coupling

- Spraying nozzle DIA 32 mm (plastic tip with collar/conical) with 18 hole water ring
- Spraying hose DIA.32 mm

The MEYCO[®] Piccola or chosen spray equipment must be fitted with a dust collection filter, or similar dust collection system, as shown below.



Care should be taken not to create excessive dust when filling the hopper. The floor areas near the pump should be kept damp with water during the application process.

The following procedure should be implemented for all applications:

- Start water
- Start air
- Start MASTERSEAL[®] 345 feed
- Apply
- Shut-off MASTERSEAL[®] 345 feed
- Finally, turn-off air
- When clear, shut off water

NOTE: Under no circumstances should MASTERSEAL[®] 345 be sprayed without the addition of water at the nozzle.

Water addition should be between 30 and 50% by product weight.

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Spraying technique

MASTERSEAL[®] 345 should be sprayed in the ambient temperature range of +5°C and +40°C, and cyclic variations shall not exceed 10°C within this range.

Spraying distance should be between 2-2.5m. Manipulation of the nozzle should be such as to promote the full coverage of the MASTERSEAL[®] 345 into the surface texture of the substrate. If blockages occur, blow out lines into barrel of water to prevent excessive dust.

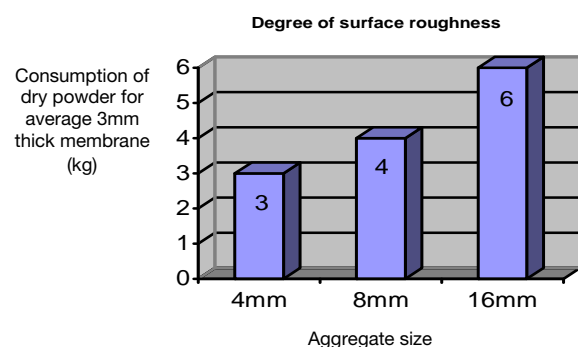
Curing

The rate of curing is dependant on the site specific environmental conditions. However, typically the MASTERSEAL[®] 345 may be over-sprayed within 6 hours (or shorter).

For a minimum of 5 days following application, the membrane shall not be exposed directly to temperatures outside the temperature range of +5°C and +40°C, and cyclic variations shall not exceed 10°C within this range.

Consumption

As a guide, the following chart gives consumption rates for an average thickness of 3mm per m² for three varying roughness sprayed concrete substrates.



If the roughness of a sprayed concrete surface requires more than 6 kg/m² of MASTERSEAL[®] 345, a smoothing layer of cementitious mortar should be considered. It is recommended that the smoothing mortar should have maximum aggregate size of 4mm. The mortar layer will reduce MASTERSEAL[®] 345 consumption significantly.

If an external curing agent has been applied to the sprayed concrete, this must be thoroughly removed before applying the membrane and the cleanliness checked.

Active water must be either pre-sealed, collected in hoses through the membrane, or be covered by MASTERSEAL[®] DR1 sheets fixed to the concrete surface, for diversion to the drainage system behind the membrane. A practical solution must be adapted to each individual case, and must be strictly implemented on site.

The inner concrete lining application of sprayed or cast in-situ concrete can be constructed directly onto the MASTERSEAL[®] 345 membrane after it has cured sufficiently (normally between 4 and 6 hours depending on environmental conditions).

The MASTERSEAL[®] 345 should receive the inner lining of concrete as soon as practically possible or if unduly adverse conditions are expected, such as high water ingress, temperatures below 5°C, or hydrostatic loads exceeding the bond strength of the membrane to the substrate.

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The installation of the inner concrete lining within hours of membrane application will inhibit the bond strength development of the membrane. However, within 56 days the designed bond strength should be achieved.

Cleaning

The dry spray machine and delivery lines should be cleaned with compressed air. The nozzle and injector should be cleaned with water.

For removal of membrane build-up in the equipment, dry sand may be sprayed through the equipment.

Storage

MASTERSEAL[®] 345 has a shelf life of 12 months if stored in original, unopened bags between +5 °C to +40°C. The storage area must remain dry.

Safety precautions

The product has no toxic components. The use of gloves, eye protection and a mask when spraying are recommended.

Care must be given to the reduction of dust during application as described in this Technical Data Sheet and advice given in the Material Safety Data Sheet. For further information please refer to the Material Safety Data Sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local BASF representative.

BASF reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality and care

All products originating from BASF's Dubai, UAE facility are manufactured under a management system independently certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001, ISO 14001 and OHSAS 18001.

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* Properties listed are based on laboratory controlled tests.

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