BPA WATERPROOFING SYSTEMS

CEMTOBENT® MS PLUS BENTONITE WATERPROOFING LINER

Waterproofing liner with root protection and radon-seal

PRODUCT DESCRIPTION

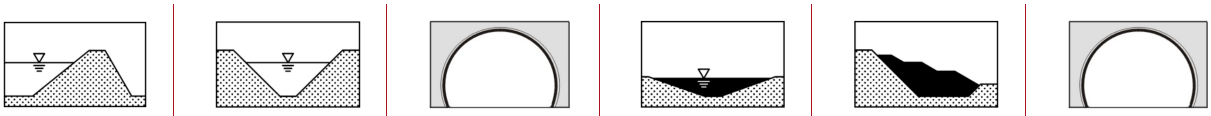
CEMtobent® MS Plus system is a bentonite membrane especially designed for structural waterproofing.
CEMtobent® MS Plus can be used for the sealing and protection of reinforced concrete in underground structures and tunnels.
CEMtobent® MS Plus consists of three complementary components:

- a polyethylene waterproofing membrane
- a geo-composite active mineral liner
- the additional nonwoven lamination improves the bond and the functional properties of the waterproofing between the CEMtobent MS Plus and the concrete structure
- in addition, the PE waterproofing membrane acts as a high-quality protection against chemical attack from the ground (water) and as a gas barrier for e.g., against methane and radon gas.

APPLICATION AREAS

CEMtobent® MS Plus (MineralSeal) can be used for the sealing and protection of reinforced concrete in underground structures and tunnels. It can be used for vertical, horizontal, pre-application, post-applications or in combination.

CEMtobent® MS Plus can be used as a sealant for retention basins, in landfill, dam and canal construction.



DIN EN 13361 | DIN EN 13362 | DIN EN 13491 | DIN EN 13492 | DIN EN 13493 | DIN EN 13967

HOW DOES CEMTOBENT® MS WORK?

The sealing process of the waterproofing system CEMtobent® MS Plus is activated immediately by penetrating water causing a controlled reaction of the mineral admix and a swelling of the bentonite clay within the matrix forming a dense, impermeable waterproofing membrane. Even if the primary sealing, the PE waterproofing membrane, is damaged, the exposed mineral admixes and bentonite reacts with the incoming water creating an extremely tight and strong, gel-like film, which seals the concrete structure (secondary sealing) and stops any water circulation between the membrane and the concrete. Even shrinkage cracks are reliably filed and sealed.

CHARACTERISTICS AND ADVANTAGES

- Higher puncture and tear resistance
- High compound shear strength
- Can be installed in every season regardless of temperature and weather conditions
- Quick and easy to install
- Joints or overlaps can be thermally welded
- self-healing properties when damaged
- Seals small cracks in the concrete

WATERPROOF CONSTRUCTION

- Protection against chemical and gas attack
- More than 500% swelling volume
- May be pre-applied or post-applied
- Constant quality control tests to ensure consistent high quality

CERTIFICATION

- CE-Marking
- Resistance tests are available on request
- Environmental Clearance Certificate

PRODUCT DATA

	Waterproofing Liner CEMtobent® MS Plus (MineralSeal)	Article-No.
Dimensions/ Packaging	CEMtobent MS Plus 0.2 // GBR-C + PE waterproofing membrane (0.2 mm) 2.55 x 40.00 m (W X L); one roll; 102.00 m²; app. 540.50 kg/roll [other dimensions on request]	20-150
	CEMtobent MS Plus 1.0 // GBR-C + PE waterproofing membrane (1.0 mm) 2.55 x 35.00 m (W X L); one roll; 89.25 m²; app. 544.43 kg/roll [other dimensions or thickness of the waterproofing membrane on request]	20-250
Storage	CEMtobent® MS Plus (MineralSeal) should be stored off the ground in dry conditions.	

TECHNICAL DATA

Technical Datas	Test Method	Unit	Value CEMtobent MS	
			MS-Plus 0.2	MS-Plus 1.0
Mass per unit area, total	EN 14196	kg/m²	5.30 (1)	6.10 (1)
Mass per unit area, bentonite layer *(sodium bentonite)*	EN 14196	kg/m²	4.80 (1)	
Mass per unit area, woven *(PP woven)*	EN ISO 9864	g/m²	100	
Mass per unit area, nonwoven *(PP nonwoven)*	EN ISO 9864	g/m²	200	
Thickness, total	EN ISO 9863-1	mm	7.2	8.3
Thickness, PE waterproofing membrane	EN ISO 9863-1	mm	0.20	1.00
Tensile strength MD / CMD	EN ISO 10319	kN/m	10 / 10	25 / 25
Puncture resistance	EN ISO 12236	kN	1.8	3.5
Peel strength	ASTM D 6496	N/m	--	600
	ASTM D 903 mod.	N/m	2600	--

Watertightness	ASTM D 5385 mod.	bar	≤ 7.0
Permeability	EN 16416	$m^3/(m^2s^1)$	≤ 5.00E^{-9} (+3.00E^{-9})
Resistance to static load	EN 12730	kg	≤ 20
Crack bridging ability	ASTM D 5385	mm	≤ 3.2
Resistance to cold temperatures	ASTM D 1970	°C	-32°C; no cracks and fractures
Reaction to fire (PE-Membrane)	EN ISO 11925-2 EN 13501-1		Class E
Swelling capacity (Bentonite)	ASTM D 5890	ml/2g	≥ 24
	DIN 18132	%	≥ 500
Montmorillonite content (Bentonit)	CUR 33	%	≥ 75
Dangerous substances	Less than required by national regulations in the EU member states		
Weather resistance	Permanently for at least 25 years for applications in natural soils (with 4 ≤ pH ≤ 9) and soil temperatures ≤ 25 °C		

(1) at 12% moisture content

ADDITIONAL INFORMATION

Surface:

Bentonite waterproofing liner CEMtobent® MS Plus should be placed on a properly prepared flat surface that is free from voids > 20mm and free from construction debris. Cracks > 1 mm and/or offsets > 1 mm should be sealed with CEMtopaste® before installing the bentonite waterproofing liner. Minimum load / minimum covering of ≥ 200 kg/m² per 50 cm when laid in pre- or post-application (observe frost resistance) in according to the öbv Braune Wanne guideline. The protective layer is to be determined in coordination with the backfill material.

Methods of the sealing (the overlap)

- Overlap with Bentonite Powder or CEMtopaste (app. 15 cm).
- Overlap sealed with SealTape (app. 15 cm).
- Overlap glued with CEM 805 Adhesive or Butyl Tape (app. 15 cm).
- In addition to the above nail fixings may be used to secure the overlaps if required

Preparation and general advice

Surrounding air temperature**:** minimum -5°C (The mentioned temperature is for valid areas in which no additional measures need to be taken during application.)

Environment and health

This product does not represent a hazardous substance within the meaning of the EU Hazardous Substances Regulation. A safety data sheet for transport, placing on the market and use is available on the request.

Dangers and Safety

The essential safety, toxicological, physical and ecological data for the handling of CEMtobent® MS Plus can be taken from the product-specific safety data sheets.

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Data

All technical data stated in this product data sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

Legal advice

All above mentioned Information concerning products, especially any recommendations and advices relating to the application and use of BPA products are given in good faith based on BPA´s current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with BPA's recommendations.

In practice, the differences in materials, actual site conditions and other factors outside are such that no warranty nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered.

The user of the product must test the product's suitability for the intended application and purpose before proceeding with the full application of the products. BPA reserves the right to change the properties of its products without notice.

Users must always refer to the most recent issue of the Product Data Sheet for the product concerned, copies of which will be supplied on request. All sales of BPA are subject to our current terms and conditions.

Local Restrictions

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local product data sheet for the exact description of the application fields.