

CEMproof® SilverSeal "active"

SilverSeal Swelling Non-woven, Laminated with PE-membrane.

SilverSeal is a Light-weight, Swelling, Water reactive, Self-healing Sealing Membrane.

SilverSeal

CEMproof EasySeal is a "light-weight" waterproofing system for the use of any water-sealing applications. CEMproof SilverSeal is a needle-punched non-woven impregnated with water absorbing and water swelling polymer coated with a silver-shining PE-sheet. SilverSeal is a well-tested double-sealing system!

Field of Application

CEMproof SilverSeal is a waterproofing system, which:

- consists of a needle-punched non-woven, fully impregnated with water absorbing, water reacting and water swelling polymer
- is combined with a high density PE-membrane.

SilverSeal is modified especially for the field of structural waterproofing as well as tunnel sealing. The self-healing properties of the hydrophilic, water reactive polymers secure the integrity of the system, even if the PE-membrane, which is on the upstream face, is damaged during installation or backfilling. Penetrating water causes the polymers to swell and thus renders the CEMproof SilverSeal impermeable. The building structure is permanently protected against penetrating water, even small cracks and voids in the concrete are sealed.

CEMproof SilverSeal can also be used in saltwater areas!



Areas of Use

CEMproof SilverSeal is used in all applications, where structures have to be protected against groundwater and seepage.

For the waterproofing of foundations, basements, tunnels, garages and flat roofs CEMproof SilverSeal is an economically and environmentally friendly alternative to synthetic liners, bituminous products and coatings.

Advantages of SilverSeal

- Tough and resistant, quick and easy to install, high compound shear strength
- Can be installed in every season, independently of temperature and weather condition
- No use of complicated welding equipment and specially trained staff, overlappings can be easily secured with CEM 805 adhesive
- Quality control (CE-Certification)
- Self-healing properties of the system based on swelling pressure of the activated swelling polymers
- Seals small cracks in the concrete by the pressure of the swelling polymer
- Flexibility in roll dimensions (2 m x 50 m)
- Can be used in saltwater condition
- Several tests have been made at the University of Braunschweig/Germany
- Easy handling of CEMproof EasySeal because of the extreme light weight
- Enormous water absorbing capacity and therefore similar large swelling and sealing capacity because of embedded high swelling absorbing polymer

Technical Data Sheet

Name of Product	CEMproof SilverSeal swelling non-woven
Type	Swelling non-woven, laminated with PE-sheet
Raw material	Polypropylene fibres, white impregnated
Swelling material	water absorbing, swelling polymer
Mass per Unit Area (g/m ²) dry / wet after swelling / re-dried	DIN EN ISO 9864: 2005 450 / 8200 / 435
Thickness at surcharge 2 kN/m ² (mm) dry / wet after swelling / re-dried	EN 964 - 1 2,2 / 9,5 / 4,2
Surcharge 20 kN/m ² / 200 kN/m ² ; (mm) dry	1,5 / 7,0 / 1,9
Maximum tensile force (kN/m) dry / wet after swelling / re-dried	DIN EN 12236: 2006 6,1 / 9,8 / 6,0
associated elongation % dry / wet after swelling / re-dried	DIN EN 29073: CD//MD 75/102/82 // 115/145/110
Static puncture test (kN) dry / wet after swelling / re-dried	EN 12236 1,7 / 1,0 / 1,6
Associated movement of plunger (cm) dry / wet after swelling / re-dried	EN 12236 6,1 / 10,8 / 6,1
Class of Robustness	GRK 3
Testing of swelling pressure (kN/m ²)	> 170
Water permeability	DIN 18130 TX-KP-ST- UO
Initial swelling	< 5 x 10 ⁻⁹ [m/s]
Dry-Wet-Testing	< 3 x 10 ⁻⁹ [m/s]
Frost-thaw-cycle (4 cycles)	< 3,9 x 10 ⁻⁹ [m/s]

Storage

CEMproof SilverSeal has to be stored dry and frost-free. SilverSeal has to be protected during storage against UV. Shelf life is 5 years.

Form of Delivery

EasySeal: Roll dimension: width x length = 2 m x 50 m; diameter Ø 0.50 m/roll, weight 47 kg

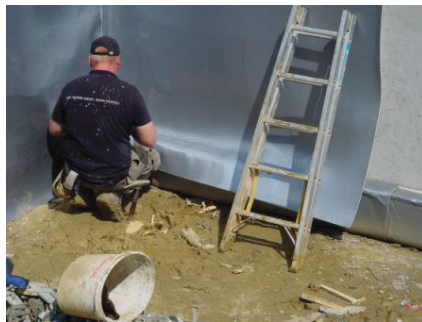
SilverSeal: Roll dimension: width x length = 2 m x 50 m; diameter Ø 0.57 m/roll, weight 57 kg; 5 rolls/pallet = 500 m²/pallet

Pictures / Application

SilverSeal is a public-tested double-sealing membrane. The overlappings are tested up to 2.5 bar water pressure (5 cm minimum overlapping bonded together with CEM 805).

The water constancy (alkaline water, saltwater, etc.) has no marginal influence of the water-penetration along and through EasySeal / SilverSeal swelling non-woven. (See actual test report of the Technical University BS / Germany)

EasySeal / SilverSeal swelling non-woven is a unique, patented technology made in Germany! The handling is very easy compared to any other systems available on the market. Overlapping areas are glued with CEM 805 and are absolutely waterproof sealed up to 2.5 bar water pressure. (See several different test reports of different public laboratories)



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Some Test Results of CEMproof SilverSeal

Water vapour permeability	DIN EN ISO 12572:2001-09		
	SilverSeal specimen	2.92 x 10 ⁸ [kg/(m ² xh)]; 9.3 sd-value [m]	
	Document number	5303/723/07 - Mc as at 18.04.2008	
Hydrostatic test	Impermeability of the 5 cm overlapping sealed with CEM 805		
	Hydrostatic pressure	Duration	Test result
	0.2 bar	72 h	watertight
	0.5 bar	24 h	watertight
	1.0 bar	24 h	watertight
	1.5 bar	24 h	watertight
	2.0 bar	14 d	watertight
	2.5 bar	24 h	Watertight
	Test was successfully determined after reaching 2.5 bar hydrostatic pressure!		
	Document number	5087/467/07b - Pan of 27.04.2007	

Test Results!

Test	Procedure	Result
Water tightness	DIN EN 1928 procedure B	tight
	Hydrostatic pressure 60 kPa (0.6 bar)	
	Duration of test: 24 h	
	Conditioned atmosphere: DIN 50014-23/50-2	
Resistance to impact load	DIN EN 12691 procedure A	tight
Resistance to aging	DIN EN 1296 12 weeks at 70°C	tight
	DIN EN 1928 procedure B	
	Hydrostatic pressure 60 kPa (0.6 bar)	
	Duration of test: 24 h Conditioned atmosphere: DIN 50014-23/50-2	
Resistance to chemicals	DIN EN 1847 duration of storage 16 weeks in alkaline medium	tight
	DIN EN 1928 procedure B	
	Hydrostatic pressure 60 kPa (0.6 bar)	
	Duration of test 24 h Conditioned atmosphere: DIN 50014-23/50-2	

Tear propagation resistance	DIN EN 12317-1	Tear propagation resistance [N]
	Test specimen 100 mm x 200 mm	longitudinal: x = 280, s = 8.6
	v = 100 mm/min	crosswise: x = 273, s = 17.1
	Nail distance: 50 mm Conditioned atmosphere DIN 50014-23/50-2	
Shear strength in overlapping area	DIN EN 12317-1	Maximum tensile strength [N/50 mm]
	Test specimen 50 mm x 300 mm	x = 45.4, s = 6.7
	Length 200 mm	
	v = 100 mm/min Bonded with CEM 805 MS Polymer adhesive	
	Conditioned atmosphere DIN 50014-23/50-2	
Resistance to statically force	DIN EN 12730	tight
	Sub grade: concrete Procedure B: stress 20 kg	
Elongation	DIN EN 12311-2	Maximum tensile strength [N/50 mm]
	Procedure B	longitudinal: x = 290, s = 11,2
	v = 100 mm/min	crosswise: x = 421, s = 19,8
	free clamping length: 120 mm Conditioned atmosphere DIN 50014-23/50-2	Elongation [%] longitudinal: x = 166, s = 10.3 crosswise: x = 151, s = 7.9
Fire behaviour	DIN EN ISO 11925-2	European class E
	DIN EN 13501-1	Not burning!
Document number	5049/459/07 - Pan of 24.10.2007	

Further Test Reports:

- Resistance to microorganism
- Behaviour in different liquid media
- and many more!

