

CONCRETE CANVAS

Concrete Mats



KEY ADVANTAGES

at a glance



→ Up to 95 % material saved compared to conventional concrete construction



→ Durable and highly resistant



→ Easy installation and fast construction process



→ Versatile use in many applications

CONCRETE CANVAS

Concrete Mats



In the early 2000s, a new and innovative product was born from the initial idea of developing stable, quickly deployable shelters for humanitarian disaster relief: CONCRETE CANVAS Concrete Mats.

CONCRETE CANVAS is a concrete mat that established a new class of products known as geosynthetic cementitious composite mats (GCCM). CONCRETE CANVAS is a flexible concrete composite material that hardens in combination with water to form a thin, durable, dense and fire-resistant concrete layer. Essentially, it is actually concrete that comes in rolls. With CONCRETE CANVAS Concrete Mats, concrete structures can be erected quickly and easily without the need for the plants and mixing equipment normally required for producing concrete. The rolls are laid and, if necessary for the specific application, joined together. Then only watering is needed to start the activation process.

CONCRETE CANVAS Concrete Mats bring together many advantages in one product: the robustness, fire resistance and durability of concrete combined with the excellent abrasion resistance and sealing properties of the geosynthetics.

PRODUCT DETAILS

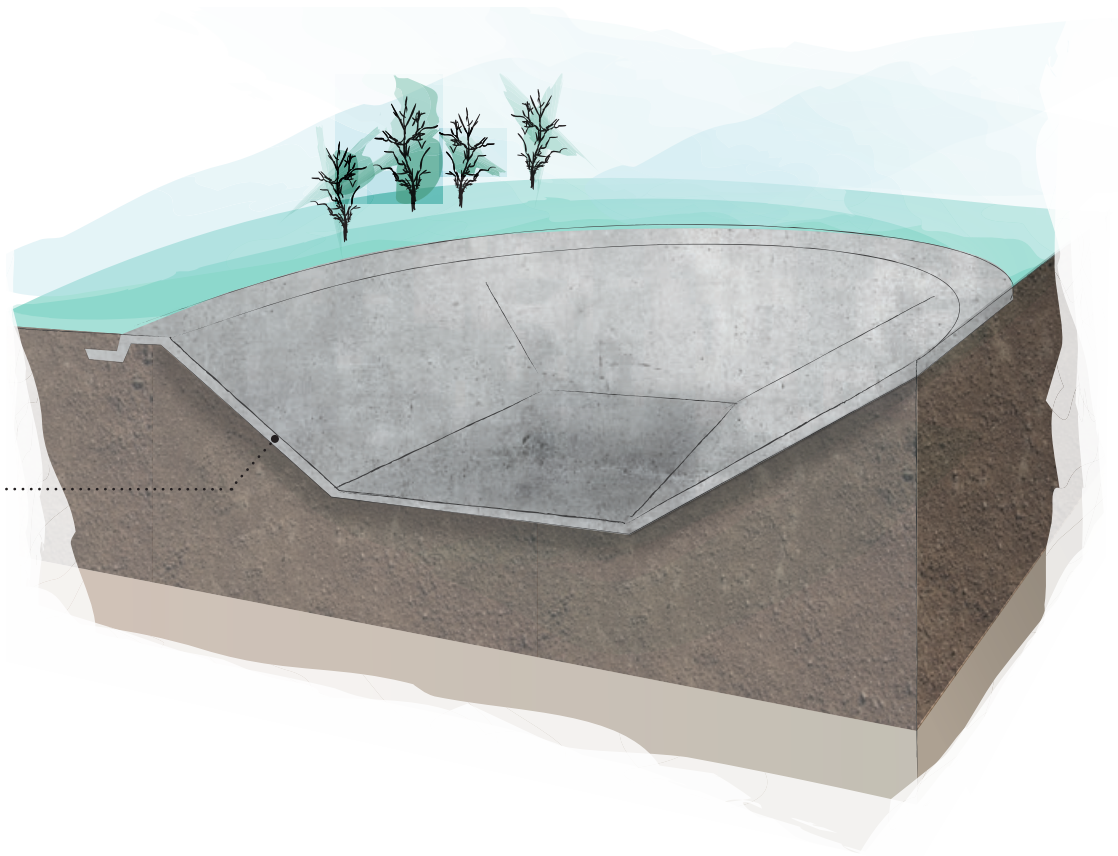
and properties

The flexible CONCRETE CANVAS composite mats comprise a multi-layer combination of geosynthetics with a specially developed dry concrete mix.

The innovative material has a water-permeable top layer made of UV-resistant polyester geotextile and a geotextile support layer with an additional coating. A dry concrete mix with a clearly defined density is placed between these two layers using a special production process. After setting, the fine fibres strengthen the concrete inside, reduce crack propagation in the long term and increase the fracture stability of the concrete layer. The concrete composite thus combines the advantages of geosynthetics with the robust properties of concrete.



CONCRETE CANVAS
Concrete Mat



CONCRETE CANVAS is delivered to the construction site in rolls and can be flexibly handled and laid in its uncured state. After water has been applied, the composite mats are 80% cured within just 24 hours and immediately form a stable, impermeable and robust concrete layer. In addition to its excellent robustness, the resulting concrete surface is characterised by good resistance to abrasion, fire and root penetration.

CONCRETE CANVAS Concrete Mats combine erosion protection, sealing and a protecting and separating layer in one easy-to-handle product.

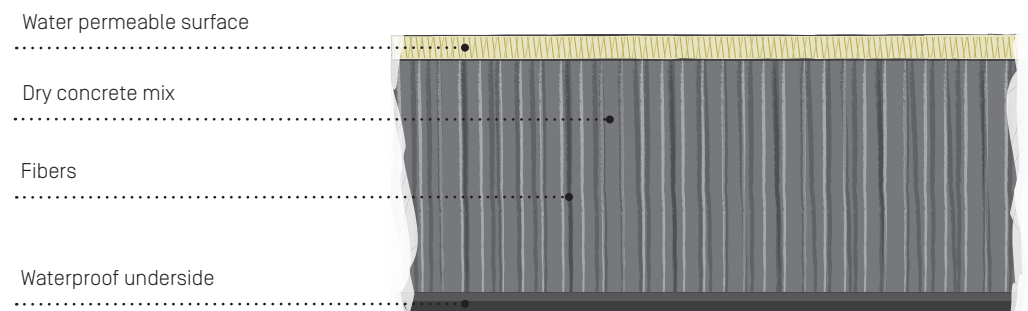


CONCRETE CANVAS

Concret Mats

CONCRETE CANVAS Concrete Mat is the ideal product in situations where good erosion resistance and protection for exposed surfaces are required. Depending on how the sheets are overlapped and joined, the concrete mat can be used to achieve a good sealing effect, on a par with that of a geosynthetic clay liner (bentonite mat).

CONCRETE CANVAS [CCT/CCX-M] cross-section



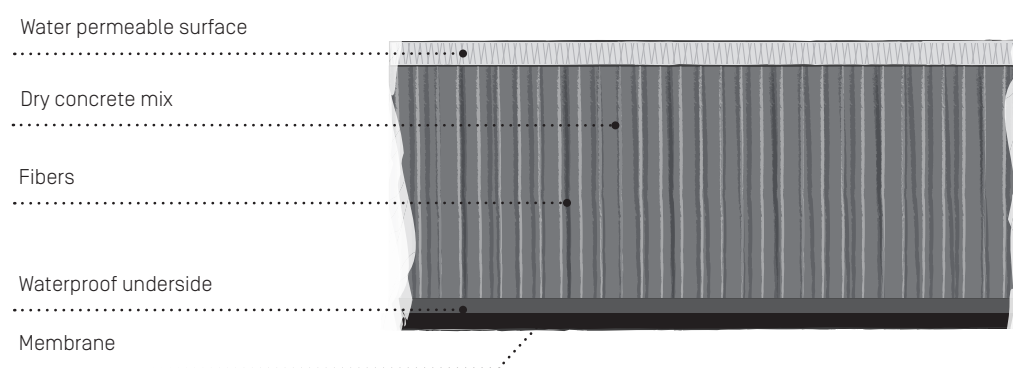
CONCRETE CANVAS

Concret Mats with membrane

For applications where the sealing effect of the pure CONCRETE CANVAS Concrete Mat is not sufficient and the installation of a conventional sealing is not possible or uneconomical, CONCRETE CANVAS Concrete Mats with a membrane are the ideal solution.

With an additional bonded sealing liner, CONCRETE CANVAS HYDRO is a combination product for high-performance sealing systems.

CONCRETE CANVAS with membrane [CCHT/CCX-B] cross-section



CONCRETE CANVAS Concrete Mats with membrane have been specially developed for applications where a higher tightness is required to the overall product. In this innovative product, the concrete mat is connected over its surface with a plastic membrane (PVC or LLDPE) to form a combination waterproofing. Due to the additional membrane, the CONCRETE CANVAS concrete mat with membrane achieves its highest sealing effect against liquids. In addition, CONCRETE CANVAS Concrete Mats with membrane have excellent resistance to a wide range of chemical substances, including oils, fuels, fermentation residues and acidic leachates, and are also suitable for use in hazardous materials storage and tank farms.

CONCRETE CANVAS Concrete Mats with membrane can be thermally welded on site as geomembranes by professional installers. The membranes have an extended, clearly marked welding strip that allows the overlap areas to be welded with a double or triple air channel and tested on site.

FUNCTIONS

CONCRETE CANVAS Concrete Mats

Erosion control



CONCRETE CANVAS mats have a resistant, durable and weatherproof surface thanks to the combination of geotextiles and concrete. The material is highly resistant to abrasion, making the product ideal for lining watercourses and channels. CONCRETE CANVAS Concrete Mats are increasingly used as an alternative to shotcrete for protecting slopes, embankments and cuttings from weathering, falling rocks and surface erosion. Because the material is supplied in small rolls and is easy to lay, it can be used as erosion protection even in areas that are difficult to access, and can be installed without the use of heavy equipment.

Sealing



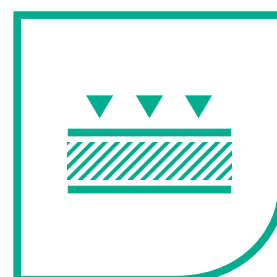
Thanks to their PVC-coated underside, the standard types of CONCRETE CANVAS already have a good sealing effect, on a par with that of a geosynthetic clay liner (bentonite mat). These mats are particularly suitable for all applications in the area of flowing water, such as canals, watercourses and channels. If more stringent demands are placed on the sealing properties of the concrete mat, the combination product CONCRETE CANVAS with membrane is used. This has an additional geomembrane as a sealing liner on the underside of the mat and is suitable for use in sealing systems in settling tanks, storage tanks and retention basins. Sealing systems created with CONCRETE CANVAS Concrete Mats do not require a protective top layer. This eliminates the need for additional excavation and subsequent covering with expensive fill material.

Like other mineral sealing liners, CONCRETE CANVAS mats are not completely watertight or gastight. CONCRETE CANVAS with membrane with an additional bonded geomembrane is suitable for more stringent sealing requirements.



Protection

Once the CONCRETE CANVAS Concrete Mat has cured, it provides surface protection with excellent resistance to mechanical loads. The material is particularly abrasion-resistant, has outstanding chemical resistance, good weather resistance and long-term UV stability. CONCRETE CANVAS Concrete Mats can be used to protect petrochemical tank farms, ammunition depots, pipelines and flood protection systems. In sealing systems, the concrete mats also provide excellent protection against damage caused by rodents and burrowing animals.



Weed and vegetation suppression

CONCRETE CANVAS Concrete Mats are suitable for effective weed control and the active suppression of vegetation. The mats are tested for root penetration resistance according to DD CEN/TS 14416:2005 and offer a fast, effective and durable solution for areas that need to meet challenging operational, health and safety requirements. The resistant concrete surface of the CONCRETE CANVAS Concrete Mat is an effective vegetation barrier. The maintenance and care of surfaces that are difficult to access, such as areas next to railways and areas under solar panels, pipes or components, can be significantly reduced. The versatile mats have also proven successful as a vegetation barrier in sensitive infrastructure such as fence systems and perimeter protection.



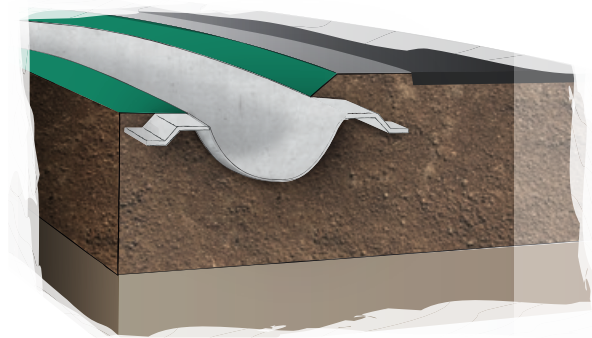
APPLICATIONS

CONCRETE CANVAS Concrete Mats

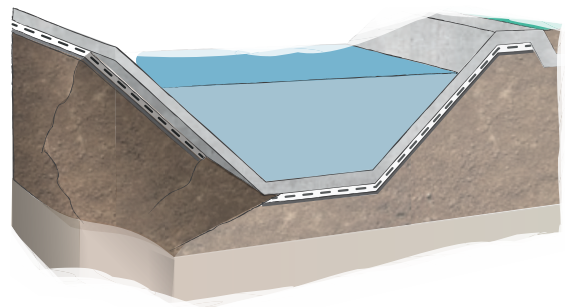
CONCRETE CANVAS Concrete Mats offer a solution for a wide range of applications due to their high flexibility.

In infrastructure and landfill construction, the material provides a robust and abrasion-resistant surface for hydraulic engineering applications such as channel and basin lining. The product can also be used in surface erosion control on dams and dikes. Due to its good root resistance, CONCRETE CANVAS Concrete Mats can also be used in anti-fouling applications.

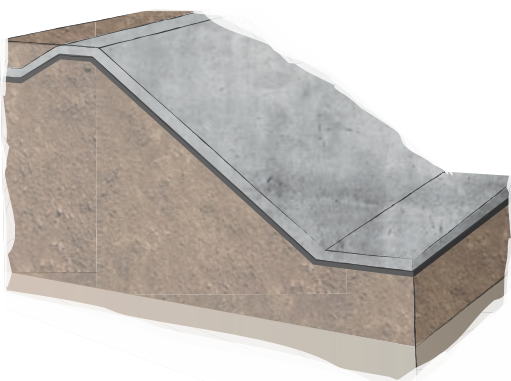
Channels



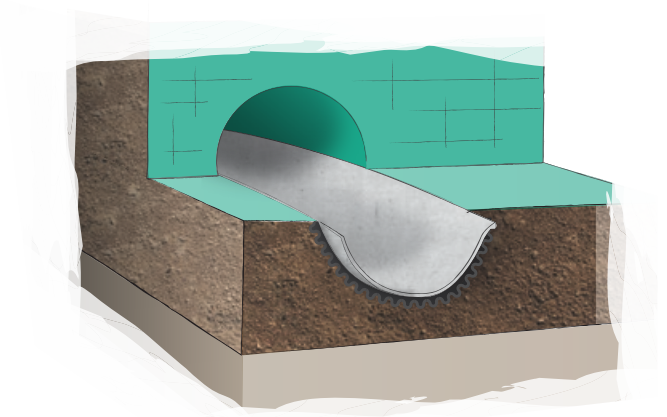
Rainwater retention basin



Embankment erosion control



Renovation of culverts



Inclinations of up to 90° are possible, provided that the structural stability of the embankment is ensured

Applications matrix at a glance

We are happy to supply current data sheets, specifications, certificates and technical verifications on request.

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Properties	CCT1	CCT2	CCX-M	CCHT-2	CCX-B
Product type	Concrete mat			Concrete mat with additional sealing	
Thickness [mm]	5	7	10,3	8	11
Fields of application					
Channels and watercourses	○	●	●	●	●
Dike and dam constructions		●	●	●	●
Retention basins*		○	○	●	●
Embankment erosion control	●	●	●	○	○
Vegetation prevention	●	○	●	○	○
Renovation of infrastructure	○	●	●	○	○
Petrochemical industry	○	○	○	●	●
Landfill sites	○	●	●	●	●

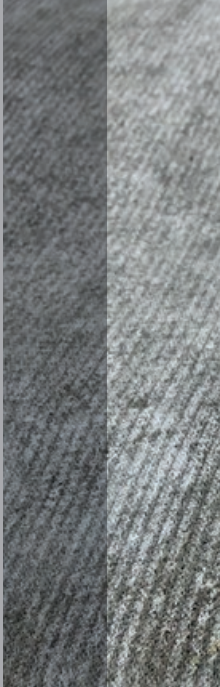
*Depending on product-specific water permeability, overflow height, physical soil and climatic conditions, a controlled water supply may be necessary.

● suitable ○ partly suitable (project-related assessment necessary)

INSTALLATION

CONCRETE CANVAS

Concrete Mats



CONCRETE CANVAS Concrete Mats are quick and easy to install.

CONCRETE CANVAS Concrete Mats are supplied in rolls and laid with an overlap. An overlap of just 10 cm is sufficient. The overlap can be dealt with in various ways, depending on local conditions and the desired sealing effect.

The appropriate overlap can be selected according to the specific requirements:

Type of overlap	Mechanical fixing	Sealing effect	Installation effort
Fastening with screws	High	Moderate	Low
Verschrauben und verkleben	Very high	High	Moderate
Screwing and bonding	Moderate	Moderate	High
Thermal welding	Very high	Very high	Very high



To be considered

1. Lifting equipment that has a cross beam and is suitable for lifting loads of at least 1,600 kg is required on site for unloading and laying the liners. The rolls, which are packaged in the factory, must be stored in dry and weatherproof conditions.
2. The installation may be carried out only by trained personnel.
3. The subgrade must be flat, even and free of foreign bodies, surface water, rubble, roots, cavities and pointed or sharp edged stones. A regulating course of sand or a protective non-woven fabric can be installed if necessary.
4. The mats must be in direct contact with the subgrade to prevent ground bridges and soil migration beneath the layer.
5. The mats must always be laid without creasing and in the direction of incline.
6. To avoid undermining and wind loads, the concrete mat must be anchored at the edges and at the top of the slope.
7. Extra care must be taken in the area of pipe penetrations and connections.
8. Vehicles must not drive directly on the mats.
9. All overlaps must be fixed together using the recommended joining technique and, if necessary, be fastened to the substrate.
10. After fixing, the concrete mat must be adequately watered. Mats that have been hydrated can still be moved for another one to two hours.
11. The mats are 80 % cured within 24 hours and are then already functional.

Concrete mats with membrane may only be installed by specialist installers. Our detailed installation and laying instructions for CONCRETE CANVAS mats must also be followed.

SUSTAINABILITY

and potential savings



For conventional, mineral or geosynthetic waterproofing solutions, protective and ballast layers are usually required. These can simply be omitted with CONCRETE CANVAS Concrete Mats, which offers significant savings potential in terms of time, resources and costs in earthworks.

Reduction of transport effort

With regard to the saving of large mass movements and the transport effort of sealing material and bulk materials, the use of concrete mats is also an environmentally friendly solution. Compared to conventional concrete construction, CONCRETE CANVAS concrete mats offer a high material saving: one truck load of CONCRETE CANVAS concrete mats replaces 32 concrete mixer loads.

Contribution to a long service life of structures

CONCRETE CANVAS concrete mats are manufactured in an industrial production process and have a complete quality control. This guarantees a homogeneous concrete layer throughout the construction process in terms of technical properties and performance characteristics. CONCRETE CANVAS concrete mats contribute to a long service life of structures due to their good abrasion resistance, high chemical resistance and good freeze-thaw resistance.

ADVANTAGES

CONCRETE CANVAS

Concrete Mats

- Up to 95 % material saved compared to conventional concrete construction
- Consistent product characteristics
- Excellent resistance
- Quick installation
- Durable product
- Many areas of application
- Conserves natural resources
- Low transport costs
- Cost-effective installation
- Low project costs

Additional advantages of the CONCRETE CANVAS with membrane:

- Protection and sealing system in one product
- Better sealing against hydrocarbons





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