

CCX-MAT™ (CCX-M™ GCCM) & CCX-BARRIER™ (CCX-B™ GCCB) Hydration Instructions 2110.01.EN

CCX-M™ & CCX-B™ are Geosynthetic Cementitious Composite Mats and Barriers (GCCMs & GCCBs), part of a revolutionary new class of construction materials. They are flexible, concrete filled geosynthetics that harden on hydration to form thin, durable and waterproof concrete layers. Follow the instructions below to correctly hydrate CCX-M™ & CCX-B™ once laid.

Minimum volume of water required for each CCX™ type:

	Mass of CCX™ per unit area kg / m ²	Minimum L of water / m ²
CCX-M™ GCCM	15	7.5
CCX-B™ GCCB	15	7.5



SPRAY THE FIBRE SURFACE WITH WATER UNTIL IT FEELS WET TO TOUCH FOR SEVERAL MINUTES AFTER SPRAYING

Always respray within 30 minutes of initial hydration. An excess of water is always recommended.

Notes:

- Wear gloves when handling CCX. Rinse hands immediately after touch test. Consult the CCX™ SDS document.
- CCX-M™ & CCX-B™ will set underwater and in seawater.
- CCX-M™ & CCX-B™ must be actively hydrated. For example do not rely on rainfall or snowmelt.
- Use a spray nozzle for the best results (see [CCX™ Equipment list](#)). Do not jet high pressure water directly onto the CCX-M™ & CCX-B™ as this may wash a channel in the unset CCX-M™ & CCX-B™.
- CCX-M™ & CCX-B™ has a working time of half an hour after hydration. Do not move or traffic CCX-M™ & CCX-B™ once it has begun to set.
- Working time will be reduced in hot climates and increased in very cold climates.
- CCX-M™ & CCX-B™ will set hard in 24 hours but will continue to gain strength over time.
- If CCX-M™ & CCX-B™ is not sufficiently wetted, or dries out in the first 5 hours, the set may be delayed and strength reduced. If the set is delayed avoid trafficking the material and re-wet with an excess of water.
- Treatment of Runoff: Ensure runoff water is treated and disposed of in accordance with national/local environmental regulations.
- See [CCX™ Equipment list](#) for full details. **Dust hazard. Always wear appropriate PPE.**

Installation in Drying Conditions:

Drying conditions can affect CCX-M™ & CCX-B™ in the first 5 hours after hydration resulting in excessive loss of water and preventing the specified strength gain.

Drying conditions occur when there is one or more of: high air temperature (>22°C), wind (>12km/h), strong direct sunlight or low humidity (<70%). Hydrate at dusk where possible. Monitor for first 5 hours and respray as soon as the surface ceases to be wet to the touch, with at least one respray at 2-3 hours. Alternatively respray at hourly intervals for the first 3 hours. Other methods to reduce evaporation such as covering the material may also be used.

In drying conditions the CCX-M™ & CCX-B™ should be inspected after 24 hours. If it is suspected that the material has over-dried: - Re-wet, in accordance with these instructions. This will normally enable the CCX-M™ & CCX-B™ to gain the specified strength, provided the CCX-M™ & CCX-B™ has not been heavily trafficked or mechanically damaged prior to full set.

Installation in Low Temperature Conditions:

- 1) If the ground surface temperature is between 0 and 5°C and rising: CCX-M™ & CCX-B™ should be covered with plastic sheeting immediately after hydration. CCX-M™ & CCX-B™ may exhibit a delayed set at low temperatures.
- 2) If the surface temperature is expected to fall below 0°C in the 8 hours following hydration, *consult Concrete Canvas Ltd for guidance*
 - It is not recommended to install CCX-M™ & CCX-B™ if the ground surface temperature is likely to fall below -4°C within 24 hours of initial hydration.
 - It is not recommended to install CCX-M™ & CCX-B™ on frozen ground as the ground may move significantly when it thaws, creating voids underneath the set CCX-M™ & CCX-B™.

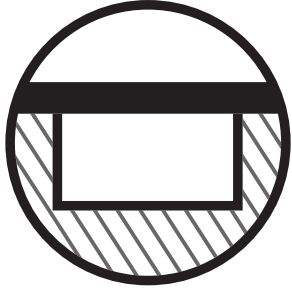
Storage:

- CCX-M™ & CCX-B™ should be stored under cover in dry conditions away from direct sunlight and in the manufacturer's sealed packaging.
- It is not recommended to store in shipping containers in direct sunlight where temperatures may exceed 40°C for prolonged periods.
- If stored correctly CCX-M™ & CCX-B™ has a shelf life of 12 months. If stored for longer it may remain usable in many instances.

Four Key Installation Principles of CCX™

2110.01.EN

The unique material properties of CCX™ mean that it can be used for a variety of applications. Following the Four Installation Principles below will help ensure a successful installation.



Avoid Voids

1. Avoid Voids

Prepare the substrate so it is well compacted, geotechnically stable and has a smooth and uniform surface.

- For soil substrates, remove any vegetation, sharp or protruding rocks and fill any large void spaces. Ensure the CCX™ makes direct contact with the substrate to minimise soil bridging or potential soil migration under the layer.
- For concrete substrates, remove any loose or friable material, cut away any protruding exposed re-bar and fill any large cracks or voids.



Secure the CCX™

2. Secure the CCX™

It is important to ensure that the CCX™ is **Jointed** at every overlap between layers and that those layers are **Fixed** to the substrate.

- **Jointing:** Overlapped CCX™ layers should be securely jointed together, typically this is achieved using stainless steel screws applied with an auto-fed screw gun at regular intervals. Correct screw placement will help ensure intimate contact between CCX™ layers, prevent washout of the substrate, and limit potential weed growth. An adhesive sealant can be applied between the layers to improve the joint impermeability.

A non-penetrative method of jointing is to 'thermally bond' the CCX™ layers together. This also improves joint impermeability. For more jointing options see the [CCX™ User Guide: Jointing and Fixing](#).

- **Fixing:** When fixing to a soil substrate, ground pegs (eg J-pegs) are typically used. On rock or concrete substrates, CCX™ layers can be jointed together and fixed to the substrate using masonry bolts, or concrete screw anchors. Stainless steel fixings with washers are recommended.

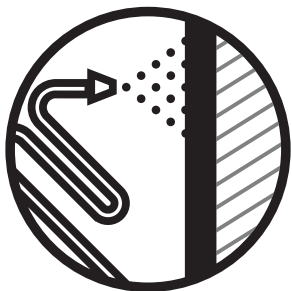


Prevent Ingress

3. Prevent Ingress

It is important to prevent water or wind ingress between the CCX™ and the substrate, both around the perimeter of the installation and along the joints.

- For soil substrates, this is typically achieved by capturing the entire perimeter edge of the CCX™ within an anchor trench.
- On rocky or concrete substrates, the perimeter edge should be sealed with a concrete fillet or an adhesive sealant.
- All overlapped CCX™ layers should be lapped in the direction of water flow.



Fully Hydrate

4. Hydrate Fully

It is critical to properly hydrate CCX™, taking into account the quantity of material used and ambient temperature conditions.

- Always ensure hydration through the fibrous top surface.
- Ensure to hydrate any overlapped areas and anchor trenched material prior to backfilling.
- Spray the fibre surface with water until it feels wet to touch for several minutes after hydration (the 'Thumb Test').
- Follow the detailed instructions overleaf.