The Concrete Cloth™ material is a three-dimensional flexible cement impregnated fabric that hardens after hydration to form a durable concrete layer. Classified as a Geosynthetic Cementitious Composite Mat (GCCM), it is used in a variety of civil infrastructure markets including: transportation, oil & gas, stormwater, landfill, mining, and erosion control. Typical applications for use are ditch lining, slope stabilization, shoreline armor, secondary berm protection, culvert invert protection, and geosynthetic liner protection.

### Dimensional Parameters

<table>
<thead>
<tr>
<th>Product</th>
<th>Thickness in (mm)</th>
<th>Dry Weight lb/ft² (kg/m²)</th>
<th>Cured Weight lb/ft² (kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC5</td>
<td>0.2 (5)</td>
<td>1.3 (6.3)</td>
<td>1.7 (8.5)</td>
</tr>
<tr>
<td>CC8</td>
<td>0.3 (8)</td>
<td>2.2 (10.6)</td>
<td>2.8 (14.2)</td>
</tr>
<tr>
<td>CC13</td>
<td>0.5 (13)</td>
<td>3.7 (18.0)</td>
<td>5.0 (24.3)</td>
</tr>
</tbody>
</table>

Listed weights are minimum values. Actual product weight may exceed these values.

### Tensile Strength: ASTM D-5035

<table>
<thead>
<tr>
<th>Product</th>
<th>Working Strength lb/ft² (kg/m²)</th>
<th>Ultimate Strength lb/ft² (kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Width</td>
</tr>
<tr>
<td>CC5</td>
<td>60 (10)</td>
<td>20 (3.5)</td>
</tr>
<tr>
<td>CC8</td>
<td>85 (15)</td>
<td>25 (4.4)</td>
</tr>
<tr>
<td>CC13</td>
<td>150 (26)</td>
<td>90 (16)</td>
</tr>
</tbody>
</table>

### Puncture Resistance: ASTM D-6241

<table>
<thead>
<tr>
<th>Product</th>
<th>Puncture Strength lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC5</td>
<td>350 (160)</td>
</tr>
<tr>
<td>CC8</td>
<td>500 (225)</td>
</tr>
<tr>
<td>CC13</td>
<td>720 (325)</td>
</tr>
</tbody>
</table>

CC13 has also passed ASTM G-13 (Impact Resistance of Pipeline Coatings).

### Permeability
- **Coefficient of Permeability** 2x10-11 m/s (CC8)
- Permeability of joints will vary dependent on the jointing method, consult Milliken Infrastructure Solutions or your distributor for more information.

### Set Time: ASTM C-807
- **Initial Set**: 120 min
- **Final Set**: 240 min
- CC will achieve ~70% strength 24hr after hydration. Working Time 1-2 hrs after hydration.

### Flex Strength: ASTM C-1185
- **7 Day Minimum**: 475 psi (3.3 MPa)
- **7 Day Modulus Minimum**: 26,000 psi (180 MPa)

### Compressive Strength: ASTM C-473
- **7 Day Minimum**: 5600 psi (38 MPa)

### Taber Abrasion: ASTM C-1353
- Approximately 7.5x Greater than 2500 psi OPC

### Freeze Thaw: ASTM C-1185
- **200 Cycles - Pass**

### Flame Resistance: MSHA ASTP-5011
- Vertical and Horizontal Certification

### Manning’s n Value: ASTM D-6460
- **n=0.011**

### Permissible Shear & Velocity CC5: ASTM D-6460
- **Shear <25 lb/ft² (1200 Pa)**
- **Velocity <35 ft/sec (10.7 m/s)**

Product Exceeded Large Scale Testing Capabilities and was not tested to failure. To actually achieve these permissible values, the CC material must be properly anchored with a system designed to meet or exceed these values.
Composition
Concrete Cloth™ GCCM is a three-dimensional flexible cement impregnated fabric that hardens after hydration. The material has a top surface fabric through which water will penetrate during hydration and a bottom surface consisting of a PVC membrane that acts as permeable barrier.

Characteristics
The dry density of the product before hydration is approximately 95 lbs/ft³ (1500 kg/m³). Upon complete hydration the density increases between 30-35% to approximately 125 lbs/ft³ (2000 kg/m³). The exact density will depend slightly on the thickness of material and the relative proportion of PVC membrane to cement.

Storage & Handling
Concrete Cloth matting is sold in three (3) thickness. Standard roll sizes referred to as Bulk or Batch rolls are noted in the product table on the proceeding page. Bulk rolls will be shipped a single roll to a pallet, Batch or Custom rolls maybe shipped multiple stacked rolls to a pallet.

Temporary anchoring may be used on the leading edge of roll to prevent unrolling. A box cutter or razor knife is generally acceptable and rotary cutters are more efficient. Always cut the material from the fabric (top) side down to minimize tearing of the PVC membrane. When possible, use a straight edge. Always wear proper hand PPE when working with cutting tools.

Overlap and Jointing
Four (4) inch overlap is typically recommended for shingling. The most common joint is an overlapped screw joint. A stainless steel #12 screw (coarse threads) is recommended 4-18 inch (typical 6) on center at least 1 inch from the overlap edge. Consult the Installation Guide for additional jointing recommendations.

Hydration
Complete hydration is critical to optimal performance. The Concrete Cloth product cannot be over hydrated and over watering is recommended. Any water source is acceptable in most circumstances. Saturate the top surface. This will take multiple passes of a moderate spray of water from a garden hose or other source. More water will be needed as the slope of the install increases. Insure that the material has been saturated by means of the “thumb test”, by pressing a thumb to observe water pooling at the indentation. Wait 30-60 minutes and then put a final dose of water on the material to insure complete hydration. The material can also be hydrated by submersion for 5-10 minutes but will only have a 1-2 hour working time after hydration. Do not jet high pressure water directly onto the surface. Do not hydrate if temperature is likely to fall below 25F (-4C) within 24hrs of initial hydration. Do not install on frozen ground. Consult the Installation Guide for additional details and pictures.

Health & Safety
The material contains cement powder which is alkaline and may cause skin irritation. Always wear proper PPE and consult the SDS for additional information.