CPD® NON-SHRINK GROUT PRE-MIX (H.E.S. – SR)

DESCRIPTION
CPD® Non-Shrink Grout (H.E.S.-SR) is a pre-blended, high early strength, sulphate resistant, ready-to-use cement base grout containing non-ferrous fluidifiers, silica fume and anti-shrinkage compounds accurately blended with graded siliceous aggregate and Portland cement. It requires only the addition of water at the job site.

WHERE TO USE
CPD® Non-Shrink Grout (H.E.S.-SR) is used for grouting structural steel column base plates, anchor bolts, bridge bearing seats, machinery bases, reinforced masonry walls and wind turbines.

BENEFITS
- can be placed in different consistencies ranging from plastic to self-leveling
- flowability facilitates placement in confined areas
- complete bearing surface contact ensures uniform load distribution
- no ferrous additives to cause staining
- expansive agents ensure uniform, consistent expansion
- excellent freeze-thaw and salt resistance
- does not contain corrosive additives, such as calcium chloride
- resistant to oil, some chemicals and moisture

LIMITATIONS:
- do not use where chemical attack is possible
- protect from freezing
- minimum thickness 25mm (1")
- maximum thickness 150mm (6")
- For thickness over 150mm (6") contact your CPD Technical Representative
- must not be used as patching compound or topping in unconfined areas
- do not exceed maximum water ratio
- do not place grout where service temperatures exceed 160°C (320°F)
- do not place grout where temperatures are below 4.4°C (40°F) or above 32°C (90°F)

PROPERTIES

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive Strength</td>
<td>(ASTM C109/C109M-13, 50mm/2&quot; cubes confined) at 21°C (69.8°F)</td>
<td>45 MPa (6,527 psi)</td>
</tr>
<tr>
<td>Compressive Strength</td>
<td>(ASTM C109/C109M-13, 50mm/2&quot; cubes confined) at 21°C (69.8°F)</td>
<td>55 MPa (7,977 psi)</td>
</tr>
<tr>
<td>Compressive Strength</td>
<td>(ASTM C109/C109M-13, 50mm/2&quot; cubes confined) at 21°C (69.8°F)</td>
<td>70 MPa (10,153 psi)</td>
</tr>
<tr>
<td>Compressive Strength</td>
<td>(ASTM C109/C109M-13, 50mm/2&quot; cubes confined) at 21°C (69.8°F)</td>
<td>90 MPa (13,053 psi)</td>
</tr>
<tr>
<td>Initial Set Time</td>
<td></td>
<td>5 hrs</td>
</tr>
<tr>
<td>Final Set Time</td>
<td></td>
<td>6 hrs</td>
</tr>
<tr>
<td>Flowable* 4L/25 kg (1.05 US gal/55 lb)</td>
<td></td>
<td>1 day: 0.00 – 0.0 – 0.30</td>
</tr>
<tr>
<td>Flowable* 4L/25 kg (1.05 US gal/55 lb)</td>
<td></td>
<td>3 days: 0.00 – 0.0 – 0.30</td>
</tr>
<tr>
<td>Flowable* 4L/25 kg (1.05 US gal/55 lb)</td>
<td></td>
<td>14 days: 0.00 – 0.0 – 0.30</td>
</tr>
<tr>
<td>Flowable* 4L/25 kg (1.05 US gal/55 lb)</td>
<td></td>
<td>28 days: 0.02 – 0.0 – 0.30</td>
</tr>
<tr>
<td>Volume Change (ASTM C1090) (%)</td>
<td></td>
<td>1 day: 0.00 – 0.0 – 0.30</td>
</tr>
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<td>Volume Change (ASTM C1090) (%)</td>
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<td>Volume Change (ASTM C1090) (%)</td>
<td></td>
<td>28 days: 0.02 – 0.0 – 0.30</td>
</tr>
<tr>
<td>Flexural Strength (ASTM C348) (MPa)</td>
<td></td>
<td>7 days: 9.1 MPa (1,320 psi)</td>
</tr>
<tr>
<td>Bond Strength (ASTM C882) (MPa)</td>
<td></td>
<td>1 day: 10.3 MPa (1,494 psi)</td>
</tr>
<tr>
<td>Bond Strength (ASTM C882) (MPa)</td>
<td></td>
<td>7 days: 10.8 MPa (1,566 psi)</td>
</tr>
<tr>
<td>Rapid Chloride Permeability Test (ASTM 1202) (Coulombs)</td>
<td></td>
<td>772</td>
</tr>
<tr>
<td>Flexural Strength and Modulus of Elasticity (Tangent) (ASTM C580)</td>
<td></td>
<td>8.2MPa (1,194 psi)</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td></td>
<td>7 days: 2.5 x 10^6 psi (2,500,000 psi)</td>
</tr>
<tr>
<td>Flexural Modulus</td>
<td></td>
<td>7 days: 2.5 x 10^6 psi (2,500,000 psi)</td>
</tr>
</tbody>
</table>

The above information is representative of typical values obtained under laboratory conditions. Variations can be expected due to on site conditions and/or other testing methods.
APPLICATION
SURFACE PREPARATION
All surfaces that will be in contact with the grout must be clean and free of grease, oil, standing water, laitance, loose material or any other contaminant that could impair substrate bond. Prior to grouting, foundation concrete should be roughened, cleaned and thoroughly wetted down. Free standing water should be blown clear just prior to grouting using oil free compressed air. Forms must be rigid and water tight. Construct them with sides one to two inches above the base plate allowing a “head” of grout to flow to the proper level. Vent high points to permit the escape of entrapped air.

Grout must be placed from one side only and allowed to flow to opposite form. Use only a minimum amount of water, consistent with flowability required. Do not exceed 4.0 L of water per 25 kg bag of grout (1.05 U.S. gal/55lb). Mix thoroughly and place within an hour of mixing.

Keep grout agitated in mixer at all times. As the grout sets, cure exposed surfaces with CIPADECK® Cure & Seal or damp burlap. Ideal grouting temperature is 10°C to 25°C (50-77°F).

Cooler temperatures will retard the rate of strength gain in all mixes. Keep surrounding concrete and contact steel above 4.5°C (40°F) for at least 72 hours after completion of grout pour.

MIXING AND PLACING
CPD® Non-Shrink Grout (H.E.S-SR) may be pumped or poured in place. In all cases, no foreign materials are to be added without first contacting your CPD® Technical Representative.

The following is to be used as a guide. Always use the minimum water required.
Flowable - 4L water per 25kg bag (1.05 U.S. gal/55lb)
Non Shrink Concrete Mix
50 kg (110 lb) CPD® Non-Shrink Grout (H.E.S-SR)
25 kg (55lb) 10mm (3/8") Pea Gravel
7-8 L (1.85-2.1 U.S. gal) water (depending on consistency required)

COVERAGE
0.014m³ (0.47ft³) per 25 kg (55lb) bag (at the maximum 4L (1.05 U.S. gal) water content).

PACKAGING
25 kg. (55 lb) multi-wall bag.

STANDARDS
Formulated to comply with U.S. Corps of Engineers CRD-C621-92 and ASTM C1107-91.

STORAGE
May be stored short term anywhere under tarp on pallets as long as the product is kept dry. Dry heated warehouse storage is recommended for extended storage.

SHELF LIFE
One year from the date of manufacture when stored in original, unopened package and under normal warehouse conditions.

SAFETY PRECAUTIONS
Consult Safety Data Sheet for specific instructions. SDS # 18.

WARRANTY
The recommendations made and the information herein is based on our own and independent laboratory experience, and is believed to be accurate under controlled conditions. However, no warranty or guarantee of accuracy is made because we cannot cover every possible application of product nor anticipate every variation encountered in weather conditions, job-conditions, methods used and types of surfaces on which the product is applied.

The users shall make their own tests to determine the suitability of such products for any particular purpose.

CPD® makes no warranties with respect to this product, expressed or implied, without limitation, the implied warranties of merchantability or fitness for a particular purpose.

CPD®s liability shall be limited in all events to supplying sufficient product to re-treat and/or repair the specific area to which CPD® product has been applied. CPD® reserves the right to have the true cause of any difficulty determined by accepted test methods. CPD® shall have no other liability, including liability for incidental, consequential or resultant damages, however caused, whether due to breach of warranty, negligence, or strict liability.

THIS WARRANTY MAY NOT BE MODIFIED OR EXTENDED BY REPRESENTATIVES OF CPD®, ITS DISTRIBUTORS OR DEALERS.