MasterFlux 881 (formerly BluCem HE80AG)

Precision Ultra rapid strength gained Micro Concrete

Material Description

MasterFlux 881 is a high early strength gained, pourable, fast setting micro concrete which is suitable for civil engineering applications. MasterFlux 881 is a C Class dual shrinkage compensated and chloride free grout.
MasterFlux 881 incorporates special cementitious powder, blended aggregates and advanced additives which has exceptionally high early strength development. The addition of special fine aggregate allows the product to be batch mixed in agitators for large volume applications.

Areas of Application

- Ideal for batching in agitators, making it suitable for high-volume applications.
- General repairs in concrete structures, including high-load and dynamic beams and columns; overheads and slabs.
- Specifically suited for use in marine environments, and tidal zones and underwater applications.
- Precast grouting.
- Aireport runway repairs and lighting installations

Characteristics and Benefits

- High early strength development - achieves significant compressive strength quickly, making it ideal for projects requiring rapid load-bearing capability.
- Fast setting time - designed to set quickly, enabling efficient completion of works in time-critical environments such as night operations or shutdown periods.
- Low shrinkage - provides exceptional dimensional stability, reducing cracking risks and ensuring long-term durability.
- Excellent workability and flow - smooth, consistent flow ensures easy placement, even in congested or hard-to-reach areas.
- Optimised for on-site mixing in bulk quantities, ideal for major infrastructure grouting projects.
- Minimises downtime - rapid strength gain and fast setting allow structures and surfaces to return to service quickly, reducing project delays.

Properties

Tested Characteristic / Standard	Result		
Compressive strength	Liter Water per 20 kg		
AS 1478.2- Appendix A	2.0 L	2.2 L	2.4 L
2 hours: MPa	20	15	10
3 hours: MPa	30	25	15
4 hours: MPa	40	35	25
24 hours: MPa	60	50	40
7 days:MPa	80	60	50
28 days: MPa	90	80	70
Flexural Strength ASTM C 348	9.7MPA		
Bond Strength EN 1542: 1999	>1.5 MPa		
Modulus of Elasticity AS1012.17	3.5 hrs: 26.0 GPa 3 days: 28.1 GPa 28 days: 33.8 GPa		
Indirect Tensile Strength AS1012.1	3.5 hrs: 4.3 MPa 3 days: 4.5 MPa 28 days: 5.7 MPa		
Coefficient of Thermal Expansion AASHTO Designation: T 336 - 11	13.7 μstrain/°C		
Drying Shrinkage AS 1478.2	7 days: 110 μstrain 28 days: 160 μstrain 56 days: 170 μstrain		
Electrical Restivity Taywood-Warner 4 Probe	7 days: 7.0 $k\Omega cm^{-1}$ 28 days: 21.0 $k\Omega cm^{-1}$ 56 days: 35.0 $k\Omega cm^{-1}$		
Setting Time AS1012.18	Initial set – 25 min Final set – 40 min		
Fresh Wet Density AS1012.5	10% water: 2310 kg/m^3 12% water: 2260 kg/m^3		

Application Properties	Results
Water addition(10-12%)	2.0 - 2.4 litres per 20kg bag
Yield	9.5-9.9L
Thickness range: (Refer to Master Builders Solutions for advice and approval on pour thicknesses)	10-100mm (>100mm)
Pot Life @ 20°C	30 - 60 minutes (Agitated) 10-30 minutes (Still)
Maximum particle size	0.3mm

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Application

For information about application, please obtain a copy of the "Cementitious Grouts MasterFlux range" application guide from your local Master Builderes Solutions Technical Sales Representative or download a copy from the website.

Concrete Preparation

Concrete must be fully cured with a minimum direct tensile strength of 1.5 MPa. All loose traces of concrete or mortar, dust, grease oil, etc. must be removed. Damaged or contaminated concrete shall be removed to obtain a keyed aggregate exposed surface. Non-impact/ vibrating cleaning methods, e.g. grit or high pressure water blasting are recommended. Scabble to a surface profile of ICRI CSP 3 or greater.

Mixing

Measure and place 80% of the specified volume of potable water to the high shear mixing vessel. Start mixer and slowly add MasterFlux 881 powder. If powder addition is too fast then large lumps will form and final mix will be slow reaching uniform consistency.
Following addition of all powder, mix for 1 - 2 minutes or until uniform consistency then add final 20% of potable water. More or less water may be added within the ratio limits specified on this data sheet. Do not mix more material than can be placed in 20 minutes.

Pumping

Once the grout has been mixed you need an effective placement method to deliver it to the area of application. MasterFlux 881 is a micro- concrete and therefore best mixed using tumble style agitators. It is also best to pour or pump shorter distances using concrete pumps. Master Builders Solutions are able to recommend the right mixer for your project.
Prior to placing grout, rinse the mixer and charge the pump hopper with sufficient water to flush and cool the pump and all grout lines thoroughly.
Check to ensure that all lines and hoses are clear and unobstructed. Once grout is mixed, it is important to keep it agitated continuously prior to pumping. If the grout is allowed to sit then it will 'gel' and may become more difficult to pump, or otherwise set earlier than expected.
Once the site is ready for grout placement, commence pumping. It is important to pump continuously and avoid the formation of cold joints.
Following completion, dispose of excess production material in consideration of the environment. Carefully wash out mixer tanks and agitators into the pump hopper and pump the resulting washout material through the grout hoses to a suitable disposal site. Drain any water out of the lines and hoses. Clean down the machinery and surrounding areas.

Application

MasterFlux 881 may be poured or pumped into place. Do not exceed the maximum application thicknesses specified in the data sheet for any wet layer. When pouring MasterFlux 881, reduce exposed surface areas to ensure maximum confinement during expansion phase of initial set.
Consult Master Builders Solutions for further information about aggregate addition for large volume pours.

Curing

It is recommended that the final surface finish layer is coated with curing compound or otherwise maintained wet for at least three days.

Estimating Data

One 20kg bag will yield approximately 9.5 – 9.9 litres :

MasterFlux 881				
20kg powder	Thickness in mm /m^2	m^3	bags /m^3	m^2/mm thickness
+10% water	9.5	0.009	105	9.5
+12% water	9.9	0.01	100	10

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Packaging

MasterFlux 880 is available in 20kg bags.
Consult Master Builders Solutions for Bulk supply options.

Storage & Shelf Life

Store in cool and dry warehouse conditions. Shelf life in these conditions is 12 months in unopened original bags.

Precautions

For the full health and safety hazard information and how to safely handle and use this product, make sure that you obtain a copy of the Safety Data Sheet (SDS) from our office or website.

Specification Clause

High early strength gained Micro concrete - The rapid curing C class micro concrete used for this project shall be a one component cement powder and aggregate which requires only the addition of water to form a durable rapid curing product and being trafficable in 2hrs. It shall be a pre-blended product that has independent testing to validate the performance outlined in the technical data table on the following pages. It shall have the capacity to be mixed in agaitators and suitable for deep pours. MasterFlux 881 manufactured by Master Builders Solutions or equivalent shall be accepted.

Disclaimer

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