MasterFlux HST 4120 (formerly BluCem HS120)

Cementitious ultra high strength precision grout

Material Description

MasterFlux HST 4120 is a non-shrink ultra-high-strength cementitious grout. It is a pumpablegrout with a flowable consistency designed for civil engineering applications, incorporating specially graded aggregates and advanced cement additives for enhanced performance.

Areas of Application

- Critical equipment baseplates, soleplates & columns.
- Crane rails, ball mills, crushers.
- Rolling, stamping, drawing and finishing mills for the steel and aluminium industries.
- Turbines, generators, pumps and centrifugal compressors.
- Applications requiring ultra-high early compressive strengths and ultimate compressive strengths– ideal for high-performance concrete repair in bridges, dams, and retaining walls..
- High flow for full compaction even in areas with congested steelwork
- Marine and coastal structures – used in environments requiring high durability and resistance to aggressive conditions.
- Grouting and anchoring – applied in post-tensioning ducts, anchor grouting, and structural void filling.

Characteristics and Benefits

- High early strength – rapid strength development for quick turnaround applications.
- Low shrinkage – minimises cracking and ensures long-term durability.
- High sulphate resistance – suitable for aggressive environments, including marine and underground conditions.
- Pumpable and flowable – easily applied in grouting and repair applications.
- Excellent bonding properties – ensures strong adhesion to concrete and reinforcement.
- Durability in harsh environments – resistant to water ingress and chemical attack.
- Reduced downtime – fast strength gain enables early reopening of work areas.

Properties

Tested Characteristic / Standard	Result		
Compressive strength ASTM C109 (Cube)	Water		
	10%	11%	12%
1 day: MPa	80	65	60
7 days: MPa	100	100	95
28 days: MPa	120	110	105
Flexural Strength ASTM C 348	2.4 litres water per 20kg 14.0MPa @ 7 days 17.0MPa @ 28 days		
Change in Height ASTM C1090	Positive through to 28 days		
Expansion ASTM C940	0.6%		
Bleeding ASTM C940	0%		
SettingTime	Initial Set – 150 minutes Final Set – 165 minutes		
Fresh Wet Density AS1012.5	2210kg/m^3		
Indirect Tensile Strength AS1012.1	2.4 litres water per 20kg 9.0MPa		
Modulus of Elasticity AS1012.17	2.4 litres water per 20kg 38.0GPa		
Bond Strength EN1542:1999	2.0MPa		

Application Properties	Results
Water addition	2.0 – 2.4 litres per 20kg (10-12% b/w)
Yield	9.8 litres per 20kg @ 12% water
Application Thickness	10- 100mm*
Pump Life @ 20°C	90 minutes
Maximum particle size	<3.0mm

**for thicknesses exceeding 100mm, refer to Master Builders Solutions for advice and approval on pour thicknesses.*

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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..
Priming using MasterCrete PRI 5000 or MasterCrete PRI 157 is recommended. Priming by saturation of the surface using potable water prior to application is also acceptable.

Mixing

Measure and place 80% of the specified volume of potable water to the high shear mixing vessel. Start mixer and slowly add MasterFlux HST 4120 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 pumping method to deliver it to the area of application.
Prior to pumping 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.

Once the site is ready for grout placement, commence pumping. It is important to pump continuously and avoid the formation of cold joints.

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 9.8 litres :

MasterFlux HST 4120				
20kg powder	Thickness in mm /m^2	m^3	bags /m^3	m^2/mm thickness
2.0-2.4L water	9.8mm	0.0098	102	9.8

Packaging

MasterFlux HST 4120 is available in 20kg bags.

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.

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Specification Clause

Ultra High Strength Grout - The high strength cementitious grout used for this project shall be a one component cement powder which requires only the addition of water to form a durable high strength product. 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. MasterFlux HST 4120 manufactured by Master Builders Solutions or equivalent shall be accepted.

Disclaimer

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