NS612
NON-SHRINK GROUT

PCCS-RM CLASS S GENERAL PURPOSE NON-SHRINK GROUT

PRODUCT DESCRIPTION

OPTIMIX NS612 NON-SHRINK GROUT is a high quality pre-mixed shrinkage-compensated cementitious grout incorporating a dual expansion system that compensates for shrinkage in both plastic and hardened states.

Straightforward control of water addition and mixing method can yield a free flowing, pourable or trowellable consistency appropriate for use in a wide range of applications including base plates, bearings, anchors and various concrete repairs. As a trowellable repair mortar, NS612 is certified as PCCS-RM Class S compliant.



TYPICAL USAGE

- Fill voids and gaps within concrete structures or elements
- Provide heavy duty support between base plates and substrates
- Grout for machinery and equipment footings
- Filling gaps for structural steel, stanchion and precast components
- Grouting for anchor bolts and dowel bars
- Support for bridge bearings, crane rails, tanks, etc.
- Geotechnical Grouting such as rock bolts, soil nails and pipe roofing

FEATURES AND BENEFITS

- Consistent Quality
- Easy to Use
- Non-shrink Property
- Low Chloride Content
- High Early & Ultimate Strength
- Non-bleeding
- Flowable, Pourable, Pumpable and Trowellable
- PCCS-RM Class S compliant
- 2-Hour Fire Resistance to BS476-20
- Cost Effective

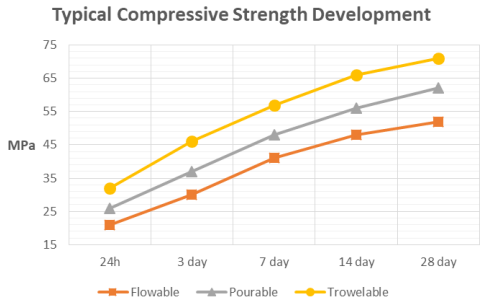
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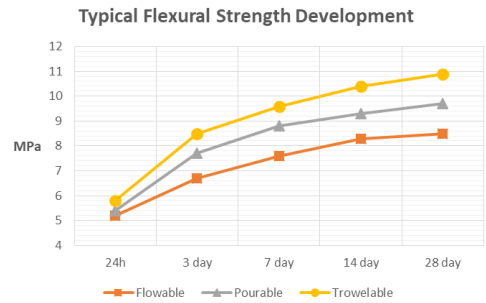


TECHNICAL DATA

Typical Product Characteristics [1]	Flowable	Pourable	Trowellable
Compressive Strength at 1 day (MPa)	> 20	> 20	> 25
Compressive Strength at 7 days (MPa)	> 40	> 45	> 50
Compressive Strength at 28 days (MPa)	> 50	> 60	> 70
PCCS-RM Class S Specification (MPa) [2]	-	-	F_{cu} 60
Flexural Strength at 1 day (MPa)	> 5	> 5	> 5
Flexural Strength at 7 days (MPa)	> 7	> 8	> 9
Flexural Strength at 28 days (MPa)	> 8	> 9	> 10
Flow – Cone	< 30 sec.	~ 60 sec.	-
Flow – Table	-	-	~ 180 mm
Bleeding	None		
Free Expansion (24 hours)	0.1 - 3.5 %		
Chloride Content	< 0.03%		
Fire Resistance	132 minutes		

Typical Strength Development [1]





Mixing [1]	Flowable	Pourable	Trowellable
Water Demand	4.0 – 4.5 L	3.5 – 4.0 L	3.0 – 3.5 L
Mixing Method	High Shear Drill & Paddle Mixer	Low or High Shear Drill & Paddle Mixer	Pan Mixer, Drill & Paddle or Similar Forced Action Mixer
Mixing Time	Mix for 5 minutes, rest for 1 minutes & briefly remix before use		
Pot Life (Stable Workability @ 25°C)	~ 30 minutes	~ 45 minutes	~ 60 minutes

Packaging & Yield [3]	Flowable	Pourable	Trowellable
Wet Density (kg/m^3)	2,200	2,250	2,300
Coverage (Powder Consumption) (kg/mm/m^2)	1.85	1.90	2.00
Yield (per bag)	13.5 L	13.0 L	12.5 L
Packing Size (per bag)	25 kg		
Shelf Life	6 months		

Notes

1) The results given here are typical laboratory results. Determined performance can vary slightly due to variations in equipment, users, substrates, ambient conditions etc.
2) F_{cu} is the maximum characteristic strength of parent concrete on which NS612 should be used according to the HKCI PCCS-RM certification scheme.
3) These are approximate figures and take no account of wastage.

Composition		Environmental Data	
Colour	Grey	Volatile Organic Compounds (VOC)	≤ 10 g/L
Components	OPC, graded sands, shrinkage compensating chemicals and additives including high performance plasticisers	Potential BEAM points	Product is manufactured within 800km of Hong Kong project sites
Maximum Particle Size (Nominal)	~ 3.0 mm	Packaging Composition	Paper bags incorporating 40% recycled paper

Testing Methods	
Compressive and Flexural Strength	BS6319: Part 2 and Part 3
Flow – Table	EN 12358
Flow - Cone	ASTM C 939
Determination of Bleeding	ASTM C940 – 98a
Change in Height at Early Ages (Free Expansion)	ASTM C827 – 95a
Chloride Content	CS1: 1990 : Section 21.10.2
Fire Resistance	BS476 Part 20:1987 +
VOC Content	USEPA Method 24

Note: The tests were performed according to Hong Kong and international standards or in-house modifications of the corresponding testing procedure.



INSTALLATION GUIDE

(Refer to Method Statement for more details)

SURFACE PREPARATION

Substrate must be clean, free from unsound material, oil grease and other contaminants. Roughen and pre-soak the surface with potable water as soon as possible before grouting making sure to remove all free water before installing any final formwork and applying the grout. Pay particular attention to fissures, holes and recesses which may require grouting separately in advance.

Metal surfaces must be free from rust, oil and grease except for levelling shims which should be treated with a thin layer of grease for ease of removal afterward. The formwork should be sturdy enough to hold the full volume of grout in place and sealed properly to prevent leakage.

MIXING

Select and carefully measure the necessary water addition from the table above. Optimix recommend mixing one bag at a time to ensure complete and proper mixing of all components. Mechanical mixing with slow speed drill fitted with a suitable paddle is recommended. Mix the mixture for about 5 minutes or until a lump-free homogeneous mix is achieved. Allow the mixture to rest for 1 minute and then briefly re-mix before application.

The 1 minute rest period allows time for trapped air to escape and for the additives in the product to fully activate.

For large grouting projects mechanical mixing of several bags at a time may be carried out in appropriately sized and rated equipment. Due care must be taken to ensure accuracy of the water addition and complete mixing of the grout.



APPLICATION

OPTIMIX NS612 can be pumped, poured, gravity fed, hand-balled or trowelled into place according to the water addition and the workability achieved.

When grouting under base plates and the like, it may be placed unmodified in a thickness up to 100mm in a single pour. Bolt pockets must be properly grouted before placing **OPTIMIX NS612** between the substrate and the base plate. The grouting material should be applied in a continual operation until the void is completely filled and should be placed within 20 minutes of mixing to gain full benefit of the expansion process.

Uninterrupted flow can be achieved by keeping the pour head constantly maintained.

When pumping large volumes, heavy-duty diaphragm pumps (or alternatively screw feed and piston pumps) are recommended and utilizing a minimum pipe or travel length may further enhance efficiency and ensure the performance of the product at the grout head.

FINISHING AND CURING

Exposed areas should be cured by the use of suitable curing membrane, continuous water spraying and/or wet hessian.

LIMITATIONS

For applications in excess of 100mm and where accessibility allows, Optimix grout can be modified with the addition of dry, clean, single sized aggregates.

This can reduce the cost and even increase the ultimate strength of the grout but at the risk of voids, reduced flow, awkward placement, uncertain shrinkage and strength development. Nominal size crushed rock of 10mm and below with addition of 10kg per 25kg bag of grout are suggested but trials are recommended to confirm suitability of aggregates and the mix for the intended application.

HEALTH AND SAFETY

OPTIMIX NS612 is alkaline in nature and can cause irritations to persons with sensitive skin. Avoid inhalation of dust and contact with skin and eyes. Wear suitable protective gloves and masks while handling the product. If contact with eyes, rinse immediately with plenty of clean water and seek medical advice. This product is non-toxic and is not flammable.

STORAGE

Store the products in a cool and dry place with the original unopened bags on pallets with plastic wrapping. Protect from direct sunlight, rainfall and exposure to high humidity conditions. Avoid excessive stacking of pallets. Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging and reduce shelf life.

Important Note: The information contained herein is, the best of our knowledge, true and reliable and is supported by the present state of our knowledge. No warranty is given or implied in connection with any recommendations or suggestions made by us or our representatives as the conditions of use and any labour involved are beyond our control.

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