BASF

The Chemical Company

PRODUCT DATA

3 03 62 13 **Non-Metallic Non-Shink Grouting**

MASTERFLOW® 1205

High-performance grout for highly stressed steel

Description

Masterflow® 1205 is a cement-based pumpable grout with specially graded aggregate. It produces a pumpable, nonbleeding, high-strength fluid product with an extended working time. The specially graded aggregate mitigates chloride migration while still allowing the product to be easily pumped over long distances through small openings. It meets all the compressive strength and nonshrink requirements of CRD C 621 and ASTM C 1107, Grades B and C, at a fluid consistency.

Yield

One 55 lb (25 kg) bag yields approximately 0.55 ft^3 (0.016 m^3)

Packaging

55 lb (25 kg) multi-wall paper bags

2,500 lb (1,134 kg) bulk bags also available by special order

Shelf Life

6 months when properly stored

Storage

Store in unopened packaging in a clean, dry environment.

Features	Benefits
• High strength grout	Provides anchorage for subsequent tensioning
• Contains no components detrimental to high-strength steel	Protects stressed tendons, bolts, and bars from corrosion
• Easy to pump or pour	Ease of placement
• Hardens without bleeding, settlement shrinkage, and formation of voids	Ensures optional performance in hardened state
• Can be pumped or recirculated for relatively long periods of time	Adds flexibility to construction scheduling
• Can be used at temperatures ranging from 40 to 90° F (4 to 32° C)	Lessens weather dependency
• Hardens without settlement shrinkage within the grout duct	Ensures maximum bond and long-term protection against water, chlorides, and rust
• Does not form hydrogen gases as an expansion mechanism	Eliminates hydrogen embrittlement or bubble- early channel formation

Where to Use

APPLICATION

- Pumping around post-tensioned tendons, cables, and rods to encapsulate and protect highly stressed steel from corrosion
- Placing around end sections of unanchored cables and rods for subsequent tensioning
- Filling voids in restricted spaces between wall panels, beams, and columns where grout will contact highly stressed steel
- Grouting cable anchor-plates or other plates where grout will contact highly stressed anchorages

How to Apply

Surface Preparation

1. Clean cables and strands of all oxidation, dirt, oil, or any loose materials. Ducts should be clean and free of any defects.

2. Check proposed method of mixing and pumping to ensure continuous placement once pumping starts. Have a source of high-pressure water with connections for flushing grout hoses or partially grouted cable ducts in case the pumping is interrupted.

3. Test the pump and grout lines with water or pressurized oil-free air. Confirm that they are capable of withstanding the required pressure and that all connections are tight, without leaks. Loss of water from slow or nonmoving grout can result in a blocked line.

4. Provide plug, ball, or gate valves at the pump outlet, the inlet ends of vertical cable ducts, and at both ends of the horizontal ducts. Also use a valved by-pass hose or pipe from the pump discharge line back to its hopper. This will ensure that the grout continues to recirculate from pump to hopper during connection changes and other pumping delays. Draped tendons typically also require venting at the crests and troughs as well as slightly uphill of crests. See the Post-Tensioning Institute "Guide Specification for Post-Tensioned Grouting" for more complete information.

5. The inside diameter of the pipe, hose, and valves through which Masterflow® 1205 is pumped should be at least 1/2 – 2" (12.5 – 51 mm) and consistent throughout the system. Avoid connector elbows if possible.

Protection and Repair

Technical Data

Composition

Masterflow® 1205 is a hydraulic, cement-based, pumpable grout with specially graded aggregate.

Compliances

- CRD C 621 and ASTM C 1107: meets all compressive strength and settlement shrinkage requirements at a fluid consistency
- Post Tensioned Institute (PTI) recommendations for a prepackaged post-tensioned steel-duct grout for horizontal and inclined tendons

Test Data

PROPERTY	RESULTS[1]	TEST METHODS
Flow, sec	20 – 25	ASTM C 939
Final set, hrs	< 10	ASTM C 953
Volume change, %		ASTM C 1090
1 day	> 0.0	
28 days	> 0.0 and < 0.2	
Prehardened expansion height, % change, at 3 hours	< 0.2	ASTM C 940
Compressive strength, psi (MPa)		ASTM C 942
1 day	> 2,000 (13.8)	
3 days	> 4,000 (27.6)	
7 days	> 5,500 (37.9)	
28 days	> 8,000 (55.2)	
Chloride permeability	< 2,500 coulombs	ASTM C 1202 Modified PTI, 30 V
Acid soluble chloride content, % by weight of cement	< 0.08	ASTM C 1152
Schupack-Gelman Pressure Bleed, 10 min at 30 psi at vertical rise of 6 ft (1.6 m) maximum pressure	< 2	Post-Tensioning Institute Guide Specification for Post-Tensioned Grouting
Wick induced bleeding, %, at 3 hrs	0	ASTM C 940, PTI modified
PTI accelerated corrosion test, hrs	> 1,600	

[1]Results assume a temperature of 70° F (21° C)

Expect reasonable variations from the results shown above. Control field and laboratory tests on the basis of the desired placing consistency rather than strictly on water content.

6. The pump lines and grout line, if needed, may be flushed with high pH lime-saturated water to lubricate and cool the ducts. The oncoming grout will displace and discharge this water at the outlet end before accessing the air-free mixed grout. Collect the lime-saturated water and use as mix water if needed. Discard the transitional grout.

Temperature

1. The recommended temperature of the mixed grout should be 40 to 90° F (4 to 32° C). The duct temperatures should also be within the same temperature range. Follow special precautions for hot or cold weather. Higher temperatures increase the amount of mixing water needed for a given fluidity and limit working time. Lower temperatures induce bleeding, retard set, and impede early strength gain, but permit reducing the mixing-water content for a given fluidity and increase ultimate strength.

HOT-WEATHER GROUTING

When duct temperatures are above 90° F (32° C), use techniques to produce a lower mixed-grout temperature. Cool bags of Masterflow® 1205 by storing them in a shaded or cool area. Use cold potable water to obtain the proper temperature for the mixed grout. If ice chips are added to the mixing water, verify removal on the 1/8" screen over the pump hopper. Do not let the grout temperature drop below 50° F (4° C). Circulating cold water can also cool ducts. Lime ($Ca\ OH_2$) can be added to the circulating water to increase pH; this will help passivate the steel and reduce the potential for steel oxidation before grouting.

COLD-WEATHER GROUTING

When duct temperatures are 40° F (4° C), the temperature of the mixed grout should be increased by mixing in warm potable water. Ducts can be heated by circulating warm water throughout ducts. Lime ($Ca\ OH_2$) may be added to the mixing water to increase pH and lubricate duct. Do not exceed 90° F (32° C) temperatures when warming both the mixed grout and the duct.

Mixing

1. Masterflow® 1205 is a ready-to-use product requiring only the addition of potable water. Normal mixing water content is determined by the ASTM C 939 Grout Efflux Time of 20 – 30 seconds immediately after mixing and attaining "0" bleeding in the Post-Tensioning Institute ASTM C 940-based Wick Induced Bleeding Test, using the specified mixer for mixing the grout at the job. Consult your BASF representative for special mixing instructions.

2. Do not use water in an amount or at a temperature that will produce a flow of less than 20 seconds on the flow cone (ASTM C 939) or cause mixed grout to bleed or segregate. Jobsite conditions such as the size and complexity of the grouted space, pumping-line diameters, height, mixing and pumping methods, and temperatures are all factors that determine the actual amount of water needed.

3. Have one or more mixers available with the capacity to allow mixing and pumping to proceed simultaneously and continuously.

4. Place water in the mixer first, then steadily add the grout with mixer operating. Mix until the grout is homogeneous and free of lumps, approximately 1 – 2 minutes, scraping all of the dry material from the mixer sides. Convey the mixed grout into the pump surge hopper and pass through a screen with 0.125 – 0.188" (3 – 5 mm) openings to catch possible lumps; then start pumping grout, after verifying grout efflux, into the duct.

NOTE: Do not mix more grout than can be placed through a pump in 30 – 45 minutes, depending on temperature.

Application

Place Masterflow® 1205 in accordance with section C5.6.3 Grouting Operations as stated in the "Guide Specification for Grouting of Post-Tension Structures" prepared by the PTI Committee on Grouting Specifications.

Curing

Cure all exposed grout areas by wet curing for 24 hours with clean, wet rags (do not use burlap), followed by the application of an ASTM C 309 or preferably C 1315–compliant curing compound. In cold weather, keep grout temperature above 40° F (4° C) until final set. Thereafter, keep temperature above freezing until the grout attains a compressive strength of 1,500 psi.

For Best Performance

- Do not add plasticizers, accelerators, retarders, or other additives unless advised in writing by BASF Technical Service.
- The water requirement may vary with mixing efficiency, temperature, and other variables.
- Hold a pre-job conference with your local representative to plan the installation. Hold conferences as early as possible. Conferences are important for applying the recommendations in this product bulletin to a given project, and they help ensure a placement of highest quality and lowest cost.
- The walls of the space grouted should be between 40 and 90° F (4 and 32° C) and saturated with lime water for optimum results. For use at temperatures above the range, consult BASF Technical Service.
- DO NOT use mixing water in an amount or at a temperature that will produce a flow of less than 20 seconds (CRD C 611 or ASTM C 939) or cause the mixed grout to bleed or segregate when tested by the PTI Wick Induced Bleeding Test (based on ASTM C 940).
- BASF is not responsible for corrosion caused by ingredients in the flushout, saturation, or mixing water or by contaminants in the space being grouted or in other materials used in the system.
- Make certain the most current versions of product data sheet and MSDS are being used; call Customer Service (1-800-433-9517) to verify the most current versions.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

Health and Safety

MASTERFLOW® 1205

WARNING!

Masterflow® 1205 contains silica, crystalline quartz; portland cement; calcium oxide; limestone; silica, amorphous; magnesium oxide.

Risks

Product is alkaline on contact with water and may cause injury to skin or eyes. Ingestion or inhalation of dust may cause irritation. Contains small amount of free respirable quartz which has been listed as a suspected human carcinogen by NTP and IARC. Repeated or prolonged overexposure to free respirable quartz may cause silicosis or other serious and delayed lung injury.

Precautions

Avoid contact with skin, eyes and clothing. Prevent inhalation of dust. Wash thoroughly after handling. Keep container closed when not in use. DO NOT take internally. Use only with adequate ventilation. Use impervious gloves, eye protection and if the TLV is exceeded or used in a poorly ventilated area, use NIOSH/MSHA approved respiratory protection in accordance with applicable Federal, state and local regulations.

First Aid

In case of eye contact, flush thoroughly with water for at least 15 minutes. In case of skin contact, wash affected areas with soap and water. If irritation persists, SEEK MEDICAL ATTENTION. Remove and wash contaminated clothing. If inhalation causes physical discomfort, remove to fresh air. If discomfort persists or any breathing difficulty occurs or if swallowed, SEEK IMMEDIATE MEDICAL ATTENTION.

Waste Disposal Method

This product when discarded or disposed of is not listed as a hazardous waste in federal regulations. Dispose of in a landfill in accordance with local regulations.

For additional information on personal protective equipment, first aid, and emergency procedures, refer to the product Material Safety Data Sheet (MSDS) on the job site or contact the company at the address or phone numbers given below.

Proposition 65

This product contains material listed by the State of California as known to cause cancer, birth defects or other reproductive harm.

VOC Content

0 g/L or 0 lbs/gal less water and exempt solvents.

For medical emergencies only, call ChemTrec (1-800-424-9300).

BASF Construction Chemicals, LLC – Building Systems

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