

PRODUCT DATA

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

MASTERFLOW® 1341

Universal post-tensioning duct grout for highly stressed steel

Description

Masterflow® 1341 is a cement-based product with specially graded spherical aggregate that produces a pumpable non-bleeding high-strength grout. It has extended working time, especially in vertical duct placements or configurations with a steep vertical rise without settlement shrinkage. It is bleed resistant for horizontal, inclined, and vertical tendon configurations. Masterflow® 1341 meets all compressive strength and vertical height change requirements of ASTM C 1107 (CRD C 621) at a modified flow and complies with the PTI Specification for Grouting of Post Tensioned Structures with vertical rises of 6 – 100 ft (1.8 – 30 m) or slightly more.

Yield

One 55 lb (25 kg) bag yields approximately 0.56 ft³ (0.016 m³).

Packaging

55 lb multi-wall paper bags
2,500 lb (1,134 kg) bulk bags, available by special order

Shelf Life

6 months in 55 lb (25 kg) bags when properly stored

Storage

Store in unopened packaging in a clean, dry environment.

Features

- Bleed free for vertical heights up to 100 ft. (30.5 m)
- Prepackaged and pretested
- Can be pumped or re-circulated for long periods of time
- High strength grout
- Hardens without bleeding, settlement, segregation, shrinkage, or formation of voids
- Compatible with high strength steel
- No added chlorides
- Can be used over a wide range of mixed grout temperatures from 45 to 90° F (7 to 32° C)
- Does not use aluminum powder as an expansion agent
- Complies with PTI Specification for Grouting of Post-Tensioned Structures

Benefits

- Universal grout for horizontal, inclined and vertical ducts. Eliminates stage regrouting in one operation
- Easy to mix. Assures uniform performance with consistent quality
- Adds flexibility to the construction schedule
- Provides anchorage for subsequent tensioning
- Ensures optimal performance in hardened state, thus providing maximum bond and long-term protection against corrosion
- Protects stressed tendons, bolts, and bars from corrosion induced by chlorides and carbonation.
- Inhibits corrosion
- Lessens weather dependency
- Eliminates hydrogen embrittlement or bubble channel formation
- High performance grout verified by both independent and lot performance testing

Where to Use

Application

- Void filling grouting in restricted spaces in vertical ducts and spaces where grout will be in contact with highly stressed steel, especially in the following applications where other duct grouts produce excessive bleeding:
 - Horizontal, inclined, and vertical post-tensioned tendon configurations
 - Off shore oil platforms
 - Vertical bridge components
 - Water tanks
 - Post-tensioned concrete tanks containing liquids
 - Nuclear power plants
 - Other vertical duct applications

How to Apply

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.



Technical Data

Composition

Masterflow® 1341 is a hydraulic cement-based, pumpable grout with specially graded aggregates.

Compliances

- Meets all compressive strength and settlement shrinkage requirements at modified flow consistency per ASTM C 1107 (CRD C621).
- Post-Tensioning Institute (PTI) recommendations for a prepackaged post-tensioned steel-duct grout for vertical rise 0 – 100 ft (30 m).

Test Data* based on 1.95 gal (7.4 L) of water per 55lb (25 Kg) bag

PROPERTY	RESULTS	TEST METHODS
Wet Density , lb/ft ³ (g/cm ³),	122 - 131 (1.95 - 2.1)	ASTM C 138 or per PTI spec Section 4.4.8
Modified Flow , sec, Immediately after Mixing	7 - 20	PTI spec Section 4.4.5.2
30 Minutes after Mixing with 30 sec Remix	7 - 20	
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 (16)	
3 days	> 3,500 (28)	
7 days	> 5,000 (38)	
28 days	> 7,000 (55)	
Chloride Permeability , coulombs, at 28 days moist cure	< 2,500	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 100 psi at vertical rise of 100 ft (30.5 m) maximum pressure	0	per PTI spec Section 4.4.6.2 Table 4.1 Type B
Wick Induced Bleeding , %, at 3 hrs	0	per PTI spec Section 4.4.6.1 wick induced bleed test
Electrical Resistivity , Ω-cm, at 28 days	> 13,000	ASTM C 1202
PTI Accelerated Corrosion Test , hrs	> 1,600 (greater than control)	per PTI spec Section 4.4.7 corrosion test

* Samples cured at 70° F (21° C). Test results are averages obtained under laboratory conditions. Expect reasonable variations.

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 Specification for Grouting of Post-Tensioned Structures for more complete information.

5. The inside diameter of the pipe, hose, and valves through which Masterflow® 1341 is pumped should be at least 1/2" - 2" (12.5 - 51 mm) and consistent throughout the system. Avoid connector elbows if possible.

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

The recommended temperature of the mixed grout should be 45 to 90° F (7 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® 1341 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" (3 mm) 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 the ducts. Lime [Ca (OH)₂] may be added to the mixing water to increase pH and lubricate the duct. Do not exceed 90° F (32° C) temperatures when warming both the mixed grout and the duct.

Mixing

1. Masterflow® 1341 is a ready-to-use product requiring only the addition of potable water. Normal mixing water content should be from 1.8 to 2.1 gallons (6.8 – 7.9 Liters) of water per 55 lb. (25 kg) bag. Mix until wet density is equal to or greater than 121.7 lb./ft³ (1.95 g/cm³) and produces "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. Water content is determined by mixing and testing to a modified flow of 16 – 25 seconds immediately after mixing, according to the PTI Specification for Grouting of Post-Tensioned Structures. Use a high-speed, high-shear colloidal mixer to obtain optimum properties of mixed product. Consult your BASF representative for special mixing instructions.

2. 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 60 minutes, depending on temperature.

Application

Place Masterflow® 1341 in accordance with section C 5.6.3 Grouting Operations as stated in the PTI Specification for Grouting of Post-Tensioned Structures.

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.
- 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.
- The temperature within the duct walls should be between 45 and 90° F (7 and 32° C) and the walls should be non-absorptive or have a saturated lime-water concrete surface (but drained [SSD]) for optimum results.
- Do not use mixing water in an amount or at a temperature that will produce a thixotropic initial flow of less than 16 seconds or more than 25 seconds or cause the mixed grout to bleed or segregate (according to PTI Specification for Grouting of Post Tensioned Structures 4.4.5.2).
- Test the mixed grout by the Wick Induced Bleeding Test (PTI 4.4.6.1) and the Schupack Pressure Bleed Test (PTI 4.4.6.2) in a height or pressure corresponding to the total vertical rise of the duct configuration. For temperatures above or below the specified range, consult BASF Technical Service.
- If used in non-duct grout applications, 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 ASTM 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 (12 MPa).

- 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.
- 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 version.
- 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

WARNING!

Masterflow® 1340 contains silica, crystalline quartz; portland cement; limestone; calcium oxide; gypsum; 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

KEEP OUT OF THE REACH OF CHILDREN. 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.

Refer to Material Safety Data Sheet (MSDS) for further information.

Proposition

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

VOC Content

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

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

BASF Construction Chemicals, LLC – Building Systems

889 Valley Park Drive
Shakopee, MN, 55379

www.BuildingSystems.BASF.com

Customer Service 800-433-9517
Technical Service 800-243-6739

137.4

LIMITED WARRANTY NOTICE Every reasonable effort is made to apply BASF exacting standards both in the manufacture of our products and in the information which we issue concerning these products and their use. We warrant our products to be of good quality and will replace or, at our election, refund the purchase price of any products proved defective. Satisfactory results depend not only upon quality products, but also upon many factors beyond our control. Therefore, except for such replacement or refund, BASF MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, RESPECTING ITS PRODUCTS, and BASF shall have no other liability with respect thereto. Any claim regarding product defect must be received in writing within one (1) year from the date of shipment. No claim will be considered without such written notice or after the specified time interval. User shall determine the suitability of the products for the intended use and assume all risks and liability in connection therewith. Any authorized change in the printed recommendations concerning the use of our products must bear the signature of the BASF Technical Manager.

This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights. In particular, BASF disclaims all CONDITIONS AND WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY. BASF SHALL NOT BE RESPONSIBLE FOR CONSEQUENTIAL, INDIRECT OR INCIDENTAL DAMAGES (INCLUDING LOSS OF PROFITS) OF ANY KIND. BASF reserves the right to make any changes according to technological progress or further developments. It is the customer's responsibility and obligation to carefully inspect and test any incoming goods. Performance of the product(s) described herein should be verified by testing and carried out only by qualified experts. It is the sole responsibility of the customer to carry out and arrange for any such testing. Reference to trade names used by other companies is neither a recommendation, nor an endorsement of any product and does not imply that similar products could not be used.



UL Classified
Approved to UL 2870-2004
Version No. 01/08

For professional use only. Not for sale to or use by the general public.

Form No. 1025255 8/09

Printed on recycled paper including 10% post-consumer fiber.

© 2009 BASF

Printed in U.S.A.