BASF

The Chemical Company

PRODUCT DATA

3 03 63 00 **Epoxy Grouting**

MASTERFLOW® 668B CHOCK GROUT

Epoxy chock grout for mounting equipment

Description

Masterflow® 668B Chock Grout is a three-component modified epoxy-resin-based grout. It is used where high-performance properties are required in less-accessible spaces subject to thermal shock and high vibrations. It can be placed from 1/2 – 3" (12.5 – 76 mm) thick on a base-grout pour, directly to the concrete or steel to steel.

Yield

One full unit yields 0.47 ft^3 (0.013 m^3).

Packaging

Full unit: 60.6 lbs (27.5 kg)

Masterflow® 668B Chock Grout Resin:
One 8.33 lb (3.77 kg) can

Masterflow® 668B Chock Grout Hardener:
One 1.37 lb (0.62 kg) bottle

Masterflow® 668B Chock Grout Aggregate:
One 50 lb (22.7 kg) bag

Color

Metallic gray

Shelf Life

2 years when properly stored

Storage

Store in unopened containers at 60 to 80° F (16 to 27° C) in clean, dry conditions.

Features	Benefits
• Highly flowable	Conforms to worn or irregular surfaces
• High-quality components	Excellent physical properties at a wide temperature range
• May be used to replace metal chocks	Eliminates costly milling of metal chocks
• Low creep characteristics through a wide temperature range	Will not deform under sustained loads

Where to Use

APPLICATION

- Where conventional epoxy grouts cannot be used
- For machinery requiring precision grouting
- Heavy equipment, reciprocating gas compressors, steam and gas turbines

LOCATION

- Interior or exterior

How to Apply

Refer to Appendix A-11 Guide to Epoxy Grouting for additional information.

Surface Preparation

ESTABLISHING CHOCK AREA

1. Chock size should be determined by a mechanical or structural engineer, based on anticipated stresses and grout capabilities.

2. Most chock grout applications involve the placement of epoxy chocks on a base grout pour. Please see the Masterflow® 648 CP grout product data sheet (Form No. 1019307).

BASE-GROUT POUR

1. The base grout pour should cure sufficiently before the chock grout application.

2. The base pour should be free of any oil, water, or other contamination and wiped with solvent.

3. Allow the base grout to cure 16 – 24 hours before proceeding

CHOCKING DIRECTLY TO CONCRETE

1. Cure and chip the concrete; follow recommendations in the Masterflow 648 CP Plus grout product data sheet data sheet (Form No. 1019309).

2. The concrete should be dry and free of any oil, water, or other contamination.

3. Seal the exposed concrete outside the chock area with an oil or chemical-resistant coating.

CHOCKING STEEL TO STEEL

1. Both steel surfaces should be free of oil, water, or other contamination.

2. Ideally, both steel surfaces should be sandblasted to white metal. Other mechanical methods, such as grinding and sanding, are also effective but do not produce a bond strength as high as sandblasting.

3. When a permanent bond is not desired, apply a thin layer of mold release-agent to one of the steel surfaces to prevent bond of the grout to the steel.

4. Coat the steel, wood, or foam with paste wax to allow for easier removal.

5. Typical epoxy chock thickness should be from 2 – 3" (51 – 76 mm).

6. Pour the grout at least 3/4" (19 mm) above the bottom of the base being grouted.

7. Form a 2" (51 mm) shoulder for proper pouring and grout head.

8. Apply tape-back foam to the vertical edge of the steel frame to allow for thermal growth of the equipment.

Protection and Repair

Technical Data

Composition

Masterflow® 668B Chock Grout is a three-component modified epoxy-resin-based grout.

Test Data

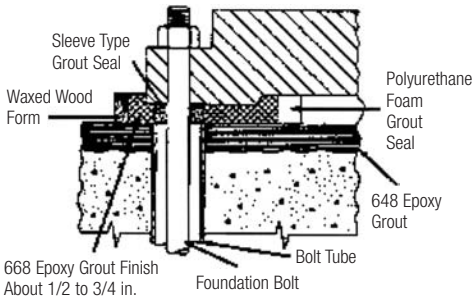
PROPERTY	RESULTS			TEST METHODS
Compressive strength, psi (MPa), conditioned 1 hour at test temp				ASTM C 579 Method B, modified, 2 by 2" cubes
Test temp ° F (° C)	**7 day cure at 73° F (23° C)**	**16 hours at 140° F (60° C)**		
73 (23)	18,300 (126)	18,900 (130)		
140 (60)	13,100 (90)	14,700 (101)		
170 (77)	13,100 (90)	13,800 (95)		
235 (113)	8,000 (55)	8,400 (58)		
Tensile strength, psi (MPa), at 73° F (23° C)	2,600 (17.9)			ASTM C 307
Flexural strength, psi (MPa), at 73° F (23° C)	6,200 (43)			ASTM C 580
Modulus of elasticity, psi (GPa)				ASTM C 580
Test temp ° F (° C)				
73 (23)	2.3×10^6 (16)			
110 (43)	2.2×10^6 (15)			
125 (52)	2.1×10^6 (15)			
140 (60)	2.1×10^6 (15)			
155 (68)	2.0×10^6 (14)			
170 (77)	1.7×10^6 (12)			
Creep, cured according to ASTM C 579, Method B				Test Method C 1181
Conditions		**Creep at 1 year**		
° F (° C)	**psi (MPa)**	**in/in (cm/cm)**		
140 (60)	600 (4.1)	0.8×10^{-3} (2.03×10^{-3})		
140 (60)	900 (6.2)	1.3×10^{-3} (3.3×10^{-3})		
140 (60)	1,200 (8.3)	1.9×10^{-3} (4.83×10^{-3})		
Working time, hrs				Michigan DOT
90° F (32° C)		1/2		
73° F (32° C)		1		
55° F (32° C)	3			
Cure rate				
Compressive strength, psi (MPa), when cured at:				
Time, hrs	**55° F (13° C)**	**73° F (23° C)**	**90° F (32° C)**	
8	—	14,500 (100)	18,600 (128)	
16	9,500 (66)	17,000 (117)	19,000 (131)	
24	14,000 (97)	18,000(124)	19,200 (132)	
48	15,300 (106)	18,800 (130)	19,200 (132)	
Coefficient of thermal expansion, at 73 to 210° F (23 to 100° C), in/in/° F (cm/cm/° C)	19×10^{-6} (34×10^{-6})			ASTM C 531
Water absorption, %	0.09			ASTM C 413
Bond strength to steel, tensile, psi (MPa)				Michigan DOT
° F (° C)				
73 (23)	5,300 (36)			
140 (60)	3,500 (24)			
170 (77)	3,200 (22)			
235 (113)	1,200 (8)			

Test Data, continued

PROPERTY	RESULTS	TEST METHODS
Bond strength to steel, shear, psi (MPa)		Michigan DOT
° F (° C)		
73 (23)	4,500 (31)	
140 (60)	3,600 (25)	
170 (77)	3,600 (25)	
235 (113)	1,200 (8)	
Density, lb/ft³ (kg/m³)	129 (2,064)	ASTM C 905
Specific gravity	2.06	
Tensile bond strength to concrete, psi (MPa)	350 (2.4); concrete failure	
Flash points, ° F (° C)		Pensky-Martens Closed Cup
Masterflow® 668B Chock Grout Resin	> 230 (110)	
Masterflow® 668B Chock Grout Hardener	210 (99)	

Test results are averages obtained under laboratory conditions. Expect reasonable variations.

FORMING EPOXY CHOCK



Forming

1. Open-cell polyurethane foam is generally used under the frame. When using foam, take precautions to properly support it. The foam should have a minimum width of 2" (50 mm) and a depth 1 – 2" (25 to 50 mm) larger than required for the chock. Compression will hold the foam in place. The form area outside of the frame (shoulders) should be approximately 2" (50 mm) in width to allow for placement of the grout and at least 3/4" (19 mm) above the bottom of the base.

2. The shoulder pouring area can be formed with foam, steel, or wood. The foam must be supported so the forms do not break during the pouring operation. Contact adhesive and caulk can be used to seal any joints or edges. The forms must be liquid tight.

Mixing

1. The aggregate must be completely dry. Store it under cover and on pallets. Before using, check for moisture by squeezing a handful. The clumping or balling of aggregate when squeezed indicates moisture. Do not use moist aggregate.

2. In cold weather, store the aggregate in a warm place for at least 24 hours; 70° F (21° C) is preferred. In hot weather, store in a cool, shaded area.

3. Store Masterflow® 668B Resin and Hardener at the same temperature as the aggregate. Ideally, all components should be brought between 60 and 80° F (16 and 27° C) 24 hours before pouring.

4. Proportions for Masterflow® 668B Chock Grout (One full unit = 60.6 lbs [27.5 kg] or 0.47 ft³ [0.013 m³]):

- Masterflow® 668B Chock Grout Resin: One 9.06 lb (4.11 kg) can
- Masterflow® 668B Chock Grout Hardener: One 1.5 lb (0.68 kg) bottle
- Masterflow® 668B Chock Grout Aggregate: One 50 lb (22.7 kg) bag

5. Pour the hardener into a pail of grout resin and stir until well mixed (approximately 3 minutes).

6. Pour the mixture into the mixer without delay.

7. Add the grout aggregate slowly and mix until completely wet (approximately 2 minutes).

8. Pour grout into buckets for transporting to the pour site. Remove the grout from the wheelbarrow or mixer within 10 minutes or it will be difficult to place.

9. After the pour is complete, clean the mixer and tools with acetone, MEK, or lacquer thinner. Use caution when using flammable solvents for cleaning.

Working Time

The following chart is a guide for the working time of a fresh grout mix at various ambient temperatures. The working time of a Masterflow® 668B grout mix begins when the hardener is added to the resin.

Working time

TEMPERATURE, ° F (° C)	MINUTES
90 (32)	20 – 30
70 (21)	50 – 60
50 (10)	150 – 180

The above working times assume product has been properly conditioned for cold or hot weather use.

Do not let mixed resin and hardener stand without adding aggregate.

HOT-WEATHER GROUTING

1. Avoid high temperatures while grouting in the summer. High ambient temperatures will increase the heat generated during cure and decrease the working time.

2. If the packaged grout is above 90° F (32° C), chill the sealed pails of grout in a tub of water or cover the pails with water-soaked burlap.

3. PROVIDE SHADE FROM SUMMER SUNLIGHT FOR AT LEAST 24 HOURS BEFORE AND 48 HOURS AFTER GROUTING.

COLD-WEATHER GROUTING

1. Temperatures below 60° F (16° C) make the grout stiff and hard to handle and significantly increase the cure time. The baseplate and foundation may be much cooler than room temperature. In cold weather, store materials in a warm place. For best handling, the grout components should be at least 70° F (21° C).

2. When baseplate and foundation temperatures (measured by a contact thermometer) are less than 50° F (10° C), the grout may be so stiff it will not readily flow. The length and depth of the grout pour also determines the flowability, so heating of the area may be necessary, depending on field conditions.

3. If heating is required, construct an enclosure (typical materials are polyethylene or canvas) around the equipment and foundation being grouted. Forced air or infrared heaters may be used to obtain the necessary heat to increase the baseplate and foundation temperatures above 50° F (21° C). Apply heat 1 – 2 days in advance of grouting to achieve uniform baseplate and foundation temperatures. Avoid exposure to exhaust from heating equipment. Remove heat during grouting placement.

Application

1. When pouring chock grout, pour on one side of formed chock to minimize air entrapment. Trapped air should pass through the open-cell foam, resulting in no air voids. Once the chock grout has been started on one side, keep the level of grout filled above the equipment base.

2. Masterflow® 668B Chock Grout is flowable but can be helped by the vertical movement of a banding strip in the open form area. Do not vibrate. Low foundation temperatures decrease flowability.

3. Where grout cannot be adequately worked to fill the grout cavity because of its large size or limited space, a head box will greatly assist flow. A sturdy wooden box or sheet-metal funnel about 6 – 12" (152 to 305 mm) deep may be used.

4. Check for leaks. Leaks do not self-seal. If not stopped, they will cause voids.

5. The grout should always have a minimum of 3/4" (19 mm) head in the open form during pouring and cure.

Curing

1. Remove jack screws and place equipment in operation when design strength of the grout has been achieved.

2. The grout will not harden below a temperature of approximately 35° F (2° C).

3. Water will inhibit the cure and strength of the grout; protect it from rain until it hardens.

COLD-WEATHER CURING

1. The foundation and the equipment base will probably be cooler than room temperature unless room temperature has been consistent for some time. Thus, the foundation and engine temperatures must be used in estimating cure time.

2. Temperatures vary so radically (day vs. night, atmospheric vs. metal surface) that field judgment must still be used as the final measure. When struck with a hammer, cured grout should have a solid, almost metallic feel. Be sure to check as close to the base of the equipment as possible.

Finishing

A smooth finish may be obtained by spraying or brushing the surface with mineral spirits. Obtain best results by smoothing the surface several times just before the grout surface hardens.

Clean Up

Clean tools and mixer with acetone, ketone solvents, or xylene before epoxy cures. Cured material must be removed mechanically.

For Best Performance

- Precondition all components to 70° F for 24 hours before using.
- The minimum placement thickness is 1/2" (13 mm).
- Do not add solvent, water, or any other material to the grout.
- Do not alter the resin to hardener proportions.
- Contact your local representative for a pre-job conference to plan the installation.
- Installation procedures contained in this product data sheet are as specific as possible, but they cannot cover all conditions encountered in the field; therefore, supervisors experienced in installing grouting materials may sometimes deviate slightly from the published procedures to fit specific field and service conditions. If additional information on installation procedures is required, please contact BASF Technical Service.
- Cold material will exhibit decreased flowability and decreased strength development.
- 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

MASTERFLOW® 668B CHOCK GROUT PART A

WARNING

Masterflow® 668B Chock Grout Part A contains epoxy resin, neopentyl glycol diglycidyl ether.

Risks

May cause skin, eye and respiratory irritation. May cause dermatitis and allergic responses. Potential skin and/or respiratory sensitizer. Ingestion may cause irritation.

Precautions

Use only with adequate ventilation. Avoid contact with skin, eyes and clothing. Keep container closed when not in use. Wash thoroughly after handling. DO NOT take internally. 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.

Proposition 65

This product contains materials 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 when components are mixed and applied per Manufacturer's instructions.

MASTERFLOW® 668B CHOCK GROUT PART B

DANGER – CORROSIVE

Masterflow® 668B Chock Grout Part B contains triethylenetetramine; 2,4,6-tris((dimethylamino)methyl)phenol.

Risks

Contact with skin or eyes may cause burns. Ingestion may cause irritation and burns of mouth, throat and stomach. Inhalation of vapors may cause irritation. May cause dermatitis and allergic responses. Potential skin and/or respiratory sensitizer. Repeated or prolonged contact with skin may cause sensitization. INTENTIONAL MISUSE BY DELIBERATELY INHALING THE CONTENTS MAY BE HARMFUL OR FATAL.

Precautions

DO NOT get in eyes, on skin or clothing. Wash thoroughly after handling. Keep container closed. DO NOT take internally. Use only with adequate ventilation. DO NOT breathe vapors. 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.

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VOC Content

0 g/L or 0 lbs/gal less water and exempt solvents when components are mixed and applied per manufacturer's instructions.

MASTERFLOW® 668B CHOCK GROUT PART C

WARNING!

Masterflow® 668B Chock Grout Part C contains silica, crystalline quartz; almandite garnet.

Risks

May cause skin, eye or respiratory irritation. Ingestion may cause irritation. Contains small 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

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VOC Content

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

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

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