



**Polymer
Grouts**

MASTERFLOW® 648 CP PLUS

High-strength, high-temperature, high-flow epoxy grout

Description

MASTERFLOW® 648 CP PLUS grout is a high-performance, three-component, modified epoxy resin-based grout with a variable fill ratio. MASTERFLOW® 648 CP PLUS grout combines high-temperature performance and crack resistance with outstanding flow characteristics and versatility of fill rates.

Features/Benefits

- High early and seven-day strengths
- Superior physical properties at high temperatures
- Excellent bearing area and flow
- Variable fill ratio for the optimum mix of flowability, bearing area, and economics on a project-by-project basis
- Good chemical resistance

Where to Use MASTERFLOW® 648 CP PLUS

- Precision alignment of machinery, compressors, and prime movers in the gas transmission and other industries
- Foundations under crusher ball mills, slab tables, and other equipment in the steel industry
- The pulp and paper, chemical processing, mining, and power industries for a wide variety of applications
- Applications requiring fast turnaround with high early and seven-day compressive strengths

Important: Read This First

Installation procedures for this material will differ greatly from cementitious or inorganic grouts.

The installation procedures contained in this data guide are as specific as possible. They highlight generally accepted, successful field practices for precision grouting. They may be followed, modified, or rejected by the owner, engineer, contractor, or their representative since they, not ChemRex Inc., are responsible for planning and executing procedures appropriate to a specific installation.

When the planned procedure differs from that discussed herein, the user is urged to contact the local ChemRex® representative to determine whether the procedure requires additional or revised information on the use of MASTERFLOW® 648 CP PLUS grout.

ChemRex® does not warrant the performance of this product unless the instructions of this document and other related ChemRex® documents are adhered to in all respects.

How to Apply MASTERFLOW® 648 CP PLUS

Application

ChemRex® recommends that the user request the services of the local representative for a pre-job conference to plan the installation.

Pre-Grout Checklist

THE FOLLOWING CHECKLIST MAY BE USED TO ENSURE THAT ALL NECESSARY STEPS HAVE BEEN TAKEN BEFORE ANY GROUT IS MIXED OR PLACED:

- Store all grout components so temperatures are 60 to 80°F (16 to 27°C) before mixing. Keep aggregate dry.
- Check aggregate for dryness. Squeeze a handful; if it clumps or packs, it is too wet.

- Foundation should be chipped to remove laitance.
- Any metal surface to be bonded should be sandblasted and kept dry.
- Check that concrete is thoroughly dry.
- Check that bolts and sleeves are sealed and dry.
- Shade the foundation from direct sunlight at least 24 hours before and 48 hours after grouting.
- Enclose and heat surrounding areas, if necessary, to maintain baseplate and foundation temperatures above 50°F (10°C). Avoid localized heating (hot spots).
- Jack screws should be coated with putty or wrapped with tape.
- Before assembling the forms, the surfaces of the forms that will be in contact with the grout should be thoroughly coated with two heavy coats of paste wax.
- Check that forms are assembled liquid tight.
- Have caulk or aerosol foam or other leak-stopping material handy in case leaks appear.
- Prepare tools for pushing grout, e.g., banding straps, wood strips, etc.
- Grout mixing tools, wheelbarrow, buckets, etc. must be clean and dry. Cover floor around mixing and grouting areas to aid in cleanup.

Follow safety precautions. Read MSDS sheet. Use necessary safety equipment: dust masks, gloves, goggles, etc.

Preparation

Foundation

- 1 The foundation should be cured until design strength of the concrete is achieved and foundation is dry. Recommended procedure per ACI Standard 318 is as follows: "Concrete shall be maintained above 50°F (10°C), and in a moist condition for at least the first 7 days." Minimum strength concrete of 3,000 psi (21 MPa) should be specified; higher strength concrete is recommended for optimum performance.
- 2 The concrete surface must be chipped so aggregate is exposed to ensure all laitance and weak float are removed. Chamfering the edge of the concrete 45 degrees to about a 2 in. (51 mm) width is desirable. (See Figure 1.)
- 3 The concrete base must be clean, dry, and free of oil, wax, and other contaminants.
- 4 If an anchor bolt sleeve is to be filled, be sure all water is removed. This may be done with a siphon, a vacuum pump, or a rubber hose and bulb. The residual moisture must also be removed by either forced air or evaporation.
- 5 Seal the anchor bolt hole with felt, foam rubber, or other means.
- 6 Cover all shims and leveling screws with putty or clay to keep the grout from adhering. Use model clay, glazing putty or anything of a putty consistency that will stick but not harden. Shims or jack pockets may be formed with wood, and forms filled with damp sand.
- 7 Shims or jack screws should be removed after the grout cures.
- 8 SHADE THE FOUNDATION FROM DIRECT SUNLIGHT FOR AT LEAST 24 HOURS BEFORE AND 48 HOURS AFTER GROUTING.

Equipment

The bonding surfaces of the base to be grouted should be sandblasted to "near white metal" and be free of coatings, wax, grease, or scale. Other mechanical methods, such as grinding or sanding, are also effective but do not produce as high a bond strength as sandblasting.

Primer should be used ONLY when a long delay between cleaning and grouting could allow excessive rusting or contamination. If the base must

be primed, use CONCREX[®] 1090. If the primer has been on the surface to be grouted for more than one month, the surface should be abraded and solvent wiped so no residue is left. Priming, if required, must be performed when the relative humidity is less than 80% and the temperature of the surface to be primed is at least 5°F (3°C) higher than the dew point.

The grout should come up at least 3/4 in. (19 mm) onto the equipment. It may be advisable to mask above the area with masking tape.

To permit easy cleanup, wax or cover all surfaces where the grout may splash or spill.

Forming

1 Protect the foundation and equipment from rain or moisture. Water will tend to prevent grout bond and inhibit cure.

2 Areas not to be grouted must be sealed off.

3 Forms should be no greater than 6 in. (152 mm) away from the edge of each individual base, rail, or soleplate on the sides where the grout is not being poured. Excessive nonload-bearing areas increase thermal stress and may result in excessive cracking. On the pouring side forms are typically 2 to 6 in. (51 to 152 mm) from the edge of the supporting area. However, this may vary depending on the application. Moderate to large size equipment or difficult/narrow placement applications should utilize an extended head form ("headbox") to create additional head pressure and enhance placement. Consult your ChemRex[®] representative for specific recommendations.

4 Before erecting the forms, cover them with EXTRA HEAVY COATS OF PASTE WAX. Forms can be shellacked before waxing to improve release. Keep wax off concrete and steel surfaces. As an alternative to waxing, a polyethylene or other nonbondable film may be used as a release agent. The top of the form should extend at least 3/4 in. (19 mm) above the bottom of the rail or plate.

5 Forms must be liquid tight. They may be sealed with putty, foam, or caulk. Seal wood forms to vertical concrete surface by applying putty, foam, or caulk below top of concrete, then press form into place.

6 Expansion joints will reduce the possibility of cracking. On multiple soleplate installations, each soleplate should be isolated. Expansion joints can be made with any material that is resistant to oils and chemicals in the environment and will not allow penetration to the concrete foundation. Oil resistant, closed-cell foam is generally recommended.

For more information, see the expansion joint and rebar Technical Bulletin or contact your ChemRex[®] sales representative.

Deep Pour Recommendations

Where a deep pour is necessary, 3/8 in. to 1/2 in. (10 to 13 mm) rebar on 8 to 12 in. (203 to 305 mm) centers may be used to minimize stress cracking. A bottom tier should be located about 2 in. (51 mm) above the foundation surface. Additional tiers, if required, should be spaced equal distances in the grout pour with vertical supports as required. All rebar must be 2 in. (51 mm) from any finished grout surface.

For deep pours, it is best to let existing rebar protrude from the foundation on 12 to 18 in. (305 to 457 mm) centers around the perimeter, about 6 to 12 in. (152 to 305 mm) in from the edge. This will serve to tie the deep pour to the foundation. The first pour should be within 2 to 3 in. (51 to 76 mm) of the bottom of the base. The final pour should not be made until the first pour is hard and has returned to ambient temperature, usually within 24 to 30 hours.

Tools

1 Obtain tools for pushing grout under the equipment. Use 1/4 in. (6 mm) plywood strips, sheet metal strips, etc.

2 Clean and dry the mortar mixer (3 to 6 ft.³ [0.085 to 0.17 m³] size). Remove all possible concrete. A cement mixer is also acceptable, but a greater amount of air may be mixed in.

3 Clean and dry a wheelbarrow and buckets or shovels for transporting the grout.

4 Get plenty of rags for wiping hands and tools.

5 Ready a pail of solvent (acetone, MEK or lacquer thinner) for cleaning tools.

6 Have soap and water or a suitable hand cleaner available for cleaning exposed skin.

Grout

1 AGGREGATE MUST BE COMPLETELY DRY. It should be stored under cover and on pallets. Before using, check aggregate for moisture by squeezing a handful. If it holds together when squeezed, further drying is necessary.

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

3 In hot weather, store in a relatively cool, shaded area.

Installing Crew

Depending upon the size of the equipment, a suitable crew will consist of three workers for mixing and transporting, and four workers (two crews of two) for placement.

Mixing

1 Do not add solvent, water, or any other material to the grout.

2 Do not alter the resin/hardener proportions.

3 Pour the hardener into a pail of grout liquid and stir until well mixed (approximately three minutes). Keep the mixing paddle submerged to avoid air entrainment.

4 Pour the mixture into the mixer without delay.

5 Add the grout aggregate, one bag at a time, and mix until completely wet (approximately two minutes). The first batch may be slightly less fluid than later batches because some of the resin is absorbed in wetting the mixer. Withholding 1/2 to 1 bag of aggregate from the first batch of a full unit will compensate for lost resin. WHEN MIXING AGGREGATE WITH THE PREMIXED RESIN AND HARDENER THE AGGREGATE SHOULD BE Poured INTO THE MIXING VESSEL AFTER THE PREMIXED RESIN AND HARDENER HAVE BEEN PLACED IN THE VESSEL.

6 The amount of aggregate used should be adjusted for the temperature and type of pour. The temperature of the grout, foundation, and equipment base are more important than the air temperature since they will affect the grout flow rate.

The required flow is related to the grout thickness (between the foundation and base) and the flow distance. The maximum amount of aggregate should be used that will still produce sufficient flow. At lower temperatures flow is reduced, so the amount of aggregate is reduced to compensate for the increased viscosity. Large open areas or deep grout pours with short-flow distances will not require the same amount of flow and should be done with higher amounts of aggregate. The following recommendations provide general guidelines of the amount of aggregate that can be excluded from a full size (4 bag) unit.

No more than one full bag of aggregate should be removed from a full size (4 bag) unit or 12 lb. (5.4 kg) from a 0.43 ft.³ (0.012 m³).

7 Pour the grout into a wheelbarrow or buckets for transporting to the poursite. Remove it from the wheelbarrow within 10 to 15 minutes or it

Temperature	Typical Pours	Thin Pours and/or Long Flow Distance
90°F (32°C)	-	-
70 to 90°F (21 to 32°C)	-	up to 1/2 bag
50 to 70°F (10 to 21°C)	up to 1/2 bag	1/2 to 1 bag

will be more difficult to place. It does not harden as rapidly after pouring because the concrete and the engine base tend to dissipate the heat and slow hardening.

8 After the job is complete, clean the mixer, wheelbarrow, and tools with ketone solvents, xylene, or lacquer thinner. Use proper safety procedures 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 MASTERFLOW[®] 648 CP PLUS grout mix begins when the hardener is added to the resin. Do not let resin and hardener stand without adding aggregate. This material produces an exothermic reaction (heat is generated). If the material is allowed to exotherm without aggregate, the resulting temperature can cause decomposition or gassing, releasing potentially hazardous fumes. If the catalyzed resin cannot be used immediately, the material should be spread over a large open surface, which will allow the heat to dissipate normally. See safety precautions.

Temperature°F (°C)	Working Time - Minutes
90 (32)	50 to 60
70 (21)	90 to 120
50 (10)	120 to 150

Grout Placement

Temperature Control

Summer Grouting

Avoid high temperatures while grouting in the summer. High ambient temperatures will increase the amount of cracking, which may occur during cold ambient conditions.

If the packaged grout is above 90°F (32°C), chill the sealed pails of grout resin in a tub of ice or cover the pails with water-soaked burlap. It is not necessary to cool the grout below 70°F (21°C).

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

Winter Grouting

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

When baseplate and foundation temperatures (measured by a contact thermometer) are less than 50°F (10°C), the grout may be so stiff that it will not readily flow. Flowability is also determined by the length and depth of the grout pour, so field judgement may be necessary to determine if area heating is required.

If heating is required, an enclosure (typical materials are polyethylene or canvas) should be erected around the equipment and foundation to be grouted. Forced air or infrared heaters may be used to obtain the necessary heat to increase the baseplate and foundation temperatures to 50 to 70°F (10 to 21°C). Avoid local hot spots. Heat should be applied 1 to 2 days in advance of grouting so uniform baseplate and foundation temperatures are achieved. Avoid exposure to exhaust from heating equipment, etc. During grouting placement, it is desirable that heat be removed.

Placing the Grout

- For flat bottom plates and bases, the grout should be poured from one side through to the other across the short dimension.
- When grouting closed areas, start at one end of the form and fill the cavity completely as you advance toward the other end to prevent air entrapment.
- MASTERFLOW® 648 CP PLUS grout will flow, but it can be helped along with pushing tools such as banding straps or plywood strips. Push it with long, slow strokes rather than short jabs until there are no air pockets under the frames. Do not vibrate!
- Where grout cannot be adequately worked to fill the cavity due to large size or limited space, a head box will greatly assist flow. A sturdy wooden box or sheet metal funnel about 1 to 2 ft. (0.3 to 0.6 m) deep may be used.
- Check frequently for leaks. Leaks do not self-seal. If not stopped, they may cause voids.
- If a multi-pour installation is necessary, sprinkle a small amount of MASTERFLOW® 648 CP PLUS aggregate on the first pour's surface as the grout solidifies. Before placement of the second pour, brush the loose aggregate from the first pour's surface. Another method is to sandblast and brush clean the first pour's surface.

Curing

Jack screws may be loosened and equipment placed in operation when design strength of the grout has been achieved. The grout will not harden below a temperature of approximately 35°F (2°C). For best results, grout should be installed and cured at temperatures above 55°F (13°C). Water will inhibit the cure and strength of the grout, so the grout must be protected from rain until it hardens.

Cold Weather Curing

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

Cure Time Vs. Temperature

The following chart is a guide for final cure time. As mentioned above, the baseplate and foundation may be cooler than room temperature.

Hours	Cure Rates					
	Compressive Strength (ASTM C 579, Method B)					
	psi 45°F	MPa (7°C)	psi 75°F	MPa (24°C)	psi 90°F	MPa (32°C)
8	-	-	-	-	-	-
16	-	-	9,500	(66)	10,000	(69)
24	-	-	10,000	(69)	13,000	(90)
48	4,500	(31)	13,000	(90)	16,000	(110)
72	6,600	(46)	13,500	(93)	16,000	(110)
96	8,000	(55)	14,000	(96)	16,000	(110)

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

Cracking

Epoxy-based grouts will sometimes develop cracks. Cracking is generally caused by thermal stresses, temperature differences from season to season, and operating to nonoperating temperatures.

Cracking often occurs on the shoulder surface near sharp corners of the baseplate and at anchor bolts. Horizontal edge cracks may occur just below the grout/concrete interface, especially in outdoor installations exposed to low temperatures. Chamfering the concrete edge helps reduce this cracking.

The amount of potential cracking is reduced if proper installation procedures are followed. If cracks develop, use MASTERFLOW® 648 CP PLUS Resin and Hardener (mixed) for crack repairs.

Finishing and Clean Up

A smooth finish may be obtained by spraying or brushing the surface with xylene or mineral spirits. Best results can be obtained by smoothing the surface several times just prior to the hardening of the grout surface. Clean tools and mixer with ketone solvents or xylene before epoxy cures. Cured material must be removed mechanically.

Typical Installation Procedures

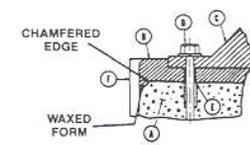


Figure 1. — REGULAR EQUIPMENT

- A — CONCRETE FOUNDATION
- B — GROUT
- C — EQUIPMENT BASE
- D — ANCHOR BOLT
- E — ANCHOR BOLT SLEEVE SEAL
- F — FORM
- G — SOLEPLATE OR RAIL
- H — SHIM OR CHOCK
- I — EXPANSION JOINT

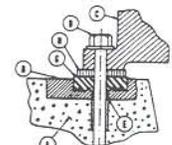


Figure 3. — RAIL OR SOLEPLATE

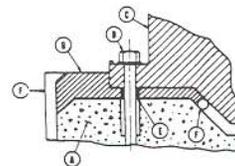


Figure 2. — ENGINE WITH OIL PAN

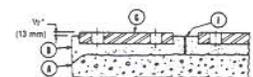


Figure 4. — TYPICAL RAIL WITH EXPANSION JOINT SECTION



Figure 5. — TYPICAL EPOXY CHOCK APPLICATION

For Best Performance

- MASTERFLOW® 648 CP PLUS grout is a three-component epoxy grout formulated for industrial and professional use only and must be kept out of the reach of children. These products contain chemicals that may be potentially HARMFUL to your health if not stored and used properly. Hazards can be significantly reduced by observing all precautions found on material safety data sheets and product labels. Please read this literature carefully before using.

- Always use a head box when placing less than 1" (25 mm) depths.
- Do not thin with solvents.
- Substrate temperature must be greater than 50°F (10°C).
- Cold material will exhibit decreased flowability and reduced strength development.
- Do not alter the resin/hardener proportions.
- Make certain the most current version of this data guide is 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 ChemRex® personnel are for the purpose of making technical recommendations only and are not for supervising or providing quality control on the jobsite.

Fill ratio guideline

Temperature	1.73 ft. ³ Unit	
	Very Thin Pours or Very Long Distances	Standard Pours
>90°F (>32°C)	-	-
70 to 90°F (21 to 32°C)	up to 1/2 bag	-
50 to 70°F (10 to 21°C)	1/2 to 1 bag	1/2 bag

The chart above provides guidelines showing the amount of aggregate that can be removed from a 1.73 ft.³ unit in order to optimize both flow and cost per ft.³. A maximum of 12 lb. of aggregate can be removed from a 0.43 ft.³ unit.

Chemical Resistance

MASTERFLOW® 648 CP PLUS grout resists nonoxidizing mineral acids and salts, caustics, dilute oxidizing acids and salts, plus some organic acids and solvents. For more specific information, contact your ChemRex® representative.

Working Time

The following chart is a guide for the working time of MASTERFLOW® 648 CP PLUS grout at various ambient temperatures. The working time of MASTERFLOW® 648 CP PLUS grout begins when the hardener is added to the resin.

- 50 to 60 minutes @ 90°F (32°C)
- 90 to 120 minutes @ 70°F (21°C)
- 120 to 150 minutes @ 50°F (10°C)

Technical Data¹

Fill Ratio

The fill ratio is the weight of aggregate to combined resin and hardener components. MASTERFLOW® 648 CP PLUS grout is designed to be utilized at a variable fill ratio from the **standard** 6.75:1 ratio to as low as 5.06:1 (**high-flow version**).

The standard 1.73 ft.³ (0.049 m³) unit of MASTERFLOW® 648 CP PLUS grout includes 188 lb./85.2 kg (four 47 lb. bags) of aggregate. This 6.75:1 fill ratio can be reduced to as low as three bags or a 5.06:1 fill ratio yielding 1.34 ft.³ (0.038 m³). For projects requiring a fill ratio different than the standard four bag mix, simply determine how many bags of aggregate will be used (number of bags per unit x number of units) and purchase the components (resin-hardener-aggregate) separately.

Unlike most epoxy grouts, MASTERFLOW® 648 CP PLUS grout maintains high bearing area when fill ratios are decreased. In addition, physical properties including high temperature performance are maintained at high levels.

By determining the proper fill ratio for a particular project and purchasing accordingly, the cost per ft.³, flow, and physical properties are optimized. A guideline for suggested fill ratios is shown below. In using this guide the temperature of the foundation and plate is the critical concern, however, grout and ambient temperature are also important.

Fill Ratio	Compressive Strength (ASTM C 579 Method B, Modified 2 x 2 in. Cubes) Post Cured*					
	7 Day Ambient		140°F (60°C)		170°F (77°C)	
	psi	(MPa)	psi	(MPa)	psi	(MPa)
(standard)	14,000	(96)	16,000	(110)		
(high-flow)	11,500	(79)	12,500	(86)		

	Elevated Temperature - Compressive Strength* (ASTM C 580)					
	73°F (23°C)	140°F (60°C)	170°F (77°C)			
	psi	(MPa)	psi	(MPa)	psi	(MPa)
(standard)	15,000	(103)	12,300	(85)	10,000	(69)
(high-flow)	12,500	(86)	9,000	(62)	7,000	(48)

	Elevated Temperature - Flexural Modulus*					
	73°F (23°C)	140°F (60°C)	170°F (77°C)			
	psi x 10 ⁶	(GPa)	psi x 10 ⁶	(GPa)	psi x 10 ⁶	(GPa)
(standard)	2.1	(15.0)	1.7	(11.6)	0.8	(6.0)
(high-flow)	1.6	(11.0)	1.3	(8.9)	0.5	(3.0)

	Elevated Temperature - Flexural Strength*					
	73°F (23°C)	140°F (60°C)	170°F (77°C)			
	psi	(MPa)	psi	(MPa)	psi	(MPa)
(standard)	4,500	(31)	4,000	(28)	3,500	(24)
(high-flow)	4,000	(28)	3,500	(24)	3,000	(21)

	Creep (ASTM C 1181, 600 psi 140°F (4.4 MPa, 60°C))	
	(standard)	(high-flow)
		4.0 x 10 ⁻³ in/in (cm/cm)
		6.0 x 10 ⁻³ in/in (cm/cm)

*Cured 24 hours at room temperature, post cured 16 hours at 140°F, and conditioned 24 hours at test temperature.

Hours	Cure Rates					
	50°F psi	(10°C) (MPa)	75°F psi	(24°C) (MPa)	90°F psi	(32°C) (MPa)
8	—	—	—	—	—	—
16	—	—	9,500	(66)	10,000	(69)
24	—	—	10,000	(69)	13,000	(90)
48	4,500	(31)	13,000	(90)	14,000	(96)
72	6,500	(45)	13,500	(93)	15,000	(103)
96	8,000	(55)	14,000	(96)	15,000	(110)

Tensile Strength (ASTM C 307)	
(standard)	2,200 psi (15 MPa)
(high-flow)	2,000 psi (14 MPa)

Coefficient of Thermal Expansion (ASTM C 531) 73 to 210°F (23 to 99°C)	
(standard)	19.0 x 10 ⁻⁶ in/in/°F 34.0 x 10 ⁻⁶ cm/cm/°C
(high-flow)	23.0 x 10 ⁻⁶ in/in/°F 41.0 x 10 ⁻⁶ cm/cm/°C

Shrinkage, Unrestrained - Linear (ASTM C 531)	
(standard)	.005%
(high-flow)	.0065%

Bond Strength to Steel - Tension		
	73°F	(23°C)
	3,000 psi	(21 MPa)

Bond Strength to Steel - Shear		
	73°F	(23°C)
	4,000 psi	(28 MPa)

Density (ASTM C 905)	
(standard)	124 lb./ft ³ (1,986 kg/m ³)
(high-flow)	117 lb./ft ³ (1,874 kg/m ³)

Volume Per Unit	
(standard)	1.73 ft ³ (0.049 m ³)
(high-flow)	1.35 ft ³ (0.038 m ³)
Impact Strength	Better Than Concrete
Abrasion Resistance	Better Than Concrete

Flash Points (Pensky-Martens Closed Cup)	
MASTERFLOW® 648 CP PLUS Grout Liquid	400°F (204°C)
MASTERFLOW® 648 CP PLUS Hardener	240°F (116°C)

¹Data is typical and representative of properties of actual production runs. Individual test results may vary by approximately 10% due to lab testing variations and batch to batch variations.

Order Information

Packaging

- Masterflow® 648 CP PLUS grout is available in two unitized package sizes for convenience. Due to installation variables, it is best to order an additional 10 to 20% as a safety precaution.

Shelf Life

- Shelf life is 18 months on the resin and hardener if stored in original, unopened containers under normal conditions.

Coverage

216 lb. Full Unit (1.73 ft.³, 0.05 m³)

Grout Resin	one 20.2 lb. pail (9.2 kg)
Hardener	one 7.6 lb. bottle (3.4 kg)
Grout Aggregate	four 47 lb. bags (21.3 kg)

54.4 lb. Unit (0.43 ft.³, .012 m³)

Grout Resin	one 5.1 lb. pail (2.3 kg)
Hardener	one 1.9 lb. bottle (.9 kg)
Grout Aggregate	one 47 lb. bag (21.3 kg)

(54.4 lb unit is shipped in a 5 gallon pail over-pack)

Color

- Dark gray

Caution

MASTERFLOW® 648 CP PLUS Part A

Risks

May cause eye irritation. May cause lung irritation and allergic respiratory reaction. May cause skin irritation. Skin sensitizer.

Precautions

KEEP OUT OF THE REACH OF CHILDREN. Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel ill, seek medical advice.

First Aid

If breathing is difficult, move person to fresh air. If you feel ill, seek medical advice. In case of eye contact, flush immediately with plenty of water for 15 minutes and call a physician. For skin, wash thoroughly with soap. If affected by inhalation of vapor or spray mist, remove to fresh air. Ingestion: Drink two glasses of water, then induce vomiting by taking Ipecac Syrup, salt water or by placing finger at back of throat. DO NOT give anything by mouth to an unconscious person.

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 does not contain materials listed by the state of California as known to cause cancer, birth defects, or reproductive harm.

VOC Content

This product contains 0 g/L or 0 lbs./gallon.

Caution

MASTERFLOW® 648 CP PLUS Part B

Risks

Harmful if inhaled. Harmful if swallowed. Causes eye burns. Causes skin burns. Refer to Material Safety Data Sheet (MSDS) for effects of repeated overexposure.

Precautions

KEEP OUT OF THE REACH OF CHILDREN. Do not breathe vapor or spray mist. Avoid prolonged or repeated skin contact. Wear an appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor/mist levels are below applicable limits. Follow respirator manufacturer's directions for respirator use. Do not get in eyes, on skin or clothing. Wear suitable protective clothing. Wear suitable gloves. Wash soiled clothing before reuse.

First Aid

In case of eye contact, flush immediately with plenty of water for 15 minutes and call a physician. In case of skin contact, immediately wash skin with soap and plenty of water. If inhaled, remove to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. If breathing is difficult, give oxygen. Call a physician. Thoroughly clean contaminated shoes. Ingestion: Drink two glasses of water, then induce vomiting by taking Ipecac Syrup, salt water or by placing finger at back of throat. DO NOT give anything by mouth to an unconscious person.

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 does not contain materials listed by the state of California as known to cause cancer, birth defects, or reproductive harm.

VOC Content

This product contains 0 g/L or 0 lbs./gallon.

Caution

MASTERFLOW® 648 CP PLUS Aggregate

Risks

Eye irritant. Skin irritant. Lung irritant. May cause delayed lung injury.

Precautions

KEEP OUT OF THE REACH OF CHILDREN. Avoid contact with eyes. Wear suitable protective eyewear. Wear suitable gloves. Wear suitable protective clothing. Do not breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment. Wash soiled clothing before reuse.

First Aid

Wash exposed skin with soap and water. Flush eyes with large quantities of water. If breathing is difficult, move person to fresh air.

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 does not contain materials listed by the state of California as known to cause cancer, birth defects, or reproductive harm.

VOC Content

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

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