CWC 604 Machine Bond®

Specifications for Installation

Technical Bulletin # 1105B

1.0 SCOPE

1.1. These specifications are to provide the product and procedural information necessary for the proper installation of CWC 604 Machine Bond epoxy resin grout.

1.2. CWC 604 Machine Bond shall be installed in accordance with these specifications and the recommendations of ITW Polymer Technologies.

1.3. These specifications cover the use of CWC 604 Machine Bond when mixed in full two cubic foot unit amounts. Consult with ITW Polymer Technologies before installation if there is intent to mix components in less than full unit amounts.

1.4. The words “epoxy resin grout”, “epoxy grout” and “grout” shall herein refer to CWC 604 Machine Bond epoxy resin grout.

2.0 APPLICATION

2.1. CWC 604 Machine Bond is designed to provide:

2.1.1. Permanent vertical support of heavy machinery, compressors, engines, and production equipment critical to maintaining precision alignment.

2.1.2. Uniform transfer of static and dynamic loads to the concrete foundation and pad.

3.0 PRODUCT CHARACTERISTICS

3.1. CWC 604 Machine Bond is a three-component, 100% solids, epoxy resin grout possessing the following qualities:

3.1.1. EXCELLENT CHEMICAL AND PHYSICAL PROPERTIES
3.1.2. SUPERIOR FLUID CONSISTENCY
3.1.3. SELF-LEVELING
3.1.4. LOW EXOTHERMIC CURE
3.1.5. DEEP MONOLITHIC POURS (18+ INCHES)
3.1.6. EXTENDED PLACEMENT TIME

3.2. Contact your local ITW Polymer Technologies Representative for deeper pours including reconstruction of crude foundations where large volumes of concrete have been removed.

4.0 MATERIAL

4.1. CWC 604 Machine Bond epoxy resin grout shall be mixed and placed when the ambient temperature of the “work area” coincides with the design temperature range stated in Section 10.4 - Grout Working and Curing Table.

4.2. If weather conditions (i.e. temperature, sunlight, moisture, wind) warrant it, the “work area” shall be enclosed by a temporary shelter and conditioned to the requirements stated in these specifications for placement and cure of CWC 604 Machine Bond.

4.3. CWC 604 Machine Bond is for use in installations where the grout bed temperatures will not exceed 185°F (85°C) during the operation of the machinery or equipment.

4.4. One unit of CWC 604 Machine Bond includes Resin (Part A) and Hardener (Part B) in a 5-gallon (19 liter) two-compartment container and four 60 lb. (27.2 kg) bags of Aggregate (Part C). The shipping weight of one unit of CWC 604 is 284 lbs. (129 kg); one unit will yield 2 cu. ft. (0.057 m^3) of grout.

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5.0 STORAGE & HANDLING

5.1. Grout shall be kept dry and protected from extreme temperatures. Both the epoxy resin and hardener liquids, and the aggregate shall be stored in a dry shelter at an ambient temperature of not less than 75F (24C) nor more than 90F (32C) for a period of 24 hours prior to mixing. It is of extreme importance that the aggregate (Part C) is absolutely dry at the time of mixing.

5.2. Components A, B, and C are packed in pre-measured amounts. Use care when transporting containers and bags of aggregate to prevent a puncture or tear. Repair as quickly as possible should this occur.

6.0 FOUNDATION & METAL PREPARATION

6.1. It is recommended that the concrete foundation shall cure a minimum of 28 days prior to the application of CWC 604 Machine Bond to assure the concrete design strength is achieved and shrinkage of the concrete foundation is negligible. If work must proceed prior to 28 days, consult ITW Polymer Technologies before grouting.

6.2. Prepare concrete surface areas to be covered with epoxy grout by chipping and removing all laitance, dirt, dust, and oil-soaked or damaged concrete to provide an irregular, rough, sound, and clean surface for good bonding. Remove all water and dry out each foundation bolt sleeve. A pliable material (i.e. silicone) may be used to fill each foundation bolt sleeve to inhibit the introduction of water, oils, or other foreign materials.

6.3. Seal each foundation bolt sleeve tightly at the top to prevent epoxy grout from entering the sleeves if they are not to be filled with epoxy grout.

6.4. Metal surfaces such as sole plates, rails, reinforcing steel, machinery or equipment bases to be imbedded in epoxy grout shall be thoroughly cleaned of any rust, oil, paint, grease, dirt, or other foreign matter to ensure a good bond with the epoxy grout. The best bond will be established on a surface that has been sandblasted to white metal then cleaned with IMPAX IXT-59 solvent.

6.5. Leveling screws or other items, which must be kept free of grout, shall be protected with caulking, plastic tape, or similar means.

6.6. The entire foundation and grout bed as well as all sole plates, rails, and machinery shall be protected from direct sunlight, rain, and sudden temperature changes during the grout placement and curing cycle.

7.0 FORMWORK

7.1. Forms may be of regular lumber or any material of sufficient strength to withstand the pressure of the grout. Forms shall allow for hydraulic head as needed to facilitate the filling of the grout bed area. The contractor shall verify the finished elevation of the formwork to ensure that the elevations meets or exceeds the finished level of the grout. A chamfer strip shall be fastened to the inside of the forms at finished grout elevation to avoid sharp corners.

7.2. Forms are to be completely sealed and rendered watertight with heavy consistency, pliable caulking or mortar. Forms placed over horizontal, rough concrete surfaces may be sealed at the bottom with a stiff sand and cement mortar flush with the inside of the forms. Place mortar dam immediately prior to beginning mortar operations as shrinkage of the mortar may permit leakage of the epoxy grout. CWC 604 Machine Bond is not self-sealing and will leak until the solidification of the grout occurs.

7.3. Contractor shall coat all formwork to be in contact with the epoxy grout with more than one coat of an industrial paste wax to ensue trouble-free release of forms. Plastic sheet is acceptable, but must be stretched tight to prevent folds and wrinkling.

8.0 CONTROL JOINTS

8.1. Whenever the grout bed exceeds 5 ft. (1.5m) in length and/or width, control joints should be placed perpendicular to the long dimensions of the block, usually 4 ft. (1.2m) to 6 ft. (1.8m) intervals. The exact locations should be determined by the equipment configuration. They should never be placed in a load-bearing area such as a sole plate or chock.

9.0 GROUT MIXING PROCEDURES

9.1. All material and equipment for mixing, placing, and cleanup shall be on hand before any mixing is started. All mixing and placing equipment shall be clean and dry. Check all motorized equipment to make sure it is operable.

9.2. Remove the inner container (Hardener-Part B) from the outer 5-gallon (19 liter) container of CWC 604 Machine Bond. Pour the hardener (Part B) into the Resin (Part A) in the outer 5-gallon container. Use a small rubber squeegee or plastic spatula to make sure all material is removed from the sides and bottom of the container. Mix thoroughly for three minutes with a slow speed (200-300 RPM) drill and a jiffy mixer attachment. Pour the mixture into a 3 to 6 cu. ft. (0.08 to 0.17m^3) mortar mixer. When the temperature of the CWC 604 Machine Bond grout material is between 60°F and 70°F (15°C and 21°C) it is desirable to allow the mixed liquid components of Part A and Part B to stand five minutes in the 5-gallon container before placing into the mixer and adding the Aggregate (Part C).

9.3. Add one bag of Part C Aggregate prior to the start of the mixing blades. Begin mixing and add the three remaining bags. Mix only until the aggregate is thoroughly wet. Care must be taken not to over mix.

9.4. Do not add solvent, water, or foreign material when mixing grout or permit such on the grout bed surface until solidification of the grout occurs. For special situations where additional aggregate or a different aggregate than provided is desired consult an ITW Polymer Technologies Representative.

10.0 WORKING TIME AND CURING TIME

10.1. "Working time" (or "pot life") indicates the time interval between the point of mixing an epoxy grout and the point when hardening begins. The length of the "working time" is affected by the temperature of the grout components at the time of mixing, the ambient temperature of the work area, the temperature of any surface in contact with the grout, and by the volume of the grout used. (See Section 10.4 - Grout Working and Curing Table.)

10.2. Curing time indicates the average time in hours required for the grout bed to acquire adequate physical properties for design loads.

10.3. Where the foundation mass and grouting surface area temperatures are lower then average ambient temperature of the "work area", the cure time shall be extended to compensate for the effect of this lower temperature influence on the grout bed.

10.4. AVERAGE WORKING AND CURING TIME (IN HOURS)

AVERAGE WORKING AND CURING TIME (IN HOURS)										
Ambient Temperature	°F °C	60 16	65 18	70 21	75 24	80 27	85 29	90 32	95 35	100 38
Working Time		6	5	4	3 ½	3	2 ½	2	1 ½	1
Curing Time		60	45	45	40	35	30	25	20	15

10.5. Higher "work area" and foundation temperatures may be affected to hasten the cure of the grout. When external heat is employed, do not exceed the maximum temperature limits indicated in the curing table. The external heat must be distributed uniformly throughout the "work area". At the completion of the curing cycle the temperature shall be lowered slowly, no more than 40°F (22°C) in 24 hours, to avoid the possibility of damage due to sudden contraction.

10.6. During the initial cure, and for at least 30 days thereafter, the grout bed shall be protected so that the temperature of the grout bed does not vary by more than 40°F (22°C) in a 48 hour period.

11.0 GROUT PLACEMENT AND FINISHING

11.1. Foundation and metal surfaces to be grouted shall be prepared as outlined in Section 6 - Foundation and Metal Surface Preparation.

11.2. A final cleaning with IMPAX IXT-59 Solvent of metal surfaces to be imbedded in epoxy grout shall be accomplished immediately prior to grouting.

11.3. Begin filling formwork at one end and maintain level grade as grout progresses to the other end of the form. The grout shall progressively fill voids under the equipment base, sole plate, or rail in a one-direction flow. The grout will flow and seek its own level under normal conditions. Please contact an ITW Polymer Technologies Representative regarding aggregate reduction in case of adverse conditions.

11.4. Check forms frequently during application for leaks. Seal any leaks immediately with a stiff sand and cement mortar or putty.

11.5. All working procedures must be completed within the grout working time as indicated in Section 10.4 - Grout Working and Curing Table.

11.6. IMPAX IXT - 59 Solvent may be used for finishing grout surfaces. When the grout begins to solidify, a trowel dipped in IMPAX IXT - 59 Solvent may be lightly moved across the surface to smooth and provide a shiny finish. Care shall be taken to not allow excess solvent to build up on the grout surface.

11.7. Formwork shall be left in place until grout has solidified.

11.8. Once the grout bed has attained initial cure the jacking bolts or other devices used for support during the grouting and curing period shall be relieved of all stresses or removed. Voids in grout beds caused by the removal of wedges or plates shall be filled with grout.

11.9. Two coats of IMPAX 2001CRE Epoxy Coating are to be applied to the concrete foundation surfaces not covered by CWC 604 Machine Bond (e.g. under the oil sump of engines). This is recommended to prevent penetration of oils, greases, water, and other substances. IMPAX 2001 CRE Epoxy Coating may be applied to the exposed surface areas of the epoxy grout and adjacent concrete to produce an appealing finish with outstanding durability.

12.0 CLEANUP

12.1. Clean water with soap should be used to clean equipment and tools. To clean mixer, fill the drum with water and one bag of silica sand and mix until clean.

13.0 PRE-GROUTING

13.1. Pre-grouting of machinery or equipment sole plates, rail plates, bearing plates, anchor bolts, or other devices shall be accomplished per instructions outlined in these specifications.

14.0 HEALTH PRECAUTIONS

14.1. CWC 604 Machine Bond is a low toxicity system; however, any epoxy resin may produce allergic reactions in some persons. Do not take internally. Persons handling this material should avoid skin contact. The use of gloves or other protective equipment is recommended. Contaminated areas of the body should be cleaned and scrubbed with soap and water. In case of contact with the eyes, flood with water and contact a physician immediately. Use CWC 604 Machine Bond in well-ventilated areas and avoid breathing fumes and aggregate dust.