COPPS INDUSTRIES, INC.
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TECHNICAL BULLETIN

REDBAC Maximum Performance Pumpable Grout – K-027

Description:

Redbac Maximum Performance Pumpable Grout is a two-component, VOC-free, epoxy system designed specifically for wet, underwater, high strength, and rugged, durable service. Its low component viscosity and mixed viscosity allow for an efficient problem-free meter mixing and pump dispensing. Maximum Performance Pumpable Grout delivers high compressive strength in extreme conditions, making it ideal for water exposure applications including quoin and miter blocks of lock miter gates. The low viscosity and thixotropy of Maximum Performance Pumpable Grout allow it to flow into narrow spaces at a rapid rate, shortening application time and assuring solid foundation support. Maximum Performance Pumpable Grout does not contain butyl glycidyl ether (BGE)[1] or nonyl phenol[2].

Intended Use:

- High compressive strength
- High impact resistance
- BGE free
- Very low shrinkage
- High service temperature
- Excellent water resistance

Application Guidelines:

The working time (the time you have before it sets) of this will vary according to the air temperature. The average working time at 72°F (22 °C) will be 20-25 minutes. In cooler weather you will have more time to pour material and in hotter weather you will have less time.

The cure time (the time before the grout is strong enough for use) will also depend on the air temperature and the temperature of the floor and machinery being grouted. The average cure time from the last pour to machinery start-up is 24 hours at 70°F (21 °C). In cool weather, the grout will cure and develop strength more slowly than in hot weather. Remember the temperature of the foundation should be taken into account along with the air temperature when figuring the cure time needed.

Handling Properties:

SPECIFIC GRAVITY, g/cm^3	1.65		ASTM D 792
MIXED VISCOSITY, cP or mPa.s	7,500		ASTM D 2196
WORKING TIME, min	20-25		
GEL TIME, min	35-40		ASTM D 2471
MAXIMUM DEPTH OF POUR, in. (cm)	1	(2.54)	

Physical Properties:

COMPRESSIVE STRENGTH, psi (MPa)	18,000	(124)	ASTM D 695
COMPRESSIVE MODULUS, psi (MPa)	449,000	(3,097)	ASTM D 695
TENSILE STRENGTH, psi (MPa)	5,500	(38)	ASTM D 638
ELONGATION @ BREAK, %	0.5		ASTM D 638
FLEXURAL STRENGTH, psi (MPa)	8,100	(56)	ASTM D 790
HEAT DISTORTION TEMPERATURE, °F (°C)	200	(93)	ASTM D 648
MAXIMUM CONTINUOUS SERVICE TEMPERATURE, °F (°C) (for non load-bearing applications)	225	(107)	
HARDNESS, Shore D @ 72°F (22 °C)	92		ASTM D 2240
WATER ABSORPTION (30 days @ 72°F or 22 °C), %	0.30		
CREEP (24 hours @ 600 psi or 4.1 MPa load, 150°F(65.5 °C), in./in. or cm/cm	3.54 X 10^{-3}		ASTM C 1181

1 - Butyl Glycidyl Ether. The EPA (SARA Title III, section 312) lists BGE as “Toxic” (per ANSI Z129.1) by skin absorption and an immediate health hazard.
2 - Nonyl Phenol is a Marine Pollutant and considered “Dangerous for the environment” per the EU directive 79/831/EEC.

Surface Preparation:

CONCRETE PREPARATION: Remove all oil, grease, or contaminated concrete. Chip the surface down to sound aggregate. The concrete must be dry and have no water in the anchor bolt holes. Light acid etching surface preparation procedures may result in poor bond and should be avoided. Do not prime or seal concrete surfaces. In hot weather conditions, cool grout in shade and ice or water down containers to 70°F (21°C). Shade application areas for one day before, during, and one day after pour. In cold weather grout and entire substrate should be raised above 50°F (10°C) during pour and cure.

FORMING: Standard wood or metal forming may be used. The forms should be protected with heavy coats of paste wax, grease, or form release agent. Wrapping the forms with heavy plastic is acceptable. The forms must be caulked and sealed to a liquid-tight condition.

When placing forms for grouting, it is absolutely necessary that the top of the forms be at least half way up the sides of the base plate or machine base. Placing the grout just to the bottom of the base plate will result in an improper grout job. If the forms cannot be placed half way up the side of the machine base, the minimum distance is 3/4 inch above the bottom of the machine base.

The forms should be placed between 2 and 6 inches (5.08 – 15.2 cm) away from the perimeter of the machine base to allow for the air to escape and to provide for a grout shoulder around the base plate.

PREPARATION OF METAL SURFACES: Base plates, sole plates and gate blocks where adhesion is specified should be sand blasted to a "white metal" condition. If it is impossible to grout within 24 hours of sand blasting, the surfaces should be primed with a high-quality primer. Do not use porch and deck enamel or red-lead primer.

If the temperature is below 60°F (15.5°C) preheat the plates and blocks with a torch to bring the temperature up to 80-90°F (27-32°C). Do not pour Copps Grout into parts hotter than 150°F (65.5°C).

Mixing:

Two component grouts (resin & hardener) - open both containers and pour the entire contents of the small can (hardener) into the large container (resin). Mix with mixing paddle in a low speed drill until a uniform color appears (3 to 4 minutes). DO NOT ADD ANY WATER. DO NOT ADD EXTRA HARDENER OR OTHERWISE ALTER THE COMPONENT RATIOS. For meter mixing, confirm pump specifications and follow equipment manufacturer instructions.

Application:

Working time/pouring time will depend on grout temperature and ambient temperature. The average working time, at 72°F (22 °C) is 20-25 minutes. Pouring time and viscosity decrease as temperature increases. Care should be taken to insure that the entire kit is poured before the working time elapses. In other words, do not mix more than you can pour during the working time.

Always sweep (pour) from one side of the base toward the other to eliminate entrapped air. The storage temperature of the unmixed kits of Maximum Performance Grout will greatly affect both the ease of pouring and the cure time. For best results, Maximum Performance Grout kits should be stored in a warm room for at least 24 hours before use.

During cold weather (below 50°F or 10°C), it is important that the foundation be enclosed and maintained above 50°F. The cure time of the grout will be longer during cold weather and it is important that the grouted area be kept warm (above 50°F) until the grout has cured completely. Do not pour if the grout is below 50°F. Conversely in hot weather, do not mix and pour in direct sunlight. Cover or “tent” operations to prevent grout from setting up too fast, which usually leads to excessive shrinkage and/or cracking. If ambient temperature is above 80°F (26°C) and the installation is in direct sunlight a two lift pour is recommended.

Packaging:

K-027-22 = 368 $in.^3$ (6,030 cm^3)
K-027-50 = 837 $in.^3$ (13,716 cm^3)
55-gallon (approx. 9,778 $in.^3$ or 0.16 m^3) bulk drum kits available for automatic meter-mixing-dispense equipment applications.

SAFETY PRECAUTIONS

Avoid breathing of vapors. Forced local exhaust is recommended to effectively minimize exposure. NIOSH approved, organic vapor respirators and forced exhaust are recommended in confined areas, or when conditions (such as heated polymers, sanding) may cause high vapor concentrations. DO NOT WELD ON, BURN OR TORCH ON OR NEAR, ANY EPOXY MATERIAL. HAZARDOUS VAPOR IS RELEASED WHEN AN EPOXY IS BURNED.
Avoid skin or eye contact. Wash skin with soap and water if contact occurs. If eye contact occurs flush with water for 15 minutes and obtain medical attention. Read and understand all cautions on can labels and safety data sheets before using this material.

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