



# VIBROPRUF® #20

*Extra high-strength non-shrink specially formulated cementitious grout*

#### *Advantages:*

- Superior workability
- High strength
- Natural aggregate
- Non-metallic
- Non-shrinking
- Easy to use
- Non-gas forming
- Cement based

#### *Coverage:*

- One 50 lb (22.7kg) package yields 0.44 ft<sup>3</sup> (0.0125m<sup>3</sup>) of grout or 5-6 ft<sup>2</sup> (0.5m<sup>2</sup>) at 1-inch (25.4mm) thick

*See Coverage section for full details*

#### *Packaging:*

50 lb (22.7kg) bags



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Supersedes all previous publications

## Product Description

VIBROPRUF® #20 premium grout is designed to deliver a high rate of flow with excellent density and a high compressive strength - over 6,100 PSI (42.1MPa) in one day 11,000 PSI (75.8MPa) in 28 days, plastic consistency. The addition of clean water is all that is needed to handle all of your toughest applications easily and cost-effectively. The specially blended ingredients produce a positive but controlled expansion in both the plastic state and the curing state. Expansion is a mass expansion therefore final volume filled is not affected by restraining such as with gas evolution or gas liberating type-grouting materials.

VIBROPRUF® #20 PREMIUM is de-signed to carry the extreme load transfers of steel columns, pre-cast concrete columns, bearing plates, anchor bolts, bridge seats and dowels. For machinery, it provides a strong stable base. VIBROPRUF® #20 will not rust, is non-staining, non-corrosive (may be used in contact with aluminum or magnesium). It can be used interior or exterior.

## Installation

Before using this product, please refer to the Material Safety Data Sheet for additional information. Proper handling precautions MUST be followed. The conditions of use, handling, and application of this product and information (whether verbal or written), including any suggested formulations and recommendations, are beyond Lambert Corporation's control. Therefore, it is imperative that testing be performed to determine satisfaction and suitability for intended use and health, safety, and environmental issues. The following information is meant as a guideline of best industry practices. While Lambert Corporation does suggest adherence to these guidelines, unforeseeable variables and/or developed successful installer practices may cause variation in methods and/or results.

### *Surface Preparation*

The concrete on which the VIBROPRUF® #20 grout will be placed should have attained its design strength before grouting. Cleaning, roughening, and presoaking the concrete substrate with water are essential steps to be taken before grout placement. Cleaning and roughening will ensure a proper bond of the grout to the substrate. An even more critical step is presoaking (for 24 hours if possible, minimum 4 hours) with water. Only this procedure will prevent a dry porous concrete substrate from absorbing or wicking water rapidly out of the VIBROPRUF® #20 grout mixture prior to its final set. With a dry substrate in hot weather, the grout may lose water too rapidly for proper hydration to take place. A dry concrete substrate could cause shrinkage of any grout especially when placed at a plastic, stiff, or "dry-pack" consistency. Blow clear any excess water prior to grouting.

Foundation areas including base plates must be thoroughly cleaned. Plates should be mechanically cleaned to "bright metal condition". Boltholes should be blown clear of dust and debris. Defective concrete, loose material, oil, grease, dirt and other laitance must be removed. This may be done by bush hammer, chipping hammer, acid wash, or sandblasting depending on conditions. A moderate amount of roughness is desired.

### *Forming*

Forming must provide for rapid continuous complete filling of the space to be grouted and be grout tight. Wood surfaces that can absorb moisture should be coated with Lambert's compatible form release. Forming must provide for venting to avoid entrapment of air. Edges of concrete to be grouted which are less than 1-inch (25 mm) thick should be cut back to form a uniform butt.

### *Mixing*

A paddle type mixer or a revolving concrete mixer can be used. To prepare the dry grout for application only water need be added. The amount of water added to obtain the desirable

consistency must be precise. An accurate measuring method must be employed. Place water into mixer before dry grout.

The Water Requirements For Each 50 lb (22.7 kg) Unit	
Fluid	10.0 pints (4.7L)
Flowable	7.0 pints (3.3L)
Plastic	6.0 pints (2.8L)

In cold conditions warm water 90°F (32.2°C) may be used to accelerate the strength development. In warm conditions grout can be chilled with ice water. Set times and water ratios are affected by the water, ambient, and material temperatures.

#### *Small Batches*

Mix one or two units of VIBROPRUF® #20 PREMIUM with a slow speed drill in a five or ten gallon size container. Commercial blades like the "jiffy" type are suggested. Mixing water (clean and potable) should be put into container. Place blade in water and turn on. Pour grout into container in a steady flow. After all the grout has been added, mixing should continue for three (3) minutes. Only mix longer if it is absolutely necessary to obtain a smooth, lump free mixture. If manual mixing is the only method, add water first, then grout. Mixing should be done vigorously to produce a smooth lump free mixture within four (4) minutes.

#### *Larger Batches*

Measure water, place water in mixer, pour each unit of VIBROPRUF® #20 into mixer in a steady stream; approximately ten seconds per 50 lb. (22.7 kg) unit. Pouring grout into mixer should be accomplished within 5 minutes. Mix for 2 or 3 additional minutes. Properly mixed grout is smooth and lump free. If lumps have occurred, pour through a 1/2-inch (12.7mm) screen.

#### *Placement*

It is essential that machine mixing capacity and labor availability is adequate to enable the grouting operation to be carried out continuously. This may require the use of a holding area/tank with provisions for gentle agitation to maintain fluidity. Place the grout within 5 minutes of mixing to gain the full benefit of the expansion process. Where large volumes have to be placed, VIBROPRUF® #20 may be pumped. A heavy-duty diaphragm or progressive cavity pump is recommended for this purpose. When placing, a continuous grout flow is essential. Sufficient grout must be available prior to starting and the time taken to pour a batch must be regulated to match the time taken to prepare the next.

#### *Machinery Placement*

Once the surfaces and base plates have been prepared, the consistency determined, and the grout mixed, it is now ready to be placed. Begin placement and continue placement from one side only. This will avoid cold joints and will minimize the chance of air entrapment. It is advisable to grout anchor boltholes and keyways first. The use of vibrators, rods, etc., to help move grout is permitted when placing stiffer grout consistencies. When using a fluid consistency grout, caution should be exercised on use of vibrators because of increasing bleed water and component segregation.

#### *Base Plate Placement*

Use a plastic consistency. Secure plate and form as necessary. With plate at proper height, fill all voids completely. Just prior to final set, it is generally recommended that the

exposed grout shoulders be cut back at a 45° angle from the base of the plate to the concrete foundation. This uniformly transfers loads from the base plate to the foundation. When shoulders are cut, curing compound must be applied.

**Equipment Placement** - Set forms securely as required. Use flowable or fluid mix with water content as desired. Place grout from one side to avoid air entrapment. Do not retemper or vibrate.

**Pumping** - Use a heavy-duty diaphragm or progressive cavity pump with a fluid grout consistency. Do not retemper.

**Patching** - Use a plastic mix consistency. Force grout into repair area, press grout to avoid air entrapment.

**Dry Pack** - Mechanically mix to plastic consistency. Allow to set no more than 5 minutes before ramming or packing into space. Pack thoroughly and uniformly to fill all spaces. Cure with wet rags for 24 hours.

#### *Limitations*

VIBROPRUF® #20 is cement based. Follow ACI recommended practices. Do not add cement, plasticizer or accelerator. Avoid placement when temperatures are, or will be below 50°F (10°C) within 24 hours. If it is placed with excess water or at low temperature, both the compressive strength and expansion properties may be affected adversely. Rapid and continuous mixing and placing are necessary on large pours. Use 3/8-inch (9.5mm) pea gravel when grout thickness is 2-inches (50.8mm) or more. Soak surfaces for a minimum of 4 hours prior to placement. VIBROPRUF® #20 is difficult to featheredge because of the aggregate gradation. Do not retemper after in mixing.

#### *Special Grouting*

**Cold Weather Grouting** - At temperatures below 50°F (10°C), use warm water for mixing and heat the surrounding surfaces. Never place grout on frozen or near frozen surfaces. Mixed grout temperature, for best results, should be above 65°F (18.3°C). Under no conditions permit ground temperature to be below 50°F (10°C) Maintain temperature until grout reaches final set. Protect freshly placed grout from hot sun, low humidity, wind and heat. Do not let VIBROPRUF® #20 dry out. Strength and bond are affected by rapid drying.

**Hot Weather Grouting** - At temperatures above 90°F (32.2°C), and when grout temperatures exceed 90°F (32.2°C), use ice water to maintain working time. Make sure base is dampened and place grout immediately after mixing. Protect grout from hot sun, drying winds, and low humidity.

**Volume Grouting** - VIBROPRUF#20 yield can be increased by the addition of washed, dried, pea gravel Aggregate must be clean and structurally sound. Rounded pea gravel produces better flow characteristic than crushed aggregate. Use up to a maximum of 25 lbs (11.3 kg) of pea gravel per 50 lb (22.7 kg) unit of VIBROPRUF® #20.

#### *Curing*

The single biggest cause of hairline cracks and shrinkage in a grout is improper or non-existent curing procedures. VIBROPRUF® #20 should be cured with Lambert's dissipating curing compound. Stiff or dry pack grout must be cured with wet rags for 24 hours, and then curing compound applied.

**Technical Data**

*Applicable Standards*

- ASTM C-1107 Grade A, B, C
- Corps of Engineers CRD C-621
- Corps of Engineers CRD C-588
- ASTM C-185
- ASTM C-827
- ASTM C-942
- ASTM C-109

*SETTING TIME:* (in hours) ASTM C-191

	<u>Plastic</u>	<u>Flowable</u>	<u>Fluid</u>
Initial Set	3	3	4
Final Set	5	6	8

Compressive Strength (PSI-MPa) ASTM C-109

<u>Age</u>	<u>Plastic</u>	<u>Flowable</u>	<u>Fluid</u>
3 Days	6133 (42.3MPa)	5430 (38MPa)	5200 (36MPa)
7 Days	10230 (71MPa)	9753 (67MPa)	7530 (52MPa)
28 Days	11110 (77MPa)	10210 (70MPa)	8890 (61MPa)

Expansion CRD C-621

<u>Age</u>	<u>Plastic</u>	<u>Flowable</u>	<u>Fluid</u>
3 Days	+0.05	+0.03	+0.03
14 Days	+0.05	+0.03	+0.02
28 Days	+0.05	+0.03	+0.02

**Coverage**

- 0.44 ft<sup>3</sup> (0.0125 m<sup>3</sup>) of grout or 5-6 ft<sup>2</sup> (0.5 m<sup>2</sup>) at 1-inch (25.4mm) thick
- Extended with 25 lb (11.3 kg) pea gravel (3/8-inch or 0.95cm maximum size) will yield 0.60 ft<sup>3</sup> (0.016 m<sup>3</sup>) of grout

**Clean-Up & First Aid**

*Clean-Up*

This product can be swept up in dry form, with attention paid to minimizing the creation of dust. A dustless clean-up system is recommended if possible.

*First Aid*

Cement powder or freshly mixed concrete. May cause skin injury. Avoid contact with skin and wash exposed skin areas promptly with water. If any cement powder or mixture gets into eyes, rinse immediately and with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN. Product contains some silica sand that can cause SILICOSIS. Avoid over-exposure to the airborne dust. Practice good housekeeping. Any food, drink or chewing product should be protected from the dust.

KEEP OUT OF REACH OF CHILDREN.  
FOR INDUSTRIAL USE ONLY.