



# VIBROPRUF<sup>®</sup> NS

## 1. PRODUCT NAME

Economical, high strength, general purpose construction grout. Non-Shrink and Non-Metallic

## 2. MANUFACTURER

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## 3. PRODUCT DESCRIPTION

VIBROPRUF<sup>®</sup>NS is specifically formulated to provide a high strength, lower cost cement grout that meets Corps of Engineers Specification CRD C- 621. It is a ready mixed grout which requires only the addition of clean potable water. VIBROPRUF<sup>®</sup>NS is free of iron aggregates, gypsum, carbon, chlorides, or other corrosive type raw materials. Natural aggregates, cement, and an expansive cementitious binder are the main ingredients. From the time of placement expansion is slight but positive with no intermediate or latent shrinkage.

### Advantages

- Ready to use-just add water.
- Places easily-does not stiffen prematurely.
- Used in variety of consistencies from fluid to plastic.
- High strengths - low cost.

### Basic Uses

VIBROPRUF<sup>®</sup>NS is suited for a wide range of applications requiring strength and durability including:

- Equipment and machinery bases.
- Structural columns, form tie holes.
- Structural cracks, rock pockets.
- Anchor bolts, reinforcing bars.

### Composition and Material

Composed of silica sands, portland cement, plasticizers, water reducing and shrinkage compensating agents.

## Applicable Standards

Corps of Engineers CRD C- 621  
ASTM - C-1107

## 4. TECHNICAL DATA

	Setting Time (minutes) ASTM C-266		
	Plastic	Flowable	Fluid
Initial Set	0:25 min.	0:44 min.	2:14 min.
Final	1:30 min.	3:03 min.	5:32 min.

### Compressive Strength -PSI ASTM C-109

Age	Plastic	Flowable	Fluid
1 Day	2833	2610	2583
3 Days	5525	4486	5085
7 Days	6684	5986	6710
28 Days	8516	7621	7011

Flow Table Analysis ASTM C-230		
Plastic	Flowable	Fluid
114%	141%	28 Sec/Flow Cone

Flow Cone Analysis CRD C-611-80		
Plastic	Flowable	Fluid
N/A	N/A	28 Sec.

### Shrinkage Test - CRD - C- 621 Sec. 10.2

3 Day	7 Day	14 & 28 Day
(+).000%	(+).01%	(+).003%

## 5. SURFACE PREPARATION

The concrete on which the VIBROPRUF<sup>®</sup>NS 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<sup>®</sup>NS mixture prior to its final set. 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. Surfaces from which the grout is to be removed after placing should be treated with a bond breaking material.

Foundation areas including base plates must be thoroughly cleaned. Plates should be mechanically cleaned to "bright shiny metal". Bolt holes 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 sandblasting, waterblasting, bush hammer, chipping hammer, or acid wash depending on conditions. A moderate amount of roughness is desired.

## 6. 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 FORM RELEASE 88. Forming must provide for venting to avoid entrapment of air. Edges of concrete to be grouted which are less than 1" (25 mm) thick should be cutback to form a uniform butt.

## 7. MIXING

To prepare the dry grout for application only water need be added. A paddle type mortar mixer (with moving type blades) will more thoroughly blend the water and dry grout mix. Use a container that will facilitate continuous placement. The amount of water added to obtain the desirable consistency must be precise, and an accurate measuring method must be employed. Place water into mixer before dry grout. Consistencies described below conform to ASTM C 1107 and CRD C-621-89A. The amount of water required for each 50 lb. (22.7 kg) unit of VIBROPRUF<sup>®</sup>NS is:

Fluid	5.0 qts. (4.75 litres)
Flowable	4.0 qts. (3.80 litres)
Plastic	3.5 qts. (3.30 litres)

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 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 (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 lumpfree mixture within (4) minutes.

### Larger Batches

Measure water, place water in mixer, pour each unit of VIBROPRUF<sup>®</sup>NS into mixer in a steady stream; approximately ten seconds per 50# (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" (13 mm) screen.

## 8. 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<sup>®</sup>NS 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 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 bolt holes 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 segregation of a fluid grout.

**Dry Pack Placement** - 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.

**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.

**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®NS is cement based. Follow ACI recommended practices. Do not add cement, plasticizer or accelerator to VIBROPRUF®NS. 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" (9.6 mm) pea gravel when grout thickness is 2" (50 mm) or more. Soak surfaces for a minimum of 4 hours prior to

placement. VIBROPRUF®NS is difficult to feather-edge because of the aggregate gradation. Do not retemper after mixing.

## **9. SPECIAL GROUTING**

### **Cold Weather Grouting**

At temperature 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 humidities, wind and heat. Do not let VIBROPRUF®NS 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. LAMBERT'S AQUA KURE curing compound should be applied immediately to prevent rapid drying. Protect grout from hot sun, drying winds, and low humidities.

### **Volume Grouting**

VIBROPRUF®NS yield can be increased by the addition of washed, dried, 3/8" (9.6 mm) 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. (11.4 kg) of 3/8" (9.6 mm) pea gravel per 50 lb. (22.7 kg) unit. Compressive strengths are reduced about 10% with this addition.

## **10. CURING**

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

## **11. COVERAGE**

1 bag of VIBROPRUF®NS will yield 0.45 cubic foot (0.014 m<sup>3</sup>) of grout or cover approximately 5.5 square feet (.557 m<sup>2</sup>) at 1" (25 mm) thick.

0.60 cubic feet per 50 lb. (0.017 cubic meters per 22.7 kg) bag extended with 25 lbs. (11.4 kg) of washed pea gravel (3/8" or 9.6 mm maximum size).

## **12. PACKAGING**

50 pound (22.7 kg) bags

50 pound (22.7 kg) pails

## **13. WARNING**

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 of 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 which can cause SILICOSIS. Avoid over-exposure to the airborne dust. Practice good house-keeping. Any food, drink or chewing product should be protected from the dust.

## **14. WARRANTY NOTICE**

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## **15. PRODUCT LIABILITY**

LAMBERT CORPORATION products are designed to be used in the construction industry and should be applied by competent persons in accordance with current published instructions. Technical advice and recommendations as to the suitability of product for any particular use are made in good faith. However, we have no control over the conditions under which our products are transported to, stored, handled or used by the customer. We cannot be held responsible for difficulty caused by other materials and conditions, or by inferior workmanship. LAMBERT recommends that the customer satisfy themselves as to the product's actual suitability for its intended purpose.

LAMBERT reserves the right to have the true cause of any difficulty determined by accepted test methods by an independent party. Any claim regarding product defect must be received in writing within 1 year from date of shipment. No claim will be considered without such written notice or after the specified time interval.