

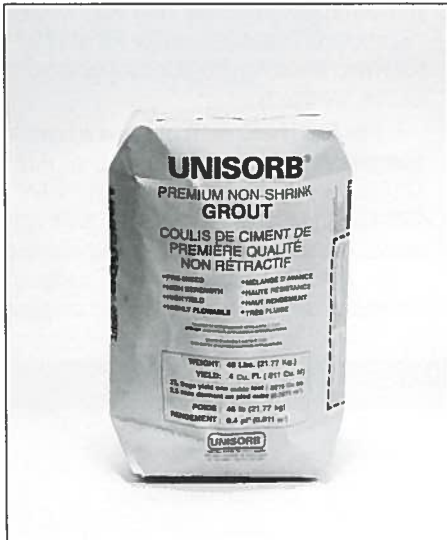
UNISORB®

INSTALLATION TECHNOLOGIES

PRODUCT DATA

BOX 1000 , JACKSON, MI 49204-1000
517-764-6060 FAX 517-764-5607

UNISORB® PREMIUM NON-SHRINK GROUT



PREMIUM GROUT

A cement-based, non-shrink, pre-mixed, highly flowable grout that develops extremely high compressive strengths in a very short period of time.

This product is particularly superior for applications where ease of placement and suitability for use under high unit loads are important. Other materials such as concrete or weaker grouts may develop structural flaws when subjected to concentrated loads.

Premium Non-Shrink Grout is ideally suited for:

- Grouting of precision machinery
- Setting precision leveling wedges
- Setting high strength anchor bolts
- Grouting of large base plates
- Grouting in machine bases
- Setting turbine base plates

This product contains a special proprietary expansion mechanism which eliminates the natural volume loss present in other cement-based products. This expansion mechanism is totally unique in the grouting industry because it is active only during the initial mixing and plastic set stages of the cure, thereby yielding a very stable end product. Controlled expansion precludes the possibility of shrinkage related voids so that full bearing contact is ensured. Many grout manufacturers today use a metallic expansion mechanism that may not be completely consumed during the cure stage. This can

| PHYSICAL PROPERTIES | | | |
|---|----------------|---|----------------|
| Mix Ratio | | | |
| Water to 48# Bag | 4.3 qts. | 3.6 qts. | 3.4 qts. |
| Flow (CRD C-611 & ASTM C-939) (CRD C-226 & ASTM C-230) | 24-26 | 140 | 118 |
| Compressive Strength (CRD C-277 & ASTM C-109) | | | |
| 1 day | 3,760 psi | 6,080 psi | 7,545 psi |
| 3 days | 6,620 psi | 8,270 psi | 8,545 psi |
| 7 days | 7,615 psi | 9,200 psi | 9,580 psi |
| 28 days | 8,850 psi | 11,250 psi | 11,690 psi |
| Expansion (CRD C-621 & ASTM C-1090) | | | |
| 3 days | 0.03% | 0.19% | 0.12% |
| 14 days | 0.03% | 0.19% | 0.12% |
| 28 days | 0.03% | 0.19% | 0.12% |
| Setting Time (CRD C-614 & ASTM C-953) | | | |
| Initial | 6 hrs. 12 min. | 5 hrs. 26 min. | 3 hrs. 43 min. |
| Final | 7 hrs. 17 min. | 7 hrs. 19 min. | 6 hrs. 17 min. |
| Flexural Strength | | Youngs Modulus of Elasticity | |
| 7 days | 1,670 psi | 6 x 10 ⁶ psi | |
| 28 days | 1,700 psi | Expansion and Bleeding of Freshly Mixed Grouts @ Max. Water (ASTM C-940) | |
| High Temperature Evaluation Compressive Strength | | Volume Expansion +1.00% | |
| 70°F | 11,000 psi | Bleed 0.00% | |
| 800°F | 11,000 psi | | |
| 900°F | 9,700 psi | | |
| 1,000°F | 8,400 psi | | |
| Tensile Strength | | | |
| 7 days | 535 psi | | |
| 28 days | 568 psi | | |

Physical properties shown are the result of independent laboratory testing performed per industry recognized test procedures. Laboratory properties aid in determining suitability of the product for the intended application. Field test results may vary due to procedures or ambient conditions such as temperature and humidity. Laboratory reports are available on request.

lead to reactivation of this material in a wet environment and create strong internal pressures that can promote premature failure. Since cured Premium Grout does not contain metallic expansion agents or allow excessive air entrapment, it does not require a post-cure coating to protect it from a wet environment.

Premium Grout is well suited for use in high ambient temperatures and is routinely used in areas where temperatures reach 1,000° F. It also exhibits superior resistance to attack by strong acids and bases.

Premium Grout is a very dense and stable material after proper cure. It provides long life expectancy and maintains the rigid machine-to-foundation connection required to meet the precise installation requirements of today's sophisticated machinery.

Premium Grout exceeds Corps of Engineers Specification for Non-Shrink Grout CRD C-621 (formerly CRD C-588). **Premium Grout also exceeds all requirements of ASTM 1107.**

PERFORMANCE ADVANTAGES

Premium Grout is composed of several carefully blended sizes of the best quality pure silica sand, "high early" portland cement and a proprietary controlled expansion mechanism. It is chloride-free and will not shrink below its original mixing volume after the recommended water ratio is added. This grout can be extended by adding up to 50% (by weight) pea gravel, substantially reducing material costs on larger pours. Premium Grout can be pumped or vibrated without risk of separation.

TEMPERATURE CONSIDERATIONS

Use standard high temperature concreting techniques for temperatures over 90° F and low temperature techniques below 45° F.

PACKAGING/YIELD

48# Bag = .40 cu. ft. (691 cu. in.)
100# Bag = .83 cu. ft. (1,434 cu. in.)

Consult the specific Material Safety Data Sheets (MSDS) for all safety data.

UNISORB® PREMIUM NON-SHRINK GROUT - TEST RESULTS

Following are summarized test results for Premium Non-Shrink Grout. A copy of the complete report is available upon request. As sampled and tested Premium Grout complies with ASTM C-1107-91 specifications for Grade A. The American Society for Testing Materials (ASTM) has developed this standard specification for Non-Shrink Cement-Based Grout, such as UNISORB® Premium. This specification includes testing and acceptance criteria for most physical properties of a cement-based grout.

Compressive strengths at 1, 3, 7 and 28 days were determined in accordance with the specifications outlined in ASTM

C942-88, "Test Method for Compressive Strength of Grouts for Preplaced Aggregate Concrete in the Laboratory" using the methods outlined in ASTM C109 (2" cubes). For one day tests, the cubes were both stripped and tested at 24 hours.

Change in height at early ages was determined in accordance with ASTM C827, "Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures".

Volume Change was determined in accordance with ASTM C1090-88, "Standard Test Method for Measuring Changes in Height of Cylindrical

Specimens from Hydraulic-Cement Grout". One test specimen of 3" diameter by 6" height was prepared for each test condition.

Consistency of the grout was determined in accordance with ASTM C939, "Standard Test Method for Flow of Grout for Preplaced Aggregate Concrete (Flow Cone Method)".

For the maximum and minimum test temperature conditions, the ASTM C1090-88 (volume change) and ASTM C942-88 (compressive strength) specimens were cured in plastic bags and maintained at the required temperatures in a refrigerator or oven.

ASTM C-1107-91 TEST RESULTS

| Test Condition | 1 | 2 | 3 | 4 | 5 | 6 | |
|---|---------------------|------------------|---------------------|------------------|---------------------|------------------|------------------------|
| Working Temperature | Maximum | | Minimum | | Laboratory | | |
| Date Specimen Molded | 7-13-92 | | 7-15-92 | | 7-9-92 | | |
| Air Temperature | 90°F | | 45°F | | 73°F | | |
| Water Temperature | 90°F | | 45°F | | 73°F | | |
| Dry Grout Temperature | 90°F | | 45°F | | 73°F | | |
| Test Temperature | 90°F | | 45°F | | 73°F | | |
| Water Added (per 50 lb. bag) | 4.5 qts. | | 4.5 qts. | | 4.5 qts. | | |
| Working Time | Freshly Mixed Grout | 30 Min. in Mixer | Freshly Mixed Grout | 30 Min. in Mixer | Freshly Mixed Grout | 30 Min. in Mixer | |
| Consistency ASTM C-939-87 | 25 sec. | 24 sec. | 25 sec. | 24 sec. | 24 sec. | 26 sec. | |
| Volume Change ASTM C-1090-88 @ 100% Relative Humidity | | | | | | | Requirements |
| 1 day (%) | +0.09 | +0.10 | +0.01 | +0.15 | +0.09 | +0.12 | Max. +0.3 Min. 0.0 |
| 3 day (%) | +0.13 | +0.13 | +0.02 | +0.17 | +0.09 | +0.12 | |
| 14 day (%) | +0.14 | +0.14 | +0.02 | +0.19 | +0.09 | +0.12 | |
| 28 day (%) | +0.14 | +0.14 | +0.06 | +0.19 | +0.09 | +0.12 | |
| Additional 28 days @ 50% Relative Humidity | | | | | | | |
| 56 day (%) | +0.22 | +0.23 | +0.08 | +0.26 | +0.09 | +0.12 | — |
| Compressive Strength ASTM C-942-88 | | | | | | | |
| 1 day (psi) | 5760 | 5080 | 1420 | 1480 | 5740 | 6120 | Min. 1000 |
| 3 day (psi) | 7910 | 7230 | 3170 | 4580 | 7770 | 7920 | Min. 2500 |
| 7 day (psi) | 9010 | 8600 | 6190 | 7190 | 8990 | 8410 | Min. 3500 |
| 28 day (psi) | 9520 | 9340 | 9360 | 9410 | 9920 | 10190 | Min. 5000 |
| Change in Height ASTM C-827-87 | | | | | | | |
| Magnification (%) | 91 | 91 | 91 | 91 | 100 | 100 | — |
| Change in Height at Time of Set (%) | +1.03 | +0.85 | +0.43 | +1.25 | +1.10 | +1.10 | Max. 4.0% Min. 0.0% |
| Time of Final Set | 7 hrs. | 6 hrs. 40 min. | 9 hrs. 55 min. | 9 hrs. 45 min. | 11 hrs. 25 min. | 10 hrs. 55 min. | — |



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1-888-4-UNISORB (357-6272)

<http://www.unisorb.com>

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