

CRYSTEX®

Non-Shrink, Non-Metallic, Precision Structural Grout

MANUFACTURER

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PRODUCT DESCRIPTION

CRYSTEX is a long work time, ready-mixed, high strength, highly fluid, controlled expansion grout with superior dynamic load stability.

CRYSTEX contains a balanced blend of washed and graded aggregates, portland cement, plasticizing agents, and a proprietary shrinkage compensating system, which guarantees controlled positive expansion in all directions. The positive expansion remains constant throughout the life of the grout. **CRYSTEX** is scientifically proportioned and ready for use at any consistency from plastic to fluid.

Unique Properties: For over 25 years **CRYSTEX** has provided unique placement properties of extended flow and long work time to the installer. This feature, of over 60 minutes of “work time”, facilitates placement of a superior performing grout in the most unfavorable of placement conditions. Extended placement time is important in many cases, including: high temperature applications, difficult to reach cavities, installations by grout pump, base plates with lateral shear keys, and large grouting cavities that require continuous placement of over one hour. **CRYSTEX** is the original “long work time” grout.

Basic Use: **CRYSTEX** is used where precision, non-shrink, high-strength, structural grout is required, such as: heavy equipment machinery bases, crane rails, pump and equipment bases in power plants, steel and paper mills, sewage treatment plants, keyways, bed plates where heavy repetitive loading occurs, anchor bolts and dowels, structural steel columns, bearing plates, load bearing masonry walls, light poles and highway signs.

FEATURES & BENEFITS

- Long-work time, easy placement.
- High strength.
- Can be mixed at a wide range of consistencies.
- Dynamic load stability.

ESTIMATING

CRYSTEX is available in 55-pound (25-kilogram) multi-walled, polyethylene reinforced bags, which yield approximately 0.5 cu. ft. (14 liter).

TECHNICAL DATA

Applicable Standards:

Meets all requirements of: ASTM C 1107/CRD C 621

Approximate Water Requirements per 55 lb. bag:

Plastic 4.0 qts. (3.8 L) - 120-125% flow table
Fluid 4.75 qts. (4.5 L) - 20-30 second flow

Working Time: approximately 60 minutes

Initial Setting Time: approximately 5 hours

Typical Vertical Expansion:

ASTM C 1090 (ASTM C 1107) 28 days

Plastic	100% flow	+0.03%
Fluid	25 sec. flow	+0.02%

Typical Compressive Strength: psi (MPa)

	1 Day	3 Days	7 Days	28 Days
Plastic	5300 (37)	7200 (50)	8760 (60)	10600 (73)
Flowable	4600 (32)	6460 (45)	8160 (56)	10150 (70)
Fluid	3800 (26)	5700 (39)	7650 (53)	9000 (64)

INSTALLATION

Surface preparation: Clean surface of oil, grease, dirt, laitance and loose material, down to sound concrete. Metal surfaces are to be free of rust and foreign material. Clean bolt holes, bolts and the underside of bed plates. After roughening the concrete surface, saturate the surface and bolt holes with water for 24 hours prior to grouting.

Forming: Construct a rigid, watertight form around the bearing plate or object to be grouted. Form elevation should be approximately one vertical inch higher than the highest point to be grouted. On large pours a form sloped at a 45-degree angle or “head box” should be employed to facilitate placement. Side and end forms should be positioned at least one horizontal inch from the bearing plate or equipment base. Placement side form should be at least two inches from the object to be grouted. Do not place grout in large, unsupported open areas.

Mixing instructions: Locate the mixing equipment (a paddle-type mortar mixer) as close to the area to be grouted as possible. Mix only the amount of grout that can be placed in 60 minutes. For fluid consistency (25-30 seconds flow using the ASTM C 939 Flow Cone Method) put into the mixer about $\frac{3}{4}$ of the required water. Mix the grout to a doughy state, being careful not to overload the mixer to the point of stalling. After all lumps have disappeared, add remaining water. Continue to mix for a total of 3 to 5 minutes, to a uniform consistency. Remove any unmixed lumps after mixing



and before placing. For consistencies stiffer than fluid, add the total amount of water at the beginning of the mixing cycle. Continue to mix for a total of 3 to 5 minutes or to a uniform consistency. Use the minimum amount of water required to achieve the necessary placement consistency.

Placing: Just before grouting remove all ponded water from the surface of the concrete substrate leaving only a damp surface. Whenever possible, grout bolt holes first. Place grout from only one direction in order to reduce the amount of voids under the plate. Place grout rapidly and continuously, without stopping, until the forms are overflowing and entrapped air can no longer be seen in the grout as it flows from under the plate and over the forms. **CRYSTEX**, when mixed to a *fluid or flowable* consistency, can be placed by either pumping or gravity flowing. The grout should be poured into a head box or through the funnel, until the grout has completely filled the formed area and is overflowing the forms. When **CRYSTEX** is mixed at a *plastic* consistency, use rods, chains or tamping to compact the grout and to remove voids, if necessary.

Deep grouting instructions:

For large grout placements of more than 4 inches in depth (100 mm), it is recommended that up to 30 pounds of 3/8 inch clean, well-graded pea gravel be added to the neat grout for every 55 pound bag of grout. Soak aggregate in clean water prior to mixing with the grout. Drain off excess water. Follow normal mixing procedures for neat grout. After all the water has been added and grout has reached a uniform consistency, add the aggregate. Continue to mix until the pea gravel is thoroughly dispersed throughout the grout.

Curing instructions: Protect and cure exposed **CRYSTEX** shoulders and edges. Cover with clear plastic, wet clean rags, or wet burlap for at least 72 hours. For continued protection apply an ASTM-C-309 compliant L&M curing compound.

FOR BEST RESULTS:

Follow ACI recommended practices. Refer to L&M's **Guide to Precision Structural Grouts**.

Do not add plasticizer, accelerators or additional cement to **CRYSTEX**. Do not mix more **CRYSTEX** than can be placed in 60 minutes. Minimum **CRYSTEX** placement temperature: above 45°F (7°C) for 24 hours. Avoid excessive vibration of foundation or base plate at time of placement. Not recommended for dry pack applications.

PRECAUTIONS

Contains portland cement and silica sand. Freshly mixed cement is highly alkaline and may cause skin injury. Avoid creating and inhaling dust. Provide ventilation and respiratory protection. Wear skin and eye protection. Dust mask recommended. Do not add sand. Do not retemper. Please refer to Product Material Safety Data Sheet (MSDS) before using.

STORAGE/SHELF LIFE

CRYSTEX bags are to be kept in dry storage to prevent

water contamination. Shelf life is a minimum of one year in unopened bags when properly stored.

TECHNICAL SERVICES

L&M recommends that the user request the service of the local representative for a pre-job conference to carefully plan each step of the installation. However, proper application is the responsibility of the user. Field visits by L&M personnel are for the purpose of making technical recommendations only and will not include supervision or provide quality control of application procedures or engineering details.

WEBSITE

L&M's convenient internet website offers instant access to Tech Data Sheets, Material Safety Data Sheets, product updates, and other useful information. Visit www.lmcc.com and follow the easy steps. L&M is ready to respond to your concrete information needs - anytime - anywhere!

SHORT SPEC

036000: Precision Non-Shrink Grout: shall meet ASTM C 1107 at a fluid consistency. Grout shall remain workable for a minimum of one hour after mixing. "**CRYSTEX**" by L&M Construction Chemicals, Inc.

LIMITED WARRANTY

*L&M guarantees **CRYSTEX** will meet the requirements of the U.S. Army Corps of Engineers specification CRD-C 621 and ASTM C 1107.*

This product is warranted to be free of defects in material and workmanship, and conforms to L&M Construction Chemicals ("L&M") quality control standards. All recommendations, statements and technical data herein are based on tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty or guaranty of any kind, expressed or implied including but not limited to, an implied warranty of merchantability or an implied warranty of fitness for a particular purpose. Satisfactory results depend upon many factors beyond L&M's control. User shall rely on his or her own information and tests to determine suitability of the product for the intended use and user assumes all risk, loss, damage, expense and liability resulting from his or her direct use, indirect use or consequential to their use of the product. L&M shall not be liable to the buyer or any third person for any injury, loss or damage directly or indirectly resulting from use or inability to use the product. L&M's sole responsibility shall be to replace that portion of the product which proves to be defective. Any warranty claim must be made within six (6) months from the date of the claimed breach. This limited warranty applies only if the product was properly installed and used according to all instructions and was properly stored prior to use.

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