CustomBlend® LHT Large & Heavy Tile Mortar



1. Product Name

CustomBlend® LHT Large & Heavy Tile Mortar

2. Manufacturer

Custom Building Products Technical Services
10400 Pioneer Boulevard, Unit 3
Santa Fe Springs, CA 90670
Customer Support: 800-272-8786
Technical Services: 800-282-8786
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3. Product Description

CustomBlend LHT Large and Heavy Tile Mortar offers a non-sag and non-slump solution for most interior and exterior, wall and floor applications. This polymer modified mortar can be applied ¾" (19mm) thick on horizontal surfaces and can be used for large format porcelain, ceramic and natural stone tile. CustomBlend LHT meets ANSI A118.4HT and A118.11.

Key Features

- For most standard floor and wall installations
- Supports large and heavy tile for flat, even installations
- For use with in-floor heating systems

Suitable Substrates

- Concrete, mortar beds, masonry, Portland cement plaster
- Cement backerboards
- Liquid-applied waterproofing membranes such as RedGard® Waterproofing and Crack Prevention Membrane, Custom® 9240 and RedGard® SpeedCoat
- Crack isolation sheet membranes such as Crack Buster® Pro
- Uncoupling mats such as RedGard® Uncoupling Mat
- Substrates treated with MBP Multi-Surface Bonding Primer
- Exterior Grade Plywood (interior residential and light commercial dry areas)
- Gypsum wallboard (interior dry areas) Existing ceramic tile (scarified)
- Fully-bonded sheet vinyl flooring (scarified) Plastic laminates (scarified)
- Cutback adhesive (see preparation instructions)

Composition of Product

Modified dry-set mortar, which is a proprietary blend of Portland cement, inorganic aggregates, copolymers and chemicals.

Benefits of Product in the Installation

- Specially formulated for large format tiles
- Non-slumping formula eliminates lippage
- Cost-efficient, all-purpose mortar
- Good bond strength
- Cures quickly even in cold climates
- Approved for industry-recommended interior and exterior applications
- Meets ANSI A118.4HT and A118.11 standards without the need for additives

Limitations to the Product

- Do not bond directly to hardwood, Luan plywood, particle board, parquet, cushion or sponge-back vinyl flooring, metal, fiberglass, plastic or OSB panels.
- Not recommended for interior and exterior pools and water features. CUSTOM recommends MegaLite® Crack Prevention Mortar and ProLite® Large Tile and Stone Mortar for the installation of ceramic and porcelain tile in submerged applications. For additional information, contact Custom Technical Services.
- When setting moisture sensitive natural stone, cement or resin agglomerate tile use EBM-Lite™ Epoxy Bonding Mortar 100% Solids or CEG-Lite™ 100% Solids Commercial Epoxy Grout.
- Do not use to install resin-backed stone; use EBM-Lite™ Epoxy Bonding Mortar 100% Solids, CEG-Lite™ 100% Solids Commercial Epoxy Grout or contact Custom's® Technical Services for recommendations.
- For clear or translucent glass, CUSTOM recommends Glass Tile Premium Thin-Set Mortar. When setting glass tile larger than 6" x 6" (15 x 15 cm), contact Custom's® Technical Services for recommendations.
- Ensure that the substrate meets deflection requirements.

Packaging

- 44 lb (20 kg) bag
- Gray or white

4. Technical Data

Applicable Standards

American National Standards Institute (ANSI) — ANSI A108.5, A118.4 and A118.11 of the American National Standards for the Installation of Ceramic Tile ASTM International (ASTM)

- ASTM C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in [50-mm] Cube Specimens)
- ASTM C627 Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester

Resilient Floor Covering Institute - (RFCI) Recommended Work Practices for Removal of Resilient Floor Coverings
Tile Council of North America (TCNA) - TCNA Handbook for Ceramic Tile Installation, TCNA Method EJ171
Complies with ISO 13007-2

Technical Chart

Property	TestMethod	Requirement	Typical Results
Pot Life			> 2 Hours
Open Time	A118.4 Section 5.3	> 20 Minutes	Pass
4 Week Shear Bond Strength			
Glazed Wall Tile	A118.4 Section 5.1.5	> 300 psi	> 300 psi (> 21.09 kg/cm²)

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Porcelain Tile	A118.4 Section 5.2.4	> 200 psi	300-350 psi (21.09- 24.6 kg/cm²)
Quarry Tile to Plywood	A118.11 Section 4.1.2	> 150 psi	> 150 psi (> 10.54 kg/cm²)

Environmental Consideration

Custom® Building Products is committed to environmental responsibility in both products produced and in manufacturing practices. Complete the LEED Product Data Request Form at custombuildingproducts.com for detailed information based on project location. Use of this product can contribute towards LEED® v3 certification:

- Up to 2 points towards MR Credit 5, Regional Materials
- Up to 2 points towards MR Credit 4, Recycled Content
- Up to 1 point towards IEQ Credit 4.1, Low-Emitting Materials – Adhesives & Sealants

5. Instructions

General Surface Prep

General Requirements Installing Finishes Using Products Manufactured by Custom Building Products

*Note: The recommendations below are based on common industry standards and Custom Building Products' requirements. Additional limitations or specific recommendations may be listed within datasheets of products used in an installation assembly. When those instructions conflict with this document, the most stringent requirements and limitations shall apply.**

All substrates and surfaces must be structurally sound, stable and suitable for the project's usage including managing weight and deflection from live and dead loads for the lifetime of the structure.

Minimum deflection requirements are L/360 for all flooring finishes over concrete and all vertical substrates; L/720 for natural stone over wood framing.

Concrete, cement-based and gypsum-based underlayment and patching compounds must be adequately cured and not exhibit signs of excessive moisture emissions, condensation, efflorescence and hydrostatic conditions/issues beyond the finish product manufacturers' limits or other products within the assembly.

Most CUSTOM® products require absorptive surfaces. To assess surface absorption, refer to ASTM F3191 for horizontal areas and place water droplets no higher than 1/2" (12mm) from the surface. Use a damp sponge to evaluate water absorption on vertical or overhead areas. Cracks in concrete 1/8" (3mm) or wider are generally considered to be structural. Cracks and differential (out of plane) substrate surfaces are to be evaluated by the contractually-obligated project design professional, and remedied prior to applying and installation system

Follow appropriate industry standards and individual product recommendations for treating concrete slab shrinkage cracks and slab joint treatment. Consult ASTM F710 for resilient, carpet tile, carpet and wood flooring; or ANSI A108 and TCNA -Movement Joints for ceramic tile and natural stone tile.

All surfaces must be flat and smooth (and properly pitched, level or plumb when required) prior to installing finishes. Flatness tolerances vary for finishes as shown below from the required plane, when measured from the high points in the surface. It is the responsibility of the installer to determine the suitability of the substrate and any required preparation work necessary to ensure a successful installation.

CUSTOM®/CustomTech™ cement-based preparation products may be used in assemblies over concrete with high moisture vapor emission levels provided that other materials such as finish flooring, adhesives or membranes are recommended in these conditions. Consult the manufacturers for their limitations and requirements. Effective moisture mitigation is required when products and finishes in the assembly limit moisture emission levels. Note: Moisture mitigation systems mange moisture vapor emissions from the initial concrete placement and when an effective vapor retarder/barrier is placed directly below on-ground slabs. They are not intended to manage excessive water intrusion or negative hydrostatic pressure.

Concrete is to have ≥3000 psi (20.7 MPa) compressive strength and lightweight or gypsum-based underlayment must obtain

≥2000 psi (≥13.8 MPa) compressive strength and tensile strengths ≥200 psi (≥1.4 MPa). Surfaces must be clean, dry and free from contaminants that would prevent or inhibit adhesion bonding. Contaminants and curing compounds should be mechanically removed before installation.

Industry Tolerances - Flatness and Pitch:

Ceramic tile <15" - 1/4 in. in 10 ft. (6 mm in 3 m) and no more than 1/16 in. in 1 ft. (1.6 mm in 0.3 m)

Ceramic tile ≥15" & Gauged Porcelain Tile/Panels - 1/8 in. in 10 ft. (3 mm in 3 m) & no more than 1/16 in. in 2 ft. (1.6 mm in 0.6 m)

Resilient, Carpet Tiles, Carpet - 3/16 in. (3.9 mm) in 10 ft and 1/32 in. (0.8 mm) in 12 in. (305 mm)

Hardwood – Concrete 1/8 - 3/16 in. in 10 ft radius (3 -3.9 mm in 305 cm radius)

Hardwood – Plywood 3/16 in. in 10 ft (3.9 mm in 305 cm) or 1/8 in. in 6 ft (3 mm in 183 cm)

Pitch - Exterior and drainage areas to be sloped at a minimum of ¼ in. per linear ft (≥6 mm in 300 mm)

Substrate and ambient temperatures, relative humidity, UV exposure, excessive wind and inclement weather can affect product performance, drying or curing timeframes during and after installation. Acceptable temperatures for products, mixing water and additives are generally between 50°F - 90°F (10° - 32° C). The area where finishes are installed should be acclimated prior to installation by providing heat or cooling and protection as needed. These conditions are to stay in place during and after installation to allow products to properly cure. Disable radiant heating systems at least 24 hours prior, during and 72hrs after installation. Follow radiant heating system manufacturer's instructions for start-up procedures to gradually introduce heat. Follow industry guidelines for water and moisture exposure to installation assemblies, especially with fill and draining rates in water features.

* *Consult individual product datasheets for recommendations and limitations regarding project conditions. Assembly mockups can determine suitability for these conditions on specific projects. Contact CUSTOM Technical Services for questions and product information: CONTACT CUSTOM or (800) 282-8786. Instructional videos, bulletins and white papers available at: custombuildingproducts.com/reference-library.aspx*

Industry Association References:

International Building Code (IBC)

International Residential Code (IRC)

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American Concrete Institute (ACI)

International Concrete Repair Institute (ICRI)

ASTM International

Tile Council of North America (TCNA)

American National Standards Institute (ANSI)

Natural Stone Institute (NSI)

National Tile Contractors Association (NTCA)

International Masonry Institute (IMI)

Resilient Floor Covering Institute (RFCI)

National Wood Flooring Association (NWFA)

USE CHEMICAL-RESISTANT GLOVES, such as nitrile, when handling product.

Surfaces must be structurally sound. Remove all grease, oil, dirt, curing compounds, sealers, adhesives or any other contaminant that would prevent a good bond. Glossy or painted surfaces must be sanded, or abraded, and stripped of all contaminants. Concrete must be cured 28 days and accept water penetration. Concrete must be free of efflorescence and not subject to hydrostatic pressure. Concrete slabs should have a coarse finish to enhance the bond. Plywood flooring including those under resilient flooring must be structurally sound and meet all ANSI and deflection requirements. For questions about proper subfloor installation, call Technical Services. Smooth concrete surfaces, existing glazed tile, terrazzo, or polished stone should be scarified. Sheet vinyl must be well bonded and stripped of old finish. Roughen the surface by sanding or abrading, then rinse and allow to dry. Expansion joints should never be bridged with setting material. Do not sand flooring materials containing asbestos.

Bonding To Concrete Surfaces

Concrete or plaster must be fully cured and must accept water penetration. Test by sprinkling water on various areas of the substrate. If water penetrates, then a good bond can be achieved; if water beads, surface contaminants are present, and loss of adhesion may occur. Contaminants should be mechanically removed before installation. Concrete must be free of efflorescence and not subject to hydrostatic pressure. Concrete slabs should have a coarse finish to enhance the bond. Smooth concrete slabs must be mechanically abraded to achieve proper bond.

Bonding to Gypsum Surfaces

Lightweight or gypsum-based underlayments must obtain a minimum 2000 psi (13.8 MPa) compressive strength. The underlayment must be sufficiently dry and properly cured to the manufacturer’s specifications for permanent, non-moisture permeable coverings. Surfaces to be tiled must be structurally sound and subject to deflection not to exceed current industry standards. Surfaces shall be free of all grease, oil, dirt, dust, curing compounds, waxes, sealers, efflorescence, or any other foreign matter. All lightweight cement or gypsum surfaces should be primed. with a properly applied sealer or a primer coat of RedGard, consisting of 1 part RedGard diluted with 4 parts clean, cool water. Mix in a clean bucket at low speed to obtain a lump free solution. The primer can be brushed, rolled or sprayed to achieve an even coat. Apply the primer coat to the floor at a rate of 300 ft2/gal (7.5 M2/L). Drying time depends on site conditions, but is normally less than 1 hour. Extremely porous surfaces may require 2 coats. At this point, RedGard can be applied to the primed lightweight or gypsum based surface. Refer to the individual product data sheet or packaging directions for application instructions. Expansion joints must be installed in accordance with local building codes and ANSI/TCNA guidelines. Refer to TCNA EJ171.

Bonding to Plywood and OSB Surfaces

Plywood floors, including those under resilient flooring, must be structurally sound and must meet all ANSI A108.01 Part 3.4 requirements. Maximum allowable deflection: L/360 tile L/720 stone. See TCNA F150-13 tile installations, TCNA F141-13 and F250-13 for stone. For questions about proper subfloor installation requirements, call Custom® Technical Services.

Bonding to Cutback Adhesive

Adhesive layers must be removed, as they reduce mortar bond strength to cement surfaces. Use extreme caution; adhesives may contain asbestos fibers. Do not sand or grind adhesive residue, as harmful dust may result. Never use adhesive removers or solvents, as they soften the adhesive and may cause it to penetrate into the concrete. Adhesive residue must be wet scraped to the finished surface of the concrete, leaving only the transparent staining from the glue. To determine desirable results, do a test bond area before starting. Refer to the RFCI Pamphlet, "Recommended Work Practices for Removal of Resilient Floor Coverings", for further information.

Movement Joint Placement

Movement joints are required for perimeters and other changes of plane in all installations. Expansion joints, perimeter joints and cold joints, as described in ANSI A108.01, should never be bridged with setting material. They must be brought through the tile work and filled with an appropriate elastomeric sealant, such as Custom's® 100% Silicone. Contact Custom's® Technical Services for the proper treatment of control or saw cut joints. Refer to TCNA EJ171, F125 and F125A.

Mixing Ratios

Mix 4.75 - 5.75 qts (4.5 - 5.4 L) clean water per 44 lb (20 kg) bag of mortar.

Mixing Procedures

Mix by hand or use a low 150-200 RPM speed 1/2" (13 mm) drill to achieve a smooth, paste-like consistency. Let the mixture slake or stand 5-10 minutes; stir again and use. Stir occasionally, but do not add more water. When properly mixed, troweled ridges will stand without slump.

Application of Product

Installation must conform to ANSI A108.5. Use a properly-sized notch trowel to ensure proper coverage under tiles. Using the flat side of the trowel, apply a skim coat of mortar to the surface. With the notch side of the trowel held at a 45° angle, apply additional mortar to the surface, combing in one direction. Press the tile firmly into place in a perpendicular motion across ridges, moving back and forth. The perpendicular motion flattens ridges and closes valleys, allowing maximum coverage. With some tile, back-buttering is advisable.

Adjust the tile promptly and beat it in with a beating block and rubber mallet. Periodically pull up a tile and check the back to ensure proper adhesive coverage. If the material has skinned over (not sticky to the touch), recomb with the notch trowel; if too dry, remove and replace the dry material with fresh material. Thin Set Mortar should not be used to fill low spots in the flooring. Mortar thickness should be less than 3/4" when beat in. Ambient temperature should be maintained above 50° F (10° C) or below 100° F (38° C) for 72 hours to achieve proper bond.

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Curing of Product

Curing time is affected by ambient and surface temperatures and humidity. Use the following as a guideline. Allow 24 hours before grouting and light traffic, and 7-10 days before heavy or vehicular traffic. Before exposure to heavy or vehicular traffic, assure assembly is rated “Heavy or Extra Heavy” per TCNA Service Requirements. As necessary, use plywood or other load distributing protection when moving heavy equipment across tiled assembly.

Cleaning of Equipment

Clean with water before the material dries.

Storage

Store in a cool, dry area.

Health Precautions

See Safety Data Sheet for more information. This product contains Portland cement and free silica. Avoid eye contact and prolonged contact with skin. Wash thoroughly after handling. If eye contact occurs, flush with water for 15 minutes and consult a physician. Do not breathe dust; wear a NIOSH approved respirator.

Conformance to Building Codes

Installation must comply with the requirements of all applicable local, state and federal code jurisdictions.

6. Size & Availability

Location	Item Code	Size	Color	Package
USA & Canada	CBLHTG44T	44 lb. (20 kg)	Gray	Bag
USA & Canada	CBLHTW44T	44 lb. (20 kg)	White	Bag

7. Product Warranty

Obtain the applicable **LIMITED PRODUCT WARRANTY** at www.custombuildingproducts.com/product-warranty or send a written request to Custom Building Products, Inc., Five Concourse Parkway, Atlanta, GA 30328, USA. Manufactured under the authority of Custom Building Products, Inc. © 2017 Quikrete International, Inc.

When CustomBlend® Fortified Thin-Set Mortar is used as a part of a qualifying full installation system of CUSTOM products, the installation can qualify for up to a 10 year system warranty. CUSTOM will repair and/or replace, at its discretion, the affected area of the system. For more information, find details and limitations to this warranty at custombuildingproducts.com.

8. Product Maintenance

Properly installed product requires no special maintenance.

9. Technical Services Information

For technical assistance, contact Custom technical services at 800-282-8786 or visit custombuildingproducts.com.

10. Filing System

Additional product information is available from the manufacturer upon request.

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Coverage Chart

SQUARE FOOT COVERAGE PER 44 LB BAG (SQUARE METER PER 20 KG)

Chart for estimating purposes. Coverage may vary based on installation practices and jobsite conditions. For more trowel sizes, please use the material calculator at CustomBuildingProducts.com or contact CUSTOM Technical Services at (800)282-8786.

Trowel Size	Min Coverage	Max Coverage
1/4" x 1/4" x 1/4" (6 x 6 x 6 mm) Square-Notch	75 ft² (6.9 M²)	86 ft² (7.99 M²)
1/4" x 3/8" x 1/4" (6 x 9.5 x 6 mm) Square-Notch	53 ft² (4.9 M²)	62 ft² (5.76 M²)
1/2" x 1/2" x 1/2" (13 x 13 x 13 mm) Square-Notch	**IMPORTANT NOTE BELOW** 37 ft² (3.4 M²)	**IMPORTANT NOTE BELOW** 43 ft² (3.99 M²)
3/4" × 9/16" × 3/8" (19 × 14 × 9.5 mm) U- Notch @45^{0} angle 3/4" × 9/16" × 3/8" (19 × 14 × 9.5 mm) U- Notch @30^{0} angle	30 ft² (2.8 M²) 37 ft² (3.4 M²)	33 ft² (3.1 M²) 43 ft² (3.99 M²)

***IMPORTANT NOTE:** Custom Building Products does not recommend the use of a 1/2" x 1/2" x 1/2" (13 x 13 x 13 mm) Square-Notched trowel as the ½” spacing between each square notch has been shown to make it more difficult to bed tiles and achieve proper mortar coverage. CUSTOM recommends the use of a trowel design that promotes mortar ridge collapse such as either a deeper, slanted, U-notch, V-notch, or ridged large format trowel when applying thicker amounts of mortar to accommodate tile warpage and back pattern recesses. Applying mortar using a 3/4" × 9/16" × 3/8" (19mm × 14mm × 9.5 mm) U- Notch at a 30^{0} angle provides better coverage between the tile and the substrate and the same coverage area as a ½” notched trowel.

Regardless of the trowel used, mortar coverage between the substrate and tile underside is required to be ≥80% for dry areas and ≥95% for wet areas and exteriors with all tile edges properly supported with mortar and in a minimum of 3/32” (2.38 mm) and a maximum of ¾” (19mm) continuous thickness. Note: Larger tiles, tiles with deep underside patterns and ungauged natural stone tiles may require larger notch sizes and may need to be flat back-troweled (formerly back buttered) or notched-back troweled to achieve proper coverage and mortar support. To meet warranty requirements, CUSTOM recommends testing to confirm adequate bonding mortar coverage.

When back troweling, consider the tile’s underside pattern and depth to estimate thickness and usage to add to your estimate. For achieving proper mortar coverage see the following video: Trowel & Error. (Also available in Spanish and Russian.) For information regarding back troweling techniques, refer to The National Tile Contractors Association / Reference Manual & Flat Back & Notched Back - Troweling (TileTVS3 22 08)