



Originally Issued: 10/24/2013

Revised: 10/23/2015

Valid Through: 10/31/2016

EVALUATION SUBJECT:
DUROCK™ SHOWER SYSTEM
CONSISTING OF:
DUROCK™ ULTRALIGHT FOAM TILE
BACKERBOARD, DUROCK™ PRE-SLOPED
SHOWER TRAY, DUROCK™ SHOWER
RAMP, DUROCK™ WATERPROOFING
MEMBRANE, DUROCK™ DRAIN
ASSEMBLY

REPORT HOLDER:
USG Corporation
550 West Adams Street
Chicago, Illinois 60661
(312)436-4260
www.usg.com

CSI DIVISION: 09 00 00 - Finishes
CSI Section: 09 30 00 - Tiling

1.0 SCOPE OF EVALUATION

1.1 Compliance to the following codes & regulations:

- 2015 and 2012 International Building Code® (IBC)
- 2015 and 2012 International Residential Code® (IRC)
- 2015 and 2012 International Plumbing Code® (IPC)
- 2015 and 2012 Uniform Plumbing Code® (UPC)
- 2010 National Plumbing Code of Canada (NPC)

1.2 Evaluated in accordance with:

- ASTM E84-11
- NFPA 286 (2011 Edition)
- ASTM E330-02
- ANSI A118.10-2008
- ASTM E96-12
- IAPMO PS106-2015e1
- IAPMO IGC195-2013e1
- ASME A112.18.2/CSA B125.2-11
- ASME A112.6.3-2001(R07)
- CSA B79-08
- ICC EG159 – Approved December 2004

1.3 Properties Assessed:

- Structural
- Fire performance
- Surface burning characteristics
- Moisture protection

2.0 PRODUCT USE

2.1 General: DUROCK™ Shower System consists of DUROCK™ UltraLight Foam Tile Backerboard; DUROCK™ Pre-Sloped Shower Tray; DUROCK™ Shower Ramp; DUROCK™ Waterproofing Membrane; and the DUROCK™ Drain Assembly. The system is used in any type of construction under the IBC and in buildings constructed under the IRC.

2.2 DUROCK™ UltraLight Foam Tile Backerboard: DUROCK™ UltraLight Foam Tile Backerboard is used as a floor underlayment and backer board for ceramic tile or dimension stone veneer and as a floor underlayment and backer board for ceramic tile or dimension stone veneer in shower areas as referenced in Section 1210.2.3 of the IBC and Sections R307, P2705, and P2710 of the IRC.

2.3 DUROCK™ Pre-Sloped Shower Tray: DUROCK™ Pre-Sloped Shower Tray is used as the shower base for ceramic tile or dimension stone veneers in accordance with Section 408 of the UPC and Section 417 of the IPC. The shower tray is a component of a waterproof shower system and may be connected to the sanitary drainage system. DUROCK™ Pre-Sloped Shower Tray is recognized in IAPMO R&T Certification Listing File No. 8312.

2.4 DUROCK™ Shower Ramp: DUROCK™ Shower Ramp is used outside of showers for barrier free/accessible shower applications in accordance with IBC Section 1109.2. DUROCK™ Shower Ramp is recognized in IAPMO R&T Certification Listing File No 8312.

2.5 DUROCK™ Waterproofing Membrane: DUROCK™ Waterproofing Membrane is used on walls and floors as a barrier to liquid water and vapor migration in bonded, thin-set installation of ceramic tile or dimension stone veneers as referenced in Section 1210.2.4 of the IBC and Section P2709.2.4 of the IRC. The membrane may also be used as shower liner in accordance with Section 417.5.2.5 of the IPC and Section 408.7 of the UPC. DUROCK™ Waterproofing Membrane is recognized in IAPMO R&T Certification Listing File No 8312.

2.6 DUROCK™ Drain Assembly: DUROCK™ Drain Assembly is used for bonded waterproofing installations with DUROCK™ Pre-Sloped Shower Tray and DUROCK™ Waterproofing Membrane, and as floor drain for wet areas in accordance with Section P2709.2.4 and P2709.4 of the IRC; Section 417.3 of the IPC; and Section 408.4 of the UPC. DUROCK™ Drain Assembly is recognized in IAPMO R&T Certification Listing File Nos. 8287 and 8288.

The product described in this Uniform Evaluation Service (UES) Report has been evaluated as an alternative material, design or method of construction in order to satisfy and comply with the intent of the provisions of the code, as noted in this report, and for at least equivalence to that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safety, as applicable, in accordance with IBC Section 104.11.

Copyright © 2015 by International Association of Plumbing and Mechanical Officials. All rights reserved. Printed in the United States. No part of this publication may be reproduced, stored in an electronic retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher.
Ph: 1-877-4IESRPT • Fax: 909.472.4171 • web: www.uniform-es.org • 4755 East Philadelphia Street, Ontario, California 91761-2816 – USA





Originally Issued: 10/24/2013

Revised: 10/23/2015

Valid Through: 10/31/2016

3.0 PRODUCT DESCRIPTION

3.1 DUROCK™ UltraLight Foam Tile Backerboard:

DUROCK™ UltraLight Foam Tile Backerboards are comprised of an extruded polystyrene (XPS) foam plastic core, with plastic film and non-woven polymer fabric bonded to both sides of the core. The boards are produced in nominal thicknesses of 1/4, 1/2, 5/8, 1, 1 1/2, and 2 inch (6.35, 12.7, 15.9, 25.4, 38.1, and 51 mm), in widths of 25 and 36 inches (635 and 914 mm), and in lengths of 60 and 96 inches (1524 and 2438 mm). The density in pounds per cubic foot for the respective thicknesses are noted in the table below:

Thickness(in)	Density(pcf)
1/4	13.2
1/2	8.2
5/8	7.1
1	5.3
1 1/2	4.4
2	3.9

3.1.1 Surface Burning Characteristics: The DUROCK™ UltraLight Foam Tile Backerboard core has a Flame Spread Index of 25 or less and a Smoke-developed Index of 450 or less when tested in accordance with ASTM E84.

3.1.2 Thermal Barrier: No thermal barrier or ignition barrier is required when DUROCK™ UltraLight Foam Tile Backerboard is covered with grouted ceramic tile. DUROCK™ UltraLight Foam Tile Backerboard boards covered with 4-inch by 4-inch (102 mm by 102 mm) ceramic tile applied over the polystyrene substrate and then grouted, complies with NFPA 286 at 2-inch (51 mm) thickness. The application complies with 2015 and 2012 IBC Section 803.1.2, and with 2015 IBC Section 2603.9 and 2012 IBC Section 2603.10 for Special Approval for use as a thermal barrier alternative.

3.1.3 Performance Characteristics

3.1.3.1 Transverse Load: At 1/2 inch (12.7 mm) thickness, with supports at 16 inches (406 mm) on center, the DUROCK™ UltraLight Foam Tile Backerboards withstand 20 psf (0.958 kN/m²) at a deflection of L/240, and the ultimate load is 60 psf (2.87 kN/m²) when tested in accordance with ASTM E330, and complies with the transverse load requirements in ICC EG159.

3.1.3.2 IAPMO PS 106: DUROCK™ UltraLight Foam Tile Backerboards comply with the requirements of IAPMO PS 106-2015e1.

3.1.4 Permeability: The 1/2-inch-thick (12.7 mm) board has a water vapor permeance rating of 0.1 perm or less when tested in accordance with ASTM E96 Procedure E (desicmabt method at 100°F (38°C) and 90% relative

humidity). These boards have a permeance rating of 0.5 perm or less and may be used in steam shower/room without additional vapor retarder in accordance with Tile Council of North Amerimay (TCNA) 2014 Handbook for Ceramic, Glass, and Stone Tile Installation (SR613-14 and SR614-14).

3.2 DUROCK™ Pre-sloped Shower Tray: DUROCK™ Pre-sloped Shower Tray is expanded polystyrene (EPS) foam plastic. The trays are 32-inch by 60-inch (813 mm by 1524 mm) center drain, 32-inch by 60-inch (813 mm by 1524 mm) offset drain, 48-inch by 48-inch (1219 mm by 1219 mm) center drain, and custom sizes between 32-inch by 32-inch (813 mm by 813 mm) and 9,216 square inches (5.95 m²). DUROCK™ Pre-Sloped Shower Trays have a Flame Spread Index of 0 and a Smoke-developed Index of 25 or less when tested in accordance with ASTM E84. The trays are in compliance with IAPMO PS106-2015e1.

3.3 DUROCK™ Shower Ramp: DUROCK™ Shower Ramp is the same expanded polystyrene (EPS) foam plastic as DUROCK™ Pre-Sloped Shower Tray. The ramps are 12-inch by 60-inch (305 mm by 1524 mm), and 12-inch by 48-inch (305 mm by 1219 mm). The ramp slopes from 1-inch (25 mm) to 1/4-inch (6mm) on the 12-inch (305 mm) side. It is designed to match up to 1-inch thick (25 mm) perimeter of DUROCK™ Pre-Sloped Shower Tray and to 1/4-inch (6 mm) thick USG DUROCK® Brand Cement Board Underlayment and USG Fiberock® Tile Backerboard, or to other approved ceramic or stone tile underlayment, outside the shower compartment. The ramps are in compliance with IAPMO PS106-2015e1.

3.4 DUROCK™ Waterproofing Membrane: DUROCK™ Waterproofing Membrane consists of high density plastic film and non-woven polymer fabrics on both sides. The membrane is 12 mils thick (0.305 mm), and conforms to ANSI A118.10 as a load bearing, bonded, waterproof membrane. DUROCK™ Waterproofing Membrane has a water vapor permeance of 0.06 perm when tested in accordance with ASTM E96 Procedure E (desicmabt method at 100°F (37.8°C) and 90 percent relative humidity). This membrane has a permeance rating of 0.5 perm or less and may be used in steam shower/room as the vapor retarder in accordance with Tile Council of North America may (TCNA) 2014 Handbook for Ceramic, Glass, and Stone Tile Installation (SR613-14 and SR614-14).

3.5 DUROCK™ Drain Assembly: DUROCK™ Drain Assembly is constructed of an ABS drain body with integrated bonding flange and connects to 2-inch (51 mm) and 3-inch (76 mm) diameter ABS or PVC waste line. The drain is designed to receive either 4-inch (102 mm) or 5-inch (127 mm) grates. The grates are available in Pro Series and Designer Series, comprising different designs, materials and finishes. The Pro Series grates are made of a polycarbonate grate base, clad with a 304 stainless steel plate surface treated by physical vapor deposition



Originally Issued: 10/24/2013

Revised: 10/23/2015

Valid Through: 10/31/2016

(PVD) for improved wear resistance and appearance. Designer Series grates are solid 304 stainless steel or solid 110 copper with different finishes. DUROCK™ Drain Assembly conforms to IAPMO IGC 195, ASME A112.18.2/CSA B125.2, ASME A112.6.3, and CSA B79. DUROCK™ Drain Assembly may be used as a shower drain or floor drain for wet areas.

4.0 DESIGN AND INSTALLATION

4.1 DUROCK™ Ultralight Foam Tile Backerboards

4.1.1 Walls: Framing assembly components shall be sized and constructed to comply with applicable code requirements. Framing spacing shall not exceed 16 inches (406 mm) on center. Minimum board thickness for open stud wall framing is ½ inch (12.7 mm) thick. Solid substrates shall comply with and be installed in accordance with the applicable code. Allowable deflection of horizontal and vertical framing shall be limited to 1/360 of the span. Steel framing shall be a minimum of No. 20 gage [0.035 inch (0.89 mm) base steel thickness] and be corrosion-resistant in accordance with the applicable code. The moisture content of wood framing shall have reached equilibrium prior to installation of the DUROCK™ Backerboards.

Approved fasteners shall be used to attach the boards to framing, and include No. 11 gage by 1¼-inch-long (31.8 mm) galvanized roofing nails for wood framing, DUROCK™ tile backer screws for steel framing (or equivalent), 1¼-inch-long (31.8 mm) and 1⅝-inch-long (41.3 mm) for steel framing; DUROCK™ tile backer screws for wood framing (or equivalent), 1¼, 1⅝, or 2¼ inches (31.8, 41.3, and 57 mm) long. Fastener spacing is 8 inches (204 mm) on center maximum. Fasteners shall be placed a minimum of 2 inches (51 mm) from corners and ⅜-inch (9.53 mm) from edges of the panel. Fastener heads shall be covered by DUROCK™ Brand Sealant for waterproof construction. No washers are required for installation.

Panel joints shall be covered with 5-inch-wide (127 mm) DUROCK™ Waterproofing Membrane Band installed with unmodified Portland cement mortar (as specified in ANSI A118.1) for waterproof construction.

Tiled surfaces shall be protected from structural movement by the use of control or expansion joints in accordance with the manufacturer's recommendations. It is the responsibility of the design professional for the project to specify locations of the control and/or expansion joints. Unmodified thin-set mortar (as specified in ANSI A118.1) shall be used to set tiles.

4.1.2 Floors: DUROCK™ UltraLight Foam Tile Backerboards used as underlayment shall be installed over a subfloor consisting of minimum 2⅜-inch-thick (18.3 mm) US DOC PS-2 Exposure 1 rated plywood or

oriented strand board (OSB) subfloor complying with, and installed in accordance with the applicable building code. Maximum joist spacing is 19.2 inches (488 mm) on center. The plywood or OSB subfloor system shall be designed so that maximum deflection is 1/360 of the span, in accordance with the applicable code. The board edges shall be staggered from the subfloor joints and adjacent boards. The backerboards shall be attached to the subfloor using unmodified mortar (as specified in ANSI A118.1) using a ¼-inch by ⅜-inch rectangular or U-notch trowel. The boards shall be secured to the subfloor with No. 11 gage by 1-¼-inch-long (31.8 mm) galvanized roofing nails or DUROCK™ tile backer screws when the mortar is still workable. Fasteners shall be spaced at 8 inches (203 mm) on center around the perimeter and in the field. Subsequent finishing with tile or other finished flooring is required.

Panel joints shall be covered with 5-inch-wide (127 mm) DUROCK™ Waterproofing Membrane Band installed with unmodified Portland cement mortar (as specified in ANSI A118.1) for waterproof construction.

Unmodified thin-set mortar (as specified in ANSI A118.1) shall be used to set tiles.

4.2 DUROCK™ Pre-sloped Shower Tray: DUROCK™ Pre-sloped Shower Tray shall be installed over a subfloor consisting of minimum 2⅜-inch-thick (18.3 mm) US DOC PS-2 Exposure 1 plywood or OSB subfloor complying with and installed in accordance with the applicable code. The maximum plywood or OSB subfloor deflection is 1/360 of the span, in accordance with the applicable building code.

The floor shall be level prior to installation of shower tray. Apply unmodified thin-set mortar (as specified in ANSI A118.1) to the subfloor using ¼-inch by ⅜-inch (6.4 mm by 9.5 mm) rectangular or U-notched trowel. The DUROCK™ Pre-sloped Shower Tray shall be firmly embedded into the mortar. The underside of tray shall be checked to ensure full mortar coverage.

4.3 DUROCK™ Shower Ramp: Unmodified thin-set mortar (as specified in ANSI A118.1) shall be applied to the subfloor, and to the edge of both the DUROCK Shower System Shower Tray and Ramp, using ¼-inch by ⅜-inch (6.4 mm by 9.5 mm) rectangular or U-notched trowel, then firmly press shower ramp into the mortar.

Apply unmodified thin-set mortar to the face of shower tray and ramp using a ⅜-inch by ⅜-inch (4.8 mm by 4.8 mm) V-notched trowel or ⅛-inch by ⅛-inch (3.2 mm by 3.2 mm) square or U-notched trowel.

4.4 DUROCK™ Waterproofing Membrane: The wall substrate shall comply with applicable code requirements and be suitable for wet areas. Unmodified thin-set mortar (as specified in ANSI A118.1) shall be applied to the wall



Originally Issued: 10/24/2013

Revised: 10/23/2015

Valid Through: 10/31/2016

substrate using $3/16$ -inch by $3/16$ -inch (4.8 mm by 4.8 mm) v-notched trowel or a $1/8$ -inch by $1/8$ -inch (3.2 mm by 3.2 mm) square or U-notched trowel. DUROCK™ Waterproofing Membrane shall be embedded into the mortar using a finishing trowel or drywall taping knife to remove air pockets and to ensure proper installation. All adjoining sections of the membrane shall be overlapped by a minimum of 2 inches (51 mm) or 5-inch-wide (127 mm) DUROCK™ Waterproofing Band shall be installed using unmodified thin-set mortar (as specified in ANSI A118.1).

The unmodified thin-set mortar (as specified in ANSI A118.1) shall be applied to the shower floor using a $3/16$ -inch by $3/16$ -inch (4.8 mm by 4.8 mm) v-notched trowel or $1/8$ -inch by $1/8$ -inch (3.2 mm by 3.2 mm) square or U-notched trowel. DUROCK™ Waterproofing Membrane shall be embedded into the mortar using a finishing trowel or drywall taping knife to remove air pockets and to ensure proper installation. All adjoining sections of the membrane shall be overlapped by a minimum of 2 inches (51 mm) or 5-inch-wide (127 mm) DUROCK™ Waterproofing Band shall be installed using unmodified thin-set mortar (as specified in ANSI A118.1).

4.5 DUROCK™ Drain Assembly: DUROCK™ Drain Assembly shall be installed after the DUROCK™ Pre-sloped Shower Tray is installed and the shower tray disk is fully embedded in the thin-set mortar and positioned to match drain hole orientation. The drain assembly shall be firmly pressed into the shower tray disk and unmodified thin-set mortar (as specified in ANSI A118.1) ensuring full support of the bonding flange. The grate assembly is installed at the same time as the floor tile. The construction plug, the shower grate tray, and the height adjustment collar are snapped together and thin-set mortar shall then be applied to the underside of the grate tray. The grate assembly shall be placed into the horizontal adjustment ring. Unmodified thin-set mortar (as specified in ANSI A118.1) shall be applied to the recessed area of the drain assembly's bonding flange, then the grate assembly shall be placed into the mortar. The construction plug shall then be removed and the grate installed 24 hours after grouting the shower floor. The drain units do not require weep holes.

5.0 CONDITIONS OF USE

DUROCK™ UltraLight Foam Tile Backerboard, DUROCK™ Pre-Sloped Shower Tray, DUROCK™ Shower Ramp, DUROCK™ Waterproofing Membrane, DUROCK™ Drain Assembly described in this report comply with the codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The products shall be installed in accordance with the applicable code, this report and the manufacturer's most current published installation instructions. In the event of a conflict, the more restrictive governs.

5.2 DUROCK™ UltraLight Foam Tile Backerboards, DUROCK™ Pre-sloped Shower Tray, and DUROCK™ Shower Ramp shall be covered by ceramic tile or dimension stone veneer.

5.3 Unmodified thin-set mortar, as specified in ANSI A118.1, shall be used for installation of DUROCK™ Waterproofing Membrane and Band.

5.4 All products shall be limited to interior installations.

5.5 USG Durock™ UltraLight Foam Tile Backerboard shall not be used as a structural panel.

6.0 SUBSTANTIATING DATA

Data in accordance with the ICC-ES Evaluation Guideline for Composite Backer Board (EG159), dated December 2004.

Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC 12) dated June 2012.

6.1 Test reports

- UL Report R3623/12CA67457 of testing in accordance with ASTM E84-11 - dated December 27, 2012.
- UL Certificate R38067 concerning ASTM E84-11.
- Intertek Report 101873824SAT-002 of testing in accordance with NFPA 286 (2011 Edition) - dated Feb. 26, 2015.
- Progressive Engineering Inc. Report 2013-211 of testing in accordance with ASTM E330-02 - dated January 22, 2013.
- Progressive Engineering Inc. Report 2015-802 of testing in accordance with ASTM D1037-12 - dated May 7, 2015.
- QAI Laboratories Report TJ0283-R3 of testing in accordance with ANSI A118.10-2008 - dated June 13, 2012.
- QAI Laboratories Report TJ0417-2 of testing in accordance with ASTM E96/E96M-12 - dated July 10, 2012.
- IAPMO Research and Testing Report 1771-13006 of testing in accordance with IAPMO PS106-2013b - dated August 14, 2013.
- IAPMO Research and Testing Report 1771-15009 of testing in accordance with IAPMO PS106-2015e1 - dated June 16, 2015.
- IAPMO Research and Testing Report 1771-13001-003 of testing in accordance with IAPMO IGC 195-2013e1 - dated August 13, 2013.
- IAPMO Research and Testing Report 1771-13002-004 of testing in accordance with ASME A112.18.2/CSA B125.2-11 - dated August 13, 2013.
- IAPMO Research and Testing Report 1771-13003-003 of testing in accordance with ASME A112.16.3-2001(R07) - dated August 13, 2013.



Originally Issued: 10/24/2013

Revised: 10/23/2015

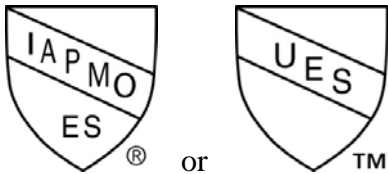
Valid Through: 10/31/2016

- IAPMO Research and Testing Report 1771-13004-003 of testing in accordance with CSA B79-08 - dated August 13, 2013.
- Progressive Engineering Inc. Report 2015-792 of testing in accordance with ASTM E96/E96M-14 - dated May 22, 2015.
- QAI Laboratories Report TJ1385 of testing in accordance with IAPMO PS106-2013b - dated July 24, 2013.

6.2 IAPMO R&T Certification Listing File Numbers:
#8287, #8288 and #8312

7.0 IDENTIFICATION

A label shall be affixed on at least one of the following: product, packaging, installation instructions or descriptive literature. The label shall include the company name or trademark, model number, and the IAPMO Uniform ES Mark of Conformity the name of the inspection agency (when applicable) and the Evaluation Report Number (ER-294) to identify the products recognized in this report. A die-stamp label may also substitute for the label. Either Mark of Conformity may be used as shown below:



IAPMO ER #294

Brian Gerber

Brian Gerber, P.E., S.E.
Vice President, Technical Operations
Uniform Evaluation Service

Richard Beck

Richard Beck, PE, CBO, MCP
Vice President, Uniform Evaluation Service

Russ Chaney

GP Russ Chaney
CEO, The IAPMO Group

For additional information about this evaluation report please visit
www.uniform-es.org or email at info@uniform-es.org