PROFILE OF INNOVATION

Schluter®-DITRA-DRAIN

INNOVATIVE SOLUTIONS FOR CERAMIC AND STONE TILE

THIN-BED DRAINAGE, VENTILATION, UNCOUPLING, AND SUPPORT/LOAD DISTRIBUTION

Application and Function

6.2 Schluter®-DITRA-DRAIN is a drainage membrane designed for use within thin-bed ceramic and stone tile assemblies in exterior applications. DITRA-DRAIN is typically installed over the Schluter®-KERDI bonded waterproofing membrane. If the substrate does not require a waterproofing assembly (e.g., drained mortar bed), DITRA-DRAIN may be adhered directly to the substrate.

DITRA-DRAIN consists of a studded polyethylene sheet with a laminated polypropylene filter fabric. Some of these studs are approximately 3/32" *(2 mm)* high inverted truncated pyramids, which form square undercut chambers on the underside. These studs facilitate the mechanical anchoring of the DITRA-DRAIN to the substrate with thin-set mortar. The remaining studs are approximately 5/32" *(4 mm)* high truncated cones, to which the filter fabric is laminated. These studs support the tile covering and effectively distribute loads to the substrate. Tile is installed over DITRA-DRAIN using the thin-bed method in such a way that the mortar is mechanically anchored in the filter fabric.

Drainage and ventilation

The free space between the filter fabric and polyethylene sheet provides ventilation for the tile bond coat to enable faster drying after water exposure compared to other thin-bed tile assemblies. The continuous free space also ensures water that drains through the ventilation layer cannot seep back into the tile covering (capillary passive drainage).

Uncoupling

DITRA-DRAIN provides uncoupling through its geometric configuration, which allows for in-plane movement that effectively neutralizes the differential movement stresses between the substrate and the tile.

Support/load distribution

The closely spaced cones are able to sustain high compressive stresses and provide effective support for the tile covering.

Material Properties and Areas of Application

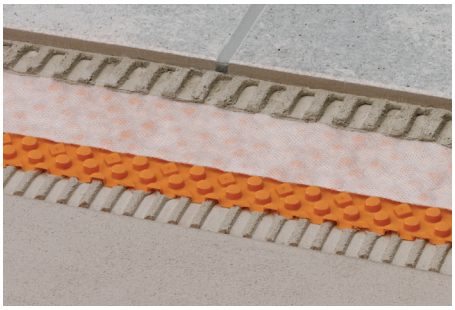
DITRA-DRAIN consists of an impact-resistant polyethylene mat with a special stud structure on one side and a polypropylene filter fabric laminated to the upper side.

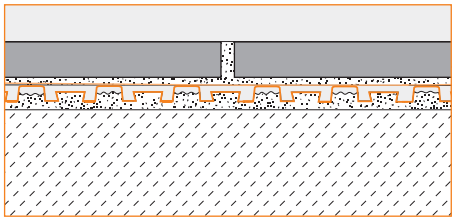
The material is dimensionally stable up to 176° F *(80° C)*. It is resistant to aging and will not rot. The compressive yield strength of DITRA-DRAIN is approximately 70 psi *(490 kPa)*.

Polyethylene is not UV stable in the long term; the product should not be stored in places with prolonged exposure to direct sunlight or left uncovered during the installation process for extended periods.

Notes:

Type, thickness, and format of the ceramic or stone tile surface covering must be suitable for the intended application. The minimum recommended tile format and thickness is 2" x 2" x 5/16" *(5 x 5 x 8 mm)*.





6.2 Schluter®-DITRA-DRAIN

Natural stone tiles may vary in color due to differences in the drying process. This covering specific occurrence cannot be completely ruled out for the covering assembly described in this product data sheet. Schluter®-Systems recommends pointing this out to the owner or design professional when selecting the covering materials.

Certain moisture-sensitive stones, e.g., green marble, or resin-backed tiles may not be suitable for exterior applications and/or require special setting materials. Consult stone supplier and Schluter®-Systems for more information.

Due to the air space within the assembly, tile coverings installed over DITRA-DRAIN may have a hollow sound when they are walked upon with hard shoes or tapped with a hard object.

Due to the differing expansion coefficients of the covering and the grout material, microfine cracks in the joints cannot be completely ruled out.

Efflorescence is considered to be a natural occurrence with cementitious materials. DITRA-DRAIN is designed to mitigate efflorescence, but it is not possible to eliminate it.

Exterior concrete floors, patios, and walkways

DITRA-DRAIN may be used over structurally sound and even exterior concrete on ground, including young concrete (concrete cured less than 28 days), post-tensioned or pre-stressed concrete, and cracked concrete. Any cracks in the concrete subfloor must exhibit in-plane movement only; thin-bed tile assemblies, including those incorporating DITRA-DRAIN, cannot accommodate differential vertical displacement. The concrete slab must be structurally sound and sloped for complete surface drainage and a gravel bed or other means of drainage must be provided below the slab. The slab must be free of waxy or oily films and curing compounds (when present, mechanical scarifying is necessary). KERDI is applied over the concrete, with all seams and floor/wall transitions sealed with KERDI-BAND using unmodified thin-set mortar. DITRA-DRAIN is then adhered to the KERDI membrane for drainage and uncoupling of the tile covering.

Balconies

For balcony applications, Schluter®-Systems requires that a roofing membrane be installed to protect the structure from moisture exposure prior to the installation of the tile assembly. The roofing membrane must be sufficiently sloped (1.5 – 2%) and installed according to the roofing membrane manufacturer's instructions.

The Schluter®-TROBA-PLUS drainage matting is loose-laid over the roofing membrane to ensure sustained water drainage within the assembly. A load distribution layer, consisting of either the Schluter®-BEKOTEC-DRAIN modular screed or a wire-reinforced mortar bed, minimum thickness 1-1/2" *(38 mm)*, is installed over the TROBA-PLUS to provide support for the tile covering. DITRA-DRAIN is then bonded to the mortar bed for drainage and uncoupling of the tile covering.

Movement Joints

Movement joints are an integral part of any tile assembly. The various components of a tile assembly (tile, mortar, substrate, etc.) have unique physical characteristics that affect their behavior. Specifically, these components will expand and contract at different rates, according to each component's intrinsic physical properties, with changes in moisture, temperature, and loading (both dead and live loads). This differential expansion/contraction of attached components results in internal stresses. Furthermore, structures that restrain overall expansion of the tile field (walls, columns, etc.) cause stress buildup within the system. If the aforementioned movements are not accommodated through the use of movement joints in the tile field and at restraining structures, the resulting stresses can cause cracking of the grout and tile and delamination of the tile from the substrate. Thus, movement joints are an essential component of any durable tile assembly.

The Tile Council of North America (TCNA) and the Terrazzo, Tile, and Marble Association of Canada (TTMAC) provide guidelines (EJ171 and 301MJ, respectively) for the placement and construction of movement joints in and around the tile field. Schluter®-Systems accepts these guidelines.

Guidelines for the placement of movement joints in exterior applications:

- Place movement joints around the perimeter of any size floor and/or against all restraining surfaces.
- Surface Joints: 8' - 12' *(2.4 - 3.7 m)* in each direction.
- Fields should be as square as possible. The ratio between length and width should not exceed 1:1.5.

Perimeter Joints

Perimeter joints are provided against all restraining surfaces to accommodate movements attributable to changes in moisture, temperature, and loading.

Surface Joints

Surface joints must be placed within the tiled surface regardless of substrate conditions. They provide for stress relief from movements in the tile field due to thermal and moisture expansion/contraction and loading.

Expansion Joints

Expansion joints permit both horizontal and vertical differential movements attributable to thermal and moisture expansion/contraction by providing a complete separation for the full depth of the slab to allow for free movement between adjoining parts of a structure or abutting surfaces. They are typically placed at columns, walls, and any other restraining surfaces. Expansion joints must be continued through the tile covering. KERDI and DITRA-DRAIN are separated at expansion joints and the joint is continued through the tile covering using Schluter®-DILEX surface movement profiles. The abutted sections of KERDI must be covered with KERDI-FLEX.

Cold Joints

Cold (construction) joints occur where two successive placements of concrete meet. True cold joints bond the new concrete to the old and do not allow movement. However, it takes extra care to accomplish this, so they are usually designed to act as expansion or control/contraction joints. Cold joints are treated in the same manner as expansion joints. See above.

Control/Contraction Joints

Control/contraction joints are designed to induce controlled cracking caused by drying and chemical shrinkage at preselected locations. They are typically formed by saw cutting, tooling, or through the use of inserts. DITRA-DRAIN is not separated at control/contraction joints; however, surface movement joints must be provided in the tile covering in accordance with the aforementioned guidelines. See also Surface Joints.

Regarding structural and seismic expansion

joints, please contact Schluter®-Systems at 800-472-4588 (USA) or 800-667-8746 (Canada) for proper installation guidelines.

Installation

1. The substrate must be clean, even, and load bearing. Repairs of uneven spots or adjustments in height and slope must be performed before installing the waterproofing membrane and DITRA-DRAIN.

2. Using a thin-set mortar that is suitable for the substrate, apply the thin-set mortar using the DITRA-HEAT/DITRA-XL trowel, or other 1/4" x 1/4" *(6 mm x 6 mm)* square-notched trowel. Unmodified thin-set mortar meeting the requirements of ANSI A118.1 is required for applications over concrete, mortar beds and the KERDI bonded waterproofing membrane.

3. Apply DITRA-DRAIN to the floor, fleece side up. Solidly embed the matting into the bonding mortar using a float or a screed trowel. The inverted truncated pyramid shaped chambers must be filled with mortar after installation. Observe the curing times of all materials.

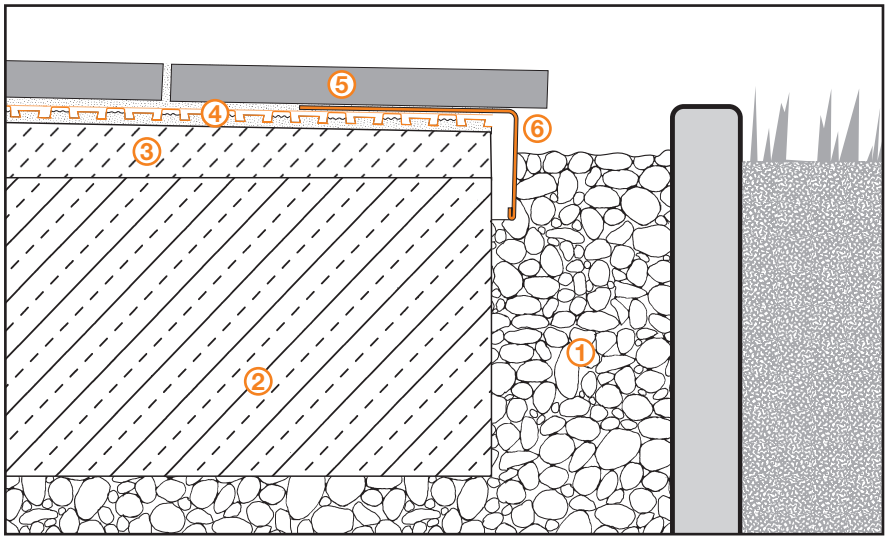
   It is best to align DITRA-DRAIN with light tension at the time of embedding the material. The individual sheets are installed with tightly abutting joints. The lateral fleece edge overlaps the joints, while the DITRA-DRAIN-STU self-adhesive joint sealing tape is available for cut edges without fleece overlap.

4. It is recommended to use walking boards, particularly where materials are transported, to protect the installed DITRA-DRAIN mat from damage or to prevent it from peeling off the substrate. Protective measures may also be required if the material is exposed to direct sunlight or precipitation in outdoor areas.

5. The tile can be installed over DITRA-DRAIN immediately. Apply unmodified thin-set mortar meeting the requirements of ANSI A118.1 to the matting using a trowel that is appropriate for the size of the tile. Solidly embed the tiles in the setting material. Depending on the tile format and substrate conditions, back-buttering may be required to achieve full coverage. Periodically remove and check a tile to ensure that full coverage is being attained.

Note: Schluter®-Systems recommends the use of Schluter®-BARA and DILEX profiles for edges, movement joints and wall connections.

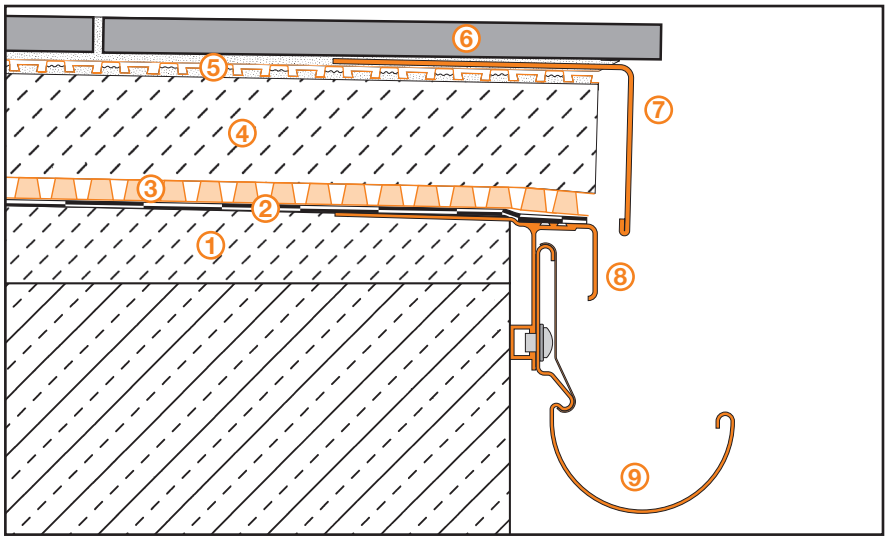
Exterior concrete floors, patios, and walkways



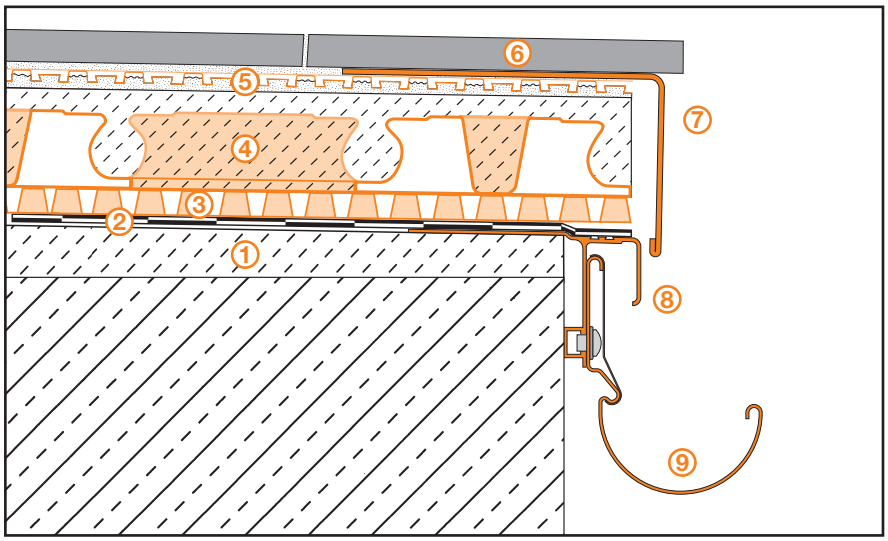
1. Capillary layer
2. Concrete slab
3. Sloped screed (1.5% - 2%)
4. Schluter®-DITRA-DRAIN
5. Ceramic or stone tile
6. Schluter®-BARA-RW

Note: Use of KERDI is optional. When the assembly is adjacent to a building, KERDI may be used for flashing.

Balconies

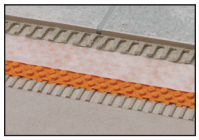


1. Sloped structure (1.5% - 2%)
2. Roofing membrane
3. Schluter®-TROBA-PLUS
4. Wire-reinforced mortar bed, minimum thickness 1-1/2" (38 mm)
5. Schluter®-DITRA-DRAIN
6. Ceramic or stone tile
7. Schluter®-BARA-RW
8. Schluter®-BARA-RTK
9. Schluter®-BARIN



1. Sloped structure (1.5% - 2%)
2. Roofing membrane
3. Schluter®-TROBA-PLUS
4. Schluter®-BEKOTEC-DRAIN
5. Schluter®-DITRA-DRAIN
6. Ceramic or stone tile
7. Schluter®-BARA-RW
8. Schluter®-BARA-RTK
9. Schluter®-BARIN

Product Item Numbers



6.2 Schluter®-DITRA-DRAIN — Thin-bed drainage membrane

Item No.	Dimensions
DITRA-DRAIN 10M	1 m x 10 m = 10 m^2 – *3'3" x 33' = 108 ft^2*
DITRA-DRAIN 25M	1 m x 25 m = 25 m^2 – *3'3" x 82' = 269 ft^2*

6.2 Schluter®-DITRA-DRAIN-STU — Self adhesive seaming tape

Item No.	Dimensions
STUVKB90/5M	90 mm x 5 m – *3-1/2" x 16' 5"*
STUVKB90/30M	90 mm x 30 m – *3-1/2" x 98' 5"*

8.1 Schluter®-KERDI — Waterproofing membrane

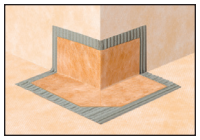
Item No.	Width	Length	Area	Thickness
KERDI 200/5M	3' 3" – *1 m*	16' 5" – *5 m*	54 ft^2 – *5 m^2*	8 mil
KERDI 200/10M	3' 3" – *1 m*	33' – *10 m*	108 ft^2 – *10 m^2*	8 mil
KERDI 200/20M	3' 3" – *1 m*	65' 7" – *20 m*	215 ft^2 – *20 m^2*	8 mil
KERDI 200	3' 3" – *1 m*	98' 5" – *30 m*	323 ft^2 – *30 m^2*	8 mil

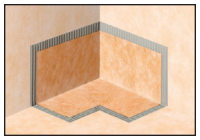
8.1 Schluter®-KERDI-BAND — Waterproofing strips

Item No.	Width	Length	Thickness
KEBA 100/125/5M	5" – *12.5 cm*	16' 5" – *5 m*	4 mil
KEBA 100/125/10M	5" – *12.5 cm*	33' – *10 m*	4 mil
KEBA 100/185/5M	7-1/4" – *18.5 cm*	16' 5" – *5 m*	4 mil
KEBA 100/250/5M	10" – *25 cm*	16' 5" – *5 m*	4 mil
KEBA 100/125	5" – *12.5 cm*	98' 5" – *30 m*	4 mil
KEBA 100/185	7-1/4" – *18.5 cm*	98' 5" – *30 m*	4 mil
KEBA 100/250	10" – *25 cm*	98' 5" – *30 m*	4 mil

8.1 Schluter®-KERDI-FLEX — Waterproofing strips for use above movement joints

Item No.	Width	Length	Thickness
FLEX 125/5M	5" – *12.5 cm*	16' 5" – *5 m*	12 mil
FLEX 250/5M	10" – *25 cm*	16' 5" – *5 m*	12 mil
FLEX 125/30	5" – *12.5 cm*	98' 5" – *30 m*	12 mil
FLEX 250/30	10" – *25 cm*	98' 5" – *30 m*	12 mil





8.1 Schluter®-KERDI-KERECK-F

Preformed corners

Item No.	Thickness	Packaging
KERECK / FI 2	4 mil	2 Inside corners
KERECK / FI 10	4 mil	10 Inside corners
KERECK / FA 2	4 mil	2 Outside corners
KERECK / FA 10	4 mil	10 Outside corners

8.3 Schluter®-KERDI-FIX

Adhesive/sealant

Item No.	Cartridge Volume
KERDIFIX / ***color****	9.81 oz – *290 ml*
KERDIFIX 100 G	Tube - 3.38 oz *(100 ml)*

*Color Codes

BW Bright white

G Grey

To complete the item number, add the ***color*** code (e.g., KERDIFIX / **BW**).

Schluter®-KERDI-TROWEL

Trowel

Item No.	Notch Size	Packaging
TRL-KER6	1/8" x 1/8" – *3 mm x 3 mm*	6 units
TRL-KER	1/8" x 1/8" – *3 mm x 3 mm*	1 unit

Schluter®-DITRA-HEAT/-DITRA-XL-TROWEL

Trowel

Item No.	Notch Size	Packaging
TRL-DHXL6	1/4" x 1/4" *(6 mm x 6 mm)*	6 units
TRL-DHXL	1/4" x 1/4" *(6 mm x 6 mm)*	1 unit

Schluter®-DITRA-DRAIN 10-Year Limited Warranty

COVERAGE AND CONDITIONS: Subject to the conditions and limitations as stated hereinafter, **Schluter-Systems*** warrants that **Schluter®-DITRA-DRAIN** (the "Product") will be free from manufacturing defects and will not rot, deteriorate or break down for a period of ten (10) years from the date of purchase only when the Product is used and installed in accordance with the terms and conditions of the Schluter®-DITRA-DRAIN Technical Data Sheet and industry standard guidelines that are not in conflict with the Data Sheet in effect at the time of installation. Further, efflorescence is considered to be a natural occurrence with cementitious materials and is therefore not considered to be a defective condition and is not covered by this warranty. It is the responsibility of the owner/builder/installer to ensure the suitability of all building materials and all associated building materials for the owner's intended use. It is recommended that the owner consult with an experienced and professional installer.

RESOLUTION: If the Product fails to meet this warranty, then the owner's exclusive remedy and the sole obligation of Schluter-Systems, at its election, shall be to a) reinstall or replace the failed portion of the floor covering assembly or b) pay an amount not to exceed the original square foot cost of the installation of the floor covering assembly verified to be defective. Floor covering assembly is defined to include all DITRA-DRAIN materials, non-reusable flooring surfaces, and the appropriate setting and grouting materials. Further, due to conditions beyond the control of Schluter-Systems (e.g., color and shade availability, discontinuation, normal wear and tear), Schluter-Systems cannot guarantee or warrant an exact match to the specific tile, stone, or other flooring materials used in the installation. In such events, substantially similar materials may be substituted.

DISCLAIMER: THERE ARE NO WARRANTIES BEYOND THIS EXPRESSED WARRANTY AS STATED ABOVE. ALL OTHER WARRANTIES, REPRESENTATIONS OR CONDITIONS, EXPRESSED OR IMPLIED, ARE DISCLAIMED AND EXCLUDED, INCLUDING WARRANTIES, REPRESENTATIONS OR CONDITIONS OF **MERCHANTABILITY** OR FITNESS FOR A PARTICULAR PURPOSE ARISING BY STATUTE OR OTHERWISE BY LAW OR FROM A COURSE OF DEALING OR USAGE OF TRADE. SCHLUTER-SYSTEMS EXCLUDES AND IN NO EVENT SHALL HAVE ANY LIABILITY FOR LOST PROFITS OR ANY OTHER INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, EXEMPLARY, OR CONSEQUENTIAL DAMAGES, ARISING OUT OF OR OTHERWISE CONNECTED TO FAILURE OF THE PRODUCT OR FLOORING SYSTEM OF WHICH IT IS PART, NOR MISUSE OF THE PRODUCT OR FLOORING SYSTEM, REGARDLESS OF ANY STRICT LIABILITY, ACTIVE OR PASSIVE NEGLIGENCE OF SCHLUTER-SYSTEMS, AND REGARDLESS OF THE LEGAL THEORY (CONTRACT OR TORT OR EXTRA-CONTRACTUAL OR OTHER), NOR FROM ACTS OF WAR, TERRORISM, FAULTY AND NEGLIGENT PENETRATION OF THE SYSTEM, FIRES, EXPLOSIONS, ACTS OF GOD, INTENTIONAL ACTS OF DESTRUCTION OR ANY LOSSES DUE TO STRUCTURAL FAILURE OR OTHER CAUSES UNRELATED TO THE PRODUCT OR DELAYS, OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES. THIS WARRANTY IS GIVEN IN LIEU OF ANY OTHER WARRANTY EXPRESSED OR IMPLIED. THE REMEDIES CONTAINED HEREIN ARE THE ONLY REMEDIES AVAILABLE FOR BREACH OF THIS WARRANTY. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS; SOME STATES AND PROVINCES DO NOT ALLOW DISCLAIMERS OR OTHER RESTRICTIONS OF IMPLIED WARRANTIES, SO SOME OF THE ABOVE DISCLAIMERS MAY NOT APPLY TO YOU.

TRANSFERABILITY: This Limited Warranty extends ONLY to the original end user (defined as original intended owner and user of the property/unit in which the installation is incorporated - herein referred to as "Owner") and is not transferable or assignable, unless approved in writing by the Technical Director or an Officer of Schluter-Systems or otherwise prohibited by specific state or provincial law.

MODIFICATIONS TO WARRANTY: No changes or modification of any terms or conditions of this warranty are allowed unless authorized by written agreement and signed by the Technical Director or an Officer of Schluter-Systems.

EFFECTIVE DATE: This warranty shall supersede and replace any and all prior oral or written warranties, agreements, or other such representations made by or on behalf of Schluter-Systems relative to the Product or the application of the Product and shall apply to any installation occurring on or after January 1, 2013.

CLAIMS ON THIS LIMITED WARRANTY: To make a claim under this Limited Warranty, the Owner must provide Schluter-Systems with written notice within 30 days of any alleged defect in the Product covered by this Limited Warranty, together with date and proof of purchase of the Product, proof of the costs of the original installation and name and address of all installers, failing which this Limited Warranty shall be of no legal effect. Schluter-Systems reserves the right at its election and as a condition of this Limited Warranty to inspect the alleged failed and defective condition.

All U.S. Claims shall be sent to:

Schluter Systems L.P.
Attn: Warranty Claims Dept.
194 Pleasant Ridge Road
Plattsburgh, NY 12901-5841

All Canadian Claims shall be sent to:

Schluter Systems (Canada), Inc.
Attn: Warranty Claims Dept.
21100 chemin Ste-Marie
Ste-Anne-de-Bellevue, QC H9X 3Y8

*For the purpose of this warranty **Schluter Systems, L.P.** shall provide the warranty for all products for end users located in the United States, and **Schluter Systems (Canada) Inc.** shall provided provide the warranty for all products for end users located in Canada. This warranty is limited to sales of the Product made in and intended for use in the United States and Canada.

Schluter Systems L.P. • 194 Pleasant Ridge Road, Plattsburgh, NY 12901-5841 • Tel.: 800-472-4588 • Fax: 800-477-9783
Schluter Systems (Canada) Inc. • 21100 chemin Ste-Marie, Ste-Anne-de-Bellevue, QC H9X 3Y8 • Tel.: 800-667-8746 • Fax: 877-667-2410

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