

## Alternative coverings such as engineered wood, vinyl, WPC/LVT/LVP, SPC tile/plank, and laminate flooring over Schluter®-DITRA-HEAT

### SUMMARY

The Schluter®-DITRA-HEAT system was designed for use with ceramic, porcelain, and stone tile coverings. Ceramic, porcelain, and stone tile have excellent heat conductivity to ensure efficient energy transfer from the heating cable to the surface of the floor covering. This brings maximum comfort to the user quickly.

Due to the popularity of DITRA-HEAT and the growing customer demand for a method to use alternative floor coverings over our system, Schluter®-Systems initiated a series of tests and trials to find the optimum method to install engineered wood, vinyl, wood plastic composite, luxury vinyl tiles, luxury vinyl planks, stone plastic composite tiles and planks, and laminate flooring over DITRA-HEAT.

This document summarizes the requirements, limitations, and general installation guidelines for installing alternative floor coverings over Schluter®-DITRA-HEAT and Schluter®-DITRA-HEAT-DUO membranes and Schluter®-DITRA-HEAT-E-HK heating cables. It also explains the limitations of these flooring materials when used over a floor warming substrate compared to ceramic and stone tile. Please use this document in conjunction with the Schluter®-DITRA-HEAT Installation Handbook to help ensure a successful installation.

### CONSIDERATIONS

It is important to note that these flooring materials have heat conductivities which are on average 10 times lower than those for ceramic, porcelain and stone. For this reason, the surface temperatures of the alternative floor coverings will be lower at the same set point temperature on the thermostat. Expected values are listed in Table 1.

Not all brands and products that fall into the alternative floor coverings types listed above are compatible with radiant floor warming. Manufacturers must be consulted to determine if individual products are suitable for this application and to determine the maximum temperature limit for those products. Conveniently, most of these products have the same temperature limit of 85°F (29.5°C) as found in manufacturers' data sheets/ installation instructions and documents from floor covering associations and institutes. However, some products may have different temperature limits. **It is essential to read the floor covering data sheet, or installation instructions, or to verify directly with the manufacturer that the chosen floor covering is compatible with radiant floor warming and that the temperature limit is at minimum 85°F (29.5°C).**

**Table 1: Expected Flooring Surface Temperatures and Thickness Requirements for Self-Leveling Underlayment**

Floor Covering			Self-Leveler Min. Thickness Over DITRA-HEAT Membrane Studs		Expected Average Surface Temperature <sup>1, 2, 3</sup>	
Type	Thickness		(in)	(mm)	(°F)	(°C)
	(in)	(mm)				
SPC (Vinyl-Based LVT/LVP & Non Vinyl-Based Tile & Plank)*	1/8 – 9/32	3 – 7	0.25	6	80.5 – 79	27 – 26
Vinyl/WPC/LVT/LVP	1/16 – 5/16	1.5 – 8	0.25	6	80 – 77	26.5 – 25
Engineered Wood (Adhered)	3/8 – 9/16	10 – 15	0.25	6	77 – 76	25 – 24.5
	5/8 – 3/4	16 – 19	0.31	8	75	24
Laminate & Engineered Wood (Floating) <sup>4</sup>	9/32 – 19/32	7 – 15	0.25	6	77 – 76	25 – 24.5
Ceramic, Porcelain, and Stone Tile	1/4 – 1/2	6 – 12.5	N/A	N/A	82	28

#### Notes

1. The temperature values reported above are based on laboratory testing; they can serve as estimates of performance in the field, but cannot predict project-specific results.
2. Surface temperatures will vary with room temperature; those reported above are based on a thermostat set point of 82°F (28°C) and room temperature of 72°F (22°C).
3. Surface temperature ranges are reported because results will vary based on floor covering thickness and installation method.
4. For floating laminate flooring and engineered wood, the foam pad or mat used was 3/32" (2.4 mm) in thickness. Expected flooring surface temperatures will be lower with thicker foam pads or mats.

\* Most SPC flooring materials withstand higher sub-floor temperatures than 85°F (29.5°C), please consult with manufacturer's data sheet or installation instructions to determine how high your choice can be set.

## REQUIREMENTS AND LIMITATIONS

Schluter®-DITRA-HEAT is suitable for applications with engineered wood, vinyl, wood plastic composite (WPC), luxury vinyl tiles (LVT), luxury vinyl planks (LVP), stone plastic composite (SPC) tiles and planks, and laminate flooring, subject to the following requirements and limitations:

- ▲ Verify with the floor covering manufacturer that the selected product is suitable for radiant floor warming applications and that it can withstand a temperature of 85°F (29.5°C) at minimum.
- ▲ If floor covering to be used in a wet area, verify with the floor covering manufacturer that the selected product is suitable.
- ▲ The floor covering, including any foam/rubber pad or mat must not exceed a thermal insulation value of R1 (Rsi of 0.18). All floor coverings listed in Table 1 have a R-value below 1.
- ▲ Carpets are generally not recommended, but if installed, they must not exceed a R-value of 1, including any rubber pad or mat used.
- ▲ Any floor covering adhesive must be recommended by the manufacturer, suitable for use over a cementitious substrate, and compatible with radiant floor warming.
- ▲ A cementitious self-leveling underlayment is used to fill the membrane and encapsulate the heating cables. Verify with the underlayment manufacturer that it is suitable for the application. The underlayment is applied to a level above the studs in the membrane as specified in Table 1, according to the type and thickness of the floor covering. The underlayment should be applied in a single pour.
- ▲ Any floor leveling must be done prior to the DITRA-HEAT system installation. Thicker than necessary, or uneven thickness of self-leveling underlayment above the DITRA-HEAT system will affect performance.
- ▲ The thermostat must be set at 82°F (28°C) or lower at all times. This can be done manually or by selecting “Laminate Flooring” in the “Floor Protection” section of the “Installer Settings” menu of any of the Schluter®-DITRA-HEAT-E thermostats.
- ▲ If the floor covering is SPC type, the thermostat set point could be set higher, but verify the limit with the manufacturer's data sheet or installation instructions.
- ▲ The temperature under the floor covering directly above the heating cable will always be slightly higher than the temperate setting on the thermostat during the heating cycles. This is why the maximum temperature setting on the thermostat must be lower than the maximum allowable temperature of the alternative floor covering.
- ▲ Solid hardwood is not recommended in floor warming applications due to its thickness and risk of damage caused by excessive drying of the wood while exposed to heat.

## INSTALLATION

The following installation method has been developed and evaluated through a series of tests to ensure practicality and successful results. This information below is meant to provide the highlights of a typical installation. Please refer to detail DH-AFC and the Schluter®-DITRA-HEAT Installation Handbook for complete installation guidelines.

1. Provide perimeter joints at the outer edges of the installation to accommodate movement due to changes in moisture, temperature, and loading. Sill seal (a polyethylene foam gasket) is an effective quality control measure to provide perimeter movement joints.
2. Install the DITRA-HEAT or DITRA-HEAT DUO membrane using thin-set mortar.
3. Test the DITRA-HEAT heating cable(s) prior to installation.
4. Embed the heating cables between studs at continuously alternating 3-2 stud spacing.
5. Install the tip of each floor temperature sensor in the middle of a 2 stud cable spacing section, instead of a 3 stud cable spacing section.
6. Retest the heating cable(s) to verify no damage occurred during the installation.
7. Fill the membrane and encapsulate the cables with a cementitious self-leveling underlayment. Apply the underlayment to a level according to Table 1.
8. Once the self-leveling underlayment has set, retest the heating cable(s) to verify no damage occurred during the installation.
9. Allow the self-leveling underlayment to cure according to the underlayment and floor covering manufacturers' instructions prior to the installation of the floor covering.
10. Install the floor covering according to the manufacturer's instructions.
11. Install the DITRA-HEAT-E thermostat in the electrical junction box, connecting it to the heating cable cold lead and to the electrical power supply.
12. Start up the floor warming after any waiting period required by the self-leveling underlayment and floor covering manufacturers.
13. The thermostat must be set to “Laminate Flooring” in the “Floor Protection” section, and to “Floor” in the “Sensor Application” section, both in the “Installer Settings” menu. The set point temperature of the thermostat must remain at 82°F (28°C) or below at all times, unless the floor covering is a SPC type. If an SPC type, verify with manufacturer's data sheet or installation instructions if the set point temperature can be raised to a higher level.

## DETAIL

### DH-AFC-19

Floors, Interior – Engineered Wood, Vinyl, WPC, LVT/LVP, SPC, and Laminate

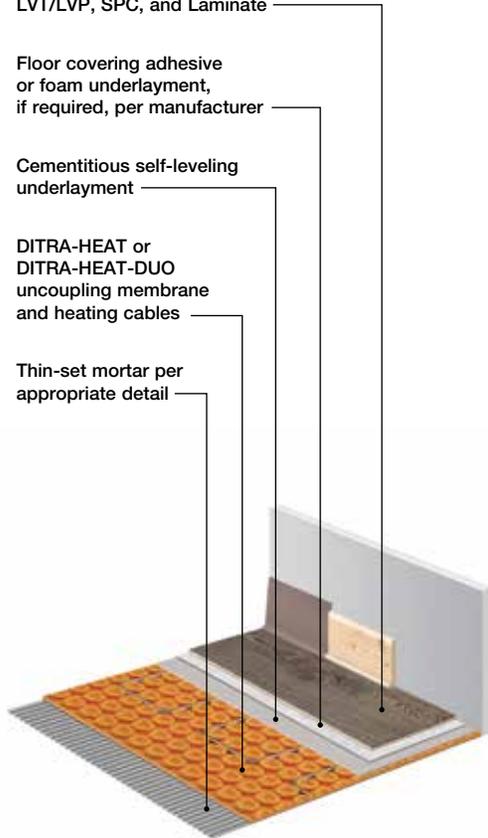
Engineered Wood, Vinyl, WPC,  
LVT/LVP, SPC, and Laminate

Floor covering adhesive  
or foam underlayment,  
if required, per manufacturer

Cementitious self-leveling  
underlayment

DITRA-HEAT or  
DITRA-HEAT-DUO  
uncoupling membrane  
and heating cables

Thin-set mortar per  
appropriate detail



#### Areas of Application

- ▲ over any even and structurally sound substrate
- ▲ interior dry or wet areas (verify suitability of floor covering material for wet areas)

#### Limitations

- ▲ DITRA-HEAT-DUO not recommended over hydronic heated floors
- ▲ withstand temperature for floor covering: 85°F (29.5°C) or greater
- ▲ maximum thermostat set point 82°F (28°C) in service, unless floor covering is SPC type and can withstand a higher temperature
- ▲ maximum thermal insulation of floor covering R1
- ▲ moisture-sensitive floor coverings not recommended for wet areas

#### Requirements

- ▲ floor covering must be recommended for the application by the manufacturer
- ▲ DITRA-HEAT-E-HK heating cables spaced at continuously alternating 3-2 stud pattern
- ▲ floor temperature sensors must be placed between heating cables spaced at 2 studs
- ▲ minimum self-leveling underlayment elevation over studs 1/4" (6 mm) or 5/16" (8 mm), as per Table 1

#### Substrate Preparation

- ▲ in accordance with applicable DITRA-HEAT Installation Handbook detail and floor covering manufacturer's directions
- ▲ any leveling of the subfloor must be done prior to installing DITRA-HEAT and DITRA-HEAT-DUO

#### Movement Joints

- ▲ DITRA-HEAT and DITRA-HEAT-DUO do not eliminate the need for movement joints, including perimeter joints. Movement joints must be installed in accordance with industry standards and floor covering manufacturer's directions

#### Setting Materials

- ▲ unmodified thin-set mortar – ANSI A118.1
- ▲ modified thin-set mortar – ANSI A118.11
- ▲ cementitious self-leveling underlayment – recommended by SLU manufacturer

#### Installation Specifications

- ▲ cementitious self-leveling underlayment – ASTM F2873 and manufacturer's directions
- ▲ floor covering – follow manufacturer's directions

#### Other Considerations

- ▲ alternative floor coverings have lower thermal conductivity than ceramic and stone tile and surface temperatures will be lower in these applications at the same thermostat set point; this effect is magnified as the alternative floor covering thickness is increased
- ▲ where a waterproof floor is required, all DITRA-HEAT and DITRA-HEAT-DUO seams and floor/wall transitions must be sealed with KERDI-BAND using Schluter SET®, Schluter ALL-SET®, Schluter FAST-SET®, or unmodified thin-set mortar; see DH-WP in the DITRA-HEAT Installation Handbook
- ▲ vapor barrier on crawl space floors according to regional building codes



## Schluter®-DITRA-HEAT System 15-Year Limited Warranty

**LIMITED WARRANTY COVERAGE:** Subject to the conditions and limitations as stated in this Schluter®-DITRA-HEAT System 15-Year Limited Warranty (the “Limited Warranty”), Schluter®-Systems warrants that its Schluter®-DITRA-HEAT System (defined hereafter) will be free from manufacturing defects and will perform as described in the Schluter-DITRA-HEAT Installation Handbook and Schluter-DITRA-HEAT Technical Data Sheet (collectively, the “Written Materials”) for a period of fifteen (15) years from the date of purchase when installed and used in accordance with the terms and conditions of the Written Materials and industry standard guidelines that are not in conflict with the Written Materials in effect at the time of installation.

In order to receive coverage under this Limited Warranty, the Owner (defined hereafter) must complete and submit the warranty registration card and completed heating cable tests log to Schluter-Systems online at [https://www.schluter.com/schluter-us/en\\_US/registerwarranty](https://www.schluter.com/schluter-us/en_US/registerwarranty) or via mail at the address provided hereafter within fourteen (14) days of installation. It is an installation requirement that the heating cable tests log be completed by the installer at the time of installation with a copy submitted to Schluter-Systems; it is recommended that the Owner retain the original logs. The heating cable tests log must include results for the following tests: “Test 1: Conductor Resistance,” “Test 2: Conductor and Ground Braid Continuity,” “Test 3: Insulation Resistance,” and “Test 4: Thermostat Floor Temperature Sensor Test.” **Failure to conduct these tests and submit the heating cable tests log will reduce or may void coverage under this Limited Warranty.**

In the event the heating cable tests log only includes results for “Test 1: Conductor Resistance,” “Test 2: Conductor and Ground Braid Continuity,” and “Test 4: Thermostat Floor Temperature Sensor Test,” but does not include results for “Test 3: Insulation Resistance,” the applicable warranty term shall be ten (10) years from the date of purchase. If the heating cable tests log does not include test results for “Test 1: Conductor Resistance,” “Test 2: Conductor and Ground Braid Continuity,” and “Test 4: Thermostat Floor Temperature Sensor Test,” such installation does not qualify for coverage under this Limited Warranty; such installation may instead receive warranty coverage under the Schluter-DITRA-HEAT and Schluter®-DITRA-HEAT-DUO Uncoupling Membrane 10-Year Limited Warranty.

For the purposes of this Limited Warranty, a “DITRA-HEAT System” is defined as Schluter-DITRA-HEAT or Schluter-DITRA-HEAT-DUO uncoupling membrane and Schluter®-DITRA-HEAT-E-HK heating cables; “Owner” is defined as the original end user of the property in which the DITRA-HEAT System is installed; and “Floor Covering Assembly” is defined to include the DITRA-HEAT System, non-reusable flooring surfaces, and applicable setting and grouting materials.

This Limited Warranty is only applicable to installations in the United States of America and Canada. Schluter-Systems is not responsible or liable under any circumstances for determining the suitability of a DITRA-HEAT System for the Owner’s intended purpose. It is the responsibility of the Owner to consult with an experienced and professional installer to ensure the suitability of a DITRA-HEAT System, subfloor/substrate and all building materials in the installation and that the Written Materials are followed properly.

**RESOLUTION:** If a DITRA-HEAT System is installed and used in accordance with the terms and conditions as described hereinabove and such DITRA-HEAT System is proven defective within the applicable warranty term, 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. 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 original installation. In such event, substantially similar materials may be substituted. This Limited Warranty does not cover the cost of disconnection or installation.

**EXCLUSIONS FROM COVERAGE:** This Limited Warranty excludes and in no event shall Schluter-Systems have any liability for any indirect, special, incidental, punitive, exemplary, or consequential damages, including lost profits, arising out of or otherwise connected to the failure of DITRA-HEAT System, regardless of any strict liability or active or passive negligence of Schluter-Systems, and regardless of legal theory, whether in contract, tort, extra-contractual or other. This Limited Warranty further excludes any loss or damage arising out of or otherwise connected to: acts of war, terrorism, fire, explosion, natural disaster, acts of God, any failure to comply with the Written Materials, inadequate subfloor/substrate, improper preparation or other failure of subfloor/substrate, faulty or negligent penetration of a DITRA-HEAT System or subfloor/substrate, intentional acts of destruction, structural failure, misuse of or failure to maintain a DITRA-HEAT System, normal wear and tear, scratches, dents, corrosion or discoloration (whether caused by excessive heat, chemical cleaning products, abrasive agents or otherwise), efflorescence and shading which are a natural occurrence with cementitious materials and are not considered a defective condition for the purposes of this Limited Warranty, variations of texture, color or shade from those on product samples, packaging materials or other marketing materials, or other causes unrelated to a DITRA-HEAT System (e.g. floor covering failure, excess point loading, overvoltage). This Limited Warranty excludes exterior applications and applications utilizing glass tile or other non-approved floor coverings, unless specifically approved in writing on a case by case basis by the Schluter-Systems Technical Services Director. Schluter DITRA-HEAT-E thermostats are specifically excluded from coverage under this Limited Warranty; warranty coverage for Schluter-DITRA-HEAT-E thermostats are limited and subject to the Schluter-DITRA-HEAT Thermostat 3-Year Limited Warranty. Any substitution of a non-Schluter-Systems product for a Schluter-Systems component in a DITRA-HEAT System voids this Limited Warranty.

This Limited Warranty is conditioned and will be considered null and void and Schluter-Systems will have the right to refuse any claims if: (a) a DITRA-HEAT System has been improperly stored or installed, (b) any component comprising a DITRA-HEAT System has been altered or otherwise modified in any way, (c) a DITRA-HEAT System is subject to abusive or abnormal use, lack of maintenance, or used in a manner other than that for which the DITRA-HEAT System was designed or in any way contrary to the Written Materials, (d) the nameplate numbers (electrical rating label) are not accessible, readable or recognizable or have been removed from the applicable heating cables or other components, if applicable, or (e) the Owner fails to return a copy of the completed heating cable tests log with the warranty registration card.

**DISCLAIMER:** There are no warranties beyond this expressed warranty as stated herein. To the extent permitted by law, all other warranties, representations or conditions, expressed or implied, are hereby disclaimed and excluded, including but not limited to the implied warranties of **MERCHANTABILITY** or **FITNESS FOR A PARTICULAR PURPOSE** (as limited to such purposes as described in the Written Materials) or arising from a course of dealing, usage of trade or otherwise by law. ANY IMPLIED WARRANTIES ARISING BY OPERATION OF LAW ARE LIMITED IN DURATION TO THE TERM OF THIS LIMITED WARRANTY. NO REPRESENTATION, PROMISE, AFFIRMATION OR STATEMENT BY ANY EMPLOYEE OR AGENT OF SCHLUTER-SYSTEMS WILL BE ENFORCEABLE AGAINST SCHLUTER-SYSTEMS UNLESS IT IS SPECIFICALLY INCLUDED IN THIS LIMITED WARRANTY OR AUTHORIZED IN WRITING BY THE SCHLUTER-SYSTEMS TECHNICAL SERVICES DIRECTOR. This Limited Warranty is given in lieu of any other warranty, whether expressed or implied. The remedies contained herein are the only remedies available for breach of this Limited Warranty. Schluter-Systems excludes and in no event shall have any liability for any indirect, special, incidental, punitive, exemplary, or consequential damages, including lost profits, arising out of or otherwise connected to failure of a DITRA-HEAT System. This Limited Warranty extends only to the Owner and is not transferable or assignable unless authorized by written agreement and signed by the Schluter-Systems Technical Services Director or otherwise prohibited by specific state or provincial law. This Limited Warranty gives you specific legal rights; some states and provinces do not allow disclaimers or other restrictions of implied warranties; some of the above disclaimers may not apply to you.

**No changes or modifications of any terms or conditions of this Limited Warranty are permitted unless duly authorized in writing by the Schluter-Systems Technical Services Director.** This Limited Warranty shall supersede and replace any and all prior oral or written warranties, agreements, or other representations made by or on behalf of Schluter-Systems relative to a DITRA-HEAT System or the application of a DITRA-HEAT System and shall apply to any installation occurring on or after March 13, 2019. If the Schluter-DITRA-HEAT or Schluter-DITRA-HEAT-DUO uncoupling membrane are used in conjunction with other Schluter products, a different Schluter warranty may apply. For the most current information and materials regarding Schluter-Systems warranties and programs, please visit [https://www.schluter.com/schluter-us/en\\_US/downloadfiles](https://www.schluter.com/schluter-us/en_US/downloadfiles).

**MAKING A CLAIM:** To make a claim under this Limited Warranty, the Owner must provide Schluter-Systems<sup>2</sup> with written notice within thirty (30) days of any alleged defect in a DITRA-HEAT System covered by this Limited Warranty, together with date and proof of purchase of such DITRA-HEAT System and/or all of its components and name and address of all installers and all invoices related to the original installation, failing which this Limited Warranty shall have no legal effect<sup>3</sup>. Schluter-Systems reserves the right at its election and as a condition of this Limited Warranty to inspect the alleged failed and/or defective DITRA-HEAT System.

All U.S. Claims shall be sent to:

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

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

<sup>1</sup> If there are any conflicting terms between any Written Materials, the most recently updated document shall be deemed to control.

<sup>2</sup> This Limited Warranty is limited to sales of DITRA-HEAT Systems made in and intended for use in the United States and Canada. For the purposes of this Limited Warranty, Schluter Systems L.P. shall offer warranty coverage to Owners located in the United States, and Schluter Systems (Canada) Inc. shall offer warranty coverage to Owners located in Canada.

<sup>3</sup> In the event that Owner fails to provide such required invoices relating to the original installation, Schluter-Systems shall pay Owner an amount equal to the average, reasonable costs of a comparable installation. If the parties fail to agree on such amount, such dispute shall promptly, and in the first instance, be submitted: (a) if a U.S. claim, to arbitration in Clinton County, New York, in accordance with the rules of the American Arbitration Association, or (b) if a Canadian claim, in the Province of Quebec, Canada, in accordance with the ADRIC Arbitration Rules. Any outcome of such arbitration proceeding shall be final and binding upon the parties hereto.