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# **ARDEX** **FLEXBONE® HEAT** **In-Floor Heating Systems**

**Innovative Design for Maximum Comfort and Energy Efficiency**

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**3-in-1 In-Floor Heating, Uncoupling and Waterproofing**

**Uncoupling: protects tile and grout joints from shear movement in the substrate**

**Waterproofing: protection for use in bathrooms, laundry rooms and other wet areas**

**Maximum heat efficiency, more heat comfort with less energy usage**

**Minimal roll memory – rolls out flat every time!**

**High quality heating cables – more efficient, easier to install, less cable required**

**Ideal for large-format tile and stone installations**

**FLEXBONE® Effect: prefill with mortar in just one pass**

**ARDEX Self-Leveling Underlayments; worry-free prefill option that fully encases cables**

**Single-Source, Complete System Solution**

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# ARDEX FLEXBONE® HEAT

## In-Floor Heating Systems

### Description and Usage

ARDEX FLEXBONE® HEAT is an electrical in-floor heating system for use with tile or stone. The unique crossbones pattern provides less touch points between the cables and the membrane, and less air space within the mat structure, providing faster and more efficient heating of the floor covering. The unique design also allows for easy prefilling in just one pass with ARDEX high-performance mortars, or approved ARDEX Self-Leveling Underlayments can be used for easier, faster prefilling to fully encase the heat cables.

ARDEX FLEXBONE® HEAT can be used as a waterproofing layer in bathrooms and other wet areas. Ideal for large-format tile and stone installations, ARDEX FLEXBONE HEAT is also an uncoupling membrane that helps to prevent grout joint and tile damage from underlying substrate movements.

ARDEX FLEXBONE HEAT is approved for CSA-W = "Wet Rating."

### For Use Indoors on the Following Substrates

- Concrete
- Wood
- Screeds
- Gypsum
- Cement backer unit
- Existing tiles

### Suitable Uses

<b>Residential Construction</b>	Yes
<b>Hotel* and Residential Bathrooms</b>	Yes
<b>Cafeterias</b>	Yes
<b>Commercial Offices</b>	Yes
<b>Restaurants</b>	Yes
<b>Retail Stores</b>	Yes

\*These requirements do not cover the use of electrical heating systems on or as part of a certified fire resistance building assembly.

### Recommended Tools

Drywall square or straight edge, utility knife or ARDEX FLEXBONE® Shears, 35 - 75 lb. roller or rubber float, electrical tester and a 1/4" x 1/4" (6 x 6 mm) square notch trowel

### Accessories

ARDEX UD 146™ Edge Insulation Strip

ARDEX UD 156™ Movement Joint Tape

ARDEX TLT™ Seam Tape

FLEXBONE® HEAT Cables - UL-E478486 - UL Listed U.S. and Canada

ARDEX Thermostats and Power Modules - UL-E157297 - UL Listed U.S. and Canada

- o FLEXBONE® HEAT Remote WiFi and Touch Thermostat - #30068
- o FLEXBONE® HEAT Touch Programming Thermostat - #30070

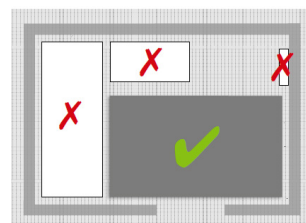
- o FLEXBONE® HEAT Non-Programmable Thermostat - #30072
- o FLEXBONE® HEAT Power Module - #30074

### Preparation

**Materials:** Deliver all material to the jobsite in the original, unopened packaging under proper storage conditions.

It is the responsibility of the installation contractor to inspect the ARDEX FLEXBONE HEAT for visual defects and to verify that it is the correct type before beginning the installation.

Acclimate the setting material, ARDEX FLEXBONE HEAT and tile or stone in an enclosed building at a minimum of 65°F (18°C) for at least 24 - 48 hours before the installation. If possible, lay out the ARDEX FLEXBONE HEAT during acclimation.



Installation Floor Plan  
(ignore unheated zones)

### Floor Plan

Preparation of a pre-installation plan showing the position of the heating cables, the floor sensor and the cold conductor cable system components as well as a subdivision into heating circuits is highly recommended. To register for the ARDEX FLEXBONE®

HEAT System Warranty, please fill out and submit the Installation Worksheet and Warranty Validation Form located on the ARDEX FLEXBONE HEAT product page or within the cable packaging.

It is possible that not all areas where the ARDEX FLEXBONE HEAT mat is installed will be heated. Never install electrical heating cables under vanities, showers, bathtub platforms, free-standing bathtubs, kitchen cabinets, islands, solid counters or any other fixtures or in closets. Excessive heat will build up in these confined spaces and may cause cable overheating. Because of this, there may be a difference in the amount of heating cable vs. membrane to take into account when calculating necessary product quantities. Ensure that all furniture placed over ARDEX FLEXBONE HEAT cables has bottom ventilation (e.g. mounting with legs). Non-compliance may lead to loss of warranty due to heating cable damage.

Do not run the heating cable under a wall or from one room to another; an individual cable must not heat more than one room. The heating section of the cable must be entirely installed under the floor covering.

If the temperature regulation of heating circuits takes place by means of more than one thermostat, the tile and stone must be separated by expansion joints into field areas corresponding to the heating circuits.

### Substrate Preparation



For all substrates listed below, acid etching, adhesive removers, solvents and sweeping compounds are not acceptable means for cleaning the substrate. Substrate and ambient temperatures must be a

minimum of 50°F (10°C) for the installation of ARDEX products. Substrates must be dry during installation and cure.

Substrates also must be load-bearing, flat and structurally sound. Vacuum all dust and debris.



All substrates must be smooth and flat with a maximum variance of 1/4" in 10' (6 mm in 3 m) from the required plane per TCNA or TTMAC guidelines, or as recommended by the tile or stone manufacturer (default

to the most stringent requirement).

Should pre-leveling or subfloor repair be required, use one of the materials listed below, as appropriate. Observe the instructions and dry times in the ARDEX technical data sheets.

Product	Substrate	Interior
ARDEX A 38™ Rapid Set Screed or ARDEX A 38 MIX™ Rapid Set, Premixed Screed	Concrete	X
	Wood	X**
ARDEX AM 100™ Rapid Set Pre-Tile Smoothing and Ramping Mortar	Concrete	X
	Wood	
ARDEX Liquid BackerBoard® Self-Leveling Underlayment for Interior Wood and Concrete Subfloors	Concrete	X
	Wood	X
ARDEX TL 1000™ Self-Leveling Underlayment	Concrete	X
	Wood	
ARDEX SKM™ Skimcoat Patch & Finishing Underlayment	Concrete	X
	Wood	X

\*\*Refer to the ARDEX A 38 and ARDEX A 38 MIX technical data sheets for further instructions.

For more detailed information on substrate preparation, please refer to the ARDEX Substrate Preparation Technical Data Sheet at [www.ardexamericas.com](http://www.ardexamericas.com).

#### NOTE ON ASBESTOS-CONTAINING MATERIALS

Please note that when removing existing flooring, any asbestos-containing materials should be handled and disposed of in accordance with applicable federal, state and local regulations.

#### Concrete Substrates

All concrete substrates must be solid, structurally sound, fully cured, clean, dry and free of oil, wax, grease, asphalt, latex and gypsum compounds, curing compounds, sealers and any contaminant that might act as a bond breaker. If necessary, mechanically clean the floor down to sound, solid concrete by shot blasting or similar. Over-watered, frozen or otherwise weak concrete surfaces also must be cleaned down to sound, solid concrete by mechanical methods. Sanding equipment is not an effective method to remove contaminants from concrete.

#### Wooden Subfloors

The wood subfloor must be constructed according to prevailing building codes. It must be solid and securely fixed to provide a rigid base free of undue flex. For tile installations, the subfloor must be constructed in accordance with ANSI L/360 or ANSI L/720 standards. Any boards exhibiting movement must be properly fastened. The surface of the wood must be clean and free of oil, grease, wax, dirt, varnish, shellac and any contaminant that might act as a bond breaker. If necessary, sand down to bare wood. A commercial drum sander can be used to sand large areas. Do not use solvents, strippers or cleaners.

Vacuum all dust and debris. Open joints should be filled with ARDEX SKM. It is the responsibility of the installation contractor to ensure that the wood subfloor is thoroughly clean and properly anchored prior to the installation of any ARDEX material.

Exterior-grade plywood and OSB subfloors must be either 5/8" (approx. 15 mm) or 3/4" (18 mm) tongue and groove. Fasten plywood or OSB every 6" (15 cm) o.c. along sheet ends and 8" (20 cm) o.c. along intermediate supports with ring-shank nails or screws. Allow 1/8" (approx. 3 mm) between sheets. All sheet ends must be supported by a framing member and properly fastened.

The underlayment must be constructed of 3/8" (9 mm) plugged-faced, exterior-grade plywood or OSB and fastened every 6" (15 cm) along sheet ends and 8" (20 cm) in the panel field with ring-shank nails or screws. Allow 1/8" (approx. 3 mm) between sheets on all edges and ends and 1/4" (approx. 6 mm) at perimeter walls and any abutting surfaces. Offset underlayment joints from the joints in the subfloor.

#### For Ceramic or Porcelain Tile Installations

If a single layer of plywood or OSB will be installed, a joist spacing of either 16" (40 cm) o.c. or 19" (49 cm) o.c. is required.

For 16" (40 cm) o.c. joist spacing, the minimum subfloor, nominal thickness must be 5/8" (approx. 15 mm) tongue and groove wood.

For 19.2" (49 cm) o.c. joist spacing, the minimum subfloor, nominal thickness must be 3/4" (18 mm) tongue and groove wood.

For 24" (61 cm) o.c. joist spacing, a double layer of plywood or OSB is required. The minimum subfloor, nominal thickness must be 3/4" (18 mm) tongue and groove wood, and the minimum underlayment, nominal thickness must be 3/8" (9 mm).

#### For Natural Stone Tile Installations

When installing natural stone over wood subfloors, two layers of plywood or OSB are required regardless of joist spacing, per TCNA and TTMAC guidelines. However, the joist spacing size must not exceed 24" (61 cm) o.c. The double-layer wood flooring must have a minimum subfloor, nominal thickness of 3/4" (18 mm) tongue and groove wood as well as a minimum underlayment, nominal thickness of 3/8" (9 mm).

#### Highly-Absorbent Substrates

Highly-absorbent substrates, such as gypsum, must be double primed with ARDEX P 51™ Primer.

The substrate must be thoroughly clean and free of dirt, debris, sealers and any contaminant that might act as a bond breaker. If necessary, mechanically clean the floor down to sound, solid material by shot blasting or similar.

Highly-absorbent substrates require two applications of ARDEX P 51. Make an initial application of ARDEX P 51 mixed with 3 parts water by volume. Apply evenly with a soft push broom. Do not use paint rollers, mops or spray equipment. Do not leave any bare spots. Brush off puddles and excess primer. Let dry thoroughly (1 - 3 hours), and install a second application of ARDEX P 51 mixed 1:1 with water as stated above. Allow primer to dry to a clear, thin film (min. 3 hours, max. 24 hours).

### Existing Tiles

Contact the ARDEX Technical Department for specific substrate requirements.

### Joints and Cracks



All existing expansion joints, isolation joints and construction joints, as well as all moving cracks, must be honored up through the uncoupling membrane and tile or stone as indicated by TCNA or TTMAC guidelines.

These joints must also be honored up through the heating cables. Please refer to the cable installation section.

Perimeter and field movement joints are essential for door areas, thresholds between rooms and geometric offsets, as well as around walls, penetrations and fixed objects. Install ARDEX UD 146 Edge Insulation Strip along walls, rising structural elements and surface penetrations.

Arrange perimeter and field movement joints in accordance with industry standards. Per TCNA/TTMAC guidelines, please note that underfloor heating areas require additional joints, as do interior areas exposed to direct sunlight, such as floors in front of floor-length windows.

For areas with heavy loads, expansion joint profiles may be necessary. Contact the expansion joint profile manufacturer to ensure suitability for the intended use.

As needed, dormant cracks and dormant control joints can be filled with ARDEX SKM, following the instructions in the technical data sheet.

### Mortar Selection

Install the ARDEX FLEXBONE HEAT and tile or stone using one of the following ARDEX setting materials:

	Suitable to Install ARDEX FLEXBONE HEAT to substrate	Suitable to Install Tile and Stone over ARDEX FLEXBONE HEAT
ARDEX S 28™ MICROTEC® Rapid-Set, Rapid-Dry, Super-Format Tile and Uncoupling Membrane Mortar	X	X
ARDEX X 78™ MICROTEC® Semi-Pourable Tile and Stone Mortar	X	X
ARDEX X 77™ MICROTEC® Fiber Reinforced Tile and Stone Mortar	X	X
ARDEX X 5™ Flexible Tile and Stone Mortar	X	X
ARDEX X 7 R™ Rapid Set, Flexible Tile and Stone Mortar		X
ARDEX X 90 OUTDOOR™ Microtec3 Rapid-Set, Flexible Tile and Stone Mortar	X	X
ARDEX X 32™ MICROTEC® Universal Rapid Setting and Drying Thin-to-Thick Bed Mortar		X
ARDEX N 23™ MICROTEC® Rapid Set Natural Stone and Tile Mortar		X

### Uncoupling Membrane Installation



Place the ARDEX FLEXBONE HEAT membrane so that it is perpendicular to the subsequent installation direction of the tile or stone installation. Trim the ends of each section as necessary to fit the surface area to be covered. Align the lengthwise edge of the material exactly with that of the adjacent section, and ensure that all rolls are placed so that the crossbone pattern halves line up. When the ARDEX FLEXBONE HEAT membrane sections are joined together end to end, the crossbone pattern MUST form a complete matching unit as shown in the blue circle. **NOTE: The ARDEX FLEXBONE HEAT installation must not extend beyond the room or area in which it originates. ARDEX FLEXBONE HEAT must not be installed in closets, over walls, over partitions that extend to the ceiling or over cabinets.**



Lift the placed mat, and use the flat side of a trowel to key in the approved ARDEX mortar to the substrate. Apply the mortar to the substrate using a 1/4" x 1/4" (6 x 6 mm) square notch trowel, leaving a minimum bed of 1/8"-3/16" (3 mm - 4.5 mm).

Comb the mortar out over an area no larger than can be covered by the ARDEX FLEXBONE HEAT membrane during the setting material open time. If the mortar skins over, it must be completely, mechanically removed and reapplied. ARDEX mortars should be mixed to the high-water ratio noted in the technical data sheet.



Carefully lay the ARDEX FLEXBONE HEAT membrane into the wet ARDEX setting material with the **fleece side facing down and the exposed plastic side up**.



DO NOT let the material fall, as this will trap air beneath the membrane. At the seams, butt the membrane edges up against each other.

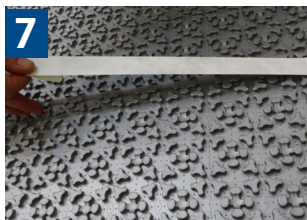


Using a float, flat trowel or 35 - 75 lb. roller, smooth and embed the membrane into the bonding mortar.



Gently lift a corner of the membrane to check for proper coverage. Full contact between the fleece and setting material must be achieved.

When approaching walls or other obstacles, cut the membrane to the appropriate length using a utility knife or ARDEX FLEXBONE Shears. Leave approximately 1/4" (6 mm) between the membrane and the edge of the wall or obstacle to allow for expansion. Use ARDEX UD 146 Edge Insulation to create these perimeter joints.



Structural, expansion and field boundary joints are formed by separating the ARDEX FLEXBONE HEAT sections to the required width. The joints in the membranes are to be covered with self-adhesive

ARDEX UD 156 Movement Joint Tape to protect against the entry of mortar and grout.

In the case of structural and expansion joints, membranes must be separated to the specified width of at least 3/8" (8 mm). Field boundary joints for subdividing large covering areas are formed on ARDEX FLEXBONE HEAT membrane. The arrangement of joints in the tile or stone installation must be in line with the separations of the membranes.

**For waterproofing applications**, use ARDEX TLT™ Seam Tape after the heating cables are installed (see "ARDEX FLEXBONE HEAT as a Waterproofing System" section below the "Cable Installation" section).

## Cable Installation

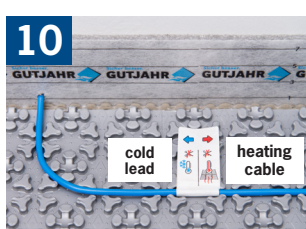
Allow the membrane and mortar course to cure in accordance with the selected mortar technical data sheet, then install the cables as detailed below. This product must be installed by a qualified person in accordance with this installation handbook and with the Canadian Electric Code Part I (Canada) or the National Electric Code (U.S.) as applicable. All electric connections must be made by a qualified electrician, according to the electrical and building codes effective in your region.



Unheated zones must be designated prior to installation and omitted during placement of the heating cables as per the pre-installation plan.



**TEST #1:** Prior to installing the heating cables, test the total resistance of the heating cables. Any defective cables must be replaced.



The socket-less transition between the cold conductor cable and the heating cable is denoted precisely and must be placed into the ARDEX FLEXBONE HEAT membrane. The cold lead cable must be threaded through a conduit from

the base of the wall to the thermostat electrical box. The temperature sensors need to be threaded either inside the same conduit as the cold lead or in a separate conduit. The conduit and fittings must be UL listed.

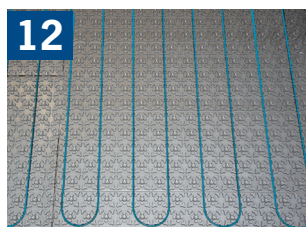
**Important! NEVER install the Hot/Cold factory connection in the wall. This will cause overheating, system failure, and could cause a fire. This connection must be installed entirely under the floor covering.**



The heating cables are placed around the crossbones and between the straights. This unique pattern allows for radial cable placement to prevent damage. **Avoid folding the heating cable on itself. A radius of curvature less**

**than 1/16" (1.5 mm) could damage its sheath.**

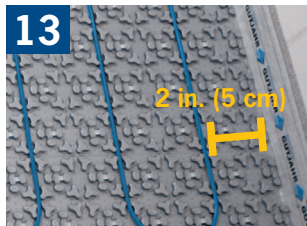
**NOTE:** Under no circumstances should heating cables bridge any moving joints, including expansion, isolation and construction joints. If these joints exist in your installation, different heating areas with separate heating cables must be created. These can then be connected to one thermostat using the power module, or to separate thermostats.



The heating cable must be spaced so that at least two crossbone patterns are between the cables (approx. 3.88" / 9.8 cm). Please note that the minimum installed bending radius of the heating cable is 5 times the cable thicknesses, or

1.97" (5 cm). A narrower spacing may cause a fire or damage the floor covering.

**Important! Never CUT or modify the heating cable in any way. This would change the cable resistance, will cause damage to the cable, and could cause cable overheating. This will also void the warranty! Multiple cable lengths are available to fit different installation areas.**



Heating cables may not cross, overlap or touch each other. The minimum spacing requirements are as follows:

- From walls, partitions and fixed cabinets: 2" (5 cm)
- From other heat sources (baseboard heaters, fireplaces, forced air heating ducts, etc.): 8" (20 cm)
- Plumbing drains: 4" (10 cm)
- Centerline of toilet drain: 7" (18 cm)

**It is helpful to plan the location of a buffer zone, as it is not possible to predict where the heating cable will end. The buffer zone is an area where heating is not essential and heating cable installation is not planned (e.g., behind a toilet or adjacent to a door opening). This area allows for placement of excess heating cable. Heating cables may also be installed 6" (15 cm) from the wall to create a buffer zone.**



Position the floor sensors between two heating cables. Two floor temperature sensors are provided - one with the ARDEX FLEXBONE HEAT thermostats and one with the ARDEX FLEXBONE HEAT heating cables.



Press the end of the floor sensor into the membrane. For non-waterproofing installations, a notch can be cut lengthwise into the membrane to accommodate the sensor. Cutting a notch is not required when using an ARDEX self-leveling

underlayment to prefill.



**TEST #2:** Before prefilling the membrane, test the total resistance of the heating cables. Any defective cables must be replaced.

### ARDEX FLEXBONE HEAT as a Waterproofing System

In applications requiring waterproofing, all seams in the ARDEX FLEXBONE HEAT membrane, as well as floor and wall transitions, must be sealed with ARDEX TLT™ Seam Tape using an approved ARDEX mortar after the heating cables are installed. The seam tape must overlap these seams and transitions by a minimum of 2" (5 cm) to secure waterproof integrity. This practice may also be appropriate in laundry rooms, spaces with icemakers and other areas where an overflow or pipe break may occur. To do this:



Trowel mortar onto the ARDEX FLEXBONE HEAT membrane over seam areas and/or the connecting areas of adjacent structural components.



Embed ARDEX TLT™ Seam Tape into the approved ARDEX mortar.



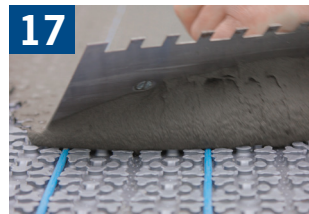
During the tile or stone installation (see below), apply a layer of mortar over the ARDEX TLT™ Seam Tape.

In some cases, the vertical section of the floor or wall transition may not be compatible with bonding the ARDEX TLT™ Seam Tape using a thin-set mortar. Connections to these vertical substrates may otherwise be achieved by using ARDEX TLT™ 700 Multi- Purpose Construction Adhesive and Sealant.

Do not mechanically fasten any material through the ARDEX FLEXBONE HEAT membrane, as this will compromise its waterproofing and uncoupling capabilities.

### Prefill and Tile or Stone Installation

Once the cables have been installed, as well as any seam/transition waterproofing needed, prefill the membrane using an approved ARDEX mortar.



After mixing the appropriate ARDEX mortar, apply the mortar to the ARDEX FLEXBONE HEAT with the flat side of a notched trowel (keying in) to fill in the membrane cavities. The ARDEX FLEXBONE HEAT

membrane's thickness is 1/4" (6 mm).

**NOTE:** Approved ARDEX self-leveling underlayments may be used as an easier, faster prefill material that will easily and fully encase the cables. Please contact the ARDEX Technical Service Department for further instructions.



Comb additional mortar over the prefilled membrane with the appropriate notched trowel for the size of the tile or stone to be installed, and directly lay the tile or stone on top.

This application may occur "wet on wet." Alternatively, allow the prefilled mortar or ARDEX self-leveling underlayment to cure a minimum of 16 hours prior to combing additional mortar.

Follow TCNA or TTMAC standards for the installation of tile and stone, including the proper transfer of setting materials. Periodically remove and check tile or stone to ensure full coverage.

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The mortar must be installed to the top of the ARDEX FLEXBONE HEAT membrane. The mortar thickness between the membrane and the tile must be a minimum thickness of 1/8" (3 mm) up to a maximum thickness of 3/8"

(9 mm). Using the correct notched trowel will provide the proper thickness. Install metal edge or transition strips where the tile ends along bordering, lower-lying surfaces.

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**TEST #3:** Test the total resistance of the heating cables. Any defective cables must be replaced.

**NOTE:** Do not walk on the ARDEX FLEXBONE HEAT membrane until the mortar has cured. Prior to installing tile or stone, ARDEX FLEXBONE HEAT should be protected with boards in areas where foot traffic is necessary.

Allow the tile or stone installation to set in accordance with the specific mortar technical data sheet prior to proceeding with the grouting installation.

**NOTE:** Due to the properties of uncoupling membranes, mortar type, tile type, tile size and climactic conditions, the mortar curing time required prior to grouting may vary. However, the ARDEX mortars allowable for use with ARDEX uncoupling membranes typically permit grouting in 3 - 24 hours.

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For grouting, use ARDEX FL™ Rapid Set, Flexible, Sanded Grout, ARDEX FH™ Sanded Wall and Floor Grout or ARDEX WA™ High Performance, 100% Solids Epoxy Grout and Adhesive.

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For soft and expansion joints, use ARDEX SX™ 100% Silicone Sealant for Tile and Stone Applications.

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### Connecting to the Thermostat

Connection of the heating cable and the floor sensor to the thermostat or power module should be completed by a certified electrician. A dedicated

circuit is required for each application. In the circuit breaker panel, clearly mark which breakers are connected to the heating membrane. A ground fault circuit interrupter (GFCI) is required for each circuit. The ARDEX FLEXBONE HEAT thermostats include a Class A GFCI, thus a GFCI circuit breaker is not required when using these thermostats.

The connecting wire in the transition between the cold conductor cable and the heating cable may be shortened to no less than 3 ft.

(1 m). Allow the tile and grout installation to cure as follows prior to turning on the heating mat:

- If ARDEX N 23, ARDEX S 28 or ARDEX X 32 are used: 4 days
- For all other ARDEX mortars: 7 days.

**Important! NEVER install a cable designed for a 120 V power source on a 240/208 V power source. This cable must be grounded. Connect the heating cable ground to the ground wire from the electrical panel.**

### Heating Cables - Warnings

- CAUTION: A ground fault protection device must be used with this heating device. Refer to the Connecting to the Thermostat section of this document.
- Before installing and operating this product, the user and/or installer must read, understand and follow these instructions and keep them handy for future reference.
- If you have a question, please contact Technical Services by phone 888-512-7339 (724-203-5000) or from our website at [www.ardexamericas.com](http://www.ardexamericas.com).
- If these instructions are not followed, the warranty will be considered null and void and the manufacturer claims no further responsibility for this product.
- Removing the cable label will void the warranty.
- De-energize all power circuits before installation and servicing.
- Heating cables shall not be altered in the field. If the installer or the user modifies the unit, he will be held responsible for any damage resulting from this modification, and the warranty and the product certification will be void.
- NEVER use the heating cable for any purpose other than heating a floor INSIDE a building.
- Heating cable testing is required while the heating cable is on the spool and at two subsequent steps during installation to ensure cable quality and for warranty purposes.
- NEVER energize the cable while it is on the spool. This would lead to overheating that could damage the cable and may cause a fire.
- Keep ends of heating devices and kit components dry before and during installation.
- The minimum temperature at which the cable should be installed is 32° F (0°C).

## ARDEX FLEXBONE® HEAT Cable Sizes and Information

Product Name	Voltage	Heat Area (sq. ft.)	Heat Area (m <sup>2</sup> )	Cable Length (ft.)	Cable Length (m)	Watts	Total Resistance $\Omega$
ARDEX UH 910-15	120	15	1.4	39.6	12.1	150	96
ARDEX UH 910-22	120	21.5	2	57.9	17.7	225	64
ARDEX UH 910-28	120	28	2.6	78	23.8	300	48
ARDEX UH 910-36	120	35.5	3.3	98	29.9	375	38.4
ARDEX UH 910-42	120	42	3.9	118	36.0	451	32
ARDEX UH 910-49	120	48.5	4.5	136.4	41.6	525	27.43
ARDEX UH 910-55	120	55	5.1	156.4	47.7	600	24
ARDEX UH 910-63	120	62.5	5.8	176.4	53.8	675	21.33
ARDEX UH 910-68	120	68	6.3	196.4	59.9	750	19.2
ARDEX UH 910-81	120	81	7.5	234.8	71.6	900	16
ARDEX UH 910-95	120	95	8.8	274.8	83.8	1,050	13.71
ARDEX UH 910-108	120	107.5	10	313.2	95.5	1,200	12
ARDEX UH 910-122	120	121.5	11.3	353.2	107.7	1,350	10.67
ARDEX UH 910-134	120	133.5	12.4	391.6	119.4	1,500	9.6
ARDEX UH 910-151	120	150.5	14	439	133.8	1,679	8.58
ARDEX UH 910-15	240	15	1.4	39.6	12.1	150	384
ARDEX UH 910-22	240	21.5	2	57.9	17.7	225	256
ARDEX UH 910-28	240	28	2.6	78	23.8	300	192
ARDEX UH 910-36	240	35.5	3.3	98	29.9	375	153.6
ARDEX UH 910-42	240	42	3.9	118	36.0	451	128
ARDEX UH 910-49	240	48.5	4.5	136.4	41.6	525	109.71
ARDEX UH 910-55	240	55	5.1	156.4	47.7	600	96
ARDEX UH 910-63	240	62.5	5.8	176.4	53.8	675	85.33
ARDEX UH 910-68	240	68	6.3	196.4	59.9	750	76.8
ARDEX UH 910-81	240	81	7.5	234.8	71.6	900	64
ARDEX UH 910-95	240	95	8.8	274.8	83.8	1,050	54.86
ARDEX UH 910-108	240	107.5	10	313.2	95.5	1,200	48
ARDEX UH 910-122	240	121.5	11.3	353.2	107.7	1,350	42.67
ARDEX UH 910-134	240	133.5	12.4	391.6	119.4	1,500	38.4
ARDEX UH 910-151	240	150.5	14	439	133.8	1,679	34.31
ARDEX UH 910-172	240	172	16	510.8	155.7	1,954	29.48
ARDEX UH 910-194	240	194	18	569.2	173.5	2,177	26.46
ARDEX UH 910-216	240	215.5	20	635.5	193.7	2,431	23.69
ARDEX UH 910-248	240	247.5	23	744.8	227.0	2,849	20.22

## Thermal Resistance Chart

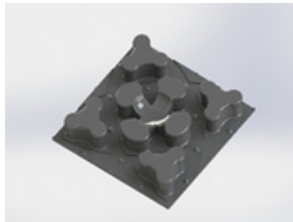
Please note that the maximum thermal resistance (R-Value) permitted above the ARDEX FLEXBONE HEAT installation must not exceed R-1. See below for examples of thermal resistance values of various floor coverings and materials.

Floor Coverings	Thickness	Thickness	Thermal Conductivity Insulation Capacity	Thermal Resistance	Thermal Resistance
Material	mm	inches	Lambda Value W/mK	R-Value (m <sup>2</sup> K/W)	(ft <sup>2</sup> •°F•h/Btu)
		<b>Nominal</b>			
Tile	10 mm	3/8"	1.1	0.009	2.85
Granite/Marble	20 mm	3/4"	2.8	0.007	2.22
Concrete Block	12 mm	1/2"	2.1	0.006	1.9
Linoleum	2.5	3/32"	0.18	0.014	4.43
Vinyl	2 mm	5/64"	0.2	0.010	3.17
Carpet	8 mm	5/16"	0.07	0.114	36.14
3-Layer Parquet	8 mm	5/16"	0.13	0.062	19.65
2-Layer Parquet	12 mm	1/2"	0.18	0.067	21.24
Cork Parquet	4 mm	5/32"	0.08	0.050	15.85
Laminate	9 mm	3/8"	0.21	0.043	13.63
Smoother Compounds	10 mm	3/8"	1.1	0.009	2.85

Please also note that building insulation beneath ARDEX FLEXBONE HEAT cannot exceed R-20.

### Material

The ARDEX FLEXBONE HEAT membrane consists of a specially shaped, rot-proof plastic film (PP) with a thickness of 1/4" (6 mm) and factory-laminated, non-woven clawing material on the underside.



### Size and Coverage Available

1/4" (6 mm) **Mat** - 39" wide x 41' long (1 m wide x 12.5 m long) roll: Coverage of 134.5 sq. ft. (12.5 sq. m) per roll

**Sheet - 38.5" wide x 31" long** (0.98 m wide x 0.79 m) Coverage of 8.3 sq. ft. (0.77 sq. m) per sheet

### Robinson Test Results

ARDEX FLEXBONE HEAT received an Extra Heavy Rating.

## Warranty

Eligible for the ARDEX FLEXBONE® HEAT System Warranty with the submittal of the Installation Worksheet and Warranty Validation Form located on the ARDEX FLEXBONE HEAT product page or within the cable packaging. Failure to follow written directions will void the warranty. For complete warranty details, please contact our Customer Service Center at 888-512-7339.

### Notes

FOR PROFESSIONAL USE ONLY.

Store and transport rolls vertically in the original packaging.

Store in temperatures from 32°F - 72°F (0°C - 22°C), and protect from sunlight and high humidity. Storage temperature resistance is from -22°F (-30°C) up to 158°F (70°C). The original packaging only offers short-term UV protection.

Dispose of packaging and residue in accordance with federal, state and local waste disposal regulations.

\*\*\*Tile and stone must be a minimum size of 2" x 2" (5 cm x 5 cm).

\*\*\*\*ARDEX recommends a polymer-modified tile and stone mortar with an ISO 13007 C2 designation and/or that complies with ANSI A 118.4, ANSI A 118.11 or ANSI A 118.15 to install the ARDEX FLEXBONE HEAT and tile or stone. ARDEX tile and stone mortars are highly recommended due to their unique hardening and curing capabilities.

### Precautions

Carefully read and follow all precautions and warnings on the product label. For complete safety information, please refer to the Safety Data Sheets (SDS) of the installation products available at [www.ardexamericas.com](http://www.ardexamericas.com).

Made in Germany.

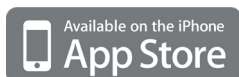
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