



Legacy report on the 1998 *International Mechanical Code*®

DIVISION: 15—MECHANICAL

Section: 15180—Heating and Cooling Piping

REPORT HOLDER:

WATTS RADIANT, INC.

www.wattsradiant.com

EVALUATION SUBJECT:

**ONIX RADIANT HEATING HOSE:
(3/8, 1/2, 5/8, 3/4 AND 1 INCH I.D.)**

EVALUATION SCOPE:

Compliance with the following code:

1998 *International Mechanical Code*®

- Section 105.2 Alternative materials and equipment
- Section 1202.4 Material standards
- Section 1202.3 Material rating
- Section 1209.1 Materials

DESCRIPTION

Onix radiant heating hose is constructed of an ethylene propylene diene monomer (EPDM) rubber tube, a layer of aluminum foil, a layer of EPDM rubber, a spiral braided aramid reinforcement wrapping and a black EPDM cover. The tubing is manufactured with 3/8-, 1/2-, 5/8-, 3/4- and 1-inch (9.5, 12.7, 15.9, 19.1 and 25 mm) nominal inside diameter sizes. The hose is used as a radiant floor heating hose in hydronic heating systems which use water or glycol/water solutions as the transfer fluid. The hose is connected to supply and return manifolds, provided by the manufacturer, which provide the transition between the hoses and the heat source supply piping.

Application

Onix radiant heating hose is installed by embedment in concrete floor slabs or cementitious toppings with a minimum covering thickness of 3/4-inch (19.1 mm) above the hose, by attaching directly to the underside of wood floor sheathing in wood frame construction, or by installing between sleepers in wood frame construction. See Figure 1 of this report for diagrams of installation types.

CONDITIONS OF USE

This report is limited to the applications and products as stated in this report. The ICC-ES Subcommittee on National Codes intends that the report be used by the code official to determine that the report subject complies with the code requirements specifically addressed, provided that this product is installed in accordance with the following conditions:

- The piping contained in this report is limited to use in systems with a maximum operating pressure of 100 lbf/in² (690 kPa) and a maximum design temperature of 180 degrees F (82 degrees C).
- This report is limited to the evaluation of Onix in hydronic systems using a transfer fluid of water, 1:1 ethylene glycol/water or 1:1 propylene glycol/water.
- The piping installation shall not contain joints or splices, except for the connections to the manifolds.
- The piping system shall be pressurized to a minimum pressure of 50 lbf/in² (345 kPa), prior to encasement in concrete or cementitious decks. During pouring, the pipe shall be maintained at the proposed operating pressure.
- Use of the Onix as potable water supply piping is beyond the scope of this report.
- The Onix shall not be exposed to temperatures less than -40 degrees F (-40 degrees C).
- Installation instructions shall be provided and available on the job site at all times. These instructions shall include, but not be limited to, product handling precautions and any other precautions needed for the proper installation of the Onix.
- This report is subject to periodic re-examination. For information on the current status of this report, contact the ICC-ES.

ITEMS REQUIRING VERIFICATION

The following items are related to the installation of the report subject, but are not within the scope of this evaluation. However, these items are related to the determination of code compliance.

- ✓ All system manifolds shall be located so as to be accessible for servicing and maintenance.
- ✓ Where used in hydronic systems supplied by a potable water supply, the system shall be designed and installed to prevent contamination of the potable water supply through cross-connection or backflow, in accordance with Section 608.0 of the 1997 *International Plumbing Code*® and the 1998 *Supplement to the International Plumbing Code*.

Listings are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the listing or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this listing, or as to any product covered by the listing.

- ✓ Review of boilers, valves, manifolds, fittings, controls, accessories and potable water supply piping of hydronic systems is beyond the scope of this report.

INFORMATION SUBMITTED

- Underwriters Laboratories Inc., File Number MH17193, dated October 22, 1997, containing results of long term pressure tests on a 1-inch-diameter (25 mm) sample of the Onix. The sample was subjected to a 56-day air oven, deionized water, 50 percent ethylene glycol and 50 percent propylene glycol solution test at 212 degrees F. (100 degrees C.).
- Bodycote Material Testing, Ltd., Report No. S800978, dated March 27, 1998, containing results of hydrostatic testing of the Onix. Results indicate that the $\frac{3}{8}$ -, $\frac{1}{2}$ -, $\frac{5}{8}$ -, $\frac{3}{4}$ - and 1-inch-diameter (9.5, 12.7, 15.9, 19.1 and 25 mm) tube withstood an internal pressure of 100 lbf/in² (690 kPa) at 180 degrees F. (82 degrees C) without bursting, leaking or developing other defects during the 1,000 hours test period.
- Underwriters Laboratories Inc., File MH17193, dated October 22, 1997, containing results of performance characteristic testing of the Onix. Results indicate that the Onix has been tested for the end use characteristics to verify the suitability of the hose for hydronic applications. Tests include adhesion, tensile strength, ozone exposure, external loading, bending deformation, hydrostatic strength and exposure to heat transfer fluids.

APPLICATION FOR PERMIT

To aid in the determination of compliance with this report, the following represents the minimum level of information to accompany the application for permit:

- The language "See ICC-ES Legacy Report No. 95-47", or a copy of this report;
- Details of hydronic piping installation, including installation of piping in or to flooring, type and spacing of piping hangers or supports, location of manifold, type and size of piping used, maximum operating pressure and temperature of the system, and system transfer fluid type.
- Specifications for material and installation requirements.

PRODUCT IDENTIFICATION

All Onix radiant heating hose manufactured in accordance with this report shall bear the following identification:

- "See ICC-ES Legacy Report No. 95-47."
- The report holder's contact information is the following:

WATTS RADIANT, INC.
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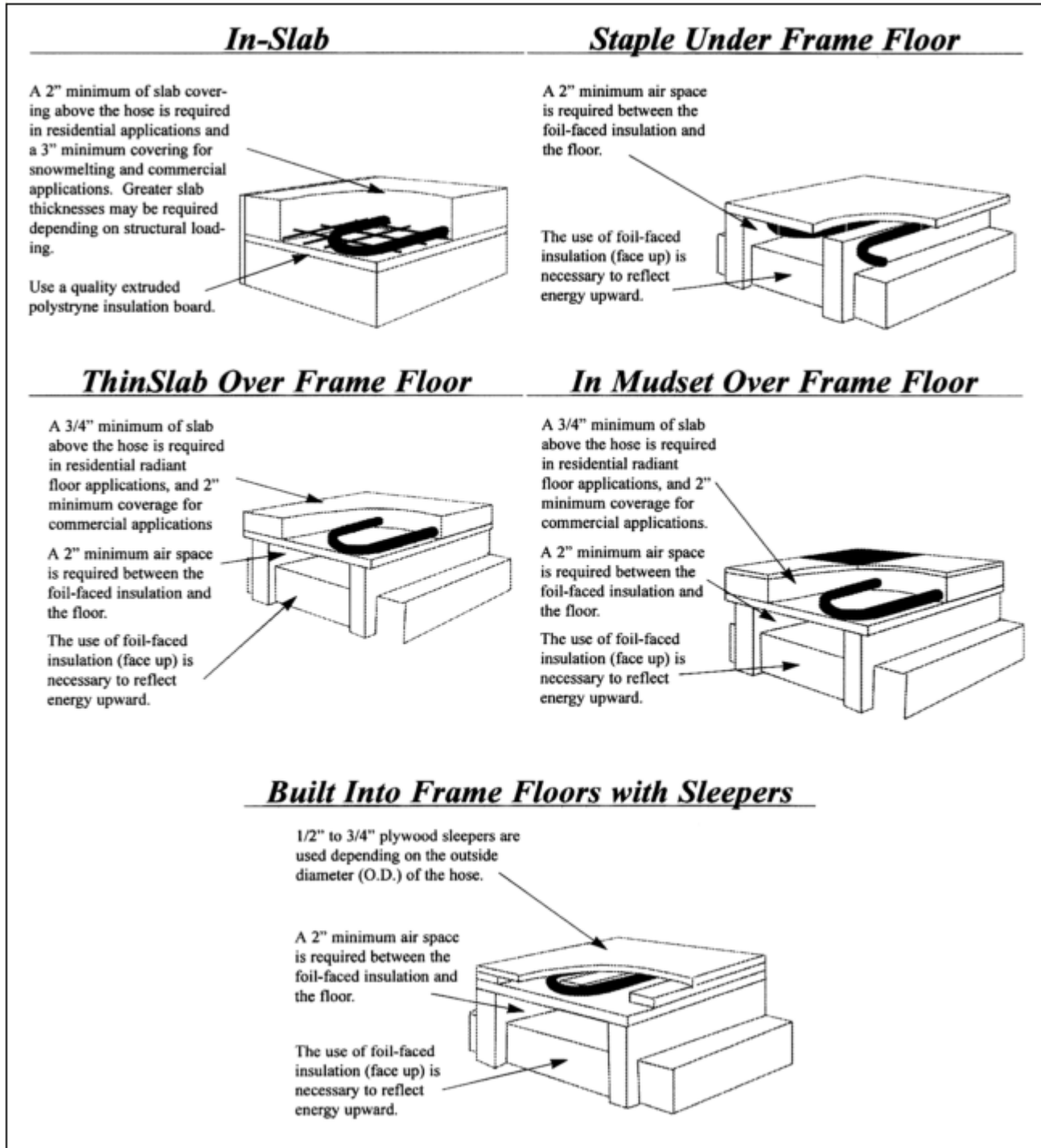


FIGURE 1*

*THIS DRAWING IS FOR ILLUSTRATION PURPOSES ONLY. IT IS NOT INTENDED FOR USE AS A CONSTRUCTION DOCUMENT FOR THE PURPOSE OF DESIGN, FABRICA