



**REHAU**

Unlimited Polymer Solutions



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## CERTIFICATIONS AND LISTINGS

REHAU PEXa Tubing, Effective March 2019

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

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# TABLE 1: REHAU CERTIFICATIONS AND LISTINGS

PEX TUBING CERTIFICATIONS - March 2019

Application	Tubing General					Fire Rated Assembly		Fire Sprinkler Applications	Plenum Applications		Geothermal Applications		Plumbing Applications		Radiant Floor Heating		
Agency Responsible for Certification	NSF	ASTM	CSA	ICC	PPI	ULC	UL	NSF	NSF		IGSHPA	NSF	NSF	NSF	DIN	NSF	
Applicable Standards for Testing	NSF-pw (NSF14/61/G)	F876/F877	B137.5	PMG-1379	TR-3/TR-4	ULC S101	UL 263	UL1821	ASTM E84	ULC S102.2		CSA C448	U.P. Code	ANSI/NSF 61/ Annex G	DIN 4726	SE 1091	
Official Logo for Certification																	
<b>RAUPEX® O<sub>2</sub> BARRIER</b>																	
136549	10 mm RAUPEX O <sub>2</sub> Barrier															✓	✓
136008	3/8" RAUPEX O <sub>2</sub> Barrier		✓	✓	✓	✓	✓		✓	✓				✓	✓		
136031	1/2" RAUPEX O <sub>2</sub> Barrier		✓	✓	✓	✓	✓		✓	✓				✓	✓		
136880	5/8" RAUPEX O <sub>2</sub> Barrier		✓	✓	✓	✓	✓		*	*				✓	✓		
136051	3/4" RAUPEX O <sub>2</sub> Barrier		✓	✓	✓	✓	✓		*	*				✓	✓		
136011	1" RAUPEX O <sub>2</sub> Barrier		✓	✓	✓	✓	✓		*	*				✓	✓		
136283	1 1/4" RAUPEX O <sub>2</sub> Barrier		✓	✓	✓	✓	✓		*	*				✓	✓		
136293	1 1/2" RAUPEX O <sub>2</sub> Barrier		✓	✓	✓	✓	✓		*	*				✓	✓		
136303	2" RAUPEX O <sub>2</sub> Barrier		✓	✓	✓	✓	✓		*	*				✓	✓		
<b>RAUPEX NON-BARRIER</b>																	
261683	3/8" RAUPEX Non-Barrier	✓	✓	✓	✓	✓	✓							✓	✓		
261026	1/2" RAUPEX Non-Barrier	✓	✓	✓	✓	✓	✓		✓	✓				✓	✓		
261036	5/8" RAUPEX Non-Barrier	✓	✓	✓	✓	✓	✓		*	*				✓	✓		
261046	3/4" RAUPEX Non-Barrier	✓	✓	✓	✓	✓	✓		*	*				✓	✓		
261066	1" RAUPEX Non-Barrier	✓	✓	✓	✓	✓	✓		*	*				✓	✓		
261086	1 1/4" RAUPEX Non-Barrier	✓	✓	✓	✓	✓	✓		*	*				✓	✓		
261106	1 1/2" RAUPEX Non-Barrier	✓	✓	✓	✓	✓	✓		*	*				✓	✓		
138331	2" RAUPEX Non-Barrier	✓	✓	✓	✓	✓	✓		*	*				✓	✓		
<b>RAUPEX RED/WHITE/BLUE UV SHIELD</b>																	
235331	3/8" RAUPEX UV Shield	✓	✓	✓	✓	✓	✓							✓	✓		
235351	1/2" RAUPEX UV Shield	✓	✓	✓	✓	✓	✓		✓	✓				✓	✓		
235371	3/4" RAUPEX UV Shield	✓	✓	✓	✓	✓	✓		+	*	*			✓	✓		
235381	1" RAUPEX UV Shield	✓	✓	✓	✓	✓	✓		+	*	*			✓	✓		
132571	1 1/4" RAUPEX UV Shield	✓	✓	✓	✓	✓	✓		+	*	*			✓	✓		
132581	1 1/2" RAUPEX UV Shield	✓	✓	✓	✓	✓	✓		+	*	*			✓	✓		
132591	2" RAUPEX UV Shield	✓	✓	✓	✓	✓	✓		+	*	*			✓	✓		
<b>RAUGEOTM</b>																	
235371	3/4" RAUGEOT		✓	✓								✓	✓				
235381	1" RAUGEOT		✓	✓								✓	✓				
235391	1 1/4" RAUGEOT		✓	✓								✓	✓				

\* See corresponding Technical Bulletin for further information  
 + White UV Shield Pipes only

# 1.

## REHAU PEX TUBING



### **Certifications and Listings for REHAU PEX Tubing**

RAUPEX® tubing is rigorously tested in house to ensure the highest quality crosslinked polyethylene (PEXa) tubing is produced. RAUPEX tubing is also extensively tested by independent third-party testing agencies and meet all applicable requirements for potable water distribution or other applications, including municipal water service lines, radiant panel heating and cooling systems, hydronic baseboard heating systems, snow and ice melting heating systems, building services piping, compressed air distribution and ground source geothermal systems.

### **NSF/ANSI Standard 14: Plastic Piping System Components and Related Materials**

This standard establishes minimum physical, performance and health effect requirements for plastic piping system components and related materials. NSF-pw covers testing to NSF 14 and NSF 61.



### **CSA B137.5: Crosslinked Polyethylene (PEX) Tubing Systems for Pressure Applications**

This standard defines requirements for crosslinked polyethylene pressure tubing systems. Systems covered by this standard are intended for use in potable water distribution or other applications, including municipal water service lines, reclaimed water distribution, radiant panel heating and cooling systems, hydronic baseboard heating systems, snow and ice melting heating systems, building services piping, compressed air distribution and ground source geothermal systems, provided that the PEX tubing systems covered by the standard comply with the applicable code requirements.



### **ASTM F876: Standard Specification for Crosslinked Polyethylene (PEX) Tubing**

This specification covers crosslinked polyethylene (PEX) tubing that is outside diameter controlled, made in one standard tubing dimension ratio, and pressure rated for water at three temperatures (160 psi @ 73.4°F, 100 psi @ 180°F, 80 psi @ 200°F). Included are requirements and test methods for material, workmanship, dimensions, sustained pressure, burst pressure, environmental stress cracking, stabilizer functionality and degree of crosslinking.

### **ASTM F877: Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems**

This specification covers requirements, test methods and methods of marking for crosslinked polyethylene plastic hot- and cold-water distribution systems components made in one standard dimension ratio and intended for 100 psi water service up to and including a maximum working temperature of 180°F (82°C). Components are comprised of tubing and fittings. Requirements and test methods are included for materials, workmanship, dimensions and tolerances, hydrostatic sustained pressure strength, thermocycling resistance, fittings and bend strength. The components covered by this specification are intended for use in residential and commercial, hot and cold, potable water distribution systems as well as municipal water service lines, radiant panel heating systems, hydronic baseboard heating systems, snow and ice melting systems and building services pipe.

### **PPI TR-3: Policies and Procedures for Developing Hydrostatic Design Bases (HDB), Pressure Design Bases (PDB), Strength Design Bases (SDB), and Minimum Required Strengths (MRS) Ratings for Thermoplastic Piping Materials or Pipe**

This report presents the policies and procedures used by the HSB (Hydrostatic Stress Board) of PPI (Plastics Pipe Institute) to develop recommendations of estimated long-term strength ratings for commercial thermoplastic piping materials. Recommendations are published in PPI TR-4 Recommended Hydrostatic Design Bases and Maximum Recommended Hydrostatic Design Stresses for Thermoplastic Piping Materials.

Listings are developed from data submitted to the HSB by the manufacturer. The general method used to evaluate the data is described in ASTM D2837 Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials with additional requirements as specified in PPI TR-3.



### **ICC PMG listing PMG-1379: REHAU RAUPEX, UV Shield, MUNICIPEX and O<sub>2</sub> Barrier Tubing**

This listing covers REHAU RAUPEX, RAUPEX UV Shield, MUNICIPEX and RAUPEX O<sub>2</sub> Barrier tubing to the building, plumbing and mechanical codes and all associated applicable standards.

#### **RAUPEX tubing is accepted by the following model plumbing and mechanical codes:**

Uniform Plumbing Code (UPC)

Uniform Mechanical Code (UMC)

Uniform Solar Energy and Hydronics Code (USEHC)

International Plumbing Code (IPC)

International Mechanical Code (IMC)

International Residential Code (IRC)

National Plumbing Code of Canada (NPCC)

Installation Code for Hydronic Heating Systems (CSA B214)

#### **US Department of Housing and Urban Development (HUD) Listing MR1296**

RAUPEX tubing is approved by HUD for use in potable hot and cold water distribution systems and hydronic heating systems.

#### **International Standards Organization (ISO)**

The quality management systems in REHAU's production facilities are certified to the international quality standard ISO 9001 by an independent third-party auditing agency. The ISO 9001 certification encompasses quality systems for product design and product manufacture.

## 2.

# FIRE-RATED ASSEMBLY APPLICATIONS



### **CAN/ULC S101: Standard Methods of Fire Endurance Tests of Building Construction and Materials**

This standard covers fire endurance tests applicable to walls, partitions, floors, roofs, ceilings, columns, beams and girders, as well as to some components of these building sub-assemblies.

### **ANSI/UL 263: Fire Tests of Building Construction and Materials**

This standard covers fire tests that are applicable to assemblies of masonry units and to composite assemblies of structural materials for buildings, including bearing and other walls and partitions, columns, girders, beams, slabs, and composite slab and beam assemblies for floors and roofs. They are also applicable to other assemblies and structural units that constitute permanent integral parts of a finished building.

# 3.

## FIREPEX™ APPLICATIONS



RAUPEX White UV Shield Pipes are designed for use in fire sprinkler systems. RAUPEX Red UV Shield Pipes and RAUPEX Blue UV Shield Pipes are not certified for fire sprinkler systems. RAUPEX pipes may not be used for fire sprinkler applications other than those defined in NFPA 13D or IRC P2904.

### **UL 1821: Plastic Sprinkler Pipe and Fittings for Fire Protection Service**

This standard defines the US performance requirements for plastic pipe and fittings for use in wet fire sprinkler systems as defined in NFPA 13D Standard for the Installation of Sprinkler Systems in One- and Two- Family Dwellings and Manufactured Homes and the International Residential Code section P2904 Dwelling Unit Fire Sprinkler Systems.

### **NFPA 13D: Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes**

This standard covers the design, installation and maintenance of automatic sprinkler systems for protection against the fire hazards in one- and two-family dwellings and manufactured homes. The purpose of this standard shall be to provide a sprinkler system that aids in the detection and control of residential fires and thus provides improved protection against injury and life loss.

### **IRC Section P2904: Dwelling Unit Fire Sprinkler Systems**

The International Residential Code (IRC) section P2904 covers the design and installation of residential fire sprinkler systems for protection against the fire hazards in dwelling units.

# 4.

## PLENUM APPLICATIONS



### **Flame Spread and Smoke Development Index**

A plenum is defined as an enclosed portion of the building structure that is designed to allow air movement, thereby serving as part of an air distribution system. Plenums can serve as supply, return, exhaust and ventilation portions of the air distribution system.

The National Building Code of Canada (NBCC) and the International Mechanical Code (IMC) requires that combustible materials installed within air plenums have a flame spread index of not more than 25, and a smoke developed index of not more than 50. These numbers do not contain units, and are used as index (comparative) ratings of how quickly building materials burn and how much smoke is developed when they burn. Pipes that meet these requirements are sometimes said to have a “plenum rating.”

### **CAN/ULC S102.2: Standard Method of Test For Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies**

The purpose of this standard is to determine the comparative burning characteristics of the material or assembly under test by evaluating the flame spread over its surface when exposed to a test fire.

### **ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials**

This is a fire-test-response standard for the comparative surface burning behavior of building materials. The purpose of this test method is to determine the relative burning behavior of the material by observing the flame spread along the specimen. Flame spread and smoke developed index are reported.



# 5.

## GEO THERMAL APPLICATIONS



### **International Ground Source Heat Pump Association (IGSHPA)**

The Closed-Loop/Geothermal Heat Pump Systems Design and Installation Standards Manual is intended as a source of precise standards and guidelines for the design and installation of closed-loop/geothermal heat pump systems. RAUGEO™ PEXa tubing has been recognized by IGSHPA as an acceptable product for installation in closed-loop/geothermal heat pump systems.



### **NSF C448: Design and Installation of Earth Energy Systems**

This standard covers minimum requirements for equipment and material selection, site survey, system design, installation, testing and verification, documentation, and commissioning and decommissioning for the following:

- a) direct expansion ground source heat pumps for systems using ground heat exchangers as a thermal source or sink for heating and/or cooling, with or without a supplementary heating source; and
- b) unitary single package or split system liquid source and earth energy heat pumps for all systems using groundwater, submerged heat exchangers, or ground heat exchangers as a thermal source or sink for heating and/or cooling, with or without a supplementary heating source.

# 6.

# PLUMBING (POTABLE) APPLICATIONS



## **ANSI/NSF Standard 61: Drinking Water System Components – Health Effects**

This standard covers products that come into contact with drinking water. The primary focus of this standard is to establish minimum health effects requirements for the chemical contaminants and impurities that are indirectly imparted to drinking water from products, components and materials used in drinking water systems.

## **Annex G: Weighted Average Lead Content Evaluation Procedure to a 0.25% Lead Requirement**

The procedures for determining the lead content of drinking water system components were removed from NSF/ANSI 61 Annex G and reestablished in NSF/ANSI 372. Annex G is due to be retired from NSF/ANSI 61 three years after the adoption of NSF/ANSI 372.

## **NSF/ANSI 372: Drinking Water System Components – Lead Content**

This standard establishes procedures for the determination of lead content based on the wetted surface areas of products. This standard applies to any drinking water system component that conveys or dispenses water for human consumption through drinking or cooking.

## **U.P. Code: Uniform Plumbing Code**

U.P. Code "This listing certifies that all products labeled with U.P. Code are in compliance with the latest version of the Uniform Plumbing Code."

# 7.

## RADIANT FLOOR HEATING APPLICATIONS



### **DIN 4726: Warm Water Floor Heating Systems and Radiator Pipe Connecting—Piping of Plastic Materials**

DIN is the German Institute for Standardization. DIN 4726 is the German standard for plastic piping that includes acceptable limits for oxygen permeability when used in warm water floor heating systems. RAU-PEX O<sub>2</sub> Barrier Piping conforms to the recognized limit of oxygen permeability of <math><0.32 \text{ mg}/(\text{m}^2\cdot\text{d})</math>.



### **NSF SE 1091: Special Engineered Specification 10mm SDR 11 PEX Tubing**

This Special Engineered Specification addresses the performance of crosslinked polyethylene (PEX) tubing, which has been designated for use in potable water or radiant floor heating applications.

This document addresses testing, marking, in-plant quality control and the listing format requirements for the specified product. This specification covers PEX tubing in metric dimensional sizes from 10 mm OD size in an SDR of 11.

## 8.

# RECOGNIZED FITTING STANDARDS



### **ASTM F2080: Standard Specification for Cold-Expansion Fittings with Metal Compression Sleeves for Crosslinked Polyethylene (PEX) Pipe and SDR9 Polyethylene of Raised Temperature (PE-RT) Pipe**

This specification covers cold-expansion fittings using metal compression-sleeves for use with crosslinked polyethylene (PEX) plastic pipe in 3/8, 1/2, 5/8, 3/4, 1, 1 1/4, 1 1/2 and 2 in. nominal diameters, meeting the requirements of Specification F876 and for use with Polyethylene of Raised Temperature (PE-RT) pipe in 3/8, 1/2, 5/8, 3/4, 1, 1- 1/4, nominal diameters meeting the requirements of Specification F2769, whereby the pipe is cold-expanded before fitting assembly. The components covered by this specification are intended for use in residential and commercial, hot and cold, potable water distribution systems or other applications such as municipal water service lines, radiant panel heating systems, hydronic baseboard heating systems, snow and ice melting systems, geothermal underground pipe systems and building services pipe with continuous operation at pressures up to and including 100 psi (690 kPa), and at temperatures up to and including 180°F (82°C).

### **ASTM F2159: Standard Specification for Plastic Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Crosslinked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing**

This specification establishes requirements for sulfone plastic insert fittings and copper crimp rings for four sizes (3/8, 1/2, 3/4 and 1 in.) of crosslinked polyethylene (PEX) plastic tubing and polyethylene of raised temperature (PE-RT) tubing. These fittings are intended for use in 100 psi (690 kPa) cold- and hot-water distribution systems operating at temperatures up to and including 180°F (82°C). Included are the requirements for material, molded part properties, performance, workmanship, dimensions and markings to be used on the fittings and rings.

### **ASTM F1960: Standard Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Crosslinked Polyethylene (PEX) Tubing**

This specification covers cold expansion fittings and cross-linked (PEX) reinforcing rings for use with crosslinked polyethylene (PEX) plastic tubing in 3/8, 1/2, 5/8, 3/4, 1, 1 1/4, 1 1/2, 2, 2 1/2 and 3 in. nominal diameters that meet the requirements of Specifications F876 and F877. These fittings are intended for use in 100 psi (690 kPa) cold- and hot-water distribution systems operating at temperatures up to and including 180°F (82°C). The system is comprised of a PEX reinforcing ring and a cold expansion fitting. Included are the requirements for materials, workmanship, dimensions and markings to be used on the fitting components. The components covered by this specification are intended for use in residential and commercial, hot and cold, potable water distribution systems as well as sealed central heating, including under-floor-heating systems.

### **ASTM F1807: Standard Specification for Metal Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Crosslinked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing**

This specification covers metal insert fittings and copper crimp rings for use with crosslinked polyethylene (PEX) tubing in 3/8, 1/2, 5/8, 3/4, 1, 1 1/4, 1 1/2 and 2 in. nominal diameters that meet the requirements for Specifications F876 and for use with polyethylene of raised temperature (PE-RT) tubing in 3/8, 1/2, 5/8, 3/4, 1 and 1 1/4 in. nominal diameters that meet the requirements of Specifications F2623 and F2769. These fittings are intended for use in 100 psi (689.5 kPa) cold and hot-water distribution systems operating at temperatures up to, and including, 180°F (82°C). The requirements for materials, workmanship, dimensions, and markings to be used on the fittings and rings are also included.

### **ASSE 1061: Performance Requirements for Push-Fit Fittings**

The purpose of this standard is to establish minimum performance requirements for push-fit fittings and push-fit connections that are integrated into plumbing devices (herein referred to as the “fitting”). The fittings described in this standard are intended for use in hot and cold potable water distribution and hydronic heating systems in residential and commercial applications.

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