

GUIDE TO CHLORINE RESISTANCE RATINGS OF CROSSLINKED POLYETHYLENE (PEX) PIPE AND TUBING FOR POTABLE WATER APPLICATIONS

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Foreword

This technical note was developed and published with the technical help and financial support of the members of the Plastics Pipe Institute (PPI). These members have shown their commitment to developing and improving quality products by assisting standards development organizations in the development of standards, and also by developing design aids and reports to help engineers, code officials, specifying groups, contractors, and users.

The purpose of this technical note is to provide information to the end user regarding the use of PEX pipe and tubing in chlorinated potable water applications.

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1.0 SCOPE

The intent of this Technical Note is to give guidance to plumbing system designers, installers, and specifiers for understanding chlorine resistance ratings as applied to crosslinked polyethylene (PEX) pipe and tubing for potable water applications and to describe the effects of using PEX pipe and tubing in operating conditions beyond these published ratings.

This Technical Note explains how PEX tubing conforming to standards ASTM F876¹ and CSA B137.5² and PEX pipe conforming to standard ASTM F2788³ may be used safely in potable hot- and cold-water distribution systems within the specific limits discussed within this document. This Technical Note is also intended to clarify that the typical hydrostatic pressure and temperature ratings for PEX tubing (e.g., 160 psi at 73°F, 100 psi at 180°F) are not to be confused with the operating conditions which are anticipated in hot chlorinated potable water systems.

As a guide for users of PEX systems, this document explains ASTM Test Method F2023 in detail and identifies the four categories of chlorine resistance ratings which are defined within product standards ASTM F876, ASTM F2788, and CSA B137.5.

The Technical Note also differentiates between residential and commercial plumbing systems and explains that continuous recirculation of hot chlorinated water through PEX pipe or tubing at commercial temperatures above 140°F (60°C) is beyond the intended application of the standard chlorine ratings, as defined in those standards listed above.

However, the fact that the chlorine ratings outlined in those standards do not explicitly cover commercial systems operating at temperatures above 140°F should not be construed as an indication that PEX is never suitable for those applications. Some PEX products may be recommended by their manufacturer(s) to operate at either continuous or intermittent recirculation of water at temperatures exceeding 140°F.

Note 1: See PPI TN-52 *Guide to High-Temperature Applications of Non-Potable Crosslinked Polyethylene (PEX) Pipe and Tubing Systems* for explanation of hydrostatic pressure ratings and considerations for use in non-chlorinated, non-potable water systems operating at temperatures above 180°F (82°C).

¹ ASTM F876 *Standard Specification for Crosslinked Polyethylene Tubing*

² CSA B137.5 *Crosslinked Polyethylene (PEX) Tubing Systems for Pressure Applications*

³ ASTM F2788 *Standard Specification for Metric and Inch-sized Crosslinked Polyethylene (PEX) Pipe*