

INSULATION RECOMMENDATIONS FOR PLASTIC PRESSURE PIPING MATERIALS IN RESIDENTIAL 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 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 regarding the need to insulate plastic pressure pipe materials used for applications such as hot- and cold-water plumbing, fire protection and hydronic heating or cooling systems within residential buildings.

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1.0 INTRODUCTION

Plastic pressure pipe materials are commonly used in applications such as hot- and cold-water plumbing, fire protection, and hydronic heating and cooling including radiant distribution systems.

This Technical Note provides guidance about insulating the following types of plastic pressure pipe and tubing materials within residential buildings:

- CPVC: *chlorinated polyvinyl chloride*
- PEX: *crosslinked polyethylene*
- PEX/AL/PEX: *crosslinked polyethylene/aluminum/crosslinked polyethylene*
- PE-RT: *polyethylene of raised temperature resistance*
- PP-R: *random copolymerized polypropylene*
- PP-RCT: *polypropylene random copolymer with modified crystallinity & temperature resistance*

This document focuses on insulating plastic pressure piping materials from the perspective of freeze protection, and not energy conservation.

Requirements and guidance for insulating all types of piping materials for energy conservation are provided in plumbing, mechanical, and energy codes, as well as industry standards such as ASHRAE 90.1 *Energy Standard for Buildings Except Low-rise Residential Buildings*, and handbooks such as those published by the American Society of Plumbing Engineers (ASPE).

This document does not apply to solar thermal collection system piping, thermal energy storage system piping, and ground source geothermal system piping. See appropriate building and mechanical codes for insulation requirements for those specific applications.

Topics discussed in this Technical Note include:

- Section 2.0: Applications
- Section 3.0: Model code requirements for piping insulation & protection
- Section 4.0: PPI recommendations to prevent freezing
- Section 5.0: Thawing frozen plastic pipes
- Section 6.0: Summary

This Technical Note is not an installation guide. Installers, builders, inspectors, engineers, and designers should refer to local regulations to determine the most appropriate requirements for protecting all types of plastic pipe and tubing against freezing.