

GUIDE TO SPECIFYING HDPE CONDUIT

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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 general information about the various standards which apply to high-density polyethylene (HDPE) conduit. The technical note may also be used as a guide for selecting appropriate standard specifications for users and specifiers.

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PPI intends to revise this technical note within 5 years or sooner if required, from the date of its publication, in response to comments and suggestions from users of the document. Please send suggestions of improvements to the address below. Information on other publications can be obtained by contacting PPI directly or visiting our website.

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GUIDE TO SPECIFYING HDPE CONDUIT

1.0 INTRODUCTION

High-density polyethylene (HDPE) conduit is the preferred material to house and protect electrical power and communications cables within. It offers unmatched corrosion and chemical resistance, is flexible, durable and available in long reel lengths to reduce joints and installation time. HDPE conduit is available in a variety of sizes, colors, dimensions and lengths designed for various applications and installation techniques.

PPI recommends the use of [PPI MS-5 Model Specification For HDPE Solid Wall Conduit For Power And Communications Applications](#) to assist engineers and end users in developing specifications for purchasing conduit.

Over the past 30+ years, multiple product standards – such as those for communications or power utility installations - have been published for specific types and applications of HDPE conduit. It is important that end users, engineers and specifiers update project specifications to reference the current HDPE conduit product standard appropriate for their application. HDPE conduit manufacturers, such as PPI Power & Communications Division members, design and produce their conduit products to ensure compliance with the latest, relevant HDPE conduit standards. The latest version of the applicable standards, as detailed in this document, should be referenced whenever possible.

In addition, conduit standards are continuously reviewed, maintained and revised by manufacturers through participation in organizations like PPI, which facilitates interface between manufacturers, users, and standards development organizations such as AASHTO, ASTM, NEMA, UL, CSA, and others. This continuous connection ensures that HDPE conduit standards meet the various code and regulatory requirements for the intended uses.

2.0 IMPORTANCE OF SPECIFYING CURRENT STANDARDS

Early on in the production of HDPE conduit, water pipe specifications were used to establish minimum standards covering the dimensions, materials and test requirements for conduit made from high-density polyethylene. This was out of necessity, because HDPE conduit specifications had not yet been developed. More information on this is provided in Appendix A. Unfortunately, many end users and specifiers utilize specifications that continue to cite inappropriate pressure pipe standards or have not revised them to list the appropriate conduit standards, whether for power, communications or other applications. This can result in conduit specifications that are either not appropriate for the end application or are not possible to produce in compliance with cited standards because HDPE pressure pipe and conduit standards may have technical differences that are critical to the performance of the products in specific applications. Specifying a water pipe for a conduit application may even violate requirements of relevant electrical codes while potentially increasing costs, with no value for the customer. Accordingly, references to pressure pipe standards should be removed from product or project specifications for HDPE conduit.

Pressure pipe standards should be replaced with the most appropriate HDPE conduit standards listed below by selecting the single HDPE conduit standard that is the closest match for the application. It is recommended that if a product or project specification currently lists multiple HDPE conduit standards, then it should be revised to select the one standard that is the best fit for the application. PPI provides a model specification ([PPI MS-5 Model Specification For HDPE Solid Wall Conduit For Power And Communications Applications](#)) that can be used to assist with this process.

3.0 FLOW CHART

To assist end users, engineers and specifiers, the flow chart shown in **Figure 1** can help guide selection of the correct HDPE conduit specification to fit the application. Additionally, the flow chart helps identify other technical information such as color, pull tape selection options and other unique wall options that can be added.

The PPI Power & Communications Division and member companies may be reached through our website, [PCD Home](#) and [PPI Find A Manufacturer](#).

4.0 STANDARDS FOR HDPE CONDUIT

Existing product standards contain the material requirements and necessary performance requirements, so it is sufficient to reference the standard(s) rather than repeating those requirements within your specification. Certain options may be offered by the manufacturer that should be specified, such as color, sizing, pull media, etc. Contact your manufacturer and see [PPI MS-5 Model Specification For HDPE Solid Wall Conduit For Power And Communications Applications](#) for common options.

The following is a list of the six (6) current standard product specifications for HDPE conduit and Cable-in-Conduit, along with their stated scopes. When referring to these standards in a specification it is preferable not to include the year reference so that requirements of the latest edition apply:

ASTM D3485-22: Standard Specification for Coilable High Density Polyethylene (HDPE) Cable-In-Conduit

This specification covers cable in conduit (CIC), which is a smooth-walled, coilable, high-density polyethylene (HDPE) conduit (duct) that contains preassembled wires and cables. The outside diameter of the conduit is controlled and the wire or cable encased within may be comprised of single or multiple configurations consisting of electrical/power wires or cables, fiber optic, traditional copper communication, coaxial cable, or any combination thereof. CIC configurations are preassembled into the conduit during the extrusion process and in industry-specific designs for use in commercial, industrial, transportation, government, and utility applications.

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