

Continuing Education Program

Course Outline: Plastic Piping Materials for Ground Source Geothermal Systems

Geothermal heating and cooling systems, also referred to as “ground source”, “ground-coupled” or “earth energy” heat pump systems, are “...self-contained, electrically-powered systems that take advantage of the Earth's relatively constant, moderate ground temperature to provide heating, cooling, and domestic hot water more efficiently and less expensively than would be possible through other conventional heating and cooling technologies” according to the *International Ground Source Heat Pump Association (IGSHPA)*.

The piping material is critical to the overall success of the ground-coupled heat exchanger piping system (i.e. the ground loop). It must provide corrosion resistance, chemical resistance, flexibility, impact resistance, resistance to slow crack growth, long-term hydrostatic strength (pressure capability), and temperature resistance. In addition, the ground loop heat exchanger material must provide suitable heat transfer capabilities.

This course explains the four types of plastic piping materials used for ground source geothermal systems, and how these materials can be used to construct reliable ground loop piping systems.

Course content is based on PPI's [TN-55 Plastic Piping Materials for Geothermal Heating and Cooling Applications](#)

Learning Objectives: By the end of this course, participants will be able to:

1. Describe the four types of plastic piping materials used for ground source geothermal systems, in terms of material properties, capabilities, and joining techniques
 - HDPE (*high density polyethylene*)
 - PEX (*crosslinked polyethylene*)
 - PE-RT (*polyethylene of raised temperature resistance*)
 - PP (*polypropylene (PP-R and PP-RCT)*)
2. Discuss the industry standards that apply to these piping materials
3. Demonstrate various manifold and header techniques
4. Introduce PPI TN-55 and other industry resources of piping information

For more information, contact **Lance MacNevin, P.Eng.** lmacnevin@plasticpipe.org