



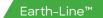
High Density Polyethylene Pipe for Geothermal Applications

Thermal-Line is used for general geothermal applications, such as the piping used when heating water circulated in underground geothermal circulation systems. Thermal-Line can also be used as the pipe of choice in installing these systems in residential housing and other developments. A blue strip is used to identify Thermal-Line and special type can be added in the print line. Upon request, A U-bend connection can be added during manufacturing, making it ready to connect to the coil system, once delivered to the project site. Thermal-Line is almost always shipped as coils.

Thermal-Line is part of United Poly Systems Earth-Line™ suite of products and is ideal for many renewable-related pipeline applications. United Poly Systems is committed to using sustainable material for a sustainable future.

- · No corrosion when compared to copper pipe
- HDPE fusion joints are stronger than solder joints
- · Lower cost Longer life span, 50 to 100 years
- Flexibility of HDPE pipe, compared to metal pipe, aids in installation
- More installation methods available for HDPE (open cut, directional drilling) compared to copper pipe





Product Information

Thermal-Line is manufactured to meet or exceed the below standards and specifications:

- · Potable water NSF
- AWWA C901 (¾ to 3 in.)
- AWWA C906 (4 in. and up)

Thermal-Line is manufactured in IPS (iron pipe size) and DIPS (ductile iron pipe size), 4 inches and up.

Material requirements for Thermal-Line meets or exceeds ASTM Standard D3350 requirements. Materials produced for water application must meet or exceed ASTM D3035.

Print line Information

Thermal-Line typically contains a blue stripe to identify water use.

The product may include "GEO" or other variant within the printline for identification.

PE4710 Typical Physical Properties

| Property | Typical Value | Units | Test Method |
|---------------------------------------|----------------------|----------------|---------------------|
| Density with minimum 2% carbon black | 0.960 | g/cc | ASTM D 792 or 1 505 |
| High Load Melt Index | 8.5 | g / 10 minutes | ASTM D 1238 |
| Melt Index | 0.08 | g / 10 minutes | ASTM D 1238 |
| Flexural Modulus | 160,000 | psi | ASTM D 790 |
| Tensile Strength @ yield (2 in / min) | 3600 | psi | ASTM D 638 |
| Tensile Elongation @ Break | 740% | | ASTM D 638 |
| Thermal expansion | 1.0 x 10-4 | in / in / 0 | ASTM D 696 |
| HDB 73.4°F (23°C) | 1600 | psi | ASTM D 2837 |
| HDB 140°F (60°C) | 1000 | psi | ASTM D 2837 |
| PENT | > 500 | hr | ASTM F1473 |
| Brittleness Temperature | <-103°F (-75°C) | °F | ASTM D 746 |
| Cell Classification | 445574C (black only) | | ASTM D 3350 |

These are nominal values and used as guidelines only.

 $This is not a product specification and does not indicate {\it minimum} \ or \ maximum \ operating \ values.$

