

# Gi-4™ Product Data Sheet

## Geothermal Ground Heat Exchanger

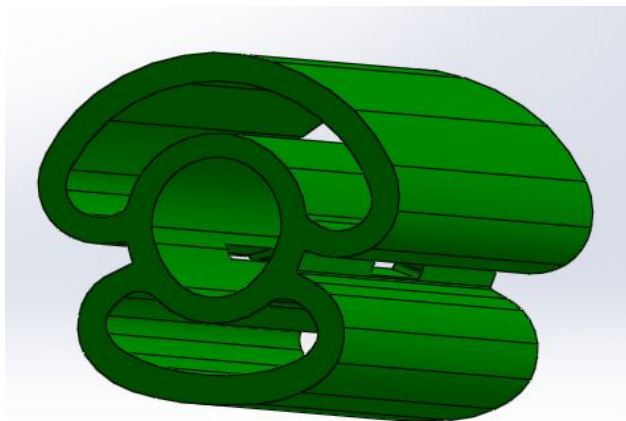
### Application

- » Geothermal Ground Heat Exchanger System
- » High Pressure Fluid Transfer

### Industrial Standards Compliance

- » ASTM D 3350 : CELL CLASSIFICATION
  - \* Dk. Green - PE445576C (MRS)
  - \* Dk. Green - PE445574C (HDB)
- » Plastics Pipe Institute (PPI) : TR-4
  - \* Dk. Green - CONTINUUM™ DGDA-2490 NT100
    - ISO PE100 pipe grade - MRS 10 @ 20C; CRS 10 @ 20C, 100 yr; CRS 8 @ 40C, 90 yr; MRS 6.3 @60C, 11 yr.; CRS 11.2 @ 14 C, 50 yr
    - ASTM PE4710 pipe grade resin - 1600 psi HDB @ 73F and 1000psi HDB @ 140F
- » National Sanitation Foundation (NSF): Standard 14 and 61
  - \* Dk. Green - DGDA-2490 Dk Green 100

Consult the regulations for complete details.



### Material Data

Physical Properties	Test Method	Values	English (SI)
<b>Resin Properties</b>			
Melt Index (I) @ 190C / 2.16 kg, g/10 min	ASTM D 1238	0.08	
Flow Rate (I) @ 190C / 21.60 kg, g/10 min	ASTM D 1238	7.0	
Density (natural resin), g/cc	ASTM D 792	0.949	
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Thermal Stability, F ( C )	ASTM D 3350	> 428 (> 220)	
<b>Mechanical Properties</b>			
Tensile Strength at Yield, psi (Mpa)	ASTM D 638	3600 (24.8)	
Elongation at Break, %	ASTM D 638	740	
Flexural Modulus, psi (Mpa)	ASTM D 790, method 1, procedure B	150,000 (1034)	
Notched Izod Impact @ 23C, ft-lbf/in. (Jm)	ASTM D 256, method A	9.1 (488)	
Brittleness Temperature, F ( C )	ASTM D 746, procedure A	< -103 (< -75)	
Slow Crack Growth PENT, hrs	ASTM F 1473	> 10,000	
<b>Pipe Properties</b>			
Hydrostatic Strength @ 20C / 1798 psi (12.4 Mpa), hr	ASTM 1598	>100	
Hydrostatic Strength @ 80C / 798 psi (5.5 Mpa), hr	ASTM 1598	> 1000	
Resistance to Rapid Crack Propagation, Pc, psi (bar)	ISO 13477	> 174 (> 12)	
Resistance to Rapid Crack Propagation, Tc, F ( C )	ISO 13477	< 2 (< -17)	

### Fabrication Conditions

- \* Screw Type HDPE Barrier Mixing Screw
- \* Melt Temperature Range: 380 - 440 F ( 193 - 225 C)
- \* Multi-Purpose Extrusion Process

### Product Applicable Standards

- \* ASTM D2683
- \* ASTM D3261
- \* ASTM D3035-08 Table 2 OD 4.5"
- \* ASTM D3350
- \* ASTM D2837

Note: Dk. Green Colorant is loaded at 6.5% Ratio

Notice: This data sheet provides typical physical properties and industrial standards designed to produce and manufacture piping products utilizing high density polyethylene resins. Gi4™ Geothermal Ground Heat Exchangers are manufactured in compliance with ASTM D 3035.

Materials are manufactured from high density polyethylene resin meeting ASTM D 3350. GI and USF have made every reasonable effort to ensure accuracy of this data sheet, but this data sheet may not provide all necessary information, particularly with respect to special and unusual applications.

A minimum Thermal Conductivity of 0.88 but preferred better than 1.0 TC. Only bentonite grouts with a slurry density of 12.1 pounds/gallon will be acceptable. For applications involving depths greater than 410 feet or grouts with densities greater than 10.1 lb/gal contact GI or USFarathane. This data sheet may be changed from time to time without notice.

Contact GI or USFarathane to determine if you have the most recent edition.

Warranty: USFarathane warrants the Gi4 ground heat exchanger against rot, rust, structural weaknesses and electrolytic corrosion and warrants it to be free from defect in materials and workmanship for a period of fifty (50) years from the date of purchase.

Gi4™ is manufactured by USF.

January 2016 Supercedes all previous publications.