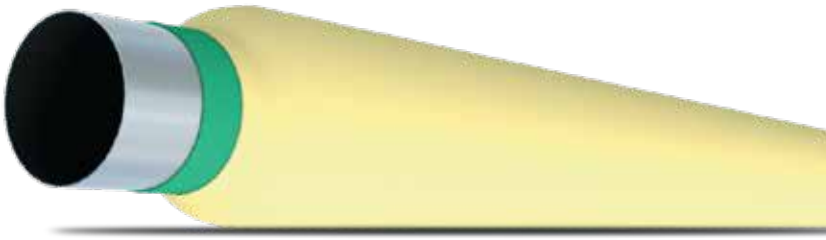
PRODUCT
DATASHEET

PERMA-PIPE®

FLOW-THERM™ GSPU

SUBSEA INSULATION



Maximum Operating Temperature[1]

226 °F (109 °C)

Maximum Water Depth[3]

5,000 ft (1525 m) - 12,000 ft (3655 m)

Pipe Sizes

3 in (75 mm) to 26 in (660 mm)
up to 80 ft (24 m) lengths

FLOW-THERM™ (fka Auto-Therm®) GSPU is a glass syntactic polyurethane (GSPU) thermal insulation coating that is highly efficient and cost-effective. Further, it exhibits excellent compressive resistance when applied to subsea pipelines and equipment such as risers, field joints, jumpers, pipeline end terminations (PLETs), pipeline end manifolds (PLEMs), inline structures, shrouds, and doghouses for deep and ultra-deepwater applications.

FLOW-THERM GSPU has lower thermal conductivity, resulting in reduced insulation thickness and lower cost than other materials while meeting project thermal performance requirements.

LAYER PROPERTY	TEST SPECIFICATION	TYPICAL VALUE (S35, S38HS, S38XHS)
General Properties		
Thermal Conductivity[2], BTU.in/hr. ft².°F (W/m K)	ASTM C518/ISO 8301	0.96 (0.138) - 1.00 (0.144)
Specific Heat, BTU/°F/lb (J/K/kg)	ASTM E1269	~ 0.35 (1.46)
Density, lb/ft³ (kg/m³)	ASTM D792/ISO 1183	50.5 (810) - 51.5 (825)
Tensile Strength, psi (Mpa)	ASTM D638/ISO 527-1 & 527-2	≥ 600 psi (4.14)
Hardness	ASTM D2240/ISO 7619 & 868	≥ 35 Shore D
Elongation @ Break, %	ASTM D638/ISO 527-1 & 527-2	≥ 80
Glass Beads Crush Strength[3], psi (Mpa)	3M	3,000 (21) - 5,500 (38)
Uniaxial Compressive Strength @ 10%, psi (Mpa)	ASTM D695/ISO 604	≥ 400 (2.76)
Shear Strength, psi (Mpa)	ASTM D732	≥ 600 (4.14)
Poisson's Ratio	BASF	~ 0.45
Adhesion to FBE, psi (Mpa) Ring Shear Test Axial Pull Test	 PERMA-PIPE PP 16.22	 ~ 300 (2) ~ 700 (4.8)

Notes

- [1]Contact PERMA-PIPE for project specific application limits.
- [2]Average thermal conductivity for the applied FLOW-THERM. In service thermal conductivity may be different due to temperature, hydrostatic pressure and water exposure.
- [3]Maximum water depth and properties will vary depending on the glass beads grade selected project.
- FLOW-THERM™ is formerly Auto-Therm®.

Select Your Own Premium Options

PERMA-PIPE is your partner of choice to solve critical pipe performance and protection challenges. We offer additional high performance features for FLOW-THERM, please select the options below to customize your piping system.

Anti-Corrosion Coatings	Fabricated Parts	Engineering Support	Field Service
Fusion Bonded Epoxy (FBE)	Elbows & Bends	Heat Loss & Heat Gain Calculations	Field Joint Materials, Support & Installation
Liquid Epoxy (LE)	Tees		
Primer	Specialty Spools		
	Manifolds		
	PLEMs		
	PLETs		
	ILTs		
Service Pipe Materials: Carbon Steel, Stainless Steel, and Clad Pipe.			

Additional Services

For all your piping system needs from start to finish, PERMA-PIPE offers on-demand, full-service engineering support, field service, custom fabrication, and leak detection systems.

Sales Contacts

PERMA-PIPE's technical staff are available to support you across a range of piping system applications and project requirements. Rely on our technical staff to help you specify the right piping insulation and to maximize your asset performance. Please contact us at askpermapipe@permapipe.com for further information.

PERMA-PIPE®