

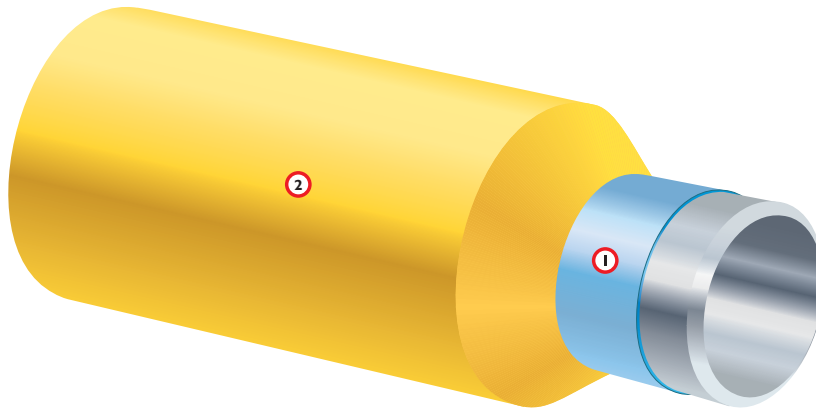
BREDERO SHAW

A SHAWCOR COMPANY

the
**GLOBAL
LEADER**
in pipe coating solutions.

ThermoFlo®

Polyurethane Insulation Systems



① Fusion Bonded Epoxy ② Syntactic Polyurethane

PRODUCT DESCRIPTION

ThermoFlo® is a polyurethane-based insulation coating designed for offshore flow assurance. The product can be customized to meet stringent specifications for both shallow and deep water and can be installed using all subsea pipe-lay methods including reeling, J-lay and S-lay.

FEATURES AND BENEFITS

Superior Insulation Properties

The ThermoFlo® product line provides superior insulation properties in subsea pipelines for flow assurance applications. This is achieved through a combination of material formulation and processing technology designed to meet strict thermophysical performance tolerances.

Flexible Installation

ThermoFlo® products can be installed using all subsea laying methods including reeling, S-lay and J-lay. Because of their high degree of flexibility, ThermoFlo® products have even been successfully reeled at thicknesses up to 106 mm (4.2"). The elastomeric nature of the material also provides excellent impact resistance and fatigue life.

Engineered Solutions

ThermoFlo® is engineered to meet a specific project requirement by varying thickness and material formulation for both shallow water and deep water applications. The compressive and creep response of ThermoFlo® materials have been subjected to extensive external and internal testing and modelling, resulting in a product line where the dimensional changes and thermophysical properties are predictable over time.

Used for Pipelines and Complex Structures

In addition to pipeline insulation, ThermoFlo® products are extremely versatile allowing for applications on complex structures. Examples of these are trees, jumpers and manifolds where thicknesses up to 150 mm (6") have been applied.

PRODUCT DATA SHEET



Subsea pipelines



Small diameter pipelines



www.brederoshaw.com



ThermoFlo®



Americas

Bredero Shaw
A ShawCor Company
3838 N. Sam Houston Pkwy E.
Suite 300
Houston, Texas
77032-3400, USA
Telephone: +1-281-886-2350
Fax: +1-281-886-2353

Shaw Pipe
A ShawCor Company
Two Executive Place,
1824 Crowchild Trail, N.W.,
Calgary, Alberta
T2M 3Y7, Canada
Telephone: +1-403-263-2255
Fax: +1-403-264-3649

Europe/Africa/Russia

Bredero Shaw
A ShawCor Company
Imperial Dock
Leith, Edinburgh, EH6 7DT
Scotland, UK
Telephone: +44-131-553-9600
Fax: +44-131-553-9699

Bredero Shaw Norway
A ShawCor Company
P.O. Box 214
N-7301 Orkanger
Norway
Telephone: +47-72-46-60-60
Fax: +47-72-46-60-70

Middle East

Bredero Shaw
A ShawCor Company
P.O.Box 1789,
Suite 402, Al Reem Plaza
Buhairah Corniche, Sharjah, U.A.E
Telephone: +971-6-573-7374
Fax: +971-6-573-7379

Asia Pacific

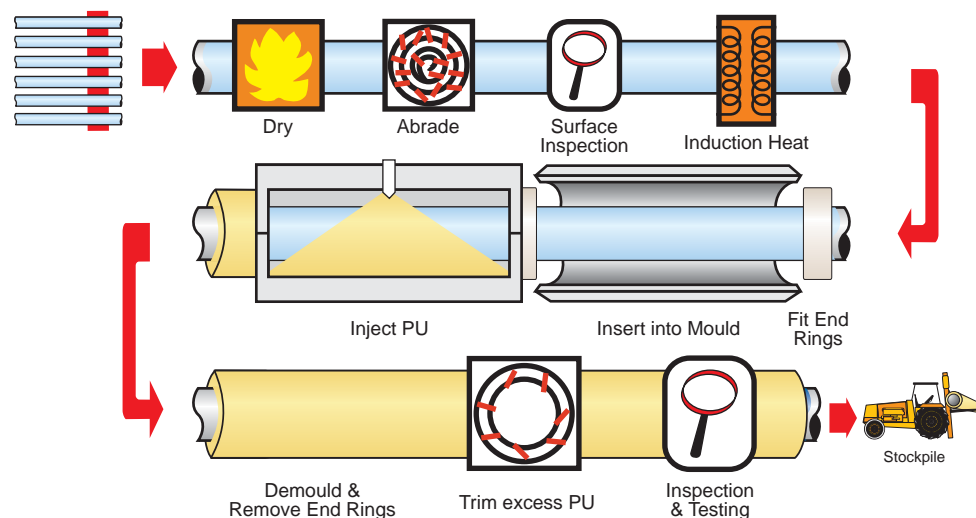
Bredero Shaw
A ShawCor Company
101 Thomson Road
#17-01/02 United Square
Singapore 307591
Telephone: +65-6732-2355
Fax: +65-6732-9073

TYPICAL PRODUCT PROPERTIES

PROPERTY	Shallow Water ThermoFlo® (S)	Deep Water ThermoFlo® (D)
Minimum Pipe Diameter	100 mm (4")	100 mm (4")
Maximum Pipe Diameter	600 mm (24")	600 mm (24")
Minimum Operating Temperature	-35°C (-30°F)	-35°C (-30°F)
Maximum Operating Temperature	115°C (240°F)	115°C (240°F)
Minimum Pipe Length	8 m (26')	9 m (30')
Maximum Pipe Length	13 m (43')	13 m (43')
OHTC ("U" Value)	> 1.8 W/m ² .K (0.317 BTU/hr.ft ² .F)	> 2.0 W/m ² .K (0.352 BTU/hr.ft ² .F)
Maximum Water Depth	300 m (1000')	2800 m (9200')
K-Value	0.1 W/m.K (0.058 BTU/ft.hr.F)	0.155 - 0.17 W/m.K (0.087 - 0.099 BTU/hr.ft.F)

Values shown are typical and may vary from plant to plant. Consult Bredero Shaw for special requirements.

PRODUCT APPLICATION PROCESS



PLANTS

Pearland, Texas	Leith, Scotland
Ellon, Scotland	Kuantan, Malaysia

BREDERO SHAW: THE GLOBAL LEADER IN PIPE COATING SOLUTIONS

Bredero Shaw is the world leader in pipe coating solutions, with more than 75 years of experience, over 27 pipe coating facilities on 6 continents and the largest team of technical and service specialists in the business. Bredero Shaw offers technologically advanced solutions for anti-corrosion coatings, protective and weight coatings, thermal flow assurance coatings, internal coatings, custom coatings and field joints for both onshore and offshore applications. This broad range of products and services provides Bredero Shaw with the unique capability to service the full spectrum of pipeline protection and flow assurance requirements. Consult your Bredero Shaw representative for your unique project requirements.

The information contained herein is indicative of the types of coatings provided by Bredero Shaw, and is not intended to be a guarantee that a particular coating will be suitable for a given application. Since many unique environmental, operating, and design conditions must be considered, the user shall determine the suitability of the coating for the intended use and assume all the risks and liabilities in connection therewith. Bredero Shaw's liability is stated in our standard conditions of sale.

www.brederoshaw.com