

BREDERO SHAW

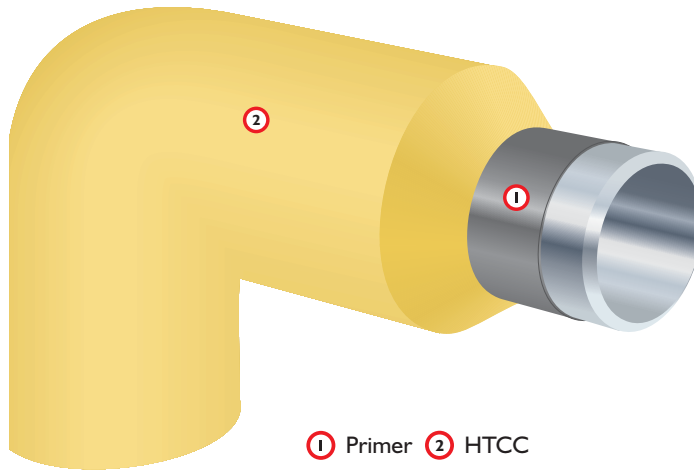
A SHAWCOR COMPANY

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

ThermoFlo® HTCC

PRODUCT DATA SHEET

High Temperature Custom Coating



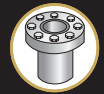
Oil & Gas pipelines



Subsea pipelines



Small diameter pipelines



Custom Coating

PRODUCT DESCRIPTION

ThermoFlo® HTCC is a syntactic epoxy foam system for subsea thermal insulation targeting operating temperatures of up to 150°C (302°F) at 3,000 meters. The system is specifically designed to meet the need for a resilient insulation material capable of withstanding the temperature and pressure extremes required for high temperature developments of offshore oil and gas fields.

FEATURES AND BENEFITS

Excellent Thermal Insulation Properties

ThermoFlo® HTCC provides excellent insulation properties for subsea structures for flow assurance applications. Specifically developed glass microspheres supported in the epoxy resin of ThermoFlo® HTCC provides very stable insulation properties over long term environmental exposure.

Environmentally Friendly and Effective Application

Compared to other available products, ThermoFlo® HTCC is more environmentally friendly and safer to use during application, providing a solution that meets Bredero Shaw's world class HSE standards in all operations. The high performance epoxy resin used in the product is also more flexible, exhibiting better resistance to material deformation and damages. The cast-in-place product is applied by single moulding with equipment and processing familiar to operators, reducing the on-site insulation schedule and shortening equipment and application lead-time.

Compatibility with Primers and Steel

ThermoFlo® HTCC can adhere to selected primers and substrates such as epoxy, polyurethane, surface treated polypropylene and blasted steel.

Engineered Solutions for High Temperature and Deepwater

ThermoFlo® HTCC is engineered to meet long term stability requirements for high temperature developments of offshore oil and gas production. The product has been tested for hydrolytic and mechanical stability at both high temperatures of up to 150°C (302°F) and high pressures of up to 4500 psi. The temperature capability of the product is very stable even in hot/wet conditions. The product has also been tested for compressive creep resistance and mechanical stability through simulated service testing. The thermal expansion and tensile elongation characteristics of the product have been carefully controlled to ensure the material exhibits properties more compatible with steel substrates, eliminating any force generated to affect the product's integrity and performance during service.

Used for Pipelines and Complex Structures

Using Bredero Shaw's unique injection moulding process, the "cast-in-place" ThermoFlo® HTCC allows applications on various components incorporated into offshore projects. Examples of these components include bends, spools, manifolds, jumpers, XMT's, flanges shrouds, insulation covers, dog houses and other components.



www.brederoshaw.com



ThermoFlo® HTCC



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

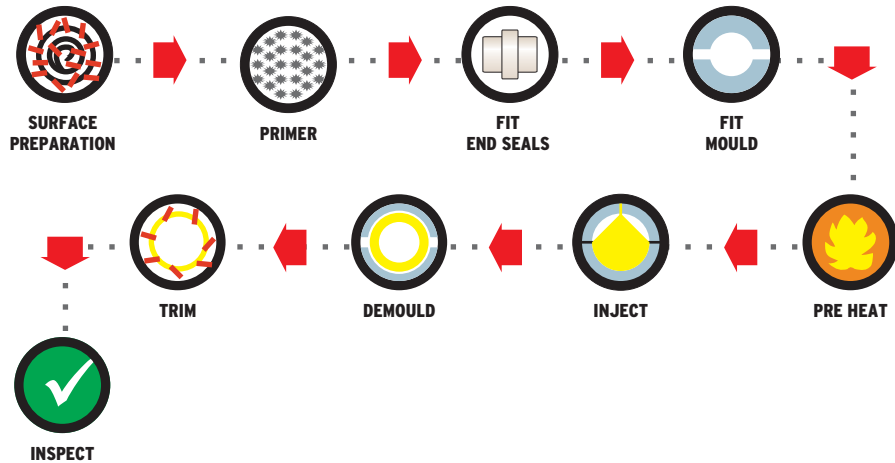
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TYPICAL PRODUCT PROPERTIES

PROPERTY	ThermoFlo® HTCC
Minimum Pipe Diameter	100 mm (4")
Maximum Pipe Diameter	600 mm (24")
Minimum Operating Temperature	-35°C (-30°F)
Maximum Operating Temperature	150°C (302°F)
Maximum Water Depth	3000 m (10,000')
Tensile Elongation at Break at 20°C (68°F)	>5.5%
Water Absorption in Autoclave at 4500 psi	<1%
K-Value	<0.160 W/m.K

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

PRODUCT APPLICATION PROCESS



CUSTOM COATING AND FIELD JOINT COATING BUSINESS UNIT

Ellon, Scotland
Bredero Shaw Limited
Castlepark Industrial Estate
Ellon
Aberdeenshire AB41 9RF
Telephone: +44-1358-723-435
Fax: +44-1358-723-371

Orkanger, Norway
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

OTHER PLANTS

Pearland, Texas

Belo Horizonte, Brazil

Veracruz, Mexico

Kuantan, Malaysia

Ras Al Khaimah, UAE

Jubail, Saudi Arabia

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.