

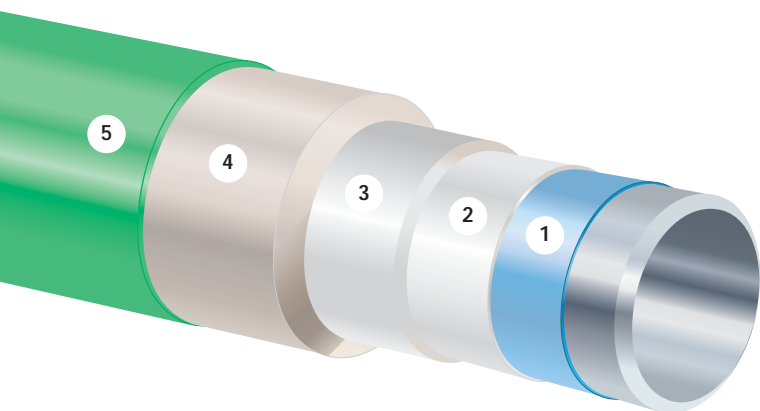
# Thermotite® ULTRA™

## Subsea Thermal Insulation Systems



FLOW  
ASSURANCE

PRODUCT DATA SHEET



1. Fusion Bonded Epoxy
2. ULTRABond Adhesive
3. ULTRA Solid
4. ULTRA Foam
5. ULTRASHield

### Product Description

Thermotite® ULTRA™ is an innovative subsea thermal insulation system with unlimited water depth capability. **This new technology employs a specially engineered blend of materials with unique mechanical and thermal properties.** The system is designed for direct exposure to ultra deep environments. Its superior thermal properties assure reduced energy loss in steady state and transient conditions.

### Applications



Oil & Gas  
Pipelines



Subsea  
Pipelines



Small Diameter  
Pipelines



### Higher Density and Lower Thermal Conductivity

- Higher densities combined with lower thermal conductivity extends cool down performance, assists in optimizing hydrodynamic response in risers and improves sea bed stability in flowlines.
- The lower thermal diffusivity of the insulation system prolongs storage of energy, resulting in reduced heat loss to maintain fluid temperatures for longer periods of time and extending cool down time.

### Thinner Insulation

- Low thermal conductivity allows for a thinner insulation system, which improves hydrodynamic riser response and may reduce installation costs.

### Designed without Glass Microspheres

- The absence of glass microspheres eliminates the risk of loss of thermal performance due to glass breakage.

### Proven Field Joint Technology

- A compatible injection-moulded field joint provides continuous insulation over the welded pipe joint area. Fusion of the infill material to the parent coating results in a high integrity system offering maximum performance benefits.
- The lower application temperature facilitates cooling and reduces cycle time.

### Standard Application with Conventional Equipment

- The simplified processing streamlines delivery schedule, product standardization and quality assurance practices.
- Project management and logistics support are widely available from multiple existing plant locations.

Features & Benefits

# Thermotite® ULTRA™



## Subsea Thermal Insulation Systems

### Typical Plant Capabilities and Product Properties

Capability/Property	Thermotite® ULTRA™
Diameter Range.....	4" - 30"
Maximum Water Depth.....	Unlimited as solid
Density .....	800 - 1040 kg/m <sup>3</sup>
Heat Capacity (Cp).....	1220 J/kg K
Thermal Conductivity (k) .....	0.11 - 0.16 W/m K
Axial Shear Strength .....	> 10 Mpa
Simulated Service .....	280 bar at 95°C
Outer Fiber Strain (Reel Lay) .....	2.6% strain at 0°C

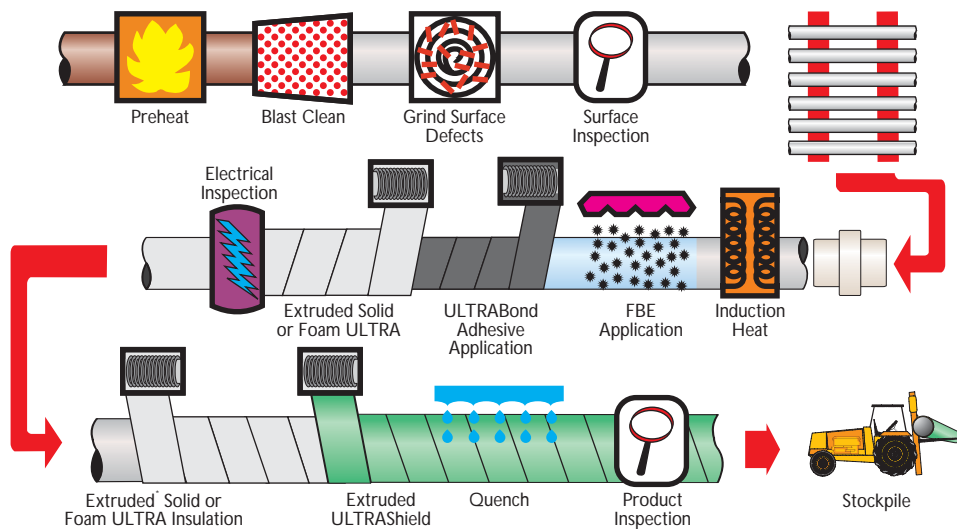
Values shown are typical and may vary from plant to plant. Consult Bredero Shaw for special requirements.

Note: As density and composition are design variables with Thermotite® ULTRA™ the above figures are given as general guidelines. Where there is a range specified, the interval is related also to the density range for the particular component. In addition, it should be noted that Thermotite® ULTRA™ has passed tests for Resonant Fatigue, Trawl Board Impact, Stinger Roller and Tensioner Clamp.



Thermotite® ULTRA™\_rev020

### Product Application Process



\* Insulation and outer shield layers may also be extruded by the crosshead method.

### Plants

North America	Latin America	EMAR	Asia Pacific
Pearland, Texas	Veracruz, Mexico	Leith, Scotland Orkanger, Norway	Kuantan, Malaysia Kabil, Batam Island, Malaysia

### About Bredero Shaw

Bredero Shaw is the global leader in pipe coating solutions. With more than 80 years of experience, the largest team of dedicated pipe coating professionals, the most extensive network of strategically located plants worldwide and with proven innovative coating technologies, the company has protected more pipelines in virtually every environment and operating condition than anyone in the industry.

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.

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Regional Offices

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.

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