CUMING

TECHNICAL BULLETIN 610

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C-THERM CAST-ON-PIPE SYNTACTIC FOAM INSULATION

INTRODUCTION

Cuming Corporation's ***C-THERM*** product line of high performance syntactic foam thermal insulation for the offshore industry comes in a variety of forms. See Technical Bulletin 601 for an overview of the many materials available. This bulletin and its associated data sheets describe cast-on-pipe insulation, applied by a unique patented process (United States Patent 6,058,979) at Cuming Insulation Corporation's factory in New Iberia, Louisiana.

SYNTACTIC FOAM

The basis of all ***C-THERM*** products is syntactic foam, an advanced composite material of hydro-space grade glass or ceramic microspheres cast into a binder of plastic resin. Other fillers may be used as required to adjust the properties of the composite. The thermal, chemical, electrical, and mechanical properties of ***C-THERM*** materials are adaptable to almost any application or operating condition.

FORMS AVAILABLE

C-THERM standard cast-on-pipe insulation is made in the following basic types of coatings:

CSM SEMI-RIGID COMPOSITE: Macrosphere-type syntactic foam of low density and high thermal efficiency, but limited flexibility; generally suitable for J-Lay flowlines and risers. (DS 610-1)

CSG SEMI-RIGID SOLID SYNTACTIC: Microspheres-only type syntactic foam of higher density and good thermal efficiency, with some flexibility; for S-Lay flowlines and risers. (DS 610-1)

CFM SEMI-FLEXIBLE COMPOSITE: Macrosphere-type syntactic foam of moderate density and thermal efficiency, with enhanced flexibility; suitable for J-Lay or S-Lay flowlines and risers. (DS 610-2)

CFG FLEXIBLE SOLID SYNTACTIC: Microspheres-only type syntactic foam of greater density and good thermal efficiency, with a high degree of flexibility; generally suitable for reeled flowlines and risers. (DS 610-2)

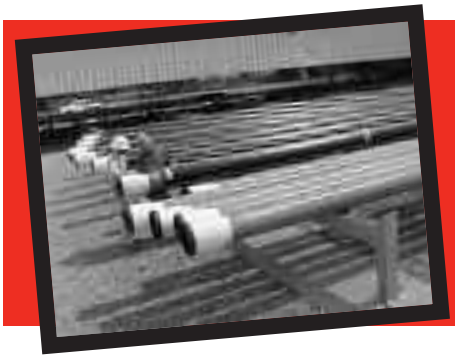
Cross Section of Cast-On-Pipe ***C-THERM*** CSM

RATINGS

C-THERM insulation materials are available to meet almost any depth or temperature requirement. The rating of cast-on-pipe materials depends in part on the desired density and degree of flexibility. In general, CSG materials will have the deepest and hottest ratings, while CFM materials will tend toward shallower, cooler applications. Consult the data sheets for specific rating and performance information.

SIZES

The factory is equipped to handle pipe up to 18" nominal diameter, in joints up to 80 ft long, weighing up to 10,000 lbs per joint. Insulation ODs up to



C-THERM Insulated Vertical Riser Joints

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Boston, MA USA — Houston, TX USA
Macae RJ, Brazil — New Iberia, LA USA
Frankfurt, GERMANY

24" can be applied in one pass. The factory's location on the Gulf of Mexico adjacent to excellent pipe handling, fabrication, and barging facilities makes for efficient production and shipping.

CAPABILITIES

Cuming Corporation offers a full range of pipe preparation services at its New Iberia location, including high quality corrosion coatings. FBE and TSA are among the coatings available. Along with fabrication and thermal insulation, these capabilities enable customers to enjoy "one stop shopping" for all their pipeline needs.

Thermal Sprayed Aluminum Applied to Riser

QUALITY ASSURANCE

Cuming Corporation factories and production facilities are ISO compliant, manufacturing under strict quality control standards. All processes are fully documented, and testing is performed at frequent intervals to ensure compliance with the highest standards. No other line of subsea composite materials can match the successful track record of ***C-THERM*** products in meeting or exceeding requirements under the most demanding conditions.

REFERENCES (ALPHABETICAL LISTINGS)

ABB	*Abo*
Amerada Hess	*Allegheny*
BP	*Bonga*
Cameron	*Ceiba*
ExxonMobil	*Conger*
Halliburton	*Europa*
Marathon	*King*
Mentor	*Kizomba*
Oceaneering	*Na Kika*
Shell	*Okume*
Technip	*Prince*
Total	*Zia*

RESEARCH & DEVELOPMENT

Cuming Corporation scientists and engineers are constantly striving to develop new insulation materials and improve existing ones. The standard formulations listed on Page 1 can be modified to suit individual customer requirements. The company also operates the world's largest and most capable materials laboratory dedicated to characterizing buoyancy and insulation materials for the offshore industry.

ENGINEERING

Cuming Corporation is the most experienced supplier in the world of syntactic foam thermal insulation, and its engineers are familiar with every kind of offshore installation. Consult the applicable data sheets and contact our sales engineers for expert guidance and advice.

Cast-on-Pipe Material Being QA Inspected

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