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REPORT ON

LINEAR SHRINKAGE UNDER

SOAKING HEAT (ASTM C356 @ 850 °F)

AND

WATER VAPOR SORPTION (ASTM C1104)

FOR

einsulation

FIBERGLASS PIPE INSULATION

FOR COMPLIANCE TO C547

PREPARED FOR
einsulation.com, Inc.
508 North Second Street
Fairfield, IA 52556

TUTCO SCIENTIFIC REPORT NO. einsulation\356&1104.705
July 11, 2005

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Kenneth Whorlow
President

Project: Determine the Linear Shrinkage under Soaking Heat (C356 @ 850 °F) and Water Vapor Sorption (C1104) of einsulation, Fiberglass Pipe Insulation. The testing was conducted by requested of Anano Verma on purchase order number USCO146/TUTCO/03, items 2 and 3, dated June 24, 2005.

Samples: The material is described as: einsulation 3 N 3 Fiberglass pipe insulation with no jacket.

Test Methods:

ASTM C 356 (Linear Shrinkage of Preformed High-Temperature thermal Insulation Subjected to Soaking Heat). The test was conducted at 850 °F oven temperature. The length measurements were taken with a dilatometer and used metal strips to protect the edges. The width measurements were taken for information only and are not part of the C547 specification requirements. The width measurements were taken with a vernier caliper, and due to the softness of the material after heating, the final measurements were done using visual contact. ASTM C547-03 (Standard Specification for Mineral Fiber Pipe Insulation) requires the linear shrinkage to be measured with a maximum allowable 2% change. The material meets the requirement of C547 of an average 1.0% change in length.

Sample	% weight Loss	% shrinkage Length	% shrinkage Width(Average of 2)
1	7.5	1.11	1.1
2	8.0	1.05	1.6
3	7.2	0.84	1.2
4	7.7	0.85	2.0
Average	7.6	0.96	1.5

ASTM C1104 (Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation). ASTM C547-03 (Standard Specification for Mineral Fiber Pipe Insulation) requires the water vapor sorption by weight to be measured with a maximum allowable 5% change. The material meets the requirement of C547 of a maximum of 5% change.

3 samples tested at 120 °F for 96 hours

Results expressed as % of weight

Sample	% gain
1	0.92
2	1.36
3	0.92
Average	1.07