

**TUTCO SCIENTIFIC CORPORATION**  
**714 East Aspen Ave**  
**Fruita, CO 81521**  
Ph. & Fax 970 858 3584 email:tutco@tutcoscientific.com

REPORT ON  
28-DAY CORROSION TEST  
AND CHEMICAL TESTS OF

OF

LEWCO SUPER MAT  
(ID: Tutco 12-16-19)

IN ACCORDANCE WITH

ASTM C795 and

NRC REG GUIDE 1.36

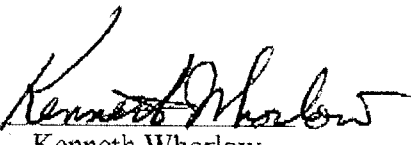
USING THE TEST METHODS OF

ASTM C692 AND ASTM C871

PREPARED FOR  
LEWCO SPECIALITY PRODUCTS  
6859 Renoir Ave.  
Baton Rouge, LA 70806

TUTCO SCIENTIFIC REPORT NO. LEWCO\065217.120  
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Reported by



Kenneth Whorlow  
President

Subject: This report covers ASTM C871 Chemical Tests (Standard Test Method for Chemical Analysis of Thermal Insulation Materials for Leachable Chloride, Fluoride, Silicate, and Sodium Ions) and ASTM C692 28-Day (Pre-Production) Corrosion Tests (Standard Test Method for Evaluating the Influence of Thermal Insulations on the External Stress Corrosion Cracking Tendency of Stainless Austenitic Steel). The material tested was Lewco Super Mat, ID: Tutco 12-16-19.

The results may be used to determine the qualification of the insulation to the requirements of ASTM C795 (Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel) and Nuclear Regulatory Commission, Regulatory Guide 1.36 (NRC RG 1.36).

Sample: The sample received was a hydrophobic flexible fiberglass thermal insulation blanket /felt and was identified as:

Name: Lewco Super Mat (0.5% WG)

Color: Gray

Type: Thermal Insulation Blanket/ Felt, Thickness: 16mm

ID: Tutco 12-16-19

### CHEMICAL TESTS

Sample Preparation: The submitted material was sampled such that the test specimens were representative of the entire cross section of the material. Samples weighing 20.0 grams were prepared for the duplicate extractions.

Each weighed sample was placed in a one-quart blender jar containing 450 ml of demineralized water. After blending to disperse and break up the solids, the sample slurry was quantitatively transferred to a one-liter stainless steel beaker and quickly heated to boiling. The slurry was maintained at boiling for 30 minutes and then cooled. The liquid weight was brought to 500 grams and then filtered to produce the extraction solution for chemical tests.

Chemical Test Procedures: All test procedures were conducted in accord with ASTM C871. The tests used were as follows: Chloride - Amperometric-coulometric titrator; Silicate - Molydisilicic acid; Sodium - Flame Photometric; Fluoride - Ion Selective Electrode; pH - Standard pH probe and meter.

Test Results: Given in parts per million (mg/kg).

<u>Sample</u>	<u>Sodium</u>	<u>Silicate</u>	<u>Chloride*</u>	<u>Fluoride</u>	<u>pH</u>
1A	223	534	31	2	8.4
1B	237	552	32	2	8.4

\*Known addition technique used to improve the low detection limit of the analytical equipment.

Chemical Test Conclusion: The sample of Lewco Super Mat, ID: Tutco 12-16-19, met the chemical requirements of ASTM C795 and NRC Reg. Guide 1.36.

## 28-DAY CORROSION TEST

Corrosion Test Procedures: The 28-Day Corrosion Test was run in accord with ASTM C692, using the Drip Test Procedure. The type 304 stainless steel used to fabricate the test coupons had a 0.051 carbon content. The coupons were sensitized by heating at 1200°F in an air atmosphere for 3 hours. They were then prepared in accord with ASTM C692. The lot of sensitized steel was qualified by three-day exposure to a 1500 ppm chloride solution - all specimens cracked, and 28-day exposure to de-ionized water - none cracked.

Sample Preparation: Test samples were fabricated from the blanket insulation to form approximately 1.5" thick, 4" wide, 3.5" tall sections using 2 layers of the material held together with rubber bands. Four specimens were prepared and each fitted with a u-bend coupon. The test coupons and specimens were set up on the C692 drip test apparatus, which was brought to operating temperature and the flow of de-ionized water from the peristaltic pump was started. The material is hydrophobic and does not readily wet. The DI Water dripped between the two pieces and percolated down to the coupon surface. The flow rate was set at 250 ml/day on each test specimen.

After 28-days the coupons and contact area of the materials were examined and the materials were slightly wet at the contact surface of the coupons. The material was slightly stuck to the coupons.

Corrosion Test Results: At the conclusion of the 28-day test period, the coupons were removed, cleaned and inspected for stress corrosion cracks - no obvious suspect areas were visible on any of the coupons. As required they were then flattened, cleaned, re-bent, and inspected - No suspect areas were found. The required inspection using dye penetrant and developer was done to add greater confidence that all cracks are found. No cracks were found on any of the coupons.

# of coupons tested

4

# of Coupons Cracked

0

### Corrosion Test Conclusion:

The sample of Lewco Super Mat, ID: Tutco 12-16-19, met the 28-Day Corrosion Test requirements of ASTM C795 and NRC Reg. Guide 1.36.