SPECIAL REPORT

SUPERIOR PRODUCTS
INTERNATIONAL SOUTHWEST

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PREPARED BY

THE MOST ABUNDANT SOURCE OF NEW ENERGY RESOURCES WE HAVE IS THE ENERGY WE CAN CONSERVE
On August 23rd & 24th 2006 at the request of Mr. Bill Dwyer, in a cooperative effort instituted by Mr. Gordon Ginzel a Measurement and Verification Analysis was conducted at the above facility in accordance with the Florida ENERGY CONSERVATION ASSISTANCE PROGRAMS Designation: ECAP-CUL-1-03 Method for Comparing Utility Loads in Structures and Buildings. The objective of this analysis is to determine the impact of the "As Built Conditions and As Installed Components / Equipment" on the energy producing loads on occupied residential, commercial, government building and other structures. The focus of this procedure is to provide a comparison to known standards for all parties interested in using alternative and conventional conservation products and devices to displaced energy loads. This report reflects the performance characteristics of the SUPER THERM COATING, as applied to the structures external surfaces, as a possible passive Energy Conservation Measure (ECM) to reduce internal Energy Loads and reduce the Heat Island Effects caused by exposed surfaces in urban areas.

- Our data indicated that at the time of this survey the test specimen container inside surface conduction related energy loads were reduced approximately 46 to 52% by applying SUPER THERM as an Energy Conservation Measure (ECM) to outside surfaces. The chart below shows a synopsis of our findings;

### AVERAGE THERMAL LOADS OF INSIDE CONTAINER ENVELOPE SURFACES / BTU PER SQUARE FOOT PER HOUR

<table>
<thead>
<tr>
<th>SAVINGS</th>
<th>LOADS RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPERTHERM RETROFIT INSIDE SURFACES</td>
<td>311</td>
</tr>
<tr>
<td>STANDARD CONTAINER INSIDE SURFACES</td>
<td>295</td>
</tr>
<tr>
<td></td>
<td>606</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

In all over 4,320 data points that were collected simultaneously over a 24 hour test period were analyzed.

TYPICAL STANDARD CONTAINER AS TESTED

The container retrofitted with the **SUPER THERM PRODUCT** demonstrated reduced loads normally associated with Energy Consumption and Coating Maintenance as follows;

**TYPICAL RETROFITTED SUPER THERM CONTAINER**

- INSIDE CONTAINER AMBIENT TEMPERATURE **22 DEGREES COOLER**
- THERMAL CONDUCTANCE TO OUTSIDE ENVIRONMENT **50% LESS**
- EXTERNAL SURFACE TEMPERATURE **47 DEGREES COOLER**
- INTERNAL SURFACE TEMPERATURES **37 DEGREES COOLER**
- OUTSIDE SURFACE REFLECTIVITY **50% HIGHER**
- ULTRAVIOLET ABSORPTION RATE **92% LESS**
- INTERNAL MOISTURE LEVELS **28.5% DRYER**
Average SITE Weather conditions during the analysis period were as follows:

High Temperature 97 Deg. F.
Low Temperature 74 Deg. F
Average Wind Speed 3 to 5.5 MPH
Average UV intensity 99 A+B
**SYSTEMS TESTED**

All load conducting surfaces on both containers were analyzed. 4,320 data points were recorded at 2 minute intervals for a 24 hour period with a synopsis of the findings as follows:
**THE COMBINED DATA INDICATES THAT THE THERMAL ENERGY NECESSARY TO COOL THE CONTAINER COATED WITH THE SUPER THERM PRODUCT WOULD REQUIRE 46 to 52% LESS ENERGY** at the time of this survey.

**PRECISION & BIAS**

In an effort to insure repeatable results additional test were conducted as follows:

Infiltration factors around all door seals were equal (0 CFM & 0 PA) and had no adverse effect on the recorded data.
The **EXTERNAL SURFACE Energy Flow Analysis** also parallel the Internal Surface data as seen in the chart below;

**TONS (12,000 BTU) OF COOLING LOAD***
**BEING LOST THROUGH EXTERNAL SURFACES FROM INSIDE THE CONTAINER**

<table>
<thead>
<tr>
<th>LOADS RECORDED</th>
<th>SAVERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPERHERM RETROFIT OUTSIDE SURFACES</td>
<td>4.39</td>
</tr>
<tr>
<td>STANDARD CONTAINER OUTSIDE SURFACES</td>
<td>7.78</td>
</tr>
</tbody>
</table>

* Cooling source 43 Degree/F water at a 6.5 GPM flow rate supplied by a calibration flow tube.

**Field Test Results**

The location of the test specimens was adequate. Both containers were of standard construction consisting of Carbon Steel side wall, roof and deck sheeting’s with a standard wood flooring overlay. The calculated R-Value of the existing Steel parent materials was found to be approximately an R-1.70. The only difference between the two containers consisting of approximately 2,690 Cubic Feet of **Control Zone Area** was the external **SUPER THERM COATING**.

As noted in the test results on the prior pages of this report the differences created by the **SUPER THERM PRODUCT** concerning load reductions produced by thermal conduction, convection and absorption **WERE SIGNIFICANT**.
Additionally, **significant reductions in internal moisture levels were also noted.** In every instance the Field Test results concur with the manufacturers published data on the products anticipated performance curves obtained using in laboratory test methods. Our Energy Flow, Heat Flux and Thermographic analysis indicated that the **standard container** would require a minimum of **46% more BTU’s** of cooling energy to maintain a comfort level **below 70 Degrees/°F** with the conditions present at the time of this survey.

In retrospect, the container coated with the **SUPER THERM PRODUCT** reduce these loads to manageable levels to maintain the same comfort level. The **Ultraviolet absorption test** also showed a possible reduction in **SURFACE MAINTENANCE** as the majority of the **Harmful UV** that normally reduces coatings service life is not being absorbed by the **SUPER THERM COATING** itself. The aforementioned internal Humidity reduction factors took place **regardless of the amount of direct solar gain**.

**CLOSING COMMENTS**

Let me thank **Intermodal Facility & Maintenance, Inc.** for giving us the opportunity to use their facility as a field test site. The data collected is a valuable asset to our **ECAP** program in building a comprehensive profiling of **actual energy related loads** that occur in **real life applications**. This type of data is critical to other Engineers facing decision making tasks, where published measurement and verification data is not yet available or inaccurate.

This report is meant to be an educational guide to familiarize you with the actual performance curves of your chosen Energy Conservation Measures based on your supplied data and our field test results.

This is the third time we have had the pleasure to test **SUPER THERM PRODUCTS**, it is rare that a single product will show such Repeatable Results in three totally different environments, South Florida, Denver Colorado and LaPorte Texas a true testimonial to your products **ENERGY STAR** rating. Please feel free to contact our offices if we can be of any assistance in helping you meet your future conservation goals.