



### FEATURES

#### 1.) As an Insulation Coating

- Reflects 95% of the sum total of all three heat waves
  - o UV – 99%
  - o Short Wave (Visual) – 92% (JIS A5759 5.3.4 (b) specific waves. Second testing: CRRC - 83.5% (ASTM C1549) combination of a limited number of waves.
  - o Long Wave (Infrared) – 99.5% (JIS A5759 5.3.4 (c) specific waves. Second testing: CRRC - 83.5% (ASTM C 1549) combination of a limited number of waves
  - o ASTM E1269 and ASTM 1461 Reduces conduction of BTU heat from 367.20 down to 3.99 with one coat of SUPER THERM.
  - o ASTM C236 “Standard Test Method for Steady-State Thermal performance of Building Assemblies by Means of a Guarded Hot Box”. Fiberglass at 3” rated 0.53 BTU K value. One coat of SUPER THERM at 10 dry mils rated 0.31 BTU K value and one coat applied at 10 dry mils to one side of wall and another coat applied to opposite side at 10 dry mils rated BTU K value of 0.21. 148% better performance than the fiberglass.
  
- Emissivity rating of 91%

“Emissivity is the ratio of the energy radiated from a material surface to that of the radiation for a blackbody (a perfect emitter) at the same temperature and wavelength and under the same viewing conditions”.
  
- The Russian Academy of Sciences Institution, Institute for Solid State Physics – July 2012 :  
Result: Reflection Coefficient%
  - Polished Aluminum Mirror – 90.4%
  - Fresh electro-zinc coating – 65.3%
  - SUPER THERM sample 1 – 96.1%
  - SUPER THERM sample 2 – 95.9%
  - SUPER THERM sample 3 – 94.3%
  - SUPER THERM sample 4 – 94.5%

Conclusion: “Total coefficients of diffuse light reflection for SUPER THERM coat samples in visible band are consistent with (and even several percentages higher) aluminum mirror reflection coefficient, and are substantially higher than reflection coefficients of galvanized iron and duralumin”.

It is understood that blocking the “heat load” over a facility is more effective than allowing 100% of the heat load to occur and then using a standard batt insulation to absorb and offer an “R” value to slow the heat from conducting into the facility. The “R” value is only : the recorded time it takes for the total heat load to pass through the material from the loaded side to the cool side.



Then the question becomes, once the material is fully loaded with heat – do you still have any R value at that point? There is no resistance based on initial loading because there is a steady flow of heat to the cool side. Also, once the batt material is loaded and the sun goes down, the batt is fully loaded with heat and will take hours to finish unloading the heat into the cool side before the A/C can cycle.

NB: If you never “load heat”, the facility never absorbs and holds heat, therefore, keeping the facility cool and when the sun goes down, it is immediately cool causing the A/C to cycle or shut down.

### **2.) As a Water Barrier Coating**

- ASTM D 6904 Resistance to Wind Driven Rain for Exterior Coatings ASTM D 7088 Resistance to Hydrostatic Pressure for Coatings Passed all testing standard to 55 mph wind driven rain.

### **3.) As a Flame & Smoke Retardant**

- ASTM E 84-89 “0” Flame Spread and “0” Smoke
- External fire performance B<sub>Roof</sub>(t<sub>2</sub>) according to ENV 1187-A1 2005 / UNI EN 13501-5

### **4.) As a Sound Reducer**

- ASTM E90 “Standard Method for Laboratory measurement of Airborne Sound Transmission Loss of building Partitions.”
- ASTM E413 “Standard Classification for Determination of sound Transmission Class.”
- Both sides total accumulative result is STC 41
- Talking range of 1000 Hz to 1600 Hz – STC 50 and again at 5000 Hz

### **5.) As a Mold / Mildew Resister**

- ASTM D-3273-82T tested for severe mold environment – Temp 90F and RH of 95%-98% for 5 ½ weeks. Rated 9 out of 10.

### **6.) As a Condensation Controller**

- Field Study Testing

### **7.) Static Coefficient of Friction is an average of 1.14 when tested in 2007**

- Kinetic Coefficient of Friction is an average of 0.78.



### CERTIFICATIONS

UL , FM, ABS, ENERGY STAR, California Bureau of Home Furnishings and Thermal Insulation, ICC (International Code Council #21-25), CRRC (Cool Roof Rating Council – Emissivity of 0.91), JIS (Japanese Institute of Standards) A 5759. US GREEN BUILDING COUNCIL- Certified, LEED program, MBDC Cradle to Cradle Program – Gold Certificate for LEED and Environment, USDA approval letter and US Consumer Council approved.

### LABORATORY TESTS



#### 1. **ASTM (American Society for Testing and Materials)**

- ASTM B177 - Salt spray (fog) corrosion tests, 450h exposure (Passed)
- ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus (Passed)
- ASTM C236 - Standard Test Method for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box - Testing for measuring R-values (Passed)
- ASTM C411 - Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation (Passed)
- ASTM C1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers (Passed)
- ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer (Passed)
- ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers- Tension - Tensile strength - 444 psi, modulus of elasticity 13,248 psi (Passed)
- ASTM D522 - Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings (resistance to cracking on metal or rubber type materials / 1"(25mm)bend / 1/4"(96mm)bend) (Passed)
- ASTM D1653 - Standard Test Methods for Water Vapor Transmission of Organic Coating Films (Passed 3%)
- ASTM D1654 - Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments Salt spray (fog/weathering) 450 Hour Salt Spray (Fog) (Passed - 2000 hours)
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# SUPER THERM<sup>®</sup>

## SPECIFICATIONS & TESTS

- ASTM D3273-82T - Standard Test Method for Resistance to Growth of mould on the Surface of Interior Coatings in an Environmental Chamber (Passed)
- ASTM 5894 - UV & Salt Spray Resistance 5000 hours
- ASTM D3274 - Standard Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algae) Growth or Soil and Dirt Accumulation (Rating degree of fungal growth or soil and dirt accumulation on paint film) (Passed - Excellent (8 out of 9))
- ASTM D3359 - Standard Test Method for Measuring Adhesion by Tape Test (Rated: 5B)
- ASTM D4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser (Passed)
- ASTM D6904 - Standard Practice for Resistance to Wind-Driven Rain for Exterior Coatings Applied to Masonry (3000 cycles)
- ASTM D7088 - Standard Practice for Resistance to Hydrostatic Pressure for Coatings Used in Below Grade Applications Applied to Masonry (Passed)
- ASTM E84-89a - Standard Test Method for Surface Burning Characteristics of Building Materials (Flame Index "0" / Smoke Index "0" - Class "A" Rating) (Passed - "0" development)
- ASTM E90 - Standard test method for laboratory measurement of airborne sound transmission loss of building partitions (Passed)
- ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials water vapor transmission (Perm Rating - 8.8 avg)
- ASTM E108 - Standard Test Method for Fire Tests of Roof Coverings (Passed)
- ASTM E413 - Standard Classification for Determination of Sound Transmission Class (STC 40 to 50 based on sound frequency)
- ASTM E514 - Standard Test Method for Water Penetration and Leakage Through Masonry Resistance to Wind Driven Rain (Passed)
- ASTM E903-96 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres (Passed)
- ASTM E903-96 - 4 Year Retest (Passed)
- ASTM E1269 - Standard Test Method for Determining Specific Heat Capacity by Differential Scanning Calorimetry - TPRL (Passed)
- ASTM E1461-92 - Standard Test Method for Thermal Diffusivity of Solids by the Flash Method (Passed)
- ASTM E1737 - Test Method for J-Integral Characterization of Fracture Toughness Flexibility (Passed)
- ASTM G53 - exposure to UV, elevated temperature and humidity (Passed)



### **2. NASA (National Aeronautics and Space Administration)**

- NHB 8060.1B/C Test 1- Flammability testing ("0" Burn, Class "A" rating) (Passed)
- NHB 8060.1C, Test 7 - Toxic Off gassing ("K" no Toxic off gassing / "K" Rating for toxicity) (Passed)



### **3. ICC (International Code Council)**

Council that formally consolidates approvals for:

- BOCA (Building Officials Code Administrators)
  - o Section 723.2 Exposed installations, Thermal insulation
  - o Section 723.3 Concealed installations, Thermal insulation
  - o Section 803.2 Classification, Interior finish
  - o 1998 International Mechanical Code
  - o Section 604.3 Coverings and Linings, Insulation
- ICBO (Intl Conference of Building Officials) \*SBCCI (Southern Building Code Congress Intl)
  - o Passed ASTM E 84 For Flame Spread
  - o Passed ASTM C 411 for High Temperature for Surface Performance
  - o Section 803.2 Classification, Interior finish
  - o Passed ASTM C 177 for Thermal Conductivity



#### 4. ECAP-CUL-1-03 - ENERGY CONSERVATION ASSISTANCE PROGRAM

Standard Method for Comparing Utility Loads in Standard Constructed Buildings

- FLORIDA: ECAP REPORT (report available on request)
- DENVER: ECAP REPORT (report available on request)
  - o "This is the second time we have had the pleasure to test your product, it is rare that a single product will show such Repeatable Results in two totally different environments, South Florida and Denver Colorado, a true testimonial to your products ENERGY STAR rating." *Alexander Othmer - Director FEO Energy Conservation Assistance / USF Tampa, Florida*
- TEXAS: Container ECAP Report Houston (report available on request)
  - o "This is the third time we have had the pleasure to test SuperTherm product, it is rare that a single product will show such Repeatable Results in three totally different environments, South Florida and Denver Colorado and LaPorte Texas a true testimonial to your products ENERGY STAR rating."



#### 5. ASHRAE (The American Society of Heating, Refrigerating and Air-Conditioning Engineers)

- 90.1 CODE COMPLIANCE ("U" value used to measure "area-weighted average", insulated walls or roofs)



#### 6. ENERGY STAR PROGRAM

Approved and accepted as an energy star partner for saving energy

- ASTM E 903-96 Reflectivity = 80%
- Only 1% Reduction in Reflectivity over 3 Years (3% over 10 years)
- ASTM C 1371 and C 1549 Solar Reflectance and Thermal Emittance



### 7. **LEED (Leadership in Energy & Environmental Design)**

- Qualifies under Sustainable Sites Credit 7.1 Heat Island Effect - non roof (1 point)
- Qualifies under Sustainable Sites Credit 7.2 Heat Island Effect - roof (1 point)
- Qualifies under Energy and Atmosphere Credit 1 Optimize Energy Performance ie. reduce thermal bridging (1-10 point)
- Indoor Environmental Quality Credit 4.2 Low Emitting Materials - paint (1 point)
  
- Innovation & Design Process Credit 1.1 Innovation in Design (5 point)
- Under Category CORE AND SHELL in the latest 2009 LEED program:
  - o SS Credit 7.2 Heat Island Effect: Roof - 1 point for having a SRI above 78 (ST-120)
  - o EA Credit 1: Optimize Energy Performance 1-21 Points SUPER THERM – 17 points.
- MBDC Cradle to Cradle GOLD CERTIFICATION
- LEED Rating System (available upon request)



### 8. **FACTORY MUTUAL**

- Factory Mutual Approval - Tested and Approved for Roofing and all other Applications
- Superior Products International II, Inc. is an active member of the NRCA. (National Roofing Contractors Association)



### 9. **JISC (Japanese Industrial Standards Corporation)**

- JIS A 5759 Reflectivity of sunlight on window or coating film (Passed)
- Reflective ratio 92.2 - Long Wave Radiation ratio 99.5 (Infrared) (Passed)
- 15 Year Re Test Solar Reflectance JIS R 3106 (Passed)



### 10. USDA (United States Department of Agriculture)

- Environmentally safe and safe for use around animals
- Letter of Written Certification as Accepted by USDA from Manufacturer (available upon request)



### 11. China Center for Technical Testing of Non-Metallic Materials for Ship Building, China Ship-Building Corporation

National Bureau for the Inspection of Technologies (97), Measurement Approval (National) No. (M0729) (Passed - 2000 hours)

- GB/T 1771-91 - Resistance to Salt Fog (2000 hours) (Passed)
- GB/T 1866-88 - Manual Aging (2000 hours) (Passed)
- GB/T 10834-88 - Resistance to Salt Water (1000 hours) (Passed)
- GB/T 5219-85 - Adhesion (pulling apart method) (4.07MPa)
- GB/T 1733-93 - Boiling Water Immersion (8 Hours)

### 12. VOC – 24 grams/ litre



### 13. IMO (International Marine Organization)

- IMO A. 653 (16) - Flame Spread Test for Bulkhead, Wall, and Ceiling Linings (Passed)





#### 14. Marine Safety Council

- MSC.41 (64) - Toxic Gas Generation, Used Colorimetric Gas Detector Tubes, Met All Toxic Gas Requirements (Passed)

#### 15. SOUND PROOFING Barrier

- Sound Reduction: STC (Sound Transmission Coefficient)-Rated 48-51 per ASTM E 90
- Stoughton Trailer Ultra Sound testing shows a 68% Reduction
- Sound testing performed by Hot-Cold Air and Fire Control by Pat Saulson, PhD
- Sound reduced an average of 50.2% by using SuperTherm<sup>®</sup> on the interior walls of a house

#### 16. USDA (US Dept. of Agriculture) approved for use around foods- no off gassing



#### 17. GREEN LABEL

- "Certified" means that an examination of samples of a Product or investigation has been performed by the Council to determine compliance with the Guidelines and that permission has been granted in accordance with this Agreement for the User to represent its Product as Certified.



#### 18. US FEDERAL AUTHORIZED VENDOR AND CONTRACTOR APPROVAL STAMP FOR SELLING DIRECTLY TO US GOVERNMENT AGENCIES AND MILITARY

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