

Insuladd® Testing Overview

Geosciences Ltd. <http://www.geoscienceltd.com/accred.html> is a highly accredited 48 year old research and development laboratory that performs thermal physics testing of materials and insulation systems. Geosciences' Thermal Property Testing Laboratory has received accreditation, certification, approval or acceptance from the following agencies:

1. **California Energy Commission (CEC) and the Bureau of Home Furnishings.**
2. **International Code Council (ICC).**
3. **Dade County Building Code** Compliance and Protocol P A301-94
4. **MIL-C-45662A** through Loral Aeronutronic (Aeronutronic Ford Corporation).
5. **Special Process Supplier's Certification** through Aerojet Liquid Rocket Company.
6. **Pacific Gas & Electric Company** approves Geoscience as a qualified insulation testing laboratory.
7. **Puget Sound Power** approves Geoscience as a qualified testing laboratory.
8. **San Diego Gas & Electric Company** approves Geoscience as a qualified testing laboratory.
9. **Oregon Department of Energy** approves Geoscience as a qualified insulation testing laboratory.
10. **Canadian General Standards Board** has reviewed Geosciences' testing laboratory and finds it to be qualified to perform tests for Canadian insulation manufacturers.
11. **Cytec Fiberite** has certified Geoscience as a high quality control laboratory service organization.
12. **Governmental Acceptance of Geosciences' Thermal Testing and Evaluation Capabilities**

For over 40 years, Geoscience has performed contract research for governmental agencies such as AEC, ERDA, DOE, NASA, ONR, USAF, and the USN's Civil Engineering Laboratory at Port Hueneme in connection with thermal property measurement activities (thermal conductivity, thermal expansion coefficient, specific heat, emissivity, viscosity, etc.). The contract monitors of these agencies visit Geoscience to review measurement techniques. In all cases, over this long

time period, the government has accepted and utilized Geosciences' data in energy and conservation programs

Geoscience is also involved in a number of cooperative thermal property activities with institutional organizations and technical societies i.e., the Canadian National Research Council, ASTM C-16 Committee and ASHRAE (The American Society of Heating, Refrigerating and Air-Conditioning Engineers advances technology to serve humanity and promote a sustainable world)

Geoscience Ltd has run over 10 different ASTM or ASTM based tests for Insuladd® Thermal Barrier insulating additive for paint.

The testing results clearly prove that Insuladd® Thermal Barrier insulating paint additive reduces heat flux through ordinary paint and assemblies by up to 38%.

The Geoscience Ltd. test results show that Insuladd® Thermal Barrier insulating additive for paint is one simple step you can take toward energy conservation that will work for you winter and summer, year after year!

Our Geoscience Test Portfolio:

1) ASTM E- 408 Infrared Emissivity Test & ASTM E -1918 Solar Reflectivity Test.
How Exterior Paints and Interior Paints Can Play Roles in Conserving Energy
Test report shows interior 11.8% and exterior 37% heat reduction when using Insuladd®

<http://insuladd.com/energy.html>

2) A Comprehensive “R” value test with concluding data for 18 common wall assemblies and the improvement of R-Value that occurs when Using Insuladd® Solar Reflective Paint on Irradiated Building Walls.
Test report shows that Insuladd when added to paint more than doubles the “Whole Wall Effect R-Value” in the majority of cases.

<http://insuladd.com/reflective.html>

3) Thermal Room Model Test That Defines Energy Savings via Low IR Emissivity Paints. A Study of the Energy Savings when Using Insuladd® Solar Reflective Paint on the Inside of Building Walls.
Test Report shows expected results resulting in rooms staying in the “human comfort zone” longer.

<http://insuladd.com/reflectiveinside.html>

4) **Thermal Wall or Roof Model test of 6 types of building envelopes** that can be Used to Estimate Energy Savings when Painting Exterior Surfaces of Roofs and Walls with Solar Reflective Paints.

Test report illustrates a 13% value or advantage resulting from using Insuladd solar reflective paint on the outside of building envelopes. Specifically, the energy savings are significant.

<http://insuladd.com/reflectiveexterior.html>

5) **Test Method for Equilibrium Fuel Tank Temperature as a result of the Solar Heating and Nocturnal Cooling Cycle.**

Test Reports show a significant effect and savings

<http://insuladd.com/tanktemp.html>

6) **Tank Evaporation Test** – Evaporation losses from Solar Irradiated Fuel Tanks coated with ordinary paints and the same paints with Insuladd added.

Test reports show a 20% lower evaporation losses for tanks coated with Insuladd.

<http://insuladd.com/tankevap.html>

7) **Testing Method for Calculation of Equivalent R Value.** A Study of the Energy Savings that can occur when Using Insuladd Solar Reflective Paint on Irradiated Building Walls.

The Test Report shows that the Insuladd/Primer coated panel consistently produced results showing a reduced heat flux through the R-3 panel of 33%, doubling the “R” value of the test substrates.

<http://insuladd.com/rvalue.html>

Geoscience Test Portfolio 3rd Party Conclusions:

The testing protocol was reviewed by Independent 3rd party engineers and energy consultants. It is their overwhelming combined opinion that the testing protocol were run to ASTM Standards and / or the mathematical computations used in the tests are consistent to thermal physics testing of materials and insulation systems standards. Their overwhelming opinion is that the addition of Insuladd® Thermal Barrier insulating additive for paint into paints and roof coatings can improve the effective insulation value and energy efficiency of exterior surfaces such as walls and roofs by a value equal or close to R-6 insulation. Interior walls and ceilings painted with Insuladd® Thermal Barrier insulating additive for paint have shown to contribute to energy savings of 20% and more.

It was further noted that conventional insulation materials like fiberglass, cellulose, rock wool and Styrofoam, no matter how thick, have almost no ability to block radiant heat

energy which can account for as much as 93 percent of summer heat gain and up to 75 percent winter heat loss in conventional structures.

Insuladd® Thermal Barrier insulating additive for paint blocks radiant heat and is a simple and affordable solution to high energy costs.

OTHER 3rd PARTY TESTING & Endorsements

1) Test of the expected energy savings when using Insuladd on Interior Walls.

Test Conducted by: China National Center for Quality Supervision and Test of Building Engineering, Chinese Academy of Building Research (CABR) - Founded in 1953, China Academy of Building Research (CABR) is the largest and most diverse research institution in the building industry in China. CABR has 14 research institutes (centers) and 77 laboratories, covering 70 research fields of building structure, foundation, earthquake engineering, **built environment and energy efficiency**, residential building system and product, intelligent building, building engineering software, construction mechanization, building fire prevention, construction technology, building materials and so on. In recent years, CABR has put more efforts on the research and **development of green building technologies**.

Results: Under the same exterior temperature (0°C (32°F)) and the same room temperature controlled at 20°C (68°F), the use of INSULADD-added paint resulted in an energy saving rate of 12% and higher.

<http://www.insuladd.com/china.html>

2) Test of the expected energy savings when using Insuladd on Exterior Walls.

Test Conducted by: Center for Energy-saving Research School of Architecture Huanan University of Science and Technology: A world leading institution for Architectural and Energy

Results: The test resulted in a significant energy-saving of 24.8% from the former where INSULADD-added paint was applied.

<http://www.insuladd.com/ChinaSummer.html>

3) Thermal Imaging Testing on Interiors showing energy savings when using Insuladd

Test Conducted by: VIE Inc. Mark and Dr. Donald Hei.

Mark Hei:

- Systems-Analyst & Physics-Engineer, 19 years (Engineering Physics, B.S.)
- 18+ years as a NASA Contractor (1990-2008)

□ 12 years with **VIE, Inc/FuelEnergySavers.com** (1997-Present)

Experience includes but not limited to the following items:

- Wide variety of skills – those specific to the energy-efficiency fields include electrical, mechanical & computer engineering., systems integration, applied physics methods, control systems & computer-controlled automation, thermodynamics, equipment fabrication & calibration, etc.
- An Infraspection Level I & II Certified thermographer, meeting training requirements of NDT personnel in the Thermal/Infrared Method ASNT document, SNT-TC-1A

Dr. Donald J. Hei:

- Physicist, 40 years in Engineering Physics – (achieved Ph.D in Space Laboratory Plasma Physics)
 - 28 years at NASA / Sr. Technical Expert to Technical GS-15 (1969-1997)
 - 12 years with **VIE, Inc/FuelEnergySavers.com** (1997-Present)
- Experience includes but not limited to the following items:*
- Participated in Space Exploration Initiative (SEI) Study to consider returning to the Moon and establishing a presence on Mars
 - Sr. technical expert and/or project manager for a wide variety of projects at all levels within NASA

Results: To date ALL our findings show that applying Insuladd® paint additive mixed in latex paint to the interior of buildings result in more energy-efficient heating than with a painted surface alone.

http://www.insuladd.com/pdfs/VIE_Inc_InsuladdReport.pdf

NASA ENDORSEMENT AND DEVELOPMENT

Insulating Paint Powder Turns Every Color 'Green: No one states it clearer than NASA,

“The answer is paint that includes an insulating powder that originated at NASA. Widely used on commercial and residential structures, it transforms any color of paint into an environmentally friendly insulation barrier that saves energy and cost. “ and

“Bringing the NASA insulation powder to the public market resulted in an innovative partnership with Tech Traders, Inc. Months of testing and development created Insuladd®, a safe, non-toxic powder that can be added to any interior or exterior paint to transform it into a layer of insulation.”

Please see this article published on NASA website

http://www.nasa.gov/topics/nasalife/green_paint.html