



SPI COATINGS

PROVEN PERFORMANCE • REAL WORLD SOLUTIONS

March 21, 2021

SUBSTANTIATION FOR HEAT BLOCKING CONSISTENCY 1994-2021

UL CERTIFICATION PROGRAM 2004 / Backup Japan Testing Center 1994

IR testing from 1994 – 2021 performance for SUPER THERM®

Issued: First test: Japan Testing Center for Construction Materials November 8th, 1994. Second test: UL 2004-10-07, UL Testing Program, Proof of performance

UL IR Spectroscopy detects the absorption of light by a compound, in the IR region of the electromagnetic spectrum. To absorb light a molecule must have a bond within its surface that exhibits a “dipole moment” – meaning electrons within a bond are not shared equally. SUPER THERM® does not have this inequality of electrons which allows the ceramic compounds to stay uniform and block radiation.

APPENDIX A of the UL Program, Page 1, “Report to manufacturer...” A. “Variations in construction are found,” – checking for formula changes.

Samples are scheduled, unless situations arise on UL personnel, are pulled once a year. Vol. 1, App. B Page 1

SUPER THERM® tested under this program Vol. 1, App. B. Page 2

UL TEST GRAPH showing the initial test and comparison of additional test matching the absorption rate of SUPER THERM®. Graph is reported u-side down meaning the top at 100% is no absorption of heat and bottom 0% is 100% absorption of heat. Print off from “12.6 Infrared Spectroscopy – Chemistry LibreTexts” explains this set up. Dr. Dictmar Kenneophl FCIC (Professor of Chemistry, Prof. Steven Farmer and William Reusch, Professor Emeritus.(Michigan State U).

Copy of 2020 inspection and approval for SUPER THERM®.

Last two pages, testing from Japan Testing Venter for Construction Materials, November 8th, 1994 long wave (IR) wave blocking is 99.5%. Matches graph from UL for SUPER THERM® in 10.-07-2004 at up to 99.6%.



Underwriters Laboratories Inc.

2002-2021

SPI Certification Program
with UL
SUPER THERM

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File R21664

Vol 1

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Revised: 2006-01-10

Light
stream of photons - shorter wave
because electromagnetic radiation travels @ a constant speed -
each wave length corresponds
to a given frequency,
which is # of times per second
a crest passes
a given point.
Longer wavelengths
have lower
frequencies.

FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

ROOFING SYSTEMS
(TGFU)

Complementary Product Category
ROOF COATINGS
(TIUY)

Manufacturer: SUPERIOR PRODUCTS INTERNATIONAL II INC
(321796-001) 10835 W 78TH ST
SHAWNEE KS 66214
Applicant: SAME AS MANUFACTURER
(321796-001)
Classified Company: SAME AS MANUFACTURER
(321796-001)

Shorter wavelength
correspond to higher
energy.
GAMMA + X-RAY
Visible 400-700 nm

This Procedure authorizes the above Manufacturer to use the marking specified by Underwriters Laboratories Inc. only on products covered by this Procedure, in accordance with the applicable Follow-Up Service Agreement.

The prescribed Mark or Marking shall be used only at the above manufacturing location on such products which comply with this Procedure and any other applicable requirements.

The Procedure contains information for the use of the above named Manufacturer and representatives of Underwriters Laboratories Inc. and is not to be used for any other purpose. It is lent to the Manufacturer with the understanding that it is not to be copied, either wholly or in part, and that it will be returned to Underwriters Laboratories Inc. upon request.

This PROCEDURE, and any subsequent revisions, is the property of UNDERWRITERS LABORATORIES INC. and is not transferable.

UNDERWRITERS LABORATORIES INC.

IR spectroscopy detects
the absorption of light
by a compound, in the IR

Sajeew Jesudas
Chief Operating Officer

"Dipole Moment"
↓

Need

region of the electromagnetic spectrum. bond
To absorb light a molecule must have a bond within its surface
that exhibits a "dipole moment" - meaning electrons within a bond
are not shared equally.

Infrared region of the electromagnetic spectrum which covers
frequencies corresponding to the vibrational frequencies of
organic bonds

An independent organization working for a safer world with integrity, precision and knowledge.





IR bandwidth of wave



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About 6,440,000 results (0.79 seconds)

Infrared radiation extends from the nominal red edge of the visible spectrum at 700 nanometers (nm) to 1 millimeter (mm). This range of wavelengths corresponds to a frequency range of approximately 430 THz down to 300 GHz.

en.wikipedia.org › wiki › Infrared
Infrared - Wikipedia

About featured snippets · Feedback

People also ask :

What is the wavelength range of infrared?

between 780 nm and 1 mm

Wavelength range and sources

Infrared radiation (IR), also known as thermal radiation, is that band in the electromagnetic radiation spectrum with wavelengths above red visible light between 780 nm and 1 mm.

www.icnirp.org › frequencies › infrared
Infrared (780 nm-1mm) - ICNIRP

Search for: What is the wavelength range of infrared?

What type of wave is a infrared wave?

Infrared waves, or infrared light, are part of the electromagnetic spectrum. People encounter Infrared waves every day; the human eye cannot see it, but humans can detect it as heat. A remote control uses light waves just beyond the visible spectrum of light—**infrared light waves**—to change channels on your TV.

science.nasa.gov › ems › 07_infraredwaves
Infrared Waves | Science Mission Directorate

Search for: What type of wave is a infrared wave?

What is the principle of IR?

IR spectroscopy detects the absorption of light by a compound, in the IR region of the electromagnetic spectrum. To absorb light a molecule must have a bond within its structure that can exhibit what is referred to as a 'dipole moment' which means electrons within a bond are not shared equally.

www.open.edu › ocw › mod › oucontent › view
2.2 Principles of IR spectroscopy - OpenLearn - Open University

Search for: What is the principle of IR?

What is Wavenumber in IR?

What is the frequency and wavelength of infrared?

What is the maximum range of infrared in meters?

IR Spectroscopy

"Dipole moment"

APPENDIX A

FIELD REPRESENTATIVE'S DUTIES AND INSTRUCTIONS
FOR EXAMINATION OF PRODUCT

FIELD REPRESENTATIVE'S DUTIES:

The Field Representative's duties include, but are not limited to:

Examine the records for current production intended to bear the UL Mark or Marking to determine compliance with the description of the product and any other requirements expressed in this Procedure. If there is no current production, review past records of products which bore the UL Mark.

Where so specified by an Appendix B, forward samples to UL for Follow-Up Tests.

Where so specified by an Appendix D, inspect the test records and facilities of the manufacturer to ensure that:

- A. The proper number of samples are undergoing the required tests, and
- B. The required tests are being performed correctly, and
- C. The proper information is being recorded and is up-to-date, and
- D. The instruments being used for the tests have been calibrated at the prescribed interval and are in good working order.

Report to the manufacturer and Conformity Assessment Services Department by means of a Variation Notice (VN) if:

- A. Variations in construction are found, *- checking for Formula changes*
- B. The manufacturer's method and/or frequency of test is not as described,
- C. The records maintained by the manufacturer are not as described,
- D. The manufacturer's inspection program is not being performed as described, or
- E. Unacceptable test results are witnessed during tests conducted specifically for the Field Representative.

APPENDIX B

INSTRUCTIONS FOR FIELD REPRESENTATIVE
FOR SAMPLE PICK-UP

FIELD REPRESENTATIVE:

Certain products covered by this Procedure employ constructions or materials requiring Follow-Up Tests by UL. Once a year, the UL Representative shall select samples as shown in the Appendix B Sample Selection Guide.

It would help if the Northbrook Office received samples from this industry at an even rate throughout the year. We ask that you try to select samples as follows:

<u>Letter Beginning Applicant's last name</u>	<u>Quarter of the year</u>
"A" through "L"	First or Second
M" through "Z"	Third or Fourth

Of course, should samples not be available for selection by this schedule, select them when they are available.

The UL Representative shall provide a sample tag for each sample or set of samples, and the tag shall properly identify the sample(s). The manufacturer is responsible for forwarding the sample(s) to the Northbrook Office.

*Once a year
Samples for
Testing*

Roofing Systems (TGFU)
Component Sample Selection Guide

<u>Section</u>	<u>Component Type and/or Identification</u>	<u>Size/ Quantity</u>	<u>Test Name</u>	<u>Test Results</u>	<u>T.R.#</u>
1	"Super Therm Roof Coating"	1 Pint	Infrared (FT-IR) Spectroscopy: Golden Gate ATR	FO 7-28-04	1