

# **SUPERTHERM**

## **Durability in weathering**

**\*\*Reflectance test Result after 15 years.**

**\*\*Reflectivity change with aging**

-SUPER THERM compared to other reflective coatings

Presented in:

International Workshop on Countermeasures to Urban Heat  
Island

“Research on Cool Roof in Japan”

by

Mr. Yasushi Kondo, PhD of Musashi Institute of Technology

# Solar Reflectance Test after 15 years

## Reflectance Durability

- User

Mr. Roger Kuntz, President of K-Teck  
Route Box 69 Grainfield, Kansas 67737



- Test Piece

The test piece was taken from a 15-year old roof in January 2008 where Super Therm was applied in 1989.

- Climate Condition

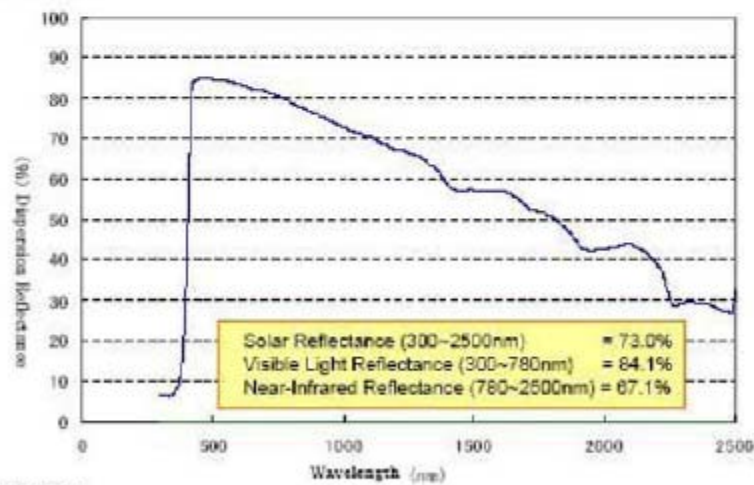
K-Teck is a manufacturing facility located in Grainfield, Western Kansas. This area's climate is very severe: with  $-21^{\circ}\text{C}$  in the winter with snow and ice, and with  $38^{\circ}\text{C}$  in the summer with sand storms and very strong sun radiation.

- Solar Reflectance Test

Test Center: Building Material Test Center

Test Method: Solar Reflectance Test JIS R 3108 (Reflectance Test on Plate Glass)

Test Result :



- Evaluation

It is an excellent result for a roof of a factory in extremely severe conditions to remain at 84.1% of visible light reflectance, and 73% of total solar reflectance after 15 years. The reflectance of near infrared is 67.1%, but this is because the Super Therm at that time did not contain the fourth ceramic which is designed to block infrared rays introduced in 2000. This fourth ceramic repels 95% of infrared, so the result with the current Super Therm will be better.

## Reflectivity change with aging of other reflective coatings

Twenty one high-reflectance coatings have been tested based on the JIS Standard as a part of the heat island mitigation effect investigation program by the city of Tokyo. The result of the newly applied product was publicly released before, but the result after it aged has just been released in the "International Workshop on Countermeasures to Urban Heat Island" in a presentation "Research on Cool Roof in Japan" by Mr. Yasushi Kondo, PhD of Musashi Institute of Technology. Dr. Kondo is a researcher with authority in the high reflectance coating field.

There are many high-reflectance coatings in the market nowadays, but not enough research has been done on its product quality. Therefore, it is difficult for users to select reliable products.

In the test done by Dr. Kondo, the product No.13 had one of its highest reflectance in the new stage, but only after one and a half years (571 days) the reflectance had decreased by about 30%.

### <Product No.13>

	Solar Reflectance (300~2500nm)		Visible Light Reflectance (300~780nm)		Near-Infrared Reflectance (780~2500nm)	
	New	571 days	New	571 days	New	571 days
White	80.8	54.8	85.2	50.4	82.1	61.4
Black	40.4	30.7	5.8	6.9	71.2	51.5

Test Method: JIS R 3106 (Reflectance Test on Plate Glass)

On the contrary to this test result, Super Therm's reduction in reflectivity after 15 years was only 19.2%. (92.2% - 73%=19.2%)

This result proves that Super Therm's durability in reflectivity is by far excellent.

### <Super Therm>

- The Solar Reflectance at the new stage was **92.2%** (Building Material Text Center)
- The Solar Reflectance **After 15 years** (K-Teck, Kansas)

	Solar Reflectance (300~2500nm)	Visible Light Reflectance (300~780nm)	Near-Infrared Reflectance (780~2500nm)
White	<b>73%</b>	<b>84.1%</b>	67.1%

Test Method: JIS R 3106 (Reflectance Test on Plate Glass)

- The reduction of solar reflectance in 3 years tested for the Energy Star Program by EPA was only **0.01%**.