

Determination of reflectance of solar radiation (JIS K5602) by heat shield paint film

INTRODUCTION

Heat shield paints which strongly reflect solar infrared radiation are being developed. These paints inhibit the increase of the surface temperature of roofs compared with regular paints and are used in the heat island project. A black heat shield paint and a regular paint were prepared and their solar radiation reflectances were determined with reference to JIS K5602 "Determination of Solar Radiation by Paint Film".

As a result, it was found that the solar radiation reflectance of the heat shield paint is higher than the regular paint indicating that it strongly reflects solar radiation. The reflectance of solar radiation can be easily calculated by using a report generator.

SAMPLE

Sample name : Heat shield paint (black) one kind
 : Regular paint (black) one kind

INSTRUMENT CONDITIONS

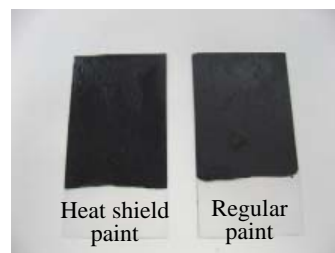
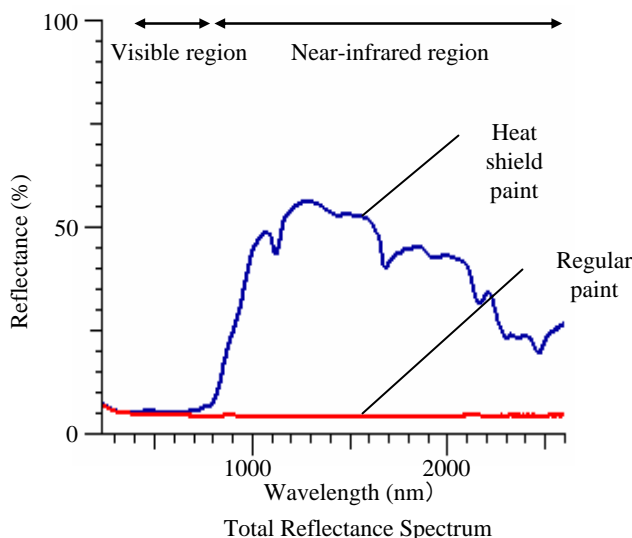
Instrument : U-4100 Spectrophotometer (Solid sample measurement system)

| | |
|-------------------------|--------------------------|
| [UV/VIS] | [NIR] |
| Scan speed : 300 nm/min | Scan speed : 300 nm/min |
| Slit : 8 nm | Slit : automatic control |
| | PbS sensitivity : 2 |

Sampling interval : 0.5 nm
 Reflectance standard : Spectralon reflectance standard (SRS-99-010)

OTHER NECESSARY ITEMS

Whiteboard holder with a transmission hole (P/N : 130-2179)
 Report generator
 Report generator sheet for Determination of Solar Radiation by Paint Film (JIS K5602)
 USA Labsphere, Inc. Reflectance standard, Spectralon reflectance standard (SRS-99-010)



Appearance of heat shield paint and regular paint

Calculation result of solar radiation reflectance (JIS K5602)

| Sample | Solar radiation reflectance (%) |
|-------------------|---------------------------------|
| Heat shield paint | 22.5 |
| Regular paint | 4.3 |

Solar radiation reflectances were calculated for the heat shield paint and regular paint. The reflectance was found to be 22.5% for the heat shield paint and 4.3% for the regular paint indicating that the reflectance was higher for the heat shield paint. This result indicates that the heat shield paint reflects solar radiation more strongly.

KEY WORDS

Material · Processing Material Related, Pigment · Paint · Dye, Heat Shield Paint, Painting, Paint Film, Reflectance of Solar Radiation, Reflectance, Energy Saving, Eco, JIS K5602 (2008), Labsphere, U-4100

Spectrophotometer (UV)

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