

AkzoNobel

Interpon Reflex

Presenter

12.2019

Reflectance and Reflectivity

Reflectivity:

- Is a property of the material
- It is the maximum amount of radiation that can be reflected by a material (coating) where no further increase in the material (coating) film thickness will increase the value

Reflectance:

- Is a property of a particular sample of the material
- A ratio of the amount of radiation (normally light) that is reflected by the surface to the amount incident on the it

Reflectance and reflectivity are not equivalent. However, they should be close at the point where the material does not transmit any radiation.



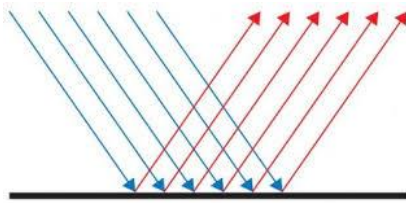
Reflectance and Reflectivity

- White reflects more than black because it has a higher **reflectivity**.
- The **reflectance** of a specific sample of white will depend on the material and its thickness.
- The maximum **reflectance** achievable is the **reflectivity** of the material

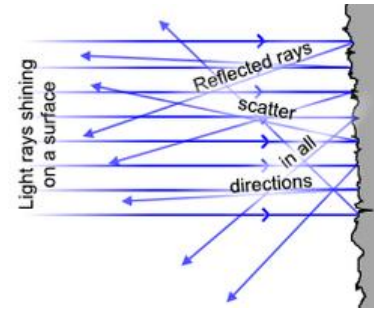


X-Rite Model 962

Types of reflection



- Specular reflection, is the mirror-like reflection of waves, such as light, from a surface. In this process, each incident ray is reflected, with the reflected ray having the same angle to the surface normal as the incident ray.
- Light source utilise specular reflection when a very focussed, directional light source is needed eg spotlights
- Diffuse reflection is the reflection of light or other waves or particles from a surface such that a ray incident on the surface is scattered at many angles rather than at just one angle as in the case of specular reflection
- Luminaires with diffuse reflection is advantageous in areas where softer light is need eg in Offices and factories



Maintained reflectance classes

According to DIN EN 16268

Class	Light Reflectance Values - LRV (Total Reflectance %)
A+	97.0 – 100.0
A	93.0 – 96.9
B	88.0 – 92.9
C	82.0 – 87.9
D	76.0 – 81.9

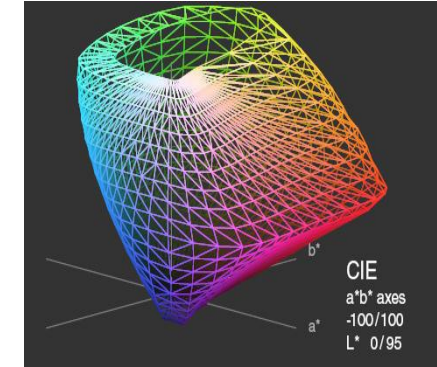
Measurement and Reporting of LRV

Reporting should include:

- Film Build
- Instrument type
- Instrument model
- Instrument setup
 - ↗ Angle of observation
 - ↗ SCI/SCE
 - ↗ Lamp
 - ↗ Aperture size

Measurement 1:

- 75 microns
- Datacolor SF600 Spectrophotometer
- SCI
- 10° Observer
- D65
- LAV 30mm



Measurement 2:

- 75 microns
- X-rite Reflectometer Model 962
- SCI
- 10° Observer
- D65
- LAV 4.0 mm

Additional Information

Standard DIN EN 16268 light Source:

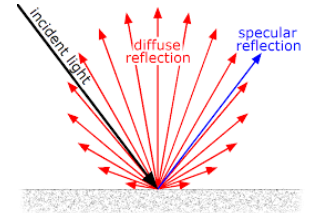
- Illuminant A
- 2 degree observer

Illuminant A represents an incandescent tungsten filament light which is not representative of light sources used today.

- ➔ Interpon Reflex Testing
 - D65
 - 10 degree observer

Interpon Reflex design

1. Careful selection of all raw materials
 - Maximise the Reflectivity of the coating
 - Coating designed to have balance of diffuse and specular reflectance depending on end use requirement
2. AkzoNobel propriety particle management technology
 - Optimisation of application characteristics to achieve the smoothest, coating surface
 - Even powder layer deposition achieving an even film thickness across the surface of the substrate



Result

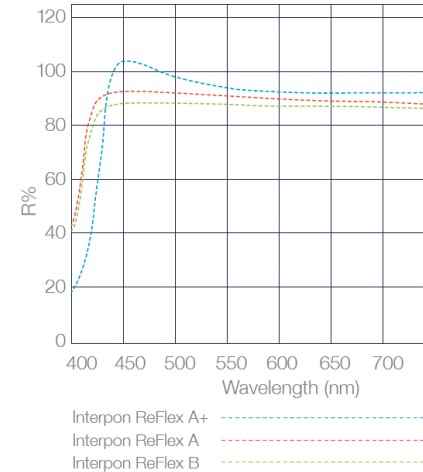
- Light Reflectance Values of up to ~97%
- Consistent reflectance performance across the whole coating surface
- Diffuse, low glare lighting using low gloss & textured finishes
- Specular light sources using high gloss finishes

Interpon Reflex Key Attributes

- Outstanding levels of reflectivity and reflectance
- Available only in white
- Available in gloss and matt versions

- 3 ranges available in North America
 - ↗ Interpon Reflex A+ **Total Reflectance % 97.0 – 100.0**
 - ↗ Interpon Reflex A **Total Reflectance % 93.0 – 96.9**
 - ↗ Interpon Reflex B **Total Reflectance % 88.0 – 92.9**

For lower levels of total reflectance standard regional products for lighting market can be used
– these can be obtained from your local product listings



Interpon ReFlex A+ range

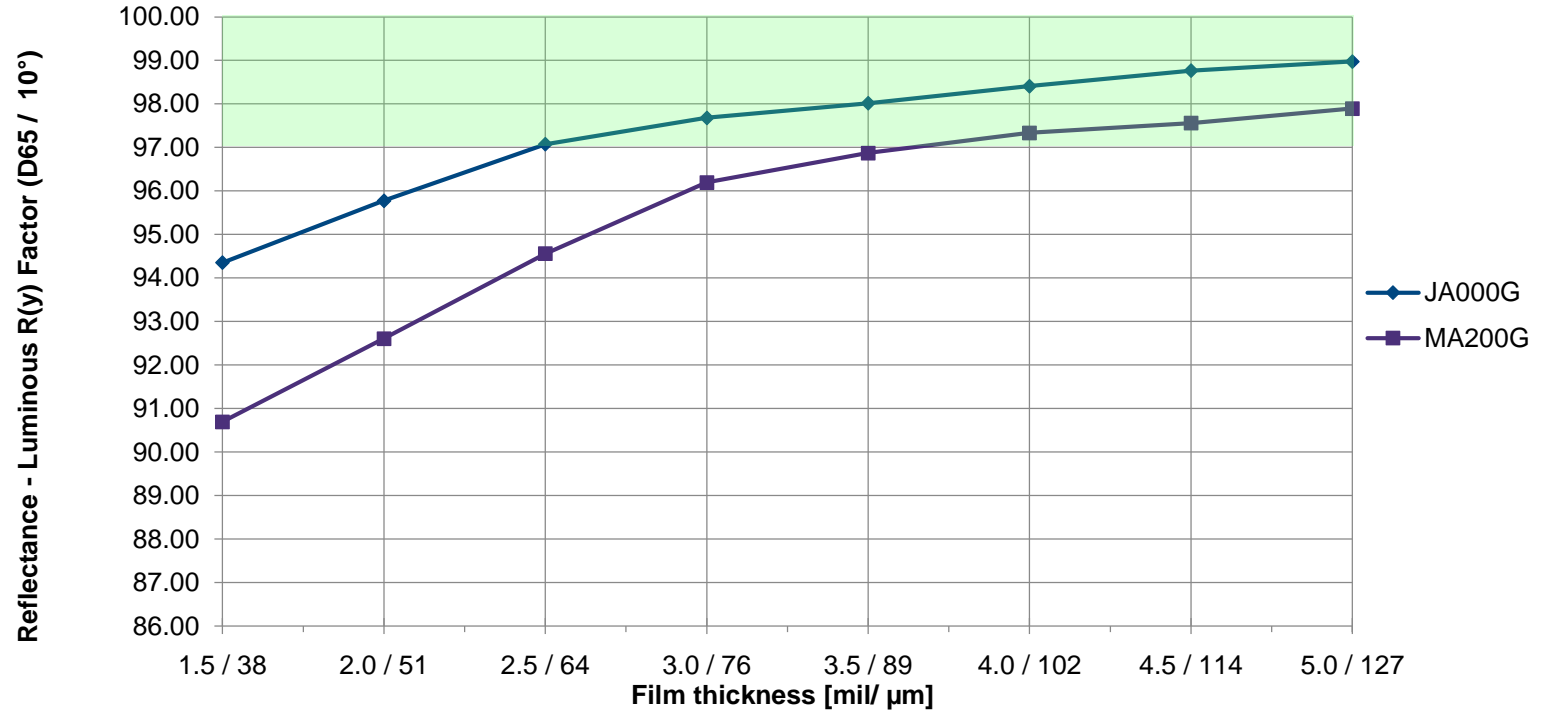
Product data

	Total Reflectance % ¹	60° Gloss ²	Chemistry
JA000G	97.1	90	Polyester TGIC
MA200G	97.2	8	Polyester TGIC Free

¹ See the graph below for film thickness thresholds to achieve > 97.0% total reflection

² 60° gloss measured at minimum film thickness to achieve 97.0% total reflection

Interpon Reflex A+ Reflectance v Film Thickness



Interpon ReFlex A range

	Gloss	Matt
Polyester TGIC	JA010G	
Polyester TGIC Free	MA010G	MA220G
Polyurethane	PA020G	

Interpon ReFlex A: Total Reflectance % 93.0 - 96.9

D65 / 10 degree observer

Interpon ReFlex A range

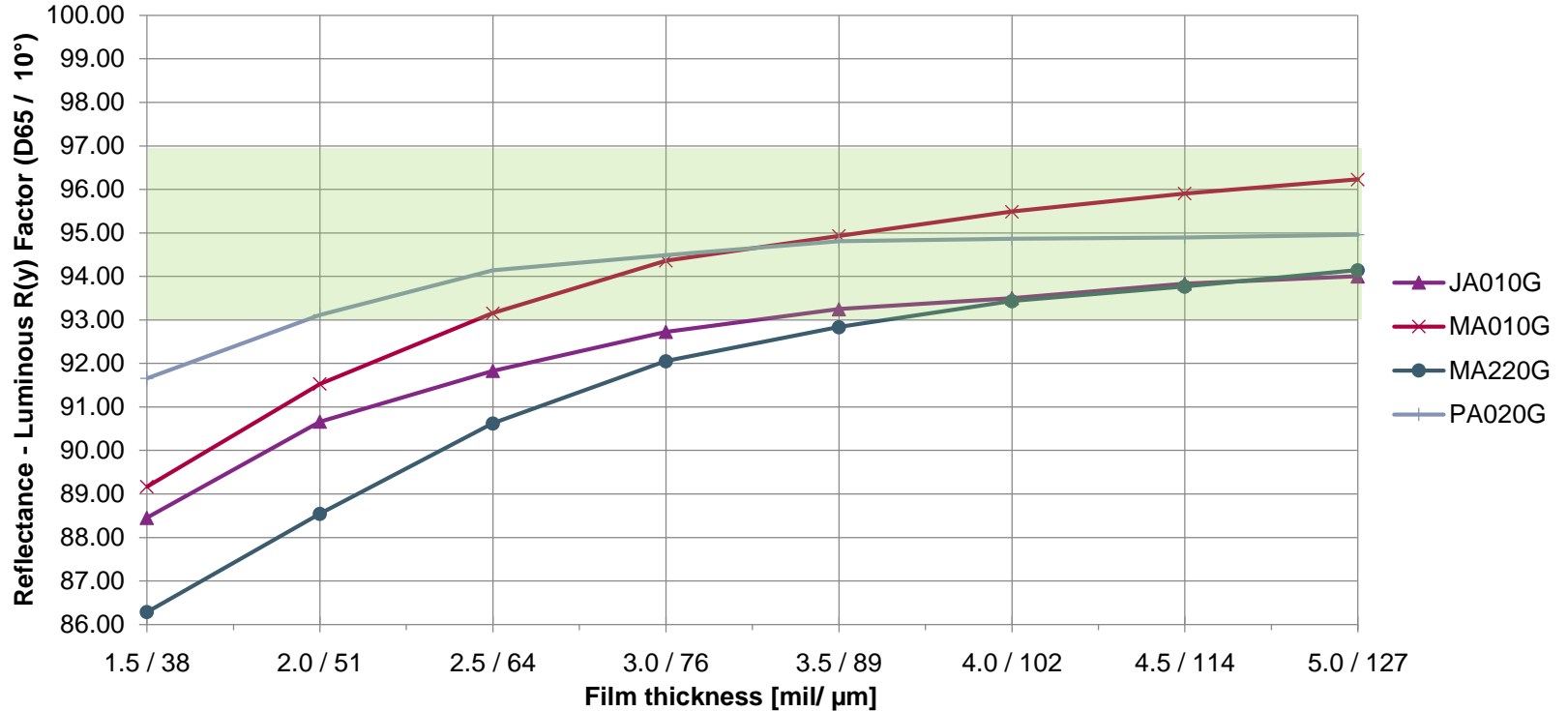
Product data

	Total Reflectance % ¹	60° Gloss ²	Chemistry
JA010G	93.1	92	Polyester TGIC
MA010G	94.9	91	Polyester TGIC Free
MA220G	90.0	4	Polyester TGIC Free
PA020G	90.7	86	Polyurethane

¹ See the graph below for film thickness thresholds to achieve > 93.0% total reflection

² 60° gloss measured at minimum film thickness to achieve 93.0% total reflection

Interpon Reflex A Reflectance v Film Thickness



Interpon ReFlex B range

	Gloss	Matt	Super Matt
Polyester TGIC	JA020G		

Interpon ReFlex B: Total Reflectance % 88.0 - 92.9

D65 / 10 degree observer

Interpon ReFlex B range

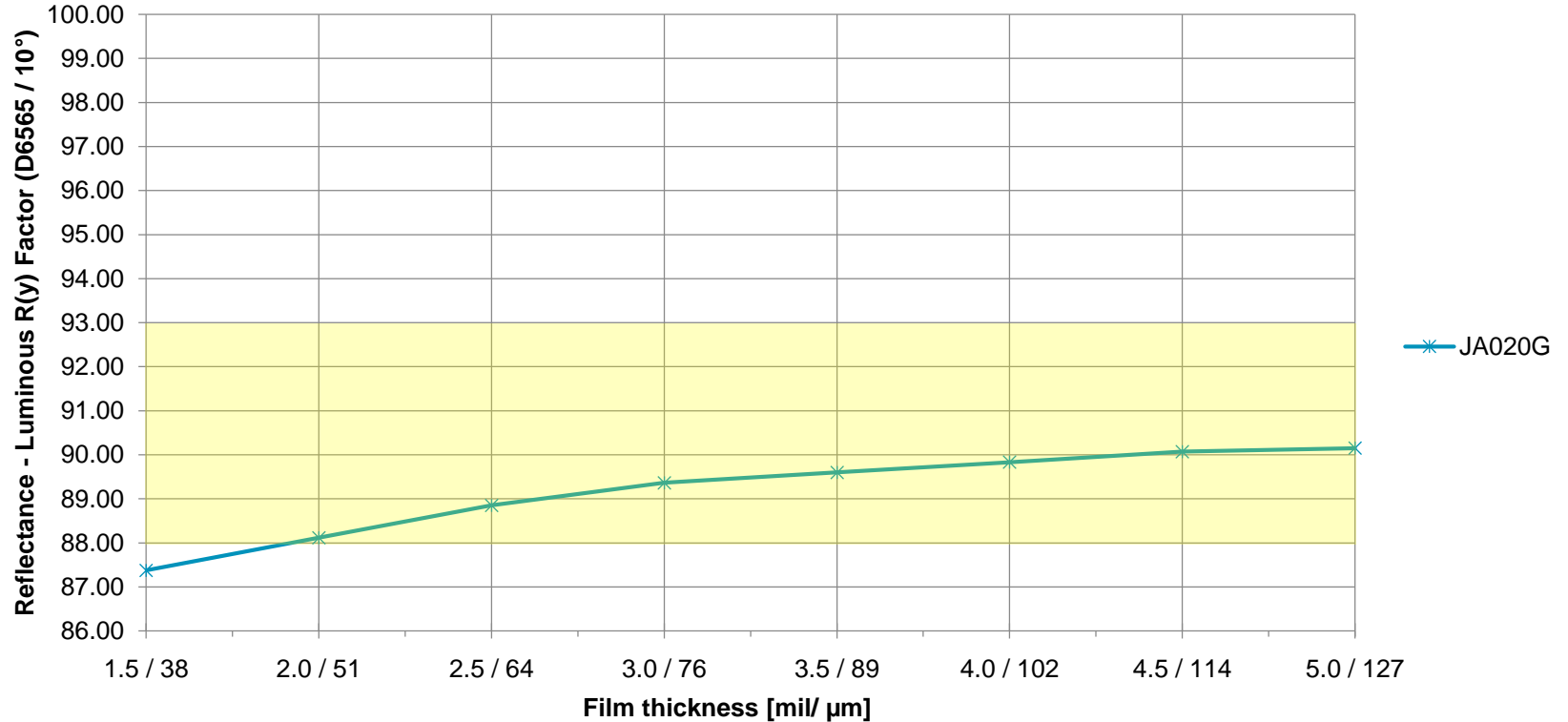
Product data

	Total Reflectance % ¹	60° Gloss ²	Chemistry
JA020G	90.8	91	Polyester TGIC

¹ See the graph below for film thickness thresholds to achieve > 88.0% total reflection

² 60° gloss measured at minimum film thickness to achieve 88.0% total reflection

Interpon Reflex B Reflectance v Film Thickness



Benefits of Interpon Reflex

WHY DOES REFLECTANCE MATTER?

- COST SAVINGS
- SUSTAINABILITY

- Higher reflectance provides increased light output in a given light fixture
- Allows use of lower wattage or fewer light sources to achieve the same output per fixture
 - lower total component cost!
 - Lower operating cost in service
- Cost saving alternative to MCPET and high reflective films
- More even light output/less glare, depending on design of the luminaire
- Simplified manufacturing processes

Green Technology

Interpon Reflex, high reflectance powder coatings provide

- Energy efficiency
- Very Low VOCs compared to liquid coatings
- Reclaim-ability and recyclability of the powder
- Supports other sustainability certifications used in the construction industry such as:
 - LEED (USA) for buildings,
 - BREEAM in Europe
 - CASBEE in Japan
 - Green Construction Standards (GCS) in China.

A tall, white, cylindrical lighthouse with a dark lantern room and a small flag on top, situated on a rocky island. The lighthouse is illuminated from within, casting a warm glow. The sky is a dramatic mix of deep blues, oranges, and yellows, with large, dark clouds. The sun is low on the horizon, creating a bright, hazy glow. The water in the foreground is calm, reflecting the colors of the sky and the lighthouse. The word "QUESTIONS" is written in large, glowing blue, 3D-style letters in the center of the image, with a reflection below it.

QUESTIONS

THANK YOU