KUBE Electronics AG

Industriestr. 55
8625 Gossau
Switzerland

Tel +41 43 928 05 50
Fax +41 43 928 05 51
www.kube.ch

Technical Informations

PIR motion detectors are working in the 7 to 14µm (Microns) infrared band and cannot see through normal glass or plastic.

Special PIR transmissive materials are needed to make fresnel lenses and other PIR optics or windows.

Calculate Infrared Transmission

Transmission data of granulates in the table are per 1/10 mm, excluding surface reflections. The actual transmission of a molded window can be calculated as follows:

$$T = 0.92 * (1 - \text{Attenuation})^{(\text{thickness in 1/10mm})}$$

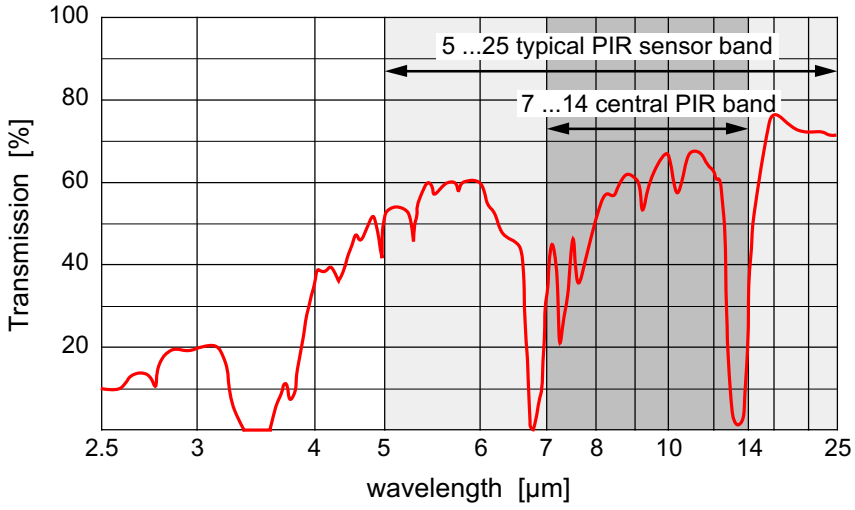
0.92 corrects for surface reflection

Refractive Index

The refractive index at 7 to 14µm wavelength is 1.525. Dispersion is negligible

Spectral Transmission

Typical example:
KUBE Granulate 22400a, 0.22mm thick (2018d film is very similar)



The low transmission at wavelengths below 3 µm helps to filter out unwanted daylight

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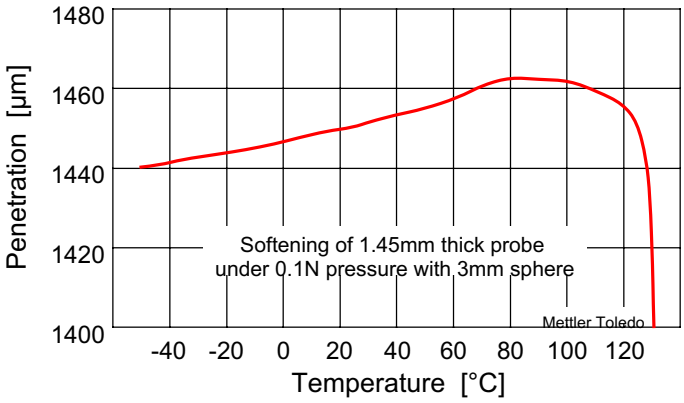
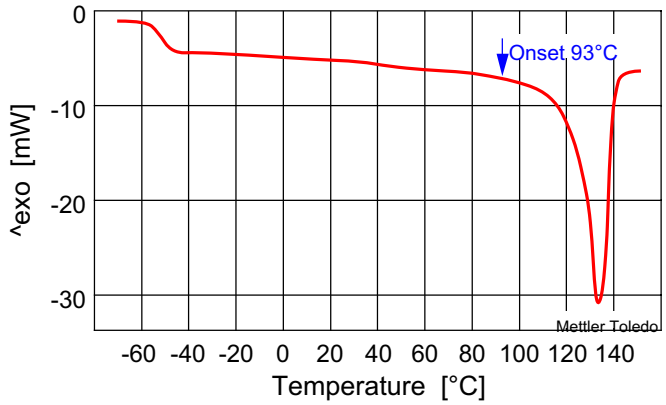
Temperature Stability

TMA (Thermo-Mechanical Analysis) of KUBE PIR Transmissive Injection Molding Plastic Granulate 22400a



The TMA analysis shows the excellent dimensional stability of KUBE granulates over a wide temperature range

DSC (Differential Scanning Calorimetry) of KUBE PIR Transmissive Injection Molding Plastic Granulate 22400a



According to the DSC plot, there are no phase transitions and no glass phase formations within this range

All KUBE PIR transmissive plastics can be used over a temperature range of -40 ... +85°C