

## Infrared Spectroscopy

# IR Specular Reflection Set for Spectrum FT-IR Instruments



Spectrum 3 FT-IR Spectrometer

The IR Specular Reflection Set is available for the measurement of the emissivity of coated glazing products according to EN673 and EN12898.

## Performance

Wavelength range	The usable wavelength range of the accessory is that of the Spectrum 3™ FT-IR configuration equipped with a KBr or CsI beamsplitter: 7,800-350 cm <sup>-1</sup> Optimized, proprietary KBr beamsplitter 7,800-230 cm <sup>-1</sup> CsI beamsplitter
Angle of incidence	8°
Sample size	>15 mm, maximum sample size 1-2 square meters (only limited by weight and handling capability)
Spot size	Variable up to 9 mm
Reproducibility	<0.001 in the thermal emissivity as defined in EN673
Accuracy	<0.007 in the thermal emissivity as defined in EN673, overall 2 sigma accuracy in combination with an FT-IR, based on results of a laboratory intercomparison <sup>1</sup>

## Optical system

General	Closed optical unit designed to fit in the accessory bay of the Spectrum One, Spectrum 100 and Spectrum 400 and Frontier FT-IR instruments.
Weight	27 Kg
Mirrors	High reflectivity, first-surface, protected gold-coated optics
Alignment	Build-in laser for manual alignment of very large or very small samples
Sample holder	Horizontal sample plate with 3-point support Additional sample support pillars for very large samples Additional sample holder for small samples (<50 mm)

## Reference mirrors

General	Protected by anodized aluminum case, delivered in plastic storage case.
Mirrors	High reflectivity, first-surface, bare gold-coated flat glass
Mirror size	50 x 50 mm square
Reflectance	>98%
Accuracy	<0.5%, traceable to NPL

## Processing

Emissivity EN673, EN12898 Calculation procedure implemented as VB macro in Microsoft® Excel® workbook provided with the IR Specular Reflection Set.

Extrapolation error*	<u>Beam splitter</u>	<u><math>\epsilon &lt; 0.1</math></u>	<u><math>0.1 &lt; \epsilon &lt; 0.8</math></u>	<u><math>\epsilon &gt; 0.8</math></u>
	KBr	<0.0006	<0.0019	<0.0020
	CsI	<0.0005	<0.0012	<0.0020

\* Residual error due to low frequency extrapolation of the reflectance spectrum implemented in the calculation procedure.

## References

1. Thin Solid Films 502 (2006) 164-169.

Wavelength: 670 nm  
Peak/CW Power: <0.9 mW  
Pulse Energy: N/A  
Pulse Length: N/A  
IEC/EN 60825-1 (2001)

**LASER RADIATION**  
**DO NOT STARE INTO BEAM**  
**CLASS 2 LASER PRODUCT**