The accurate and reliable way to measure emissivity.
Simple, fast and precise.



TIR100-2

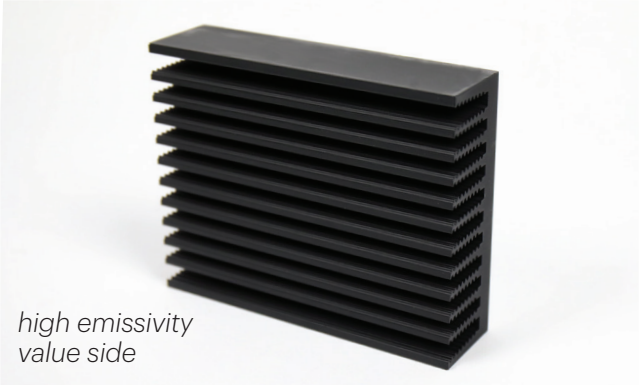
The TIR 100-2 model is a compact hand-held analytical instrument, which employs a non-destructive technique that measures thermal emissivity within seconds. This device can measure a variety of materials that range from low to high emissivity and from smooth to textured surfaces.

- **High precision and reproducibility**
- **Measurements within seconds**
- **Portable for use on-site or in a laboratory**

The TIR100-2 comes with a Two-in-One calibration standard, with a low emissivity value side of ultra polished aluminium (Ra <10nm) and a high emissivity value side that consists of a black light trap:



low emissivity value side



high emissivity value side

The calibration range of the Two-in-One standard is typically from >96% (light trap) to ~1% (aluminium) and it is traceable to a primary standard/reference. The certificate of calibration is issued by INGLAS and is valid for two years.

The TIR100-2 and the Two-in-One calibration standard can be safely stored and transported in the provided lockable and portable, hard aluminium case.



An operations manual is supplied in English as a hard copy. It can also be downloaded from our website www.tir100.com.

The TIR100-2 is manufactured in Germany and comes with a 2-year warranty. It is built for durability and robustness.

Some applications for the TIR100-2:

- Solar panel coatings
- Glass production and coatings
- Foils and coatings for the building industry
- Metal, such as Aluminium/ Tin/ Steel
- Satellites
- Car industry
- 3D-printing and their components
- Semiconductors
- Universities / R&D laboratories

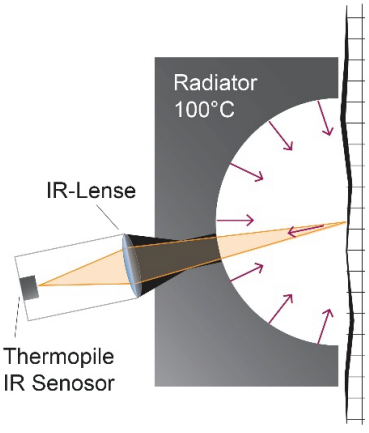


The TIR100-2 is mentioned in or complies to the following European standards:

- **EN 673:2011-04: Glass in building, Determination of thermal transmittance (U value) – Calculation method, 2011.**
- **EN 12898: 2001-04: Glass in building, Determination of the emissivity, 2001.**
- **EN 16012 - 2015-05 Thermal insulation for buildings**
- **EN 15976 - 2011-07 Flexible sheets for waterproofing**

Principle of the TIR100-2

The TIR100-2 employs the reflectometry method for the directional total (near normal) emissivity. The sample is subject to thermal radiation at a temperature of 100°C.
A black body half-sphere radiator is used to encapsulate the sample to ensure homogenous illumination.



The reflected infrared radiation is observed at an angle and is converted into a numeric value. This value is then plotted against a calibration curve from the high and low emissivity reference standards. The results of the emissivity are then given as a fractional value on the TIR display. All of this is accomplished at a touch of a button.

Specifications of the TIR100-2

Mains supply	220-240VAC 50/60Hz 130W *or* 100-230VAC 50/60Hz 260W
Measuring range	As calibration standard
Measure uncertainty	+- 0.005 (lowE)...+-0.01 (hiE)
Spectral range	2,5µm - 40µm
λ_{max} of radiant energy	7,8µm
Radiator temperature	100°C
Measuring duration	approx. 5 seconds
Measuring spot	approx. 5mm
Interface	USB-B
Dimension	230mm x 140mm x 120mm
Weight of the TIR100-2	approx. 2kg
Total weight (with case and calibration standard)	approx. 9kg
Power cord length	1,5m
Ambient conditions	Operating: 15°C - 30°C r.H. <70% Transport & storage: -10°C - 60°C r.H. <85%