

Table of emissivity

The emissivity ϵ (radiant emittance factor) is the relationship of the radiated intensity of a body to the intensity of a blackbody of the same temperature.

It is the most important factor, in order to determine of an item exactly. If you want to measure the surface temperature with an infrared thermometer the emissivity must be known and correct adjusted on the instrument.

Material	Emissivity		Material	Emissivity
Metals	Wavelength 0.9 μm	Wavelength 1.6 μm	Non metals	Wavelength 8 - 14 μm
Aluminium, bright	0.05 - 0.25	0.05 - 0.25	Asphalt	0.95
Aluminium, anodized	0.2 - 0.4	0.1 - 0.4	Concrete	0.95
Chrom, bright	0.28 - 0.32	0.25 - 0.3	Gypsum	0.85 - 0.95
Iron, oxidised	0.4 - 0.8	0.5 - 0.9	Graphite	0.75 - 0.92
Iron, not oxidised	0.35	0.1 - 0.3	Glass*, pane	0.80
Gold, bright	0.02	0.02	Rubber	0.85 - 0.95
Copper, bright	0.06 - 0.20	0.06 - 0.20	Wood, natural	0.8 - 0.95
Copper, oxidised	0.5 - 0.8	0.7 - 0.85	Chalk	0.98
Magnesium	0.03 - 0.8	0.05 - 0.3	Ceramics	0.85 - 0.95
Brass, bright	0.8 - 0.95	0.01 - 0.05	Plastics	0.85 - 0.95
Brass, oxidised	0.65 - 0.75	0.65 - 0.75	Masonry	0.85 - 0.95
Nickel, oxidised	0.8 - 0.9	0.4 - 0.7	Human skin	0.98
Platinum, black	-	0.95	Oil paints	0.85 - 0.95
Silver	0.02	0.02	Paper	0.85 - 0.95
Steel, melted	0.30	0.20 - 0.25	Porcelain	0.85 - 0.95
Steel, oxidised	0.8 - 0.9	0.8 - 0.9	Quartz	0.8
Steel, bright	0.40 - 0.45	0.30 - 0.4	Carbon black	0.95
Titanium, bright	0.5 - 0.75	0.3 - 0.5	Chamotte	0.85 - 0.95
Titanium, oxidised	-	0.6 - 0.8	Textile, Drapery	0.85 - 0.95
Zinc, bright	0.6	0.4 - 0.6	Tone	0.95
Zinc, oxidised	0.5	0.05	Water	0.95
Tin	0.25	0.1 - 0.3	Cement	0.9

* The emissivity of glass (0.95 - 0.97 μm) is in the range of 4.5 - 7 μm particularly high. Glass has there an absorption band (spectral range, where materials absorb radiation). To measure glass surface temperatures, the best wavelength is at 5.14 μm , because the measurement at this range is not affected by absorption bands such as carbon or hydrogen.