

FAQ: Rechargeable Pro Thermal Imager TI270



Q: Where can I find product specification and information to help me use my TI270?

A: Refer to the TI270 Instruction Manual for detailed product specifications.

Q: Which mobile devices are compatible for use with the Klein Tools TI270 Thermal Imager?

A: The TI270 Thermal Imager is compatible with devices using Android® 7 or iOS 11 and higher.

Q: What is Emissivity:

A: Emissivity is a property which measures an object's ability to emit or radiate thermal energy based on its material and the nature of its surface. Most organic, painted, or oxidized surfaces have emissivity values close to 0.95 (default). For specific details on the emissivity for various objects to use with your TI270, please review the Klein Tools Emissivity Settings Chart for Non-Metal and Metal Materials.

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EMISSIVITY CHART FOR NON-METAL MATERIALS

Temp F° (C°)	Emissivity	Temp F° (C°)	Emissivity	Temp F° (C°)	Emissivity	Temp F° (C°)	Emissivity	
Adobe		Cotton Cloth		Paints		Silica, Glazed		
68 (20)	0.9	68 (20)	0.77	Blue, Cu2O3	75 (24)	0.94	1832 (1000)	0.85
Asbestos		Dolomite Lime		Black, CuO	75 (24)	0.96	Silica, Unglazed	
Board	100 (38)	68 (20)	0.41	Green, Fe2O3	75 (24)	0.92	2012 (1100)	0.75
Cement	32-392 (0-200)	Emery Corundum		Red, Fe2O3	75 (24)	0.91	Silicon Carbide	
Cement, Red	2500 (1371)	176 (80)	0.86	White, Al2O3	75 (24)	0.94	300-1200	83-96
Cement, White	2500 (1371)	Glass		White, Y2O3	75 (24)	0.9	(149-649)	
Cloth	199 (93)	Convex D	212 (100)	White, ZnO	75 (24)	0.95	Silk Cloth	
Paper	100-700 (38-371)	Convex D	600 (316)	White, MgCO3	75 (24)	0.91	68 (20)	0.78
Slate	68 (20)	Convex D	932 (500)	White, ZrO2	75 (24)	0.95	Slate	
Asphalt, pavement	100 (38)	NoneX	212 (100)	White, ThO2	75 (24)	0.9	100 (38)	.67-80
Asphalt, tar paper	68 (20)	NoneX	600 (316)	White, MgO	75 (24)	0.91	Snow, Fine Particles	
Basalt		NoneX	932 (500)	White, PbCO3	75 (24)	0.93	20 (-7)	0.82
68 (20)	0.72	Smooth	32-200 (0-93)	Yellow, PbO	75 (24)	0.9	Snow, Granular	
Brick		Granite	70 (21)	Yellow, PbCrO4	75 (24)	0.93	18 (-8)	0.89
Red, rough	70 (21)	70 (21)	0.45	Paints, Aluminium			Soil	
Gault Cream	2500-5000 (1371-2760)	Gravel	100 (38)	100 (38)	.27-.67		Surface	100 (38)
Fire Clay	2500 (1371)	100 (38)	0.28	26% Al	100 (38)	0.3	Black Loam	68 (20)
Light Buff	1000 (538)	Gypsum	68 (20)	Dow XP-310	200 (93)	0.22	Plowed Field	68 (20)
Lime Clay	2500 (1371)	Ice, Smooth	32 (0)	Paints, Bronze			Soot	
Fire Brick	1832 (1000)	32 (0)	0.97	Low	.34-.80		Acetylene	75 (24)
Magnesite, Refractory	1832 (1000)	Ice, Rough	32 (0)	Gum Varnish (2 coats)	70 (21)	0.53	Camphor	75 (24)
Grey Brick	2012 (1100)	32 (0)	0.98	Gum Varnish (3 coats)	70 (21)	0.5	Candle	250 (121)
Silica, Glazed	2000 (1093)	Lacquer		Cellulose Binder (2 coats)	70 (21)	0.34	Coal	68 (20)
Silica, Unglazed	2000 (1093)	Black	200 (93)	Paints, Oil			Stonework	
Sandlime	2500-5000 (1371-2760)	Blue, on Al Foil	100 (38)	All colours	200 (93)	.92-.96	100 (38)	0.93
Carborundum		Clear, on Al Foil (2 coats)	200 (93)	Black	200 (93)	0.92	Water	
1850 (1010)	0.92	Clear, on Bright Cu	200 (93)	Black Gloss	70 (21)	0.9	100 (38)	0.67
Ceramic		Clear, on Tarnished Cu	200 (93)	Camouflage Green	125 (52)	0.85	Waterglass	
Alumina on Inconel	800-2000 (427-1093)	Red, on Al Foil (2 coats)	100 (38)	Flat Black	80 (27)	0.88	68 (20)	0.96
Earthenware, Glazed	70 (21)	White	200 (93)	Flat White	80 (27)	0.91	Wood	
Earthenware, Matte	70 (21)	White, on Al Foil (2 coats)	100 (38)	Grey-Green	70 (21)	0.95	Low	.80-.90
Greens No. 5210-2C	200-750 (93-399)	Yellow, on Al Foil (2 coats)	100 (38)	Green	200 (93)	0.95	Beech Planed	
Coating No. C20A	200-750 (93-399)	Lime Mortar	100-500 (38-260)	Lamp Black	209 (98)	0.96	158 (70)	0.94
Porcelain	72 (22)	100-500 (38-260)	.90-.92	Red	200 (93)	0.95	Oak, Planed	
White Al2O3	200 (93)	Limestone	100 (38)	White	200 (93)	0.94	100 (38)	0.91
Zirconia on Inconel	800-2000 (427-1093)	100 (38)	0.95	Quartz, Rough, Fused				
Clay		Marble, White		Glass, 1.98 mm	70 (21)	0.93		
68 (20)	0.39	Smooth, White	100 (38)	Glass, 1.98 mm	540 (282)	0.9		
Fired	158 (70)	Polished Grey	100 (38)	Glass, 6.88 mm	1540 (838)	0.41		
Shale	68 (20)	Mica	100 (38)	Glass, 6.88 mm	540 (282)	0.93		
Tiles, Light Red	2500-5000 (1371-2760)	100 (38)	0.75	Glass, 6.88 mm	1540 (838)	0.47		
Tiles, Red	2500-5000 (1371-2760)	Oil on Nickel		Opaque	570 (299)	0.92		
Tiles, Dark Purple	2500-5000 (1371-2760)	0.001" Film	72 (22)	Opaque	1540 (838)	0.68		
Concrete		0.002" Film	72 (22)	Red Lead	212 (100)	0.93		
Rough	32-2000 (0-1093)	0.005" Film	72 (22)	Rubber, Hard	74 (23)	0.94		
Tiles, Natural	2500-5000 (1371-2760)	Thick" Film	72 (22)	Rubber, Soft, Grey	76 (24)	0.86		
Brown	2500-5000 (1371-2760)	Oil, Linseed		Sand	68 (20)	0.76		
Black	2500-5000 (1371-2760)	On Al Foil, uncoated	250 (121)	Sandstone	100 (38)	0.67		
		On Al Foil, 1 coat	250 (121)	Sandstone, Red	100 (38)	.67-83		
		On Al Foil, 2 coats	250 (121)	Sawdust	68 (20)	0.75		
		On Polished Iron, .001 Film	100 (38)	Shale	68 (20)	0.69		
		On Polished Iron, .002 Film	100 (38)					
		On Polished Iron, .004 Film	100 (38)					
		On Polished Iron, Thick Film	100 (38)					

EMISSIVITY CHART FOR METAL MATERIALS

Temp F° (C°)	Emissivity	Temp F° (C°)	Emissivity	Temp F° (C°)	Emissivity
Alloys		Chromium		Cast Iron	
20-Ni, 24-CR, 55-FE, Oxid.	392 (200)	100 (38)	0.08	Oxidised	390 (199)
20-Ni, 24-CR, 55-FE, Oxid.	932 (500)	1000 (538)	0.26	Oxidised	1110 (599)
60-Ni, 12-CR, 28-FE, Oxid.	518 (270)	Chromium, Polished		Unoxidised	212 (100)
60-Ni, 12-CR, 28-FE, Oxid.	1040 (560)	302 (150)	0.06	Strong Oxidation	40 (104)
80-Ni, 20-CR, Oxidised	212 (100)	Cobalt, Unoxidised		Strong Oxidation	482 (250)
80-Ni, 20-CR, Oxidised	1112 (600)	932 (500)	0.13	Liquid	2795 (1535)
80-Ni, 20-CR, Oxidised	2372 (1300)	1832 (1000)	0.23	Wrought Iron	
Aluminium		Columbium, Unoxidised		Dull	77 (25)
Unoxidised	77 (25)	1500 (816)	0.19	Dull	660 (349)
Unoxidised	212 (100)	2000 (1093)	0.24	Smooth	100 (38)
Unoxidised	932 (500)	Copper		Polished	100 (38)
Oxidised	390 (199)	Cuprous Oxide	100 (38)	Lead	
Oxidised	1110 (599)	Cuprous Oxide	500 (260)	Polished	100-500 (38-260)
Oxidised at 1110°F (599°C)	390 (199)	Cuprous Oxide	1000 (538)	Rough	100 (38)
Oxidised at 1110°F (599°C)	1110 (599)	Black, Oxidised	100 (38)	Oxidised	100 (38)
Heavily Oxidised	200 (93)	Etched	100 (38)	Oxidised at 1100	100 (38)
Heavily Oxidised	940 (504)	Matte	100 (38)	Gray Oxidised	100 (38)
Highly Polished	212 (100)	Roughly Polished	100 (38)	Magnesium	
Roughly Polished	212 (100)	Polished	100 (38)	100-500 (38-260)	.07-.13
Commercial Sheet	212 (100)	Highly Polished	100 (38)	1880-3140 (1027-1727)	.16-.20
Highly Polished Plate	440 (227)	Rolled	100 (38)	Mercury	
Highly Polished Plate	1070 (577)	Rough	100 (38)	32 (0)	0.09
Bright Rolled Plate	338 (170)	Molten	1000 (538)	77 (25)	0.1
Bright Rolled Plate	932 (500)	Molten	1970 (1077)	100 (38)	0.1
Alloy A3003, Oxidised	600 (316)	Molten	2230 (1221)	212 (100)	0.12
Alloy A3003, Oxidised	900 (482)	Nickel Plated	100-500 (38-260)	Molybdenum	
Alloy 1100-0	200-800 (93-427)	Dow Metal	0.4-600 (-18-316)	100 (38)	0.06
Alloy 24ST	75 (24)	Gold	212 (100)	500 (260)	0.08
Alloy 24ST, Polished	75 (24)	Enamel	212 (100)	1000 (538)	0.11
Alloy 75ST	75 (24)	Plate on .0005 Silver	200-750 (93-399)	2000 (1093)	0.18
Alloy 75ST, Polished	75 (24)	Plate on .0005 Nickel	200-750 (93-399)	Monel, Ni-Cu	
Bismuth, Bright	176 (80)	Polished	100-500 (38-260)	392 (200)	0.41
Bismuth, Unoxidised	77 (25)	Polished	1000-2000 (538-1093)	752 (400)	0.44
77 (25)	0.05	Haynes Alloy C,	600-2000 (316-1093)	1112 (600)	0.46
212 (100)	0.06	Oxidised	600-2000 (316-1093)	Monel, Ni-Cu Oxidised	
Brass		Haynes Alloy 25,	600-2000 (316-1093)	68 (20)	0.43
73% Cu, 27% Zn, Polished	476 (247)	Oxidised	600-2000 (316-1093)	Monel, Ni-Cu Oxid. at 1110degF	
73% Cu, 27% Zn, Polished	674 (357)	Haynes Alloy X,	600-2000 (316-1093)	1110 (599)	0.46
62% Cu, 37% Zn, Polished	494 (257)	Oxidised	600-2000 (316-1093)	Nickel	
62% Cu, 37% Zn, Polished	710 (377)	Inconel Sheet	1000 (538)	Polished	100 (38)
83% Cu, 17% Zn, Polished	530 (277)	Unoxidised	1200 (649)	Oxidised	100-500 (38-260)
Matte	68 (20)	Unoxidised	1400 (760)	Unoxidised	77 (25)
Burnished to Brown Colour	68 (20)	Inconel X, Polished	75 (24)	Unoxidised	212 (100)
Cu-Zn, Brass Oxidised	392 (200)	75 (24)	0.19	Unoxidised	932 (500)
Cu-Zn, Brass Oxidised	752 (400)	Inconel B, Polished	75 (24)	Unoxidised	1832 (1000)
Cu-Zn, Brass Oxidised	1112 (600)	Iron	212 (100)	Electrolytic	100 (38)
Unoxidised	77 (25)	Oxidised	930 (499)	Electrolytic	500 (260)
Unoxidised	212 (100)	Oxidised	2190 (1199)	Electrolytic	1000 (538)
Unoxidised	77 (25)	Unoxidised	212 (100)	Electrolytic	2000 (1093)
Unoxidised	212 (100)	Red Rust	77 (25)	Nickel Oxide	
Unoxidised	77 (25)	Rusted	77 (25)	1000-2000 (538-1093)	.59-.86
Carbon	77 (25)	Liquid	2760-3220 (1516-1771)	Palladium Plate (.00005 on .0005 silver)	
Lampblack	77 (25)	Haynes Alloy X,		200-750 (93-399)	.16-.17
Unoxidised	77 (25)	0.0005 on 0.0005 Ni	200-700 (93-371)	Platinum	
Unoxidised	212 (100)	100 (38)	0.01	100 (38)	0.05
Unoxidised	932 (500)	Polished	1000 (538)	500 (260)	0.05
Candle Soot	250 (121)	Polished	2000 (1093)	1000 (538)	0.1
Filament	500 (260)	Steel			
Graphitized	212 (100)	Cold Rolled	200 (93)		
Graphitized	572 (300)	Ground Sheet	1720-2010 (938-1099)		
Graphitized	932 (500)	Polished Sheet	100 (38)		
		Polished Sheet	500 (260)		
		Polished Sheet	1000 (538)		
		Mild Steel, Polished	75 (24)		
		Mild Steel, Smooth	75 (24)		
		Mild Steel, liquid	2910-3270 (1599-1793)		
		Steel, Unoxidised	212 (100)		
		Steel, Oxidised	77 (25)		
		Steel Alloys			
		Type 301, Polished	75 (24)		
		Type 301, Polished	450 (232)		
		Type 301, Polished	1740 (949)		
		Type 303, Oxidised	600-2000 (316-1093)		
		Type 310, Rolled	1500-2100 (816-1149)		
		Type 316, Polished	75 (24)		
		Type 316, Polished	450 (232)		
		Type 316, Polished	1740 (949)		
		Type 321	200-800 (93-427)		
		Type 321 Polished	300-1500 (149-815)		
		Type 321 w/BK Oxide	200-800 (93-427)		
		Type 347, Oxidised	600-2000 (316-1093)		
		Type 350	200-800 (93-427)		