PeakTech 4950 Infrared Thermometer with K Type Input User Manual

Contents

PeakTech®

PeakTech 4950 Infrared Thermometer with K Type Input User Manual

Safety precautions

This product complies with the requirements of the following directives of the European Union for CE conformity: 2014/30/EU (electromagnetic compatibility), 2011/65/EU (RoHS).
We herewith confirm that this product meets the essential protection standards, which are given in directions of council for adaptation of the administration regulations for UK of Electromagnetic Compatibility Regulations 2016 and the Electrical Equipment (safety) regulations 2016. Damages resulting from failure to observe the following safety precautions are exempt from any legal claims whatever.

- do not subject the equipment to direct sunlight, extreme temperatures, extreme humidity or dampness
- use extreme caution when the laser beam is turned ON
- do not let the beam enter your eye, another person's eye or the eye of an animal
- be careful not to let the beam on a reflective surface strike your eye
- do not allow the laser light beam impinge on any gas which can explode
- do not let the beam of any body
- do not operate the equipment near strong magnetic fields (motors, transformers etc.)
- do not subject the equipment to shocks or strong vibrations
- keep hot soldering iron or guns away from the equipment
- allow the equipment to stabilize at room temperature before taking up measurement (important for exact measurement)
- do not modify the equipment in any way
- opening the equipment and service- and repair work must only be performed by qualified service personnel
- Measuring instruments don't belong to children hands!

Cleaning the cabinet
Clean only with a damp soft cloth and a commercially available mild household cleanser. Ensure that no water gets inside the equipment to prevent possible shorts and damage to the equipment.

Features

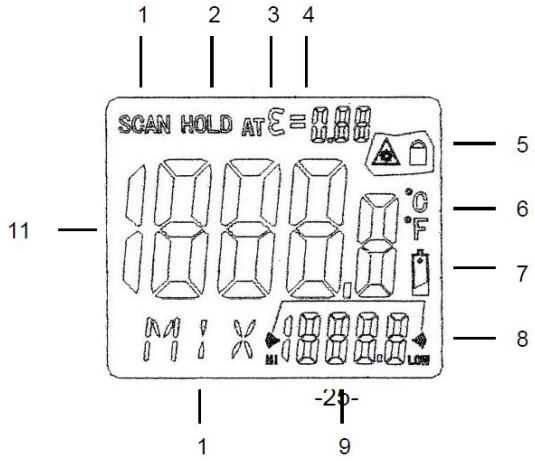
- Precise non-contact temperature measurement
- Type K temperature Measurement

- Unique flat surface, modern housing design
- Built-in laser pointer
- Automatic Data Hold
- Automatic Power Off
- °C/°F switch
- Emissivity Digitally adjustable from 0.10 to 1.0
- MAX, MIN, DIF, AVG record
- LCD with Backlight
- Automatic range selection
- Resolution 0,1° C (0,1°F)
- Trigger lock
- High and Low alarm
- Obtain Emissivity

Front Panel description

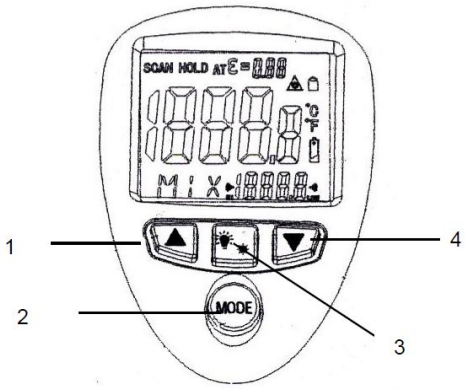
1. Infrared-Sensor
2. Laser pointer beam
3. LCD-Display
4. down button
5. up button
6. mode button
7. laser/backlight button
8. Measurement Trigger
9. Handle grip
10. Battery Cover

Indicator



1. Data hold
2. Measuring indication
3. Emissivity symbol and value
4. °C/°F symbol
5. Auto obtain Emissivity
6. lock and laser “on” symbols
7. High alarm and low alarm symbol
8. Temperature values for the MAX, MIN, DIF, AVG, HAL, LAL and TK
9. Symbols for EMS MAX, MIN, DIV, AVG, HAL, LAL and TK
10. Current temperature value
11. Low battery

Buttons

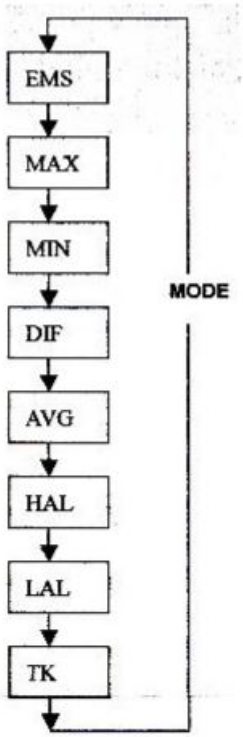


1. Up button (for EMS, HAL, LAL)
2. MODE button (for cycling through the mode loop)
3. Down button (for EMS, HAL, LAL)
4. Laser/Backlight on/off button (pull trigger and press button to activate laser/backlight)

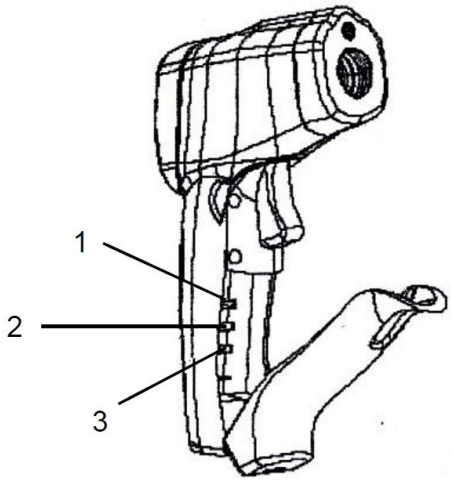
MODE Button Function

The infrared thermometer measures Maximum (MAX), Minimum (MIN), Differential (DIF), and Average (AVG) Temp. Each time take a reading. This data is stored and can be recalled with the MODE button until a new measurement is taken. When the trigger is pulled again, the unit will begin measuring in the last mode selected.

Pressing the MODE button also allows you to access the High Alarm (HAL), Low Alarm (LAL), Emissivity (EMS), Each time you press MODE, you advance through the mode cycle. Pressing the MODE button also allows you to access the Type k Temp. Measurement The diagram shows the sequence of functions in the MODE cycle.



Switching C/F, Lock ON/OFF and Set ALARM



1. °C/°F
2. LOCK ON/OFF
3. SET ALARM

- Select the temperature units (°C or °F) by using the °C/°F switch
- To lock the unit on for continuous measurement, slide the middle switch LOCK ON/OFF right. If the trigger is pulled while the unit is locked on, the laser and backlight will be turned on if they have been activated. When the unit is locked on, the backlight and laser will remain on unless it is turned off using the Laser/Backlight button on the keypad.
- To activate the alarms, please slide the bottom switch SET ALARM right.

- To set values for the High Alarm (HAL), Low Alarm (LAL) and Emissivity (EMS), firstly active the display by pulling the trigger or pressing the MODE button, then press the MODE button until the appropriate code appears in the lower left corner of the display, press the UP and down buttons to adjust the desired values.

Measurement Considerations

Holding the meter by it's handle, point the IR sensor toward the object whose temperature is to be measured. The meter automatically compensates for temperature deviations from ambient temperature. Keep in mind that it will take up to 30 minutes to adjust to wide ambient temperature changes. When low temperatures are to be measured followed by high temperature measurements some time (several minutes) is required after the low (and before the high) temperature measurements are made. This is a result of the cooling process which must take place for the IR sensor.

Non-Contact IR Measurement Operation

Power ON/OFF

1. Press the ON/HOLD key to take a reading. Read the measured temperature on the LCD.
2. The meter powers OFF automatically approximately 7 seconds after the ON/HOLD key is released.

Selecting Temperature Units (°C/°F)

1. Select temperature units (degrees °C or °F) by first pressing the ON/HOLD key and then pressing the °C or °F key. The unit will be seen on the LCD

Data Hold

This meter automatically holds the last temperature reading on the LCD for 7 seconds after the ON/HOLD key is released. No extra key presses are necessary to freeze the displayed reading.

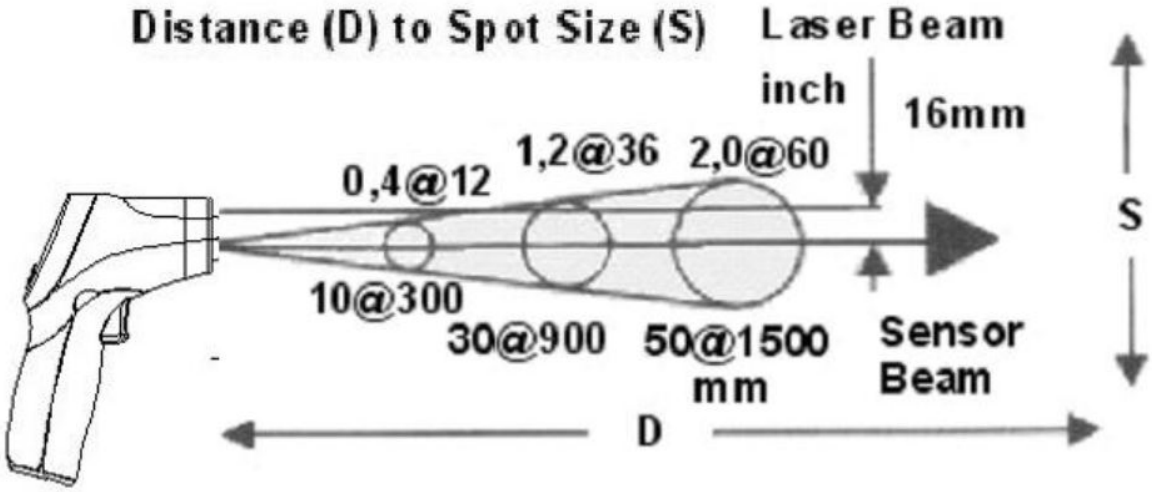
Backlite LCD

Select backlite by first pressing the ON/HOLD key and then pressing the BACKLITE key. Press the backlight key again to turn the backlight OFF.

Laser Pointer

1. To turn the laser pointer ON, press the LASER key after pressing the ON/HOLD key.
2. Press the Laser key again to turn the laser OFF.

Desciption of the Laser Pointer



- D = Distance (avoid exposure-laser radiation is emitted from this aperture) 30 : 1
- S = diameter of the spot center 16 mm

Technical Specifications

Display	3½-digit, LCD-Display with backlight
Measuring Range	-50°C…850°C (-58°F…1562°F)
Sample Rate	ca. 6 x/Sek. (150ms)
Auto Power Off	automatically shut-off after 7 Seconds
Resolution	0,1°C/F, 1°C/F
Emissivity	0,1 ~ 1,0 adjustable
Spectral response	8 … 14 µm
Laser product	Class II, Output < 1mW, Wavelength 630 – 670 nm
Distance Factor D/S (distance/spot)	30 : 1
Operating temperature	0 … 50 °C / 32 … 122 °F
Operating humidity	10% – 90%
Power supply	9 V battery
Dimensions (WxHxD)	47 x 180 x 100mm
Weight	290 g

Specification Infrared-Thermometer

IR-Measurement	
Measuring Range	-50 … +850°C (-58 … + 1562°F)
Distance Factor D/S	30 : 1
Resolution	0,1°C (0,1°F)
Accuracy	
-50 … -20°C	+/-5°C
-20 … +200° C	+/-1,5% of rdg. +2°C
200 … 538° C	+/-2,0% of rdg. +2°C
538 … 850° C	+/-3,5% of rdg. +5°C
-58 … -4°F	+/-9°F
-4 … +392°F	+/-1,5% of rdg. +3,6°F
392 … 1000° F	+/-2,0% of rdg. +3,6°F
1000… 1562°F	+/-3,5% of rdg. +9°F

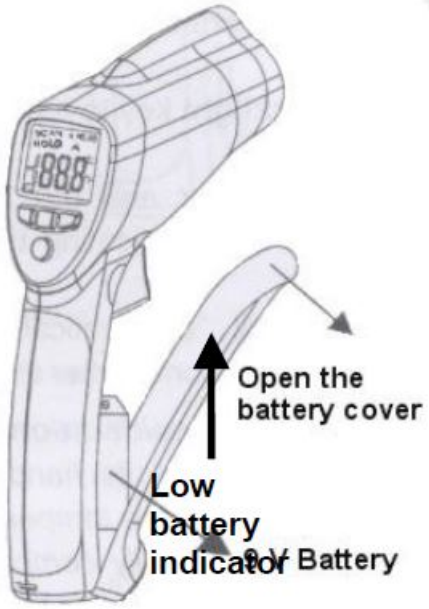
K-Type	
Measuring Range	-50 … +1370°C (-58 … + 2498°F)
Resolution	0,1°C (-50 … 1370°C) 0,1°F (-58 … 1999°C) 1°F (2000 … 2498°F)
Accuracy	
-50 … 1000°C	+/-1,5% of rdg. +3°C
1000 … 1370°C	+/-1,5% of rdg. +2°C
-58 … +1832°F	+/-1,5% of rdg. +5,4°F
1832 … 2498°F	+/-1,5% of rdg. +3,6°F

Note: Accuracy is given at 18°C to 28°C, less than 80% R. H.
Emissivity: 0 – 1 adjustable
Field of view: Make sure, that the target is larger than the infrared beam. The smaller the target, the closer you should be on it. If accuracy is critical, make sure, that the target is at least twice as large than the infrared beam.

Battery Replacement

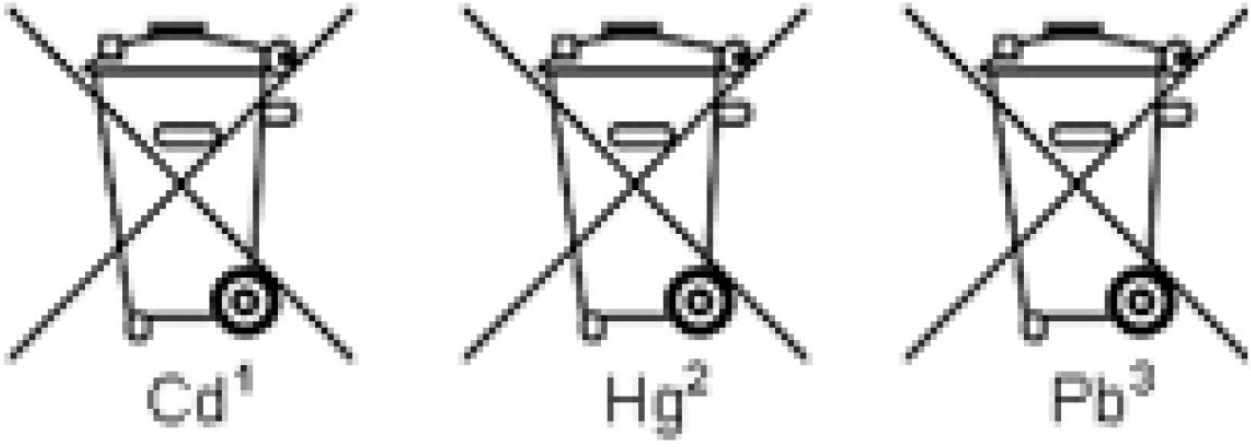
A Bat Symbol in the display is the indication that the battery voltage has fallen into the critical region (6,5 to 7,5 V). Reliable readings can be obtained for several hours after the first appearance of the low battery indication.
Open the battery compartment (see picture below) and remove the battery, then install a new battery and replace the cover.

ATTENTION !
Batteries, which are used up dispose duly. Used up batteries are hazardous and must be given in the for this supposed collective container.



Notification about the Battery Regulation
The delivery of many devices includes batteries, which for example serve to operate the remote control. There also could be batteries or accumulators built into the device itself. In connection with the sale of these batteries or accumulators, we are obliged under the Battery Regulations to notify our customers of the following: Please dispose of old batteries at a council collection point or return them to a local shop at no cost. The disposal in domestic refuse is strictly forbidden according to the Battery Regulations. You can return used batteries obtained from us at no charge at the address on the last side in this manual or by posting with sufficient stamps.

Contaminated batteries shall be marked with a symbol consisting of a crossed-out refuse bin and the chemical symbol (Cd, Hg or Pb) of the heavy metal which is responsible for the classification as pollutant:



1. “Cd” means cadmium.
2. “Hg” means mercury.
3. “Pb” stands for lead.

Note:
If your meter does not work properly, check the fuses and batteries to make sure that they are still good and that they are properly inserted

How it Works

Infrared thermometers measure the surface temperature of an object. The unit´s optics sense emitted, reflected and transmitted energy, which is collected and focused onto a detector. The unit´s electronics translate the information into a temperature reading which is displayed on the unit. In units with a laser, the laser is used for aiming purposes only.

Data Logger

Storing Data
Your thermometer is capable of storing up to 20 data locations. The infrared temperature and temperature scale (°C or °F) are also stored.

Infrared
To store data from an infrared reading, pull the trigger. While holding the trigger, press the MODE button until LOG appears in the lower left corner of the display; a log location number will be shown. If no temperature has been recorded in the shown LOG location, 4 dashes will appear in the lower right corner. Aim the unit at the target area you want to record and press the laser/backlight button. The recorded temperature will appear in the lower right corner. To select another log location, press the up and down keys.

Recalling Data
To recall stored data after the unit shuts off, press the MODE button until LOG appears in the lower left corner. A LOG location number will be shown below LOG and the stored temperature for that location will be displayed. To move to another LOG location, press the UP and DOWN keys.

LOG Clear Function
The „Log clear“ function allows you to quickly clear all logged data points. This function can only be used when the units is in LOG mode. It can be used when the user has any number of LOG locations stored. You should only use the LOG clear function if you want to clear all the LOG location data that is stored in unit’s memory. The “LOG clear” function works as follows:

- While in LOG mode, press the trigger and then press the DOWN button until you reach LOG location ”0”.

Note: This can only be done when the trigger is pulled. LOG location “0” cannot be accessed, by using the UP button.

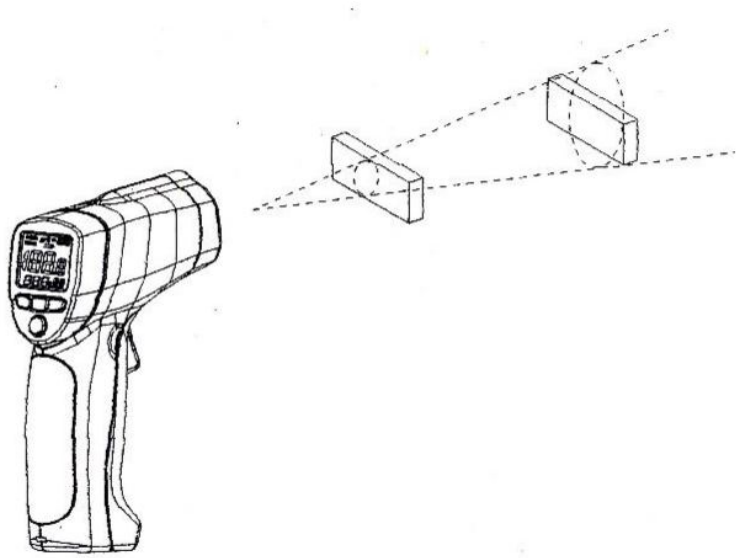
- When LOG location “0” shows in the display, press the Laser/backlight button. A tone will sound and the LOG location will automatically change to “1”, signifying that all data locations have been cleared.

Field of View

Make sure that the target is larger than the unit´s spot size. The smaller the target, the closer you should be to it. When accuracy is critical, make sure the target is at least twice as large as the spot size.

Distance & Spot Size

As the distance (D) from the object increases, the spot size (S) of the area measured by the unit becomes larger. See Fig.



Locating a hot Spot

To find a hot spot aim the thermometer outside the area of interest, then scan across with an up and down motion until you locate hot spot.

Reminders

1. Not recommended for use in measuring shiny or polished metal surface (stainless steel, aluminum, etc.) See emissivity.
2. The unit cannot measure through transparent surfaces such as glass. It will measure the surface temperature of the glass instead.
3. Steam, dust, smoke, etc. can prevent accurate measurement by obstructing the unit´s optics.

How to obtain Emissivity ?

Press the ON/OFF switch and select the EMS function with the MODE button. Now press and hold the laser/backlight button and the trigger at the same time until the symbol “EMS” flashes on the left side of the LCD display. In the upper area of the LCD-display appears “ε =”; the central area of the LCD display shows the infrared temperature, and the type-K temperature appears at the bottom of the LCD display. Place the K-type probe to the target surface and check. The temperature of the same point with the help of infrared measurement If both values are stable, press the UP and Down button to confirm. The calculated emission factor of the object will appear at the top of the LCD display. Press the MODE button to switch to the normal measuring mode.

Note:

1. If the IR value does not match with the TK measurement value or the infrared and TK measurement value have been measured at various points, no or a wrong emission factor will be determined.
2. The temperature of the measuring object should
3. be above the ambient temperature. Normally, a temperature of 100 ° C is suitable to measure an emission

factor with a higher accuracy. If the difference between the infrared value (in the middle of the LCD display) and the TK measurement value (in the display below) is too large, after measurement of the emission factor, the measured emission factor will be inaccurate. In this case, the measurement of the emissivity has to be repeated. After obtaining the emissivity, if the difference between IR value (in the middle of LCD) and TK value (at the lower side of LCD) is too big, the obtained emissivity will be incorrect. It´s necessary to obtain a new emissivity.

Emissivity Values

Material	Condition	Temperature- Range	Emissivity- factor (ε)
Aloo- minimum	polished	50°C … 100°C	0.04 … 0.06
	Raw surface	20°C … 50°C	0.06 … 0.07
	oxidized	50°C … 500°C	0.2 … 0.3
	Aluminum oxide, Aluminum powder	normal Temperature	0.16
Brass	matt	20°C … 350°C	0.22
	oxidized at 600°C	200°C … 600°C	0.59 … 0.61
	Polished	200°C	0.03
	Wrought with sandpaper	20°C	0.2
Bronze	polished	50°C	0.1
	porous and raw	50°C … 150°C	0.55
Chrome	polished	50°C 500°C … 1000°C	0.1 0.28 … 0.38
Copper	burnished	20°C	0.07
	electrolytic polished	80°C	0.018
	electrolytic powdered	normal Temperature	0.76
	molten	1100°C … 1300°C	0.13 … 0.15
	oxidized	50°C	0.6 … 0.7
	oxidized and black	5°C	0.88

Material	Condition	Temperature- Range	Emissivity- factor (ε)
	With red rust	20°C	0.61 … 0.85

Iron			
	electrolytic polished	175°C … 225°C	0.05 … 0.06
	Wrought with sandpaper	20°C	0.24
	oxidized	100°C 125°C … 525°C	0.74 0.78 … 0.82
	Hot-rolled	20°C	0.77
	Hot-rolled	130°C	0.6
Lacquer	Bakelite	80°C	0.93
	black, matt	40°C … 100°C	0.96 … 0.98
	black, high-glossed, sprayed onto iron	20°C	0.87
	Heat-resistant	100°C	0.92
	white	40°C … 100°C	0.80 … 0.95
Lamp black	–	20°C … 400°C	0.95 … 0.97
	Application to solid surfaces	50°C … 1000°C	0.96
	With water glass	20°C … 200°C	0.96
Paper	black	normal Temperature	0.90
	black, matt	dto.	0.94
	green	dto.	0.85
	Red	dto.	0.76
	White	20°C	0.7 … 0.9
	yellow	normal Temperature	0.72

Material	**Condition**	**Temperature- Range**	**Emissivity- factor (ε)**

Glass	–	20°C … 100°C 250°C … 1000°C 1100°C … 1500°C	0.94 … 0.91 0.87 … 0.72 0.7 … 0.67
	Matted	20°C	0.96
Gypsum	–	20°C	0.8 … 0.9
Ice	Covered with heavy frost	0°C	0.98
	smooth	0°C	0.97
Lime	–	normal Temperature	0.3 … 0.4
Marble	greyish polished	20°C	0.93
Glimmer	Thick layer	normal Temperature	0.72
Porcelain	glazed	20°C	0.92
	White, glossy	normal Temperature	0.7 … 0.75
Rubber	Hard	20°C	0.95
	Soft, grey rough	20°C	0.86
Sand	–	normal Temperature	0.6
Shellac	black, matt	75°C … 150°C	0.91
	black, glossy, applied to tin alloy	20°C	0.82
Plumbed	grey, oxidized	20°C	0.28
	at 200°C oxidized	200°C	0.63
	red, powder	100°C	0.93
	Lead sulfate, Powder	normal temperature	0.13 … 0.22

Material	Condition	Temperature- Range	Emissivity- factor (ε)
Mercury	pure	0°C … 100°C	0.09 … 0.12
Moly- denim	–	600°C … 1000°C	0.08 … 0.13
	Heating wire	700°C … 2500°C	0.10 … 0.30
Chrome	wire, pure	50°C 500°C … 1000°C	0.65 0.71 … 0.79
	wire, oxidized	50°C … 500°C	0.95 … 0.98
Nickel	absolutely pure, polished	100°C 200°C … 400°C	0.045 0.07 … 0.09
	at 600°C oxidized	200°C … 600°C	0.37 … 0.48
	wire	200°C … 1000°C	0.1 … 0.2
	Nickel oxidized	500°C … 650°C 1000°C … 1250°C	0.52 … 0.59 0.75 … 0.86
Platinum	–	1000°C … 1500°C	0.14 … 0.18
	Pure, polished	200°C … 600°C	0.05 … 0.10
	Stripes	900°C … 1100°C	0.12 … 0.17
	wire	50°C … 200°C	0.06 … 0.07
		500°C … 1000°C	0.10 … 0.16
Silver	Pure, polished	200°C … 600°C	0.02 … 0.03

Material	Condition	Temperature- Range	Emissivity- factor (ε)
	Alloy (8% Nickel, 18% Chrome)	500°C	0.35
	Galvanized	20°C	0.28

Steel	oxidized	200°C … 600°C	0.80
	strongly oxidized	50°C 500°C	0.88 0.98
	Newly-rolled	20°C	0.24
	Rough, flat surface	50°C	0.95 … 0.98
	rusty, rest	20°C	0.69
	sheet	950°C … 1100°C	0.55 … 0.61
	sheet, Nickel-coated	20°C	0.11
	sheet, polished	750°C … 1050°C	0.52 … 0.56
	sheet, rolled	50°C	0.56
	rustles, rolled	700°C	0.45
	rustles, sand-blasted	700°C	0.70
Cast Iron	poured	50°C 1000°C	0.81 0.95
	liquid	1300°C	0.28
	at 600°C oxidized	200°C … 600°C	0.64 … 0.78
	polished	200°C	0.21
Tin	burnish	20°C … 50°C	0.04 … 0.06
Titanium	at 540°C oxidized	200°C 500°C 1000°C	0.40 0.50 0.60
	polished	200°C 500°C 1000°C	0.15 0.20 0.36

Material	**Condition**	**Temperature- Range**	**Emissivity- factor (ε)**

Wolfram	–	200°C 600°C … 1000°C	0.05 0.1 … 0.16
	Heating wire	3300°C	0.39
Zinc	at 400°C oxidized	400°C	0.11
	oxidized surface	1000°C … 1200°C	0.50 … 0.60
	Polished	200°C … 300°C	0.04 … 0.05
	sheet	50°C	0.20
Zirconium	Zirconium oxide, Powder	normal temperature	0.16 … 0.20
	Zirconium silicate, Powder	normal temperature	0.36 … 0.42
Asbestos	tablet	20°C	0.96
	Paper	40°C … 400°C	0.93 … 0.95
	Powder	normal temperature	0.40 … 0.60
	slate	20°C	0.96
Material	Condition	Temperature- Range	Emissivity- factor (ε)
Coal	Heating wire	1000°C … 1400°C	0.53
	cleaned (0.9% Ascher)	100°C … 600°C	0.81 … 0.79
Cement	–	normal temperature	0.54
Charcoal	Powder	normal temperature	0.96
Clay	Fired clay	70°C	0.91

Fabric (Cloth)	black	20°C	0.98

Material	**Condition**	**Temperature- Range**	**Emissivity- factor (ε)**
Vulcanite	–	normal temperature	0.89
Grease	coarse	80°C	0.85
Silicon	Granulate powder	normal temperature	0.48
	Silicon, Powder	normal temperature	0.30
Slag	furnace	0°C … 100°C 200°C … 1200°C	0.97 … 0.93 0.89 … 0.70
Snow	–	–	0.80
Stucco	rough, burned	10°C … 90°C	0.91
Bitumen	Waterproof paper	20°C	0.91 … 0.93
Water	Layer on metal surface	0°C … 100°C	0.95 … 0.98
Brick	Chamotte	20°C 1000°C 1200°C	0.85 0.75 0.59
	Fire-resistant	1000°C	0.46
	Fire-resistant, high- blasted	500°C … 1000°C	0.80 … 0.90
	Fire-resistant, low- blasted	500°C … 1000°C	0.65 … 0.75
	Silicon (95% $Si0^2$)	1230°C	0.66

Documents / Resources

	PeakTech 4950 Infrared Thermometer with K Type Input [pdf] User Manual 4950 Infrared Thermometer with K Type Input, 4950, Infrared Thermometer with K Type Input, Infrared Thermometer, Thermometer, Thermometer with K Type Input, K Type Input Thermometer

References

- Home
- Home