

Important information about measuring surface body temperature with a Testo IR thermometer

Things to keep in mind when using infrared thermometers for scanning people

- Infrared temperature measuring instruments can be used for scanning people and finding anomalies of high temperature, but they are not suitable for diagnostic measurements in the medical sector
- Due to the many factors (such as ambient/ surrounding temperatures - see image below) that could influence the temperature reading Testo measuring instruments should be used for comparative measurements
- The body surface temperature on the forehead differs from the internal body temperature, which is generally taken using a medical **contact** thermometer
- A control measurement, with a conventional contact fever thermometer is necessary for accurate body temperature measurement if the measured value is higher than expected
- The operator of the IR thermometer needs to have basic knowledge about the content communicated in this document.

How to perform a measurement on the forehead

- Before the measurement, the person should make sure to close their eyes, so as not to look into the laser pointer. The laser can also be disabled by obstructing it with a sticker (this does not affect the temperature reading)
- Carry out the measurement on the forehead at a distance of approx. 5 cm
- Always measure the temperature at the same site, as the measurement values vary in different surroundings
- Physical exertion should be avoided, by the person being scanned, directly before or during the measurement
- The correct emissivity for human body surface temperature measurements is 0.98
- Do not measure with a fogged lens
- Do not shake or tap on the infrared temperature measuring instrument
- Do not drop the instrument
- Protect the instrument from direct sunlight, extremely high or low temperatures, dirt and dust
- If an error occurs or the instrument is damaged, do not attempt to repair the instrument yourself

What has an influence on the surface temperature of the forehead?

Many factors such as ambient temperature, physical exertion, a person standing in direct sunlight (even before the measurement), blood circulation, evaporation of sweat and many more, can have an impact on the surface temperature of skin on a forehead.

How do so called “medical” infrared thermometers work?

So called medical infrared fever thermometers often show a value very close to 36°C for any temperature in the measuring range of the instrument below 36°C and just start measuring more accurately at higher temperatures. To compensate to the real (internal) body temperature, these instruments sometimes show values of about 2 °C higher than the real value. We have tested such devices from different manufacturers and have seen that there is no consistency in the offset factors.

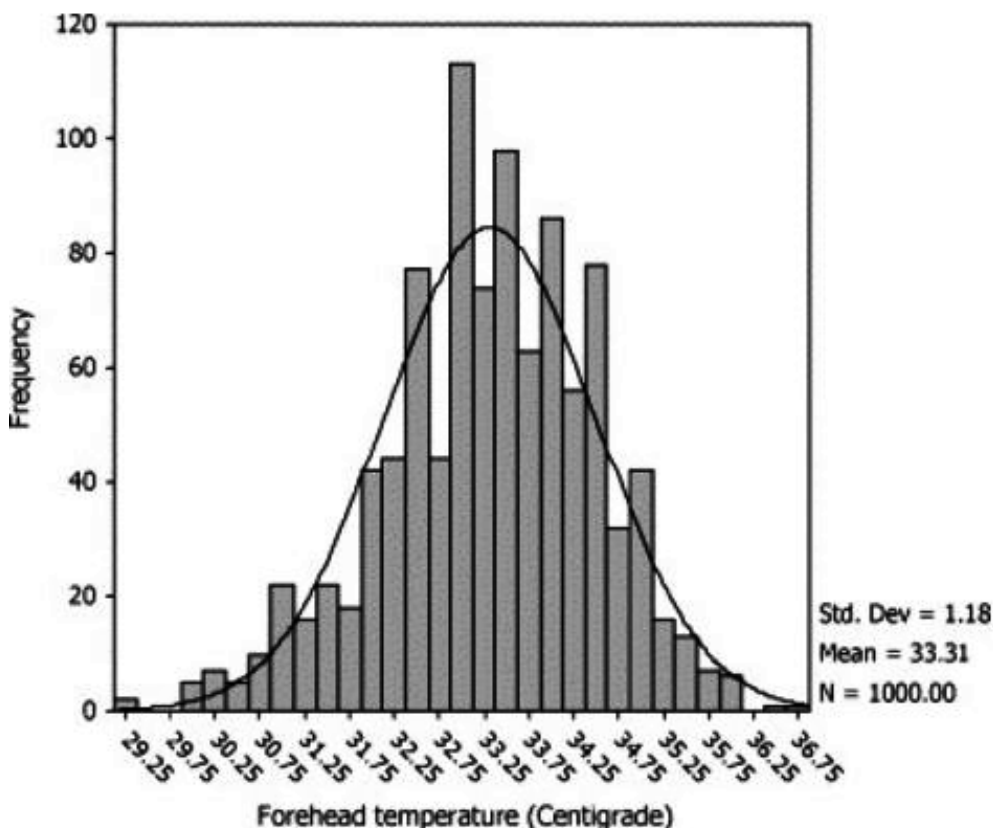
What readings can you expect?

On the forehead, depending on ambient conditions, you can expect readings between 29 and 36°C.

As per government gazette, people with internal body temperatures higher than 37.5°C should be checked further by skilled health personnel. Nevertheless, as the surface temperature on the skin of the forehead is in most cases lower than the internal body temperature, we recommend checking people further if they have a temperature on the skin of the forehead higher than 37°C. Please note that this is an indication only. In very cold ambient conditions, people with a fever can have a surface temperature of less than 36°C. **That is why it is recommended to screen for anomalies within a set of measurements rather than looking at an absolute value.**



Thermal image of a person that has a temperature of 31.6°C on the forehead at 22°C ambient temperature. This shows that skin temperatures do fluctuate and temperatures well below 36°C are to be expected.



Histogram showing the frequency distribution of forehead temperature in 1000 apparently healthy adults. (American Journal of Infection Control - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7115295/figure/fig2/>)