



Penetration measurement: What do I need to keep in mind?

The most accurate measurement is always a core temperature measurement, i.e. a penetration probe measures the temperature in the interior of the refrigerated goods.

Measurements with penetration probes on non-frozen food:

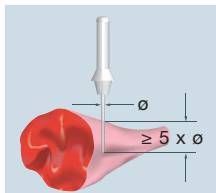
For an optimum heat transfer from the food to the probe, the probe should be immersed at least 5 times (optimally 10 times) deeper into the material than its thickness.

Example: Diameter of the probe tip = 4 mm
Penetration depth = 4 mm x 5 = 20 mm

Immersion/penetration probes are designed specifically for measuring temperature in liquids and semi-solid substances (meat, fish, dough, etc.). With sufficient time, they are also suitable for air measurement.

Measurements in frozen food with special screw probe

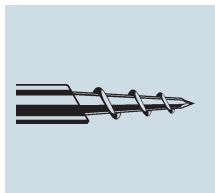
For measurements in hard, frozen food, a special frozen food probe is required. It has a self-screwing tip (corkscrew tip). This is screwed in until the thread is no longer visible.



Penetration depth for measurements



Immersion/penetration probes



Screw-in probes



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Response time

Each probe requires a certain amount of time to reach the final temperature value for the food which it is measuring. The technical name for this value is the t_{99} time and it is given in catalogues and brochures. However, it only refers to measurement in water. In foods, this value is higher (approx. 15 seconds to 3 minutes, depending on the design of the probe, the materials and the thickness of the probe shaft).

Ambient temperature

Measuring instruments with thermocouple sensor technology and infrared measuring instruments are dependent on the ambient temperature. If the instrument is exposed to a cold environment for a longer time (> 2 mins), it will need an acclimatization time of 15 to 20 minutes.

Never store the measuring instrument in the deep-freeze area!



Penetration measurement
in fish



Screw probe for frozen
goods



Penetration measurement
in cheese