

# Types of thermometer

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Different types of thermometers Galileo thermometer. A Galileo thermometer (or Galilean thermometer), named after Italian physicist Galileo Galilei, is a thermometer made of a sealed glass cylinder containing a clear liquid and a series of objects whose densities are such that they rise or fall as the temperature changes. By definition, Galileo's thermometer is actually a thermoscope, not a thermometer. Gas thermometer A gas thermometer measures temperature by the variation in volume or pressure of a gas.

One common apparatus is a constant volume thermometer. It consists of a bulb connected by a capillary tube to a manometer. The bulb is filled with a gas such that the volume of the gas in the bulb remains constant. The volume is related to temperature by  $k$ , known as Charles's Law . The pressure of the gas in the bulb can be obtained by measuring the level difference in the two arms of the manometer. Gas thermometers are often used to calibrate other thermometers. Alcohol thermometer

The Alcohol thermometer or spirit thermometer is an alternative to the mercury-in-glass thermometer, and functions in a similar way. But unlike mercury-in-glass thermometer, the contents of an alcohol thermometer are less toxic and will evaporate away fairly quickly. For the working temperature range, the meniscus or interface between the liquid is within the capillary. With increasing temperature, the volume of liquid expands and the meniscus moves up the capillary. The position of the meniscus shows the temperature against an inscribed scale. Infrared thermometer

Infrared thermometers infer temperature using a portion of the thermal radiation sometimes called blackbody radiation emitted by the object of

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measurement. They're sometimes called laser thermometers if a laser is used to help aim the thermometer, or non-contact thermometers to describe the device's ability to measure temperature from a distance. By knowing the amount of infrared energy emitted by the object and its emissivity, the object's temperature can be determined most of the time. Mercury thermometer A mercury-in-glass thermometer, is a thermometer consisting of mercury in a glass tube.

Calibrated marks on the tube allow the temperature to be read by the length of the mercury within the tube, which varies (nearly linearly) according to the temperature of the mercury. To increase the sensitivity, there is usually a bulb of mercury at the end of the thermometer which contains most of the mercury; expansion and contraction of this volume of mercury is then amplified in the much narrower bore of the tube. The space above the mercury may be filled with nitrogen or it may be less than atmospheric pressure, which is normally known as a vacuum.