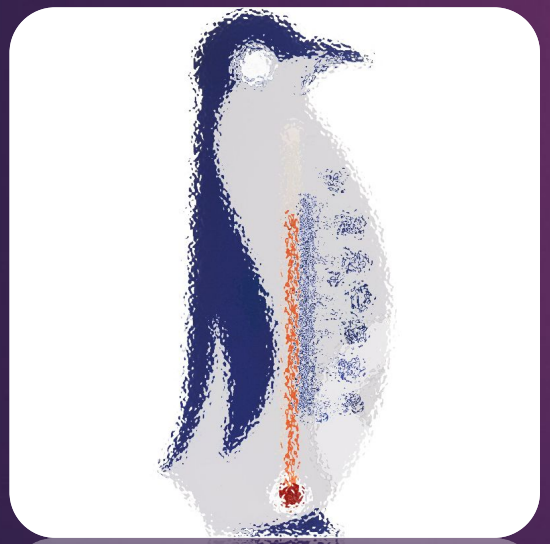
Thermometers



Thermometers and their types

Thermometer (Greek. born - heat; μετρέω - measure) - instrument for measuring temperature of air, soil, water and so on..

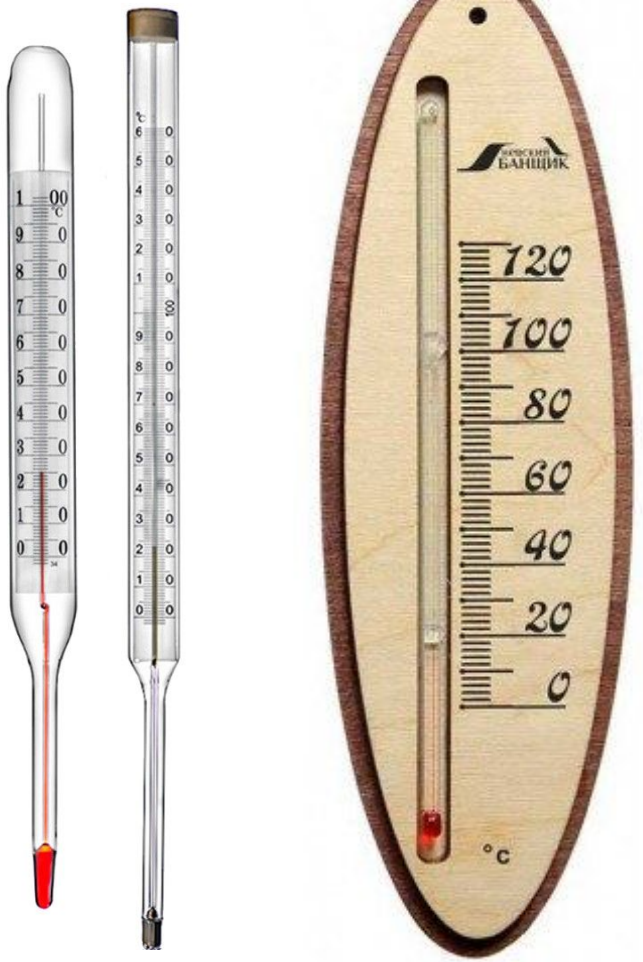
Types thermometers:

- liquid;
- mechanical;
- electronic;
- optical;
- gas;
- infrared.

Liquid thermometers

Liquid thermometers are based on the principle of changing the volume of liquid that is poured into the thermometer (usually alcohol or mercury), when the ambient temperature changes.

Due to the fact that since 2020 mercury will be banned worldwide because of its health hazards in many areas of activity is searching for alternative fillings for household thermometers. For example, such a replacement was galinstan (an alloy of metals: gallium, indium, tin and zinc).



Mechanical thermometers

Thermometers of this type operate on the same principle as the liquid, but as a sensor is usually used a metal spiral or tape of bimetal.

Electronic thermometer

The principle of operation of electronic thermometers is based on the change in the resistance of the conductor when the ambient temperature changes.

Electronic thermometers of a wider range are based on thermocouples (contact between metals with different electronegativity creates a contact potential difference depending on temperature).

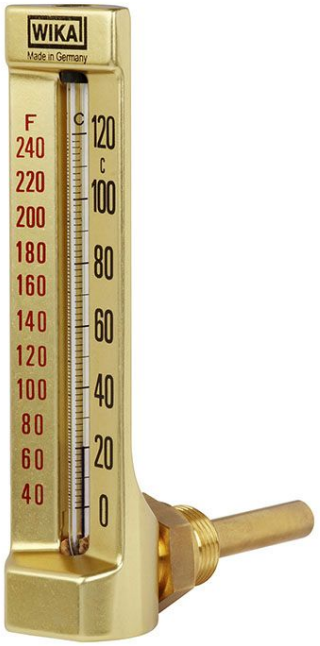
Optical thermometers

Optical thermometers allow you to register the temperature by changing the level of luminosity, spectrum and other parameters (see Fiber optic temperature measurement) when the temperature changes. For example, an infrared temperature meter body.

Infrared thermometer allows you to measure the temperature without direct contact with a person.

Technical thermometers

Technical thermometers are used at the enterprises in agriculture, petrochemical, chemical, mining and metallurgical industries, in mechanical engineering, housing and communal services, transport, construction, medicine, in a word in all spheres of life.



Gas thermometer

Gas thermometer — a device for measuring temperature, based on Charles ' law.

In a wide range of changes in the concentrations of gases and temperatures and low pressures, the temperature coefficient of pressure of different gases is approximately the same, so the method of measuring the temperature using a gas thermometer is little dependent on the properties of a particular substance used in the thermometer as a working fluid. The most accurate results are obtained if hydrogen or helium is used as the working fluid.

Thank you for listening