

Different expressions used to describe temperature

The equivalent temperature (T_{eq}) is defined as the temperature of an imaginary enclosure with the mean radiant temperature equal to air temperature and still air in which a person has the same heat exchange by convection and radiation as in the actual conditions.

Operative temperature is the temperature of a uniform (isothermal) “black” enclosure in which a solid body or occupant would exchange the same amount of heat by radiation and convection as in the actual non-uniform environment.

The globe temperature is the temperature of a blackened hollow sphere of thin copper (usually 0.15 m diameter) as measured by a thermometer at its centre and approximately equals operative temperature.

Mean Radiant Temperature is the temperature of an imaginary isothermal, “black” enclosure, in which a solid body or occupant would exchange the same amount of heat by radiation as in the actual non-uniform enclosure.

The “Air Temperature” and “Mean Radiant Temperature” can be combined into the “**Operative Temperature**” expression.

The “Air Temperature”, the “Mean Radiant Temperature”, and the “Air Velocity” can be combined into the “**Equivalent Temperature**” expression. Air humidity is also often considered when estimating the Equivalent Temperature due to increasing impact of air humidity in combination with higher air velocity.

The **equivalent temperature** is derived from the operative temperature by the inclusion of the effect of air velocity on a heated body. The **operative temperature** considers the air temperature and the mean radiant temperature and reflects an approach to perceived thermal environment when air temperature and mean radiant temperature differs significantly from each other. **The equivalent temperature** represents an even more exact objective assessment of perceived or subjective thermal conditions when also air velocity and possibly also air humidity are sufficiently high to affect the results.