Wet Bulb Globe Temperature (WBGT) for Heat Stress

Wet bulb globe temperature indoors or outdoors in sunshine from the natural wet-bulb, globe and air temperatures, the index used to screen heat stress at work.

Method: Wet bulb globe temperature index

Input parameters

Unit system: SI

Parameter	Value	Unit
Exposure	Indoors or outdoors without sun	
Natural wet-bulb temperature	26.000	°C
Black globe temperature	40.000	°C
Air (dry-bulb) temperature	33.000	°C

Calculated results

Parameter	Value	Unit
Wet bulb globe temperature	30.200	°C
Indoor formula 0.7t_nw + 0.3t_g	30.200	°C
Outdoor formula 0.7t_nw + 0.2t_g + 0.1t_a	29.500	°C

Notes for this case

• Yaglou–Minard WBGT (weights 0.7/0.3 indoors, 0.7/0.2/0.1 in sun). Compare with the reference values for the work rate and acclimatisation in the occupational guidance that applies; use a 150 mm black globe and an unshielded, naturally ventilated wet bulb.

Formula and method

$$WBGT_{in} = 0.7t_{nw} + 0.3t_g, \quad WBGT_{out} = 0.7t_{nw} + 0.2t_g + 0.1t_a$$

Variables

$\mathrm{location}$	Exposure	-
t_{nw}	Natural wet-bulb temperature	K
t_g	Black globe temperature	K
t_a	Air (dry-bulb) temperature	K
$WBGT$	Wet bulb globe temperature	K
$WBGT_{in}$	Indoor formula 0.7t_nw + 0.3t_g	K
$WBGT_{out}$	Outdoor formula 0.7t_nw + 0.2t_g + 0.1t_a	K

Method and standards

WBGT heat-stress index.

Assumptions and limits

- Instruments to the usual specification (150 mm black globe, natural wet bulb).

References

Wet bulb globe temperature index

Report details

Report reference	FCC-G1SH-3SQJ (the same inputs always give the same reference)
Generated	23 November 2026, 17:51 UTC
Calculator	Wet Bulb Globe Temperature (WBGT) for Heat Stress
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/hvac/loads/wbgt-heat-stress

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.