Draught Rate: Percentage Dissatisfied with Local Air Movement

Predicted percentage of people dissatisfied because of draught from the local air temperature, mean air speed and turbulence intensity, by the draught rate model.

Method: Fanger's draught rate model (as used in ISO 7730)

Input parameters

Unit system: SI

Parameter	Value	Unit
Local air temperature	22.000	°C
Local mean air speed	0.20000	m/s
Turbulence intensity (mixing ventilation 30–60 %)	40.000	%

Calculated results

Parameter	Value	Unit
Draught rate (percentage dissatisfied)	22.578	%
Air speed giving 20 % draught rate at this temperature and turbulence	0.18237	m/s

Notes for this case

• DR = (34 − t)(v − 0.05)^0.62 (0.37 v T_u + 3.14), with v below 0.05 m/s taken as 0.05 and DR capped at 100 %. Applies to people at light, mainly sedentary activity, at neck height.

Formula and method

$$DR = (34 - t_{a,l})(\bar{v}_{a,l} - 0.05)^{0.62}(0.37\bar{v}_{a,l}T_u + 3.14)$$

Variables

$t_{a,l}$	Local air temperature	K
$\bar{v}_{a,l}$	Local mean air speed	m/s
T_u	Turbulence intensity (mixing ventilation 30–60 %)	-
DR	Draught rate (percentage dissatisfied)	-
$v_{DR=20}$	Air speed giving 20 % draught rate at this temperature and turbulence	m/s

Method and standards

Draught rate model.

Assumptions and limits

- Sedentary occupants, 20–26 °C, below 0.5 m/s.

References

Fanger's draught rate model (as used in ISO 7730)

Report details

Report reference	FCC-SVBR-9XD7 (the same inputs always give the same reference)
Generated	23 November 2026, 17:50 UTC
Calculator	Draught Rate: Percentage Dissatisfied with Local Air Movement
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/draught-rate

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.