Thermal Conductivity Unit Converter (W/m·K, kcal/h·m·°C, Btu/h·ft·°F)

Convert thermal conductivity between W/(m·K), mW/(m·K), kcal/(h·m·°C) and Btu/(h·ft·°F), the units of insulation and refractory data.

Method: Unit definitions (NIST SP 811; International Table calorie and Btu)

Input parameters

Unit system: SI

Parameter	Value	Unit
Thermal conductivity (choose its unit)	1.0000	W/(m·K)

Calculated results

Parameter	Value	Unit
watt per metre kelvin	1.0000	W/(m·K)
milliwatt per metre kelvin	1,000.0	mW/(m·K)
kilocalorie per hour metre °C	0.85985	kcal/(h·m·°C)
Btu per hour foot °F	0.57779	Btu/(h·ft·°F)

Notes for this case

- 1 kcal/(h·m·°C) = 1.163 W/(m·K); 1 Btu/(h·ft·°F) = 1.7307 W/(m·K). Insulation values are often quoted in mW/(m·K).

Formula and method

$$1\ \mathrm{kcal/(h\,m\,^{\circ}C)} = 1.163\ \mathrm{W/(m\,K)}, \quad 1\ \mathrm{Btu/(h\,ft\,^{\circ}F)} = 1.7307\ \mathrm{W/(m\,K)}$$

Variables

k	Thermal conductivity (choose its unit)	W/(m·K)

Method and standards

Unit factors.

Assumptions and limits

- Linear unit factors.

References

- Unit definitions (NIST SP 811; International Table calorie and Btu)

Report details

Report reference	FCC-VZ8X-FTH7 (the same inputs always give the same reference)
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Method last reviewed	13 November 2026
Software release	FireCAD Calc, release of 17 November 2026
Release checks	2 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/general/unit-conversions/thermal-conductivity-unit-converter

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.