

Product	Specific Heat - c_p -	
	<i>(Btu/(lb_m °F))</i> <i>(kcal/(kg °C))</i>	<i>(kJ/(kg K))</i>
Agate	0.19	0.80
Aluminum bronze	0.10	0.44
Aluminum, 0°C	0.21	0.87
Antimony	0.05	0.21
Apatite	0.2	0.84
Arsenic	0.083	0.35
Artificial wool	0.32	1.36
Asbestos cement board	0.2	0.84
Asbestos mill board	0.2	0.84
Ashes	0.2	0.84
Asphalt	0.22	0.92
Augite	0.19	0.80
Bakelite. wood filler	0.33	1.38
Bakelite. asbestos filler	0.38	1.59
Barite	0.11	0.46
Barium	0.07	0.29

Product	Specific Heat - c_p -	
	<i>(Btu/(lb_m °F))</i> <i>(kcal/(kg °C))</i>	<i>(kJ/(kg K))</i>
Basalt rock	0.2	0.84
Beeswax	0.82	3.40
Beryl	0.2	0.84
Beryllium	0.24	1.02
Bismuth	0.03	0.13
Boile scale	0.19	0.80
Bone	0.11	0.44
Borax	0.24	1.0
Boron	0.31	1.3
Brass	0.09	0.38
Brick, common	0.22	0.9
Brick, hard	0.24	1
Bronze, phosphor	0.09	0.38
Cadmium	0.06	0.25
Calcite 32 - 100F	0.19	0.8
Calcite 32 - 212F	0.2	0.84

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	<i>(Btu/(lb_m °F)) (kcal/(kg °C))</i>	<i>(kJ/(kg K))</i>
Calcium	0.15	0.63
Calcium carbonat	0.18	0.76
Calcium sulfate	0.27	1.1
Carbon, Diamond	0.12	0.52
Carbon, Graphite	0.17	0.71
Carborundum	0.16	0.67
Cassiterite	0.09	0.38
Cement dry	0.37	1.55
Cement powder	0.2	0.84
Cellulose	0.37	1.6
Celluloid	0.36	1.5
Charcoal	0.24	1
Chalk	0.22	0.9
Chalcopyrite	0.13	0.54
Charcoal, wood	0.24	1
Chromium	0.12	0.5

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Clay	0.22	0.92
Coal, anthracite	0.3	1.26
Coal, bituminous	0.33	1.38
Cobalt	0.11	0.46
Coke	0.2	0.85
Concrete, stone	0.18	0.75
Concrete, light	0.23	0.96
Constantan	0.098	0.41
Copper	0.09	0.39
Cork, Corkboard	0.45	1.9
Corundum	0.1	0.42
Cotton	0.32	1.34
Diamond	0.15	0.63
Dolomite rock	0.22	0.92
Duralium	0.22	0.92
Earth, dry	0.3	1.26

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Electron	0.24	1.00
Emery	0.23	0.96
Fats	0.46	1.93
Fiberboard, light	0.6	2.5
Fiber hardboard	0.5	2.1
Fire brick	0.25	1.05
Fluorite	0.22	0.92
Fluorspar	0.21	0.88
Galena	0.05	0.21
Garnet	0.18	0.75
Glass	0.2	0.84
Glass, crystal	0.12	0.5
Glass, plate	0.12	0.5
Glass, Pyrex	0.18	0.75
Glass, window	0.2	0.84
Glass-wool	0.16	0.67

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Gold	0.03	0.13
Granite	0.19	0.79
Graphite	0.17	0.71
Gypsum	0.26	1.09
Hairfelt	0.5	2.1
Hematite	0.16	0.67
Hornblende	0.2	0.84
Hypersthene	0.19	0.8
Ice -112°F	0.35	1.47
Ice -40°F	0.43	1.8
Ice -4°F	0.47	1.97
Ice 32°F (0°C)	0.49	2.09
India rubber min	0.27	1.13
India rubber max	0.98	4.1
Ingot iron	0.12	0.49
Iodine	0.052	0.218

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	<i>(Btu/(lb_m °F))</i> <i>(kcal/(kg °C))</i>	<i>(kJ/(kg K))</i>
Iridium	0.03	0.13
Iron, 20°C	0.11	0.46
Labradorite	0.19	0.8
Lava	0.2	0.84
Limestone	0.217	0.91
Litharge	0.21	0.88
Lead	0.03	0.13
Leather, dry	0.36	1.5
Lithium	0.86	3.58
Magnetite	0.16	0.67
Malachite	0.18	0.75
Manganese	0.11	0.46
Magnesia (85%)	0.2	0.84
Magnesium	0.25	1.05
Marble, mica	0.21	0.88
Mercury	0.03	0.14

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Mica	0.12	0.5
Mineral wool blanket	0.2	0.84
Molybdenum	0.065	0.27
Nickel	0.011	0.46
Oliglocose	0.21	0.88
Orthoclose	0.19	0.8
Osmium	0.03	0.13
Oxide of chrome	0.18	0.75
Paper	0.33	1.34
Paraffin wax	0.7	2.9
Peat	0.45	1.88
Phosphorbronze	0.086	0.36
Phosphorus	0.19	0.80
Pig iron, white	0.13	0.54
Pinchbeck	0.09	0.38
Pit coal	0.24	1.02

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Plaster, light	0.24	1
Plaster, sand	0.22	0.9
Plastics, foam	0.3	1.3
Plastics, solid	0.4	1.67
Platinum, 0°C	0.032	0.13
Porcelain	0.26	1.07
Potassium	0.13	0.54
Pyrex glass	0.2	0.84
Pyrolusite	0.16	0.67
Pyroxylin plastics	0.36	1.51
Quartz mineral 55 - 212°F	0.19	0.8
Quartz mineral 32°F (0°C)	0.17	0.71
Red lead	0.022	0.09
Red metal	0.09	0.38
Rhenium	0.033	0.14
Rhodium	0.057	0.24

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	<i>(Btu/(lb_m °F))</i> <i>(kcal/(kg °C))</i>	<i>(kJ/(kg K))</i>
Rock salt	0.22	0.92
Rosin	0.31	1.30
Rubber	0.48	2.01
Rubidium	0.079	0.33
Salt	0.21	0.88
Sand, dry	0.19	0.80
Sandstone	0.22	0.92
Sawdust	0.21	0.9
Selenium	0.078	0.33
Serpentine	0.26	1.09
Silica aerogel	0.2	0.84
Silicon	0.18	0.75
Silicon, carbide	0.16	0.67
Silk	0.33	1.38
Silver, 20°C	0.056	0.23
Slate	0.18	0.76

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	<i>(Btu/(lb_m °F))</i> <i>(kcal/(kg °C))</i>	<i>(kJ/(kg K))</i>
Sodium	0.3	1.26
Soil, dry	0.19	0.80
Soil, wet	0.35	1.48
Steatite	0.2	0.83
Steel	0.12	0.49
Stone	0.2	0.84
Stoneware	0.19	0.8
Sulphur, sulfur	0.17	0.71
Tantalium	0.033	0.14
Tar	0.35	1.47
Tellurium	0.05	0.21
Thorium	0.033	0.14
Tile hollow	0.15	0.63
Timber, see wood		
Tin	0.057	0.24
Titanium	0.11	0.47

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	($Btu/(lb_m \text{ } ^\circ F)$) ($kcal/(kg \text{ } ^\circ C)$)	($kJ/(kg \text{ } K)$)
Topaz	0.21	0.88
Tungsten	0.03	0.134
Uranium	0.028	0.12
Vanadium	0.12	0.5
Vermiculite	0.2	0.84
Vulcanite	0.33	1.38
Wax	0.82	3.43
Welding iron	0.12	0.52
White metal	0.035	0.15
Wood, balsa	0.7	2.9
Wood, oak	0.48	2
Wood, white pine	0.6	2.5
Wool, loose	0.3	1.26
Wool, felt	0.33	1.38
Zinc	0.09	0.38

- $1 \text{ Btu}/lb_m \text{ } ^\circ F = 4.187 \text{ kJ}/kg \text{ } K = 1 \text{ kcal}/kg \text{ } ^\circ C$
- $T \text{ (} ^\circ C \text{)} = 5/9[T \text{ (} ^\circ F \text{)} - 32]$
- $T \text{ (} ^\circ F \text{)} = [T \text{ (} ^\circ C \text{)}](9/5) + 32$

For conversion of units, use the [Specific heat online unit converter](#).

See also tabulated values of *specific heat* of [gases](#), [food and foodstuff](#), [metals and semimetals](#), [common liquids and fluids](#) and other [common substances](#) as well as values of *molar heat capacity* of [common organic substances](#) and [inorganic substances](#).

Heating Energy

The energy required to heat a product can be calculated as

$$q = c_p m dt \quad (1)$$

where

q = heat required (kJ)

c_p = specific heat (kJ/kg K, kJ/kg °C)

dt = temperature difference (K, °C)