

Specific Heats of Metals

Metal	atomic mass(g/mol)	specific heat(J/g°C)	metal	atomic mass(g/mol)	specific heat(J/g°C)	metal	atomic mass(g/mol)	specific heat(J/g°C)
Aluminum	27.0	0.9025	iron	55.8	0.4494	rhodium	102.9	0.2427
Antimony	121.7	0.2072	lanthanum	138.9	0.1952	rubidium	85.5	0.3634
Barium	137.3	0.2044	lead	207.2	0.1276	ruthenium	101.1	0.2381
Beryllium	9.01	1.824	lithium	6.9	3.569	scandium	45.0	0.5677
Bismuth	209.0	0.1221	lutetium	175.0	0.1535	silver	107.9	0.235
Cadmium	112.4	0.2311	magnesium	24.3	1.024	sodium	23.0	1.228
Calcium	40.1	0.6315	manganese	54.9	0.4791	strontium	87.6	0.301
Cesium	132.9	0.2421	mercury	200.6	0.1395	tantalum	180.9	0.1402
Chromium	52.0	0.4491	molybdenum	95.9	0.2508	thallium	204.4	0.1288
Cobalt	58.9	0.421	nickel	58.7	0.4442	tin	118.7	0.2274
Copper	63.5	0.3845	niobium	92.9	0.2648	titanium	47.9	0.5226
Gallium	69.7	0.3709	osmium	190.2	0.130	tungsten	183.9	0.132
Germanium	72.6	0.3215	palladium	106.4	0.2441	vanadium	50.9	0.4886
Gold	197.0	0.129	platinum	195.1	0.1326	yttrium	88.9	0.2984
Hafnium	178.5	0.1442	potassium	39.1	0.7566	zinc	65.4	0.3884
Indium	114.8	0.2407	rhenium	186.2	0.1368	zirconium	91.2	0.278
Iridium	192.2	0.1306						

Metal Alloys:

Alloy Name	Specific Heat (J/g°C)	Alloy Name	Specific Heat (J/g°C)
Admiralty Brass	0.38	Nickel steel	0.456
Aluminum Bronze	0.38	Solder 50 Sn/ 50 Pb	0.167
Ball Metal	0.36	Carbon Steel	0.49
Beryllium Copper	0.42	Cast Iron	0.46
Brass	0.377	Wrought Iron	0.50
Manganese Bronze	0.38	Silicon	0.71

GIVEN
 ΔH_{fus} for water = 6.02 kJ/mol

 ΔH_{vap} for water = 40.7 kJ/mol

Specific heat of water = 4.184 J/g°C

Specific heat of steam = 2.0 J/g°C

Specific heat of ice = 2.1 J/g°C

Substance	Standard Enthalpy of Formation, ΔH_f° (kJ/mol)	Standard entropy, S° (J/mol-K)	Substance	Standard Enthalpy of Formation, ΔH_f° (kJ/mol)	Standard entropy, S° (J/mol-K)
Ag(s)	0	42.7	HBr	-36.4	198.6
AgCl(s)	-127.1	96.2	HCl(g)	-92.3	186.8
AgNO ₃ (s)	-124.4	140.9	HCN(g)	135.1	201.7
Al(s)	0	28.3	HF(g)	-272.5	173.8
Al ₂ O ₃ (s)	-1676	51	Hg(l)	0	76
AlCl ₃ (s)	-705.6	110.7	Hg ₂ Cl ₂ (s)	-265.2	192.5
Br ₂ (g)	30.9	245.5	HgO(s)	-90.8	70.3
Br ₂ (l)	0	152.2	HNO ₃ (g)	-134.3	266.4
C(s, diamond)	1.9	2.4	K(s)	0	64.7
C(s, graphite)	0	5.7	KCl(s)	-436.7	82.6
C ₂ H ₂ (g)	226.7	201	KClO ₃ (s)	-391.0	143.0
C ₂ H ₄ (g)	52.5	219.3	KNO ₃ (s)	-494.6	133.1
C ₂ H ₅ OH(l)	-277.7	161	KOH(s)	-424.7	78.9
C ₂ H ₆ (g)	-83.8	229.1	Li(s)	0	29.1
C ₃ H ₈ (g)	-104.7	270.2	LiCl(s)	-408.8	59.3
C ₆ H ₁₂ O ₆ (s)	-1273.3	212.1	LiOH(s)	-484.9	42.8
C ₆ H ₆ (l)	49	173.4	Mg(s)	0	32.7
Ca(OH) ₂ (s)	-986.1	83.4	MgCl ₂ (s)	-641.6	89.6
Ca(s)	0	41.6	N ₂ (g)	0	191.6
CaCl ₂ (s)	-795.8	104.6	N ₂ O(g)	82.4	220
CaCO ₃ (s)	-1206.9	92.9	N ₂ O ₄ (g)	9.1	304.4
CaO(s)	-634.9	38.2	Na(s)	0	51.5
CCl ₄ (g)	-95.8	309.9	NaCl(s)	-411.2	72.1
CCl ₄ (l)	-135.4	216.2	NaF(s)	12.3	51.5
CH ₃ OH(l)	-239.1	127.2	NaOH(s)	-425.9	64.4
CH ₄ (g)	-74.9	186.3	NH ₃ (g)	-45.9	192.8
Cl ₂ (g)	0	223.1	NH ₄ Cl(s)	-314.5	94.6
CO(g)	-110.5	197.6	NO(g)	90.3	210.8
CO ₂ (g)	-393.5	213.8	NO ₂ (g)	33.1	240
CS ₂ (g)	117.1	237.8	O ₂ (g)	0	205.1
Cu(s)	0	33.2	O ₃ (g)	142.7	238.9
CuCl ₂ (s)	-220.1	108.1	Pb(s)	0	64.8
CuSO ₄ (s)	-770	109.3	PbCl ₂ (s)	-359.4	136.2
F ₂ (g)	0	202.8	PbO(s)	-219.4	66.3
Fe(s)	0	27.3	S(s)	0	32.1
Fe ₂ O ₃ (s)	-825.5	87.4	Si(s)	0	18.8
Fe ₃ O ₄ (s)	-1120.9	145.3	SiCl ₄ (g)	-657	330.9
FeCl ₃ (g)	-399.4	142.3	SiO ₂ (s)	-910.9	41.5
H ₂ (g)	0	130.7	SnCl ₄ (l)	-511.3	258.6
H ₂ O(g)	-241.8	188.7	SO ₂ (g)	-296.8	248.1
H ₂ O(l)	-285.8	70	SO ₃ (g)	-395.8	256.8
H ₂ O ₂ (l)	-187.8	109.6	Zn(s)	0	41.6
H ₂ S(g)	-20.5	205.7	ZnCl ₂ (s)	-415.1	111.5
H ₂ SO ₄ (l)	-814	156.9	ZnO(s)	-348.3	43.6