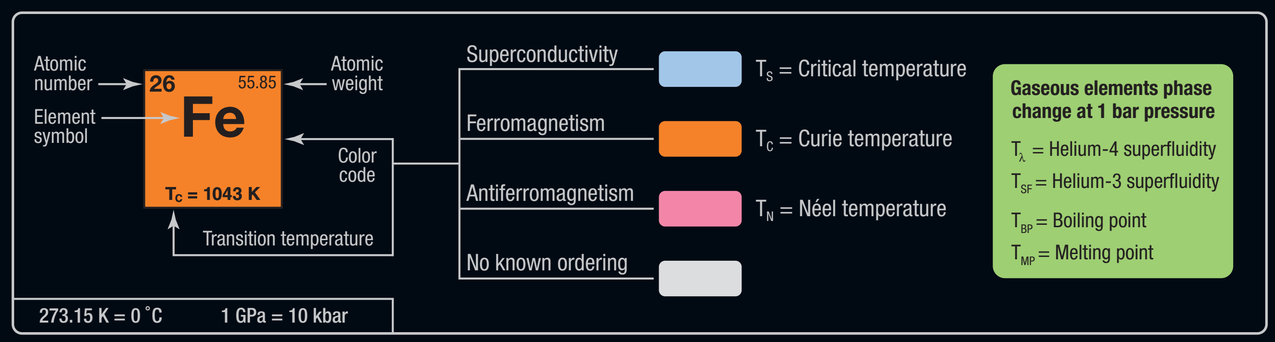
Periodic Table of Elements

Selected Phase Transition Temperatures

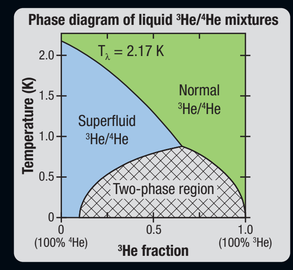


Gaseous elements phase change at 1 bar pressure

T_λ = Helium-4 superfluidity
T_{SF} = Helium-3 superfluidity
T_{BP} = Boiling point
T_{MP} = Melting point

Helium-3 isotope

2 | 3.0 | He
T_{BP} = 3.19 K
T_{SF} = 0.0025 K



1																	2
1 H 1.008 T_{BP} = 20.3 K T_{MP} = 13.8 K	2											1 B 10.81	2 C 12.01 Carbon	3 N 14.01 T_{BP} = 77.4 K T_{MP} = 63.3 K	4 O 16.00 T_{BP} = 90.2 K T_{MP} = 54.4 K $T_{\gamma\to\beta}$ = 43 K	5 F 19.00 T_{BP} = 85.0 K T_{MP} = 53.5 K	2 He 4.003 T_{BP} = 4.21 K T_λ = 2.17 K
3 Li 6.941 T_S = 0.0004 K	4 Be 9.012 T_S = 0.026 K											13 Al 26.98 T_S = 1.14 K	14 Si 28.09	15 P 30.97	16 S 32.07	17 Cl 35.45 T_{BP} = 239.1 K T_{MP} = 171.7 K	10 Ne 20.18 T_{BP} = 27.1 K T_{MP} = 24.6 K
11 Na 22.99 Sodium	12 Mg 24.31 Magnesium	1	2	3	4	5	6	7	8	9	10						
19 K 39.10 Potassium	20 Ca 40.08	21 Sc 44.96	22 Ti 47.87 T_S = 0.39 K	23 V 50.94 T_S = 5.38 K	24 Cr 52.00 T_N = 311 K	25 Mn 54.94 (α) T_N = 100 K	26 Fe 55.85 T_C = 1043 K	27 Co 58.93 T_C = 1388 K	28 Ni 58.69 T_C = 627 K	29 Cu 63.55 Copper	30 Zn 65.41 T_S = 0.875 K	31 Ga 69.72 T_S = 1.091 K	32 Ge 72.64	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80 T_{BP} = 119.9 K T_{MP} = 115.8 K
37 Rb 85.47 Rubidium	38 Sr 87.62	39 Y 88.91	40 Zr 91.22 T_S = 0.546 K	41 Nb 92.91 T_S = 9.20 K	42 Mo 95.94 T_S = 0.92 K	43 Tc (98) T_S = 7.77 K	44 Ru 101.1 T_S = 0.51 K	45 Rh 102.9 T_S = 0.00033 K	46 Pd 106.4 Palladium	47 Ag 107.9 Silver	48 Cd 112.4 T_S = 0.52 K	49 In 114.8 T_S = 3.404 K	50 Sn 118.7 T_S = 3.722 K	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3 T_{BP} = 165.0 K T_{MP} = 161.3 K
55 Cs 132.9	56 Ba 137.3		72 Hf 178.5 T_S = 0.12 K	73 Ta 180.9 T_S = 4.483 K	74 W 183.8 T_S = 0.012 K	75 Re 186.2 T_S = 1.4 K	76 Os 190.2 T_S = 0.655 K	77 Ir 192.2 T_S = 0.14 K	78 Pt 195.1 Platinum	79 Au 197.0 Gold	80 Hg 200.6 (α) T_S = 4.153 K	81 Tl 204.4 T_S = 2.39 K	82 Pb 207.2 T_S = 7.193 K	83 Bi 209.0	84 Po (209) Polonium	85 At (210) Astatine	86 Rn (222) T_{BP} = 211.5 K T_{MP} = 202.2 K
87 Fr (223) Francium	88 Ra (226) Radium		104 Rf (261) Rutherfordium	105 Db (262) Dubnium	106 Sg (266) Seaborgium	107 Bh (264) Bohrium	108 Hs (277) Hassium										

Magnetic standard reference materials

Platinum	χ_{DC}(297 K) = 1.01 x 10^{-6} emu/g·Oe	(NIST SRM #764a)
Palladium	χ_{DC}(298 K) = 5.25 x 10^{-6} emu/g·Oe	(Quantum Design part #4500-658)
Nickel	M_{sat}(298 K, 5000 Oe) = 54.9 emu/g	(NIST SRM #772a)

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M. Brian Maple, University of California, San Diego

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Dedicated to the memory of Bernd Matthias

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
57 La 138.9 (fcc) T_S = 6.00 K	58 Ce 140.1 $T_{N\text{-}hex}$ = 13.7 K	59 Pr 140.9 $T_{N\text{-}hex}$ = 0.03 K	60 Nd 144.2 $T_{N\text{-}hex}$ = 19.9 K $T_{N\text{-}cub}$ = 7.5 K	61 Pm (145) Promethium	62 Sm 150.4 $T_{N\text{-}hex}$ = 109 K $T_{N\text{-}cub}$ = 14.0 K	63 Eu 152.0 $T_{N\text{-}cub}$ = 90.4 K	64 Gd 157.3 T_C = 293 K	65 Tb 158.9 $T_{N\text{-}hex}$ = 230 K T_C = 220 K	66 Dy 162.5 $T_{N\text{-}hex}$ = 180 K T_C = 90.5 K	67 Ho 164.9 $T_{N\text{-}hex}$ = 132 K T_C = 19.5 K	68 Er 167.3 $T_{N\text{-}hex}$ = 85 K T_C = 18.7 K	69 Tm 168.9 $T_{N\text{-}hex}$ = 58 K T_C = 32 K	70 Yb 173.0 Ytterbium	71 Lu 175.0
89 Ac (227) Actinium	90 Th 232.0 T_S = 1.368 K	91 Pa 231.0 T_S = 1.4 K	92 U 238.0 (β) T_S = 0.8 K	93 Np (237) Neptunium	94 Pu (244) Plutonium	95 Am (243) T_S = 0.79 K	96 Cm (247) T_N = 64 K	97 Bk (247) T_N = 34 K	98 Cf (251) T_C = 51 K	99 Es (252) Einsteinium	100 Fm (257) Fermium	101 Md (258) Mendelevium	102 No (259) Nobelium	103 Lr (262) Lawrencium

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