MAGNETIC SUSCEPTIBILITY OF THE ELEMENTS AND INORGANIC COMPOUNDS

When a material is placed in a magnetic field $\boldsymbol{H}$, a magnetization (magnetic moment per unit volume) $\boldsymbol{M}$ is induced in the material which is related to $\boldsymbol{H}$ by $\boldsymbol{M} = \kappa\boldsymbol{H}$, where κ is called the volume susceptibility. Since $\boldsymbol{H}$ and $\boldsymbol{M}$ have the same dimensions, κ is dimensionless. A more useful parameter is the molar susceptibility χ_m , defined by

$$\chi_m = \kappa V_m = \kappa M/\rho$$

where V_m is the molar volume of the substance, M the molar mass, and ρ the mass density. When the cgs system is used, the customary units for χ_m are $cm^3\ mol^{-1}$; the corresponding SI units are $m^3\ mol^{-1}$.

Substances that have no unpaired electron orbital or spin angular momentum generally have negative values of χ_m and are called diamagnetic. Their molar susceptibility varies only slightly with temperature. Substances with unpaired electrons, which are termed paramagnetic, have positive χ_m and show a much stronger temperature dependence, varying roughly as $1/T$. The net susceptibility of a paramagnetic substance is the sum of the paramagnetic and diamagnetic contributions, but the former almost always dominates.

This table gives values of χ_m for the elements and selected inorganic compounds. All values refer to nominal room temperature (285 to 300 K) unless otherwise indicated. When the physical state (s = solid, l = liquid, g = gas, aq = aqueous solution) is not given, the most common crystalline form is understood. An entry of "Ferro." indicates a ferromagnetic substance.

Substances are arranged in alphabetical order by the most common name, except that compounds such as hydrides, oxides, and acids are grouped with the parent element (the same ordering used in the table "Physical Constants of Inorganic Compounds").

In keeping with customary practice, the molar susceptibility is given here in units appropriate to the cgs system. These values should be multiplied by 4π to obtain values for use in SI equations (where the magnetic field strength $\boldsymbol{H}$ has units of $A\ m^{-1}$).

REFERENCES

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3. *Landolt-Börnstein, Numerical Data and Functional Relationships in Science and Technology, New Series*, II/2, II/8, II/10, II/11,and II/12a, *Coordination and Organometallic Transition Metal Compounds*, Springer-Verlag, Heidelberg, 1966-1984.
4. *Tables de Constantes et Données Numérique, Volume 7, Relaxation Paramagnetique*, Masson, Paris, 1957.

Name	Formula	$\chi_m/10^{-6}\ cm^3\ mol^{-1}$	Name	Formula	$\chi_m/10^{-6}\ cm^3\ mol^{-1}$
Aluminum	Al	+16.5	Arsenic (yellow)	As	-23.2
Aluminum trifluoride	AlF_3	-13.9	Arsine (g)	AsH_3	-35.2
Aluminum oxide	Al_2O_3	-37	Arsenic(III) bromide	$AsBr_3$	-106
Aluminum sulfate	$Al_2(SO_4)_3$	-93	Arsenic(III) chloride	$AsCl_3$	-72.5
Ammonia (g)	NH_3	-16.3	Arsenic(III) iodide	AsI_3	-142.2
Ammonia (aq)	NH_3	-18.3	Arsenic(III) oxide	As_2O_3	-30.34
Ammonium acetate	$NH_4C_2H_3O_2$	-41.1	Arsenic(III) sulfide	As_2S_3	-70
Ammonium bromide	NH_4Br	-47	Barium	Ba	+20.6
Ammonium carbonate	$(NH_4)_2CO_3$	-42.5	Barium bromide	$BaBr_2$	-92
Ammonium chlorate	NH_4ClO_3	-42.1	Barium bromide dihydrate	$BaBr_2{\cdot}2H_2O$	-119.3
Ammonium chloride	NH_4Cl	-36.7	Barium carbonate	$BaCO_3$	-58.9
Ammonium fluoride	NH_4F	-23	Barium chloride	$BaCl_2$	-72.6
Ammonium iodate	NH_4IO_3	-62.3	Barium chloride dihydrate	$BaCl_2{\cdot}2H_2O$	-100
Ammonium iodide	NH_4I	-66	Barium fluoride	BaF_2	-51
Ammonium nitrate	NH_4NO_3	-33	Barium hydroxide	$Ba(OH)_2$	-53.2
Ammonium sulfate	$(NH_4)_2SO_4$	-67	Barium iodate	$Ba(IO_3)_2$	-122.5
Ammonium thiocyanate	NH_4SCN	-48.1	Barium iodide	BaI_2	-124.4
Antimony	Sb	-99	Barium iodide dihydrate	$BaI_2{\cdot}2H_2O$	-163
Stibine (g)	SbH_3	-34.6	Barium nitrate	$Ba(NO_3)_2$	-66.5
Antimony(III) bromide	$SbBr_3$	-111.4	Barium oxide	BaO	-29.1
Antimony(III) chloride	$SbCl_3$	-86.7	Barium peroxide	BaO_2	-40.6
Antimony(III) fluoride	SbF_3	-46	Barium sulfate	$BaSO_4$	-65.8
Antimony(III) iodide	SbI_3	-147.2	Beryllium	Be	-9.0
Antimony(III) oxide	Sb_2O_3	-69.4	Beryllium chloride	$BeCl_2$	-26.5
Antimony(III) sulfide	Sb_2S_3	-86	Beryllium hydroxide	$Be(OH)_2$	-23.1
Antimony(V) chloride	$SbCl_5$	-120.5	Beryllium oxide	BeO	-11.9
Argon (g)	Ar	-19.32	Beryllium sulfate	$BeSO_4$	-37
Arsenic (gray)	As	-5.6	Bismuth	Bi	-280.1

MAGNETIC SUSCEPTIBILITY OF THE ELEMENTS AND INORGANIC COMPOUNDS (continued)

Name	Formula	$\chi_m/10^{-6}$ cm^3 mol^{-1}
Bismuth tribromide	$BiBr_3$	-147
Bismuth trichloride	$BiCl_3$	-26.5
Bismuth fluoride	BiF_3	-61.2
Bismuth hydroxide	$Bi(OH)_3$	-65.8
Bismuth triiodide	BiI_3	-200.5
Bismuth nitrate pentahydrate	$Bi(NO_3)_3 \cdot 5H_2O$	-159
Bismuth oxide	Bi_2O_3	-83
Bismuth phosphate	$BiPO_4$	-77
Bismuth sulfate	$Bi_2(SO_4)_3$	-199
Bismuth sulfide	Bi_2S_3	-123
Boron	B	-6.7
Diborane (g)	B_2H_6	-21.0
Boric acid (orthoboric acid)	H_3BO_3	-34.1
Boron trichloride	BCl_3	-59.9
Boron oxide	B_2O_3	-38.7
Bromine (l)	Br_2	-56.4
Bromine (g)	Br_2	-73.5
Bromine trifluoride	BrF_3	-33.9
Bromine pentafluoride	BrF_5	-45.1
Cadmium	Cd	-19.7
Cadmium bromide	$CdBr_2$	-87.3
Cadmium bromide tetrahydrate	$CdBr_2 \cdot 4H_2O$	-131.5
Cadmium carbonate	$CdCO_3$	-46.7
Cadmium chloride	$CdCl_2$	-68.7
Cadmium chromate	$CdCrO_4$	-16.8
Cadmium cyanide	$Cd(CN)_2$	-54
Cadmium fluoride	CdF_2	-40.6
Cadmium hydroxide	$Cd(OH)_2$	-41
Cadmium iodate	$Cd(IO_3)_2$	-108.4
Cadmium iodide	CdI_2	-117.2
Cadmium nitrate	$Cd(NO_3)_2$	-55.1
Cadmium nitrate tetrahydrate	$Cd(NO_3)_2 \cdot 4H_2O$	-140
Cadmium oxide	CdO	-30
Cadmium sulfate	$CdSO_4$	-59.2
Cadmium sulfide	CdS	-50
Calcium	Ca	+40
Calcium bromide	$CaBr_2$	-73.8
Calcium carbonate	$CaCO_3$	-38.2
Calcium chloride	$CaCl_2$	-54.7
Calcium fluoride	CaF_2	-28
Calcium hydroxide	$Ca(OH)_2$	-22
Calcium iodate	$Ca(IO_3)_2$	-101.4
Calcium iodide	CaI_2	-109
Calcium oxide	CaO	-15.0
Calcium sulfate	$CaSO_4$	-49.7
Calcium sulfate dihydrate	$CaSO_4 \cdot 2H_2O$	-74
Carbon (diamond)	C	-5.9
Carbon (graphite)	C	-6.0
Carbon monoxide (g)	CO	-9.8
Carbon dioxide (g)	CO_2	-21.0
Cerium (β)	Ce	+2500
Cerium(II) sulfide	CeS	+2110
Cerium(III) chloride	$CeCl_3$	+2490
Cerium(III) fluoride	CeF_3	+2190
Cerium(III) sulfide	Ce_2S_3	+5080
Cerium(IV) oxide	CeO_2	+26
Cerium(IV) sulfate tetrahydrate	$Ce(SO_4)_2 \cdot 4H_2O$	-97
Cesium	Cs	+29
Cesium bromate	$CsBrO_3$	-75.1
Cesium bromide	CsBr	-67.2
Cesium carbonate	Cs_2CO_3	-103.6
Cesium chlorate	$CsClO_3$	-65
Cesium chloride	CsCl	-56.7
Cesium fluoride	CsF	-44.5
Cesium iodide	CsI	-82.6
Cesium superoxide	CsO_2	+1534
Cesium sulfate	Cs_2SO_4	-116
Chlorine (l)	Cl_2	-40.4
Chlorine trifluoride (g)	ClF_3	-26.5
Chromium	Cr	+167
Chromium(II) chloride	$CrCl_2$	+7230
Chromium(III) chloride	$CrCl_3$	+6350
Chromium(III) fluoride	CrF_3	+4370
Chromium(III) oxide	Cr_2O_3	+1960
Chromium(III) sulfate	$Cr_2(SO_4)_3$	+11800
Chromium(VI) oxide	CrO_3	+40
Cobalt	Co	Ferro.
Cobalt(II) bromide	$CoBr_2$	+13000
Cobalt(II) chloride	$CoCl_2$	+12660
Cobalt(II) chloride hexahydrate	$CoCl_2 \cdot 6H_2O$	+9710
Cobalt(II) cyanide	$Co(CN)_2$	+3825
Cobalt(II) fluoride	CoF_2	+9490
Cobalt(II) iodide	CoI_2	+10760
Cobalt(II) sulfate	$CoSO_4$	+10000
Cobalt(II) sulfide	CoS	+225
Cobalt(II,III) oxide	Co_3O_4	+7380
Cobalt(III) fluoride	CoF_3	+1900
Cobalt(III) oxide	Co_2O_3	+4560
Copper	Cu	-5.46
Copper(I) bromide	CuBr	-49
Copper(I) chloride	CuCl	-40
Copper(I) cyanide	CuCN	-24
Copper(I) iodide	CuI	-63
Copper(I) oxide	Cu_2O	-20
Copper(II) bromide	$CuBr_2$	+685
Copper(II) chloride	$CuCl_2$	+1080
Copper(II) chloride dihydrate	$CuCl_2 \cdot 2H_2O$	+1420
Copper(II) fluoride	CuF_2	+1050
Copper(II) fluoride dihydrate	$CuF_2 \cdot 2H_2O$	+1600
Copper(II) hydroxide	$Cu(OH)_2$	+1170
Copper(II) nitrate trihydrate	$Cu(NO_3)_2 \cdot 3H_2O$	+1570
Copper(II) nitrate hexahydrate	$Cu(NO_3)_2 \cdot 6H_2O$	+1625
Copper(II) oxide	CuO	+238
Copper(II) sulfate	$CuSO_4$	+1330
Copper(II) sulfate pentahydrate	$CuSO_4 \cdot 5H_2O$	+1460
Copper(II) sulfide	CuS	-2.0
Dysprosium (α)	Dy	+98000
Dysprosium(III) oxide	Dy_2O_3	+89600
Dysprosium(III) sulfide	Dy_2S_3	+95200
Erbium	Er	+48000
Erbium oxide	Er_2O_3	+73920
Erbium sulfate octahydrate	$Er_2(SO_4)_3 \cdot 8H_2O$	+74600
Erbium sulfide	Er_2S_3	+77200

MAGNETIC SUSCEPTIBILITY OF THE ELEMENTS AND INORGANIC COMPOUNDS (continued)

Name	Formula	$\chi_m/10^{-6}$ cm^3 mol^{-1}
Europium	Eu	+30900
Europium(II) bromide	$EuBr_2$	+26800
Europium(II) chloride	$EuCl_2$	+26500
Europium(II) fluoride	EuF_2	+23750
Europium(II) iodide	EuI_2	+26000
Europium(II) sulfide	EuS	+23800
Europium(III) oxide	Eu_2O_3	+10100
Europium(III) sulfate	$Eu_2(SO_4)_3$	+10400
Gadolinium (350 K)	Gd	+185000
Gadolinium(III) chloride	$GdCl_3$	+27930
Gadolinium(III) oxide	Gd_2O_3	+53200
Gadolinium(III) sulfate octahydrate	$Gd_2(SO_4)_3 \cdot 8H_2O$	+53280
Gadolinium(III) sulfide	Gd_2S_3	+55500
Gallium	Ga	-21.6
Gallium suboxide	Ga_2O	-34
Gallium(II) sulfide	GaS	-23
Gallium(III) chloride	$GaCl_3$	-63
Gallium(III) sulfide	Ga_2S_3	-80
Germanium	Ge	-11.6
Germane (g)	GeH_4	-29.7
Germanium(II) oxide	GeO	-28.8
Germanium(II) sulfide	GeS	-40.9
Germanium(IV) chloride	$GeCl_4$	-72
Germanium(IV) fluoride	GeF_4	-50
Germanium(IV) iodide	GeI_4	-171
Germanium(IV) oxide	GeO_2	-34.3
Germanium(IV) sulfide	GeS_2	-53.9
Gold	Au	-28
Gold(I) bromide	AuBr	-61
Gold(I) chloride	AuCl	-67
Gold(I) iodide	AuI	-91
Gold(III) chloride	$AuCl_3$	-112
Hafnium	Hf	+71
Hafnium oxide	HfO_2	-23
Helium (g)	He	-2.02
Holmium	Ho	+72900
Holmium oxide	Ho_2O_3	+88100
Hydrazine (l)	N_2H_4	-201
Hydrogen (l, 20.3 K)	H_2	-5.44
Hydrogen (g)	H_2	-3.99
Hydrogen chloride (l)	HCl	-22.6
Hydrogen chloride (aq)	HCl	-22
Hydrogen fluoride (l)	HF	-8.6
Hydrogen fluoride (aq)	HF	-9.3
Hydrogen iodide (s, 195 K)	HI	-47.3
Hydrogen iodide (l, 233 K)	HI	-48.3
Hydrogen iodide (aq)	HI	-50.2
Hydrogen peroxide (l)	H_2O_2	-17.3
Hydrogen sulfide (g)	H_2S	-25.5
Indium	In	-10.2
Indium(I) chloride	InCl	-30
Indium(II) chloride	$InCl_2$	-56
Indium(II) sulfide	InS	-28
Indium(III) bromide	$InBr_3$	-107
Indium(III) chloride	$InCl_3$	-86
Indium(III) oxide	In_2O_3	-56
Indium(III) sulfide	In_2S_3	-98
Iodine	I_2	-90
Iodic acid	HIO_3	-48
Iodine pentoxide	I_2O_5	-79.4
Iodine chloride	ICl	-54.6
Iodine trichloride	ICl_3	-90.2
Iodine pentafluoride	IF_5	-58.1
Iridium	Ir	+25
Iridium(III) chloride	$IrCl_3$	-14.4
Iridium(IV) oxide	IrO_2	+224
Iron	Fe	Ferro.
Iron(II) bromide	$FeBr_2$	+13600
Iron(II) carbonate	$FeCO_3$	+11300
Iron(II) chloride	$FeCl_2$	+14750
Iron(II) chloride tetrahydrate	$FeCl_2 \cdot 4H_2O$	+12900
Iron(II) fluoride	FeF_2	+9500
Iron(II) iodide	FeI_2	+13600
Iron(II) oxide	FeO	+7200
Iron(II) sulfate	$FeSO_4$	+12400
Iron(II) sulfate monohydrate	$FeSO_4 \cdot H_2O$	+10500
Iron(II) sulfate heptahydrate	$FeSO_4 \cdot 7H_2O$	+11200
Iron(II) sulfide	FeS	+1074
Iron(III) chloride	$FeCl_3$	+13450
Iron(III) chloride hexahydrate	$FeCl_3 \cdot 6H_2O$	+15250
Iron(III) fluoride	FeF_3	+13760
Iron(III) fluoride trihydrate	$FeF_3 \cdot 3H_2O$	+7870
Iron(III) nitrate nonahydrate	$Fe(NO_3)_3 \cdot 9H_2O$	+15200
Krypton (g)	Kr	-29.0
Lanthanum (α)	La	+95.9
Lanthanum oxide	La_2O_3	-78
Lanthanum sulfate nonahydrate	$La_2(SO_4)_3 \cdot 9H_2O$	-262
Lanthanum sulfide	La_2S_3	-37
Lead	Pb	-23
Lead(II) acetate	$Pb(C_2H_3O_2)_2$	-89.1
Lead(II) bromide	$PbBr_2$	-90.6
Lead(II) carbonate	$PbCO_3$	-61.2
Lead(II) chloride	$PbCl_2$	-73.8
Lead(II) chromate	$PbCrO_4$	-18
Lead(II) fluoride	PbF_2	-58.1
Lead(II) iodate	$Pb(IO_3)_2$	-131
Lead(II) iodide	PbI_2	-126.5
Lead(II) nitrate	$Pb(NO_3)_2$	-74
Lead(II) oxide	PbO	-42
Lead(II) phosphate	$Pb_3(PO_4)_2$	-182
Lead(II) sulfate	$PbSO_4$	-69.7
Lead(II) sulfide	PbS	-83.6
Lithium	Li	+14.2
Lithium bromide	LiBr	-34.3
Lithium carbonate	Li_2CO_3	-27
Lithium chloride	LiCl	-24.3
Lithium fluoride	LiF	-10.1
Lithium hydride	LiH	-4.6
Lithium hydroxide (aq)	LiOH	-12.3
Lithium iodide	LiI	-50
Lithium sulfate	Li_2SO_4	-41.6
Lutetium	Lu	+182.9
Magnesium	Mg	+13.1
Magnesium bromide	$MgBr_2$	-72
Magnesium carbonate	$MgCO_3$	-32.4
Magnesium chloride	$MgCl_2$	-47.4

MAGNETIC SUSCEPTIBILITY OF THE ELEMENTS AND INORGANIC COMPOUNDS (continued)

Name	Formula	$\chi_m/10^{-6}$ cm^3 mol^{-1}
Magnesium fluoride	MgF_2	-22.7
Magnesium hydroxide	$Mg(OH)_2$	-22.1
Magnesium iodide	MgI_2	-111
Magnesium oxide	MgO	-10.2
Magnesium sulfate	$MgSO_4$	-42
Magnesium sulfate monohydrate	$MgSO_4 \cdot H_2O$	-61
Magnesium sulfate heptahydrate	$MgSO_4 \cdot 7H_2O$	-135.7
Manganese	Mn	+511
Manganese(II) bromide	$MnBr_2$	+13900
Manganese(II) carbonate	$MnCO_3$	+11400
Manganese(II) chloride	$MnCl_2$	+14350
Manganese(II) chloride tetrahydrate	$MnCl_2 \cdot 4H_2O$	+14600
Manganese(II) fluoride	MnF_2	+10700
Manganese(II) hydroxide	$Mn(OH)_2$	+13500
Manganese(II) iodide	MnI_2	+14400
Manganese(II) oxide	MnO	+4850
Manganese(II) sulfate	$MnSO_4$	+13660
Manganese(II) sulfate monohydrate	$MnSO_4 \cdot H_2O$	+14200
Manganese(II) sulfate tetrahydrate	$MnSO_4 \cdot 4H_2O$	+14600
Manganese(II) sulfide (α form)	MnS	+5630
Manganese(II) sulfide (β form)	MnS	+3850
Manganese(II,III) oxide	Mn_3O_4	+12400
Manganese(III) fluoride	MnF_3	+10500
Manganese(III) oxide	Mn_2O_3	+14100
Manganese(IV) oxide	MnO_2	+2280
Mercury (s, 234 K)	Hg	-24.1
Mercury (l)	Hg	-33.5
Mercury(I) bromide	Hg_2Br_2	-105
Mercury(I) chloride	Hg_2Cl_2	-120
Mercury(I) fluoride	Hg_2F_2	-106
Mercury(I) iodide	Hg_2I_2	-166
Mercury(I) nitrate	$Hg_2(NO_3)_2$	-121
Mercury(I) oxide	Hg_2O	-76.3
Mercury(I) sulfate	Hg_2SO_4	-123
Mercury(II) bromide	$HgBr_2$	-94.2
Mercury(II) chloride	$HgCl_2$	-82
Mercury(II) cyanide	$Hg(CN)_2$	-67
Mercury(II) fluoride	HgF_2	-57.3
Mercury(II) iodide	HgI_2	-165
Mercury(II) nitrate	$Hg(NO_3)_2$	-74
Mercury(II) oxide	HgO	-46
Mercury(II) sulfate	$HgSO_4$	-78.1
Mercury(II) sulfide	HgS	-55.4
Mercury(II) thiocyanate	$Hg(SCN)_2$	-96.5
Molybdenum	Mo	+72
Molybdenum(III) bromide	$MoBr_3$	+525
Molybdenum(III) chloride	$MoCl_3$	+43
Molybdenum(III) oxide	Mo_2O_3	-42.0
Molybdenum(IV) bromide	$MoBr_4$	+520
Molybdenum(IV) chloride	$MoCl_4$	+1750
Molybdenum(IV) oxide	MoO_2	+41
Molybdenum(V) chloride	$MoCl_5$	+990
Molybdenum(VI) fluoride	MoF_6	-26.0
Molybdenum(VI) oxide	MoO_3	+3
Neodymium (α)	Nd	+5930
Neodymium fluoride	NdF_3	+4980
Neodymium oxide	Nd_2O_3	+10200
Neodymium sulfate	$Nd_2(SO_4)_3$	+9990
Neodymium sulfide	Nd_2S_3	+5550
Neon (g)	Ne	-6.96
Neptunium	Np	+575
Nickel	Ni	Ferro.
Nickel(II) bromide	$NiBr_2$	+5600
Nickel(II) chloride	$NiCl_2$	+6145
Nickel(II) chloride hexahydrate	$NiCl_2 \cdot 6H_2O$	+4240
Nickel(II) fluoride	NiF_2	+2410
Nickel(II) hydroxide	$Ni(OH)_2$	+4500
Nickel(II) iodide	NiI_2	+3875
Nickel(II) nitrate hexahydrate	$Ni(NO_3)_2 \cdot 6H_2O$	+4300
Nickel(II) oxide	NiO	+660
Nickel(II) sulfate	$NiSO_4$	+4005
Nickel(II) sulfide	NiS	+190
Nickel(III) sulfide	Ni_3S_2	+1030
Niobium	Nb	+208
Niobium(V) oxide	Nb_2O_5	-10
Nitrogen (g)	N_2	-12.0
Nitric acid (l)	HNO_3	-19.9
Nitrous oxide (g)	N_2O	-18.9
Nitric oxide (s, 90 K)	NO	+19.8
Nitric oxide (l, 118 K)	NO	+114.2
Nitric oxide (g)	NO	+1461
Nitrogen dioxide (g, 408 K)	NO_2	+150
Nitrogen trioxide (g)	N_2O_3	-16
Nitrogen tetroxide (g)	N_2O_4	-23.0
Osmium	Os	+11
Oxygen (s, 54 K)	O_2	+10200
Oxygen (l, 90 K)	O_2	+7699
Oxygen (g)	O_2	+3449
Ozone (l)	O_3	+6.7
Palladium	Pd	+540
Palladium(II) chloride	$PdCl_2$	-38
Phosphorus (white)	P	-26.66
Phosphorus (red)	P	-20.77
Phosphine (g)	PH_3	-26.2
Phosphoric acid (aq)	H_3PO_4	-43.8
Phosphorous acid (aq)	H_3PO_3	-42.5
Phosphorus(III) chloride (l)	PCl_3	-63.4
Platinum	Pt	+193
Platinum(II) chloride	$PtCl_2$	-54
Platinum(III) chloride	$PtCl_3$	-66.7
Platinum(IV) chloride	$PtCl_4$	-93
Platinum(IV) fluoride	PtF_4	+445
Plutonium	Pu	+525
Plutonium(IV) fluoride	PuF_4	+1760
Plutonium(IV) oxide	PuO_2	+730
Plutonium(VI) fluoride	PuF_6	+173
Potassium	K	+20.8
Potassium bromate	$KBrO_3$	-52.6
Potassium bromide	KBr	-49.1
Potassium carbonate	K_2CO_3	-59

MAGNETIC SUSCEPTIBILITY OF THE ELEMENTS AND INORGANIC COMPOUNDS (continued)

Name	Formula	$\chi_m/10^{-6}$ cm^3 mol^{-1}
Potassium chlorate	$KClO_3$	-42.8
Potassium chloride	KCl	-38.8
Potassium chromate	K_2CrO_4	-3.9
Potassium cyanide	KCN	-37
Potassium ferricyanide	$K_3Fe(CN)_6$	+2290
Potassium ferrocyanide trihydrate	$K_4Fe(CN)_6 \cdot 3H_2O$	-172.3
Potassium fluoride	KF	-23.6
Potassium hydrogen sulfate	$KHSO_4$	-49.8
Potassium hydroxide (aq)	KOH	-22
Potassium iodate	KIO_3	-63.1
Potassium iodide	KI	-63.8
Potassium nitrate	KNO_3	-33.7
Potassium nitrite	KNO_2	-23.3
Potassium permanganate	$KMnO_4$	+20
Potassium sulfate	K_2SO_4	-67
Potassium sulfide	K_2S	-60
Potassium superoxide	KO_2	+3230
Potassium thiocyanate	KSCN	-48
Praseodymium (α)	Pr	+5530
Praseodymium chloride	$PrCl_3$	+44.5
Praseodymium oxide	Pr_2O_3	+8994
Praseodymium sulfide	Pr_2S_3	+10770
Protactinium	Pa	+277
Rhenium	Re	+67
Rhenium(IV) oxide	ReO_2	+44
Rhenium(IV) sulfide	ReS_2	+38
Rhenium(V) chloride	$ReCl_5$	+1225
Rhenium(VI) oxide	ReO_3	+16
Rhenium(VII) oxide	Re_2O_7	-16
Rhodium	Rh	+102
Rhodium(III) chloride	$RhCl_3$	-7.5
Rhodium(III) oxide	Rh_2O_3	+104
Rubidium	Rb	+17
Rubidium bromide	RbBr	-56.4
Rubidium carbonate	Rb_2CO_3	-75.4
Rubidium chloride	RbCl	-46
Rubidium fluoride	RbF	-31.9
Rubidium iodide	RbI	-72.2
Rubidium nitrate	$RbNO_3$	-41
Rubidium sulfate	Rb_2SO_4	-88.4
Rubidium superoxide	RbO_2	+1527
Ruthenium	Ru	+39
Ruthenium(III) chloride	$RuCl_3$	+1998
Ruthenium(IV) oxide	RuO_2	+162
Samarium (α)	Sm	+1278
Samarium(II) bromide	$SmBr_2$	+5337
Samarium(III) bromide	$SmBr_3$	+972
Samarium(III) oxide	Sm_2O_3	+1988
Samarium(III) sulfate octahydrate	$Sm_2(SO_4)_3 \cdot 8H_2O$	+1710
Samarium(III) sulfide	Sm_2S_3	+3300
Scandium (α)	Sc	+295.2
Selenium	Se	-25
Selenium dioxide	SeO_2	-27.2
Selenium bromide	Se_2Br_2	-113
Selenium chloride (l)	Se_2Cl_2	-94.8
Selenium hexafluoride (g)	SeF_6	-51
Silicon	Si	-3.12
Silane (g)	SiH_4	-20.4
Disilane (g)	Si_2H_6	-37.3
Tetramethylsilane (l)	$(CH_3)_4Si$	-74.80
Tetraethylsilane (l)	$(C_2H_5)_4Si$	-120.2
Tetrabromosilane (l)	$SiBr_4$	-126
Tetrachlorosilane (l)	$SiCl_4$	-87.5
Silicon carbide	SiC	-12.8
Silicon dioxide	SiO_2	-29.6
Silver	Ag	-19.5
Silver(I) bromide	AgBr	-61
Silver(I) carbonate	Ag_2CO_3	-80.90
Silver(I) chloride	AgCl	-49
Silver(I) chromate	Ag_2CrO_4	-40
Silver(I) cyanide	AgCN	-43.2
Silver(I) fluoride	AgF	-36.5
Silver(I) iodide	AgI	-80
Silver(I) nitrate	$AgNO_3$	-45.7
Silver(I) nitrite	$AgNO_2$	-42
Silver(I) oxide	Ag_2O	-134
Silver(I) phosphate	Ag_3PO_4	-120
Silver(I) sulfate	Ag_2SO_4	-92.90
Silver(I) thiocyanate	AgSCN	-61.8
Silver(II) oxide	AgO	-19.6
Sodium	Na	+16
Sodium acetate	$NaC_2H_3O_2$	-37.6
Sodium bromate	$NaBrO_3$	-44.2
Sodium bromide	NaBr	-41
Sodium carbonate	Na_2CO_3	-41
Sodium chlorate	$NaClO_3$	-34.7
Sodium chloride	NaCl	-30.2
Sodium dichromate	$Na_2Cr_2O_7$	+55
Sodium fluoride	NaF	-15.6
Sodium hydrogen phosphate	Na_2HPO_4	-56.6
Sodium hydroxide (aq)	NaOH	-15.8
Sodium iodate	$NaIO_3$	-53
Sodium iodide	NaI	-57
Sodium nitrate	$NaNO_3$	-25.6
Sodium nitrite	$NaNO_2$	-14.5
Sodium oxide	Na_2O	-19.8
Sodium peroxide	Na_2O_2	-28.10
Sodium sulfate	Na_2SO_4	-52
Sodium sulfate decahydrate	$Na_2SO_4 \cdot 10H_2O$	-184
Sodium sulfide	Na_2S	-39
Sodium tetraborate	$Na_2B_4O_7$	-85
Strontium	Sr	+92
Strontium bromide	$SrBr_2$	-86.6
Strontium bromide hexahydrate	$SrBr_2 \cdot 6H_2O$	-160
Strontium carbonate	$SrCO_3$	-47
Strontium chlorate	$Sr(ClO_3)_2$	-73
Strontium chloride	$SrCl_2$	-61.5
Strontium chloride hexahydrate	$SrCl_2 \cdot 6H_2O$	-145
Strontium chromate	$SrCrO_4$	-5.1
Strontium fluoride	SrF_2	-37.2
Strontium hydroxide	$Sr(OH)_2$	-40
Strontium iodate	$Sr(IO_3)_2$	-108
Strontium iodide	SrI_2	-112
Strontium nitrate	$Sr(NO_3)_2$	-57.2

MAGNETIC SUSCEPTIBILITY OF THE ELEMENTS AND INORGANIC COMPOUNDS (continued)

Name	Formula	$\chi_m/10^{-6}$ cm^3 mol^{-1}
Strontium oxide	SrO	-35
Strontium peroxide	SrO_2	-32.3
Strontium sulfate	$SrSO_4$	-57.9
Sulfur (rhombic)	S	-15.5
Sulfur (monoclinic)	S	-14.9
Sulfuric acid (l)	H_2SO_4	-39
Sulfur dioxide (g)	SO_2	-18.2
Sulfur trioxide (l)	SO_3	-28.54
Sulfur chloride (l)	$SSCl_2$	-62.2
Sulfur dichloride (l)	SCl_2	-49.4
Sulfur hexafluoride (g)	SF_6	-44
Thionyl chloride (l)	$SOCl_2$	-44.3
Tantalum	Ta	+154
Tantalum(V) chloride	$TaCl_5$	+140
Tantalum(V) oxide	Ta_2O_5	-32
Technetium	Tc	+115
Tellurium	Te	-38
Tellurium dibromide	$TeBr_2$	-106
Tellurium dichloride	$TeCl_2$	-94
Tellurium hexafluoride (g)	TeF_6	-66
Terbium (α)	Tb	+170000
Terbium oxide	Tb_2O_3	+78340
Thallium	Tl	-50
Thallium(I) bromate	$TlBrO_3$	-75.9
Thallium(I) bromide	$TlBr$	-63.9
Thallium(I) carbonate	Tl_2CO_3	-101.6
Thallium(I) chlorate	$TlClO_3$	-65.5
Thallium(I) chloride	$TlCl$	-57.8
Thallium(I) chromate	Tl_2CrO_4	-39.3
Thallium(I) cyanide	$TlCN$	-49
Thallium(I) fluoride	TlF	-44.4
Thallium(I) iodate	$TlIO_3$	-86.8
Thallium(I) iodide	TlI	-82.2
Thallium(I) nitrate	$TlNO_3$	-56.5
Thallium(I) nitrite	$TlNO_2$	-50.8
Thallium(I) sulfate	Tl_2SO_4	-112.6
Thallium(I) sulfide	Tl_2S	-88.8
Thorium	Th	+97
Thorium(IV) oxide	ThO_2	-16
Thulium	Tm	+24700
Thulium oxide	Tm_2O_3	+51444
Tin (gray)	Sn	-37.4
Tin(II) chloride	$SnCl_2$	-69
Tin(II) chloride dihydrate	$SnCl_2{\cdot}2H_2O$	-91.4
Tin(II) oxide	SnO	-19
Tin(IV) bromide	$SnBr_4$	-149
Tin(IV) chloride (l)	$SnCl_4$	-115
Tin(IV) oxide	SnO_2	-41
Titanium	Ti	+151
Titanium(II) bromide	$TiBr_2$	+720
Titanium(II) chloride	$TiCl_2$	+484
Titanium(II) iodide	TiI_2	+1790
Titanium(II) sulfide	TiS	+432
Titanium(III) bromide	$TiBr_3$	+660
Titanium(III) chloride	$TiCl_3$	+1110
Titanium(III) fluoride	TiF_3	+1300
Titanium(III) oxide	Ti_2O_3	+132
Titanium(IV) chloride	$TiCl_4$	-54
Titanium(IV) oxide	TiO_2	+5.9
Tungsten	W	+53
Tungsten carbide	WC	+10
Tungsten(II) chloride	WCl_2	-25
Tungsten(IV) oxide	WO_2	+57
Tungsten(IV) sulfide	WS_2	+5850
Tungsten(V) bromide	WBr_5	+270
Tungsten(V) chloride	WCl_5	+387
Tungsten(VI) chloride	WCl_6	-71
Tungsten(VI) fluoride (g)	WF_6	-53
Tungsten(VI) oxide	WO_3	-15.8
Uranium	U	+409
Uranium(III) bromide	UBr_3	+4740
Uranium(III) chloride	UCl_3	+3460
Uranium(III) hydride	UH_3	+6244
Uranium(III) iodide	UI_3	+4460
Uranium(IV) bromide	UBr_4	+3530
Uranium(IV) chloride	UCl_4	+3680
Uranium(IV) fluoride	UF_4	+3530
Uranium(IV) oxide	UO_2	+2360
Uranium(VI) fluoride	UF_6	+43
Uranium(VI) oxide	UO_3	+128
Vanadium	V	+285
Vanadium(II) bromide	VBr_2	+3230
Vanadium(II) chloride	VCl_2	+2410
Vanadium(III) bromide	VBr_3	+2910
Vanadium(III) chloride	VCl_3	+3030
Vanadium(III) fluoride	VF_3	+2757
Vanadium(III) oxide	V_2O_3	+1976
Vanadium(III) sulfide	V_2S_3	+1560
Vanadium(IV) chloride	VCl_4	+1215
Vanadium(IV) oxide	VO_2	+99
Vanadium(V) oxide	V_2O_5	+128
Water (s, 273 K)	H_2O	-12.63
Water (l, 293 K)	H_2O	-12.96
Water (l, 373 K)	H_2O	-13.09
Water (g, 373 K))	H_2O	-13.1
Xenon (g)	Xe	-45.5
Ytterbium (β)	Yb	+67
Yttrium (α)	Y	+187.7
Yttrium oxide	Y_2O_3	+44.4
Yttrium sulfide	Y_2S_3	+100
Zinc	Zn	-9.15
Zinc carbonate	$ZnCO_3$	-34
Zinc chloride	$ZnCl_2$	-55.33
Zinc cyanide	$Zn(CN)_2$	-46
Zinc fluoride	ZnF_2	-34.3
Zinc hydroxide	$Zn(OH)_2$	-67
Zinc iodide	ZnI_2	-108
Zinc oxide	ZnO	-27.2
Zinc phosphate	$Zn_3(PO_4)_2$	-141
Zinc sulfate	$ZnSO_4$	-47.8
Zinc sulfate monohydrate	$ZnSO_4{\cdot}H_2O$	-63
Zinc sulfate heptahydrate	$ZnSO_4{\cdot}7H_2O$	-138
Zinc sulfide	ZnS	-25
Zirconium	Zr	+120
Zirconium carbide	ZrC	-26
Zirconium nitrate pentahydrate	$Zr(NO_3)_4{\cdot}5H_2O$	-77
Zirconium(IV) oxide	ZrO_2	-13.8