ภาคผนวก

ตารางที่ 1 ตารางธาตุ

ตารางที่ 2 น้ำหนักของอะตอมของธาตุต่าง ๆ

Element	*Symbol*	*Atomic Number*	*Atomic Weight*	*Element*	*Symbol*	*Atomic Number*	*Atomic Weight*
Actinium	Ac	89	227.0278	Molybdenum	Mo	42	95.94[b]
Aluminum	Al	13	26.98154	Neodymium	Nd	60	144.24 ± 3[b]
Amencium	Am	95	(243)	Neon	Ne	10	20.179[b]
Antimony	Sb	51	121.75 ± 3	Neptunium	Np	93	237.0482
Argon	Ar	18	39.948[b,c]	Nickel	Ni	28	58.69
Arsenic	As	33	74.9216	Niobium	Nb	41	92.9064
Astatine	At	85	(210)	Nitrogen	N	7	14.0067
Barium	Ba	56	137.33[b]	Nobelium	No	102	(259)
Berkelium	Bk	97	(247)	Osmium	Os	76	190.2[b]
Beryllium	Be	4	9.01218	Oxygen	O	8	15.9994 ± 3
Bismuth	Bi	83	208.9804	Palladium	Pd	46	106.42[b]
Boron	B	5	10.81[g]	Phosphorus	P	15	30.97376
Bromine	Br	35	79.904	Platinum	Pt	78	195.08 ± 3
Cadmium	Cd	48	112.41[b]	Plutonium	Pu	94	(244)
Calcium	Ca	20	40.08[b]	Polonium	Po	84	(209)
Californium	Cf	98	(251)	Potassium	K	19	39.0983
Carbon	C	6	12.011[g]	Praseodymium	Pr	59	140.9077
Cerium	Ce	58	140.12[b]	Promethium	Pm	61	(145)
Cesium	Cs	55	132.9054	Protoactinium	Pa	91	231.0359
Chlorine	Cl	17	35.453	Radium	Ra	88	226.0254[b]
Chromium	Cr	24	51.996	Radon	Rn	86	(222)
Cobalt	Co	27	58.9332	Rhenium	Re	75	186.207
Copper	Cu	29	63.546 ± 3[b]	Rhodium	Rh	45	102.9055
Curium	Cm	96	(247)	Rubidium	Rb	37	85.4678 ± 3
Dysprosium	Dy	66	162.50 ± 3	Ruthenium	Ru	44	101.07 ± 3[b]
Einsteinium	Es	99	(252)	Samarium	Sm	62	150.36 ± 3[b]
Erbium	Er	68	167.26 ± 3	Scandium	Sc	21	44.9559
Europium	Eu	63	151.96[b]	Selenium	Se	34	78.96 ± 3
Fermium	Fm	100	(257)	Silicon	Si	14	28.0855 ± 3
Fluorine	F	9	18.998403	Silver	Ag	47	107.8682 ± 3
Francium	Fr	87	(223)	Sodium	Na	11	22.98977
Gadolinium	Gd	64	157.25 ± 3[b]	Strontium	Sr	38	87.62[b]
Gallium	Ga	31	69.72	Sulfur	S	16	32.06[g]
Germanium	Ge	32	72.59 ± 3	Tantalum	Ta	73	180.9479
Gold	Au	79	196.9665	Technetium	Tc	43	(98)
Hafnium	Hf	72	178.49 ± 3	Tellurium	Te	52	127.60 ± 3[b]
Helium	He	2	4.00260[b]	Terbium	Tb	65	158.9254
Holmium	Ho	67	164.9304	Thallium	Tl	81	204.383
Hydrogen	H	1	1.00794 ± 7[b,e]	Thorium	Th	90	232.0381[b]
Indium	In	49	114.82[b]	Thulium	Tm	69	168.9342
Iodine	I	53	126.9045	Tin	Sn	50	118.69 ± 3
Iridium	Ir	77	192.22 ± 3	Titanium	Ti	22	47.88 ± 3
Iron	Fe	26	55.847 ± 3	Tungsten	W	74	183.85 ± 3
Krypton	Kr	36	83.80[b]	Unnilhexium	Unh	106	(263)
Lanthanum	La	57	138.9055 ± 3[a]	Unnilpentium	Unp	105	(262)
Lawrencium	Lr	103	(260)	Unnilquadium	Unq	104	(261)
Lead	Pb	82	207.2[b,c]	Uranium	U	92	238.0289[b]
Lithium	Li	3	6.941 ± 3[b,e]	Vanadium	V	23	50.9415
Lutetium	Lu	71	174.967	Xenon	Xe	54	131.29 ± 3[b]
Magnesium	Mg	12	24.305[b]	Ytterbium	Yb	70	173.04 ± 3
Manganese	Mn	25	54.9380	Yttrium	Y	39	88.9059
Mendelevium	Md	101	(258)	Zinc	Zn	30	65.38
Mercury	Hg	80	200.59 ± 3	Zirconium	Zr	40	91.22[b]

ตารางที่ 3 โครงสร้างอีเล็คตรอนของอะตอมและเทอมสัญลักษณ์

Element	Configuration	Term	Element	Configuration	Term
H	$1s^1$	^2S	I	$[Kr]4d^{10}5s^25p^5$	^2P
He	$1s^2$	^1S	Xe	$[Kr]4d^{10}5s^25p^6$	^1S
Li	$[He]2s^1$	^2S	Cs	$[Xe]6s^1$	^2S
Be	$[He]2s^2$	^1S	Ba	$[Xe]6s^2$	^1S
B	$[He]2s^22p^1$	^2P	La	$[Xe]5d^16s^2$	^2D
C	$[He]2s^22p^2$	^3P	Ce	$[Xe]4f^15d^16s^2$	^3H
N	$[He]2s^22p^3$	^4S	Pr	$[Xe]4f^36s^2$	^4I
O	$[He]2s^22p^4$	^3P	Nd	$[Xe]4f^46s^2$	^5I
F	$[He]2s^22p^5$	^2P	Pm	$[Xe]4f^56s^2$	^6H
Ne	$[He]2s^22p^6$	^1S	Sm	$[Xe]4f^66s^2$	^7F
Na	$[Ne]3s^1$	^2S	Eu	$[Xe]4f^76s^2$	^8S
Mg	$[Ne]3s^2$	^1S	Gd	$[Xe]4f^75d^16s^2$	^9D
Al	$[Ne]3s^23p^1$	^2P	Tb	$[Xe]4f^96s^2$	^6H
Si	$[Ne]3s^23p^2$	^3P	Dy	$[Xe]4f^{10}6s^2$	^5I
P	$[Ne]3s^23p^3$	^4S	Ho	$[Xe]4f^{11}6s^2$	^4I
S	$[Ne]3s^23p^4$	^3P	Er	$[Xe]4f^{12}6s^2$	^3H
Cl	$[Ne]3s^23p^5$	^2P	Tm	$[Xe]4f^{13}6s^2$	^2F
Ar	$[Ne]3s^23p^6$	^1S	Yb	$[Xe]4f^{14}6s^2$	^1S
K	$[Ar]4s^1$	^2S	Lu	$[Xe]4f^{14}5d^16s^2$	^2D
Ca	$[Ar]4s^2$	^1S	Hf	$[Xe]4f^{14}5d^26s^2$	^3F
Sc	$[Ar]3d^14s^2$	^2D	Ta	$[Xe]4f^{14}5d^36s^2$	^4F
Ti	$[Ar]3d^24s^2$	^3F	W	$[Xe]4f^{14}5d^46s^2$	^5D
V	$[Ar]3d^34s^2$	^4F	Re	$[Xe]4f^{14}5d^56s^2$	^6S
Cr	$[Ar]3d^54s^1$	^7S	Os	$[Xe]4f^{14}5d^66s^2$	^5D
Mn	$[Ar]3d^54s^2$	^6S	Ir	$[Xe]4f^{14}5d^76s^2$	^4F
Fe	$[Ar]3d^64s^2$	^5D	Pt	$[Xe]4f^{14}5d^96s^1$	^3D
Co	$[Ar]3d^74s^2$	^4F	Au	$[Xe]4f^{14}5d^{10}6s^1$	^2S
Ni	$[Ar]3d^84s^2$	^3F	Hg	$[Xe]4f^{14}5d^{10}6s^2$	^1S
Cu	$[Ar]3d^{10}4s^1$	^2S	Tl	$[Xe]4f^{14}5d^{10}6s^26p^1$	^2P
Zn	$[Ar]3d^{10}4s^2$	^1S	Pb	$[Xe]4f^{14}5d^{10}6s^26p^2$	^3P
Ga	$[Ar]3d^{10}4s^24p^1$	^2P	Bi	$[Xe]4f^{14}5d^{10}6s^26p^3$	^4S
Ge	$[Ar]3d^{10}4s^24p^2$	^3P	Po	$[Xe]4f^{14}5d^{10}6s^26p^4$	^3P
As	$[Ar]3d^{10}4s^24p^3$	^4S	At	$[Xe]4f^{14}5d^{10}6s^26p^5$	^2P
Se	$[Ar]3d^{10}4s^24p^4$	^3P	Rn	$[Xe]4f^{14}5d^{10}6s^26p^6$	^1S
Br	$[Ar]3d^{10}4s^24p^5$	^2P	Fr	$[Rn]7s^1$	^2S
Kr	$[Ar]3d^{10}4s^24p^6$	^1S	Ra	$[Rn]7s^2$	^1S
Rb	$[Kr]5s^1$	^2S	Ac	$[Rn]6d^17s^2$	^2D
Sr	$[Kr]5s^2$	^1S	Th	$[Rn]6d^27s^2$	^3F
Y	$[Kr]4d^15s^2$	^2D	Pa	$[Rn]5f^26d^17s^2$	^4K
Zr	$[Kr]4d^25s^2$	^3F	U	$[Rn]5f^36d^17s^2$	^5L
Nb	$[Kr]4d^45s^1$	^6D	Np	$[Rn]5f^46d^17s^2$	^6L
Mo	$[Kr]4d^55s^1$	^7S	Pu	$[Rn]5f^67s^2$	^7F
Tc	$[Kr]4d^55s^2$	^6S	Am	$[Rn]5f^77s^2$	^8S
Ru	$[Kr]4d^75s^1$	^5F	Cm	$[Rn]5f^76d^17s^2$	^9D
Rh	$[Kr]4d^85s^1$	^4F	Bk	$[Rn]5f^97s^2$	^6H
Pd	$[Kr]4d^{10}$	^1S	Cf	$[Rn]5f^{10}7s^2$	^5I
Ag	$[Kr]4d^{10}5s^1$	^2S	Es	$[Rn]5f^{11}7s^2$	^4I
Cd	$[Kr]4d^{10}5s^2$	^1S	Fm	$[Rn]5f^{12}7s^2$	^3H
In	$[Kr]4d^{10}5s^25p^1$	^2P	Md	$[Rn]5f^{13}7s^2$	^2F
Sn	$[Kr]4d^{10}5s^25p^2$	^3P	No	$[Rn]5f^{14}7s^2$	^1S
Sb	$[Kr]4d^{10}5s^25p^3$	^4S	Lr	$[Rn]5f^{14}6d^17s^2$	^2D
Te	$[Kr]4d^{10}5s^25p^4$	^3P			

ตารางที่ 4 ค่า Equilibrium constant (ที่ 25 °C)

Water	$H_2O = H^+ + OH^-$	10^{-14}
Weak Acids :		
Acetic	$HC_2H_3O_2 = H^+ + C_2H_3O_2^-$	1.8×10^{-5}
Boric	$H_3BO_3 = H^+ + H_2BO_3^-$	5.8×10^{-10}
Carbonic	$H_2CO_3 = H^+ + HCO_3^-$	$K_1 = 4.5 \times 10^{-7}$
	$HCO_3^- = H^+ + CO_3^{--}$	$K_2 = 6 \times 10^{-11}$
Chromic	$H_2CrO_4 = H^+ + HCrO_4^-$	$K_1 = 5.9 \times 10^{-2}$
	$HCrO_4^- = H^+ + CrO_4^{--}$	$K_2 = 6 \times 10^{-5}$
Formic	$HCHO_2 = H^+ + CHO_2^-$	2×10^{-4}
Hydrocyanic	$HCN = H^+ + CN^-$	4×10^{-10}
Hydrofluoric	$HF = H^+ + F^-$	7.2×10^{-4}
Hydrogen peroxide	$H_2O_2 = H^+ + HO_2^-$	2.4×10^{-12}
Hydrogen sulfide	$H_2S = H^+ + HS^-$	$K_1 = 1.1 \times 10^{-7}$
	$HS^- = H^+ + S^{--}$	$K_2 = 1.0 \times 10^{-15}$
Nitrous	$HNO_2 = H^+ + NO_2^-$	4.5×10^{-4}
Oxalic	$H_2C_2O_4 = H^+ + HC_2O_4^-$	$K_1 = 5.9 \times 10^{-2}$
	$HC_2O_4^- = H^+ + C_2O_4^{--}$	$K_2 = 6.4 \times 10^{-5}$
Phosphoric	$H_3PO_4 = H^+ + H_2PO_4^-$	$K_1 = 7.5 \times 10^{-3}$
	$H_2PO_4^- = H^+ + HPO_4^{--}$	$K_2 = 2 \times 10^{-7}$
	$HPO_4^{--} = H^+ + PO_4^{---}$	$K_3 = 1 \times 10^{-12}$
Phosphorous	$H_3PO_3 = H^+ + H_2PO_3^-$	$K_1 = 1.6 \times 10^{-2}$
Bisulfate ion	$HSO_4^- = H^+ + SO_4^{--}$	$K_2 = 1.2 \times 10^{-2}$
Sulfurous	$H_2SO_3 = H^+ + HSO_3^-$	$K_1 = 12 \times 10^{-2}$
	$HSO_3^- = H^+ + SO_3^{--}$	$K_2 = 1 \times 10^{-7}$
Weak Bases :		
Ammonium hydroxide	$NH_4OH = NH_4^+ + OH^-$	1.8×10^{-5}
Complex Ions and Amphoteric Hydroxides :		
Cupric ammonia	$Cu(NH_3)_4^{++} = Cu^{++} + 4NH_3$	5×10^{-14}
Silver ammonia	$Ag(NH_3)_2^+ = Ag^+ + 2NH_3$	6×10^{-8}
Zinc ammonia	$Zn(NH_3)_4^{++} = Zn^{++} + 4NH_3$	3×10^{-10}
Mercuric chloride	$HgCl_4^{--} = HgCl_2 + 2Cl^-$	1×10^{-2}
Silver chloride	$AgCl_2^- = Ag^+ + 2Cl^-$	1×10^{-5}
Aluminum hydroxide	$Al(OH)_4^- = Al(OH)_3 + OH^-$	2.5×10^{-2}
Chromic hydroxide	$Cr(OH)_4^- = Cr(OH)_3 + OH^-$	10^2
Lead hydroxide	$Pb(OH)_3^- = Pb(OH)_2 + OH^-$	50
Stannous hydroxide	$Sn(OH)_3^- = Sn(OH)_2 + OH^-$	2×10^3
Zinc hydroxide	$Zn(OH)_4^{--} = Zn(OH)_2 + 2OH^-$	10

ตารางที่ 5 ค่า Solubility products (18 °C ถึง 25 °C)

Acetates :	
$AgAc$	2×10^{-3}
Halides :	
$AgCl$	1.6×10^{-10}
$AgBr$	4×10^{-13}
AgI	1×10^{-16}
Hg_2Cl_2	1×10^{-18}
$PbCl_2$	1.7×10^{-5}
PbI_2	9×10^{-9}
Carbonates :	
Ag_2CO_3	8×10^{-12}
$BaCO_3$	5×10^{-9}
$CaCO_3$	4.8×10^{-9}
$CuCO_3$	1×10^{-10}
$FeCO_3$	2×10^{-11}
$MgCO_3$	1×10^{-5}
$MnCO_3$	9×10^{-11}
$PbCO_3$	1×10^{-13}
$SrCO_3$	1×10^{-9}
Chromates :	
Ag_2CrO_4	1×10^{-12}
$BaCrO_4$	2×10^{-10}
$PbCrO_4$	2×10^{-14}
$SrCrO_4$	3.6×10^{-5}
Hydroxides :	
$Al(OH)_3$	1×10^{-33}
$Ca(OH)_2$	8×10^{-6}
$Cr(OH)_3$	1
$Cu(OH)_2$	6×10^{-20}
$Fe(OH)_2$	1×10^{-15}
Hydroxides, continued :	
$Fe(OH)_3$	1×10^{-38}
$Mg(OH)_2$	6×10^{-12}
$Mn(OH)_2$	1×10^{-14}
$Pb(OH)_2$	1×10^{-16}
$Sn(OH)_2$	1×10^{-26}
$Zn(OH)_2$	1×10^{-17}
Oxalates :	
CaC_2O_4	2×10^{-9}
MgC_2O_4	9×10^{-5}
BaC_2O_4	1×10^{-7}
Sulfates :	
Ag_2SO_4	1.2×10^{-5}
$BaSO_4$	1×10^{-10}
$CaSO_4 \cdot 2H_2O$	2.4×10^{-5}
Hg_2SO_4	6×10^{-7}
$PbSO_4$	2×10^{-8}
$SrSO_4$	2.8×10^{-7}
Sulfides :	
Ag_2S	10^{-51}
CdS	10^{-28}
CoS	10^{-21}
CuS	10^{-40}
FeS	10^{-22}
HgS	10^{-54}
MnS (flesh colored)	10^{-16}
NiS	10^{-21}
PbS	10^{-28}
SnS	10^{-28}
ZnS (β)	10^{-24}

ตารางที่ 6 ค่าคงที่สมดุลของการแตกตัวของไอออนเชิงซ้อนและเกลือ

Compound	Dissociation reaction	K	pK
AMMINE (AMMONIA) COMPLEX IONS			
Tetraamminecadmium(II)	$Cd(NH_3)_4^{2+} = Cd^{2+} + 4NH_3$	2×10^{-7}	6.7
Tetraamminecopper(II)	$Cu(NH_3)_4^{2+} = Cu^{2+} + 4NH_3$	8×10^{-13}	12.1
Diamminesilver(I)	$Ag(NH_3)_2^{+} = Ag^{+} + 2NH_3$	6×10^{-8}	7.2
Tetraamminezinc(II)	$Zn(NH_3)_4^{2+} = Zn^{2+} + 4NH_3$	1×10^{-9}	9.0
HYDROXIDE COMPLEX IONS—AMPHOTERIC HYDROXIDES			
Tetrahydroxoaluminate	$Al(OH)_4^{-} = Al(OH)_3(s) + OH^{-}$	3×10^{-2}	1.5
Tetrahydroxochromate(III)	$Cr(OH)_4^{-} = Cr(OH)_3(s) + OH^{-}$	2.5	−0.40
Trihydroxoplumbate(II) ion	$Pb(OH)_3^{-} = Pb(OH)_2(s) + OH^{-}$	2×10^{1}	−1.3
Trihydroxostannate(II)	$Sn(OH)_3^{-} = Sn(OH)_2(s) + OH^{-}$	2.6	−0.41
Tetrahydroxozincate	$Zn(OH)_4^{2-} = Zn(OH)_2(s) + 2OH^{-}$	4×10^{1}	−1.6
CHLORIDE COMPLEX IONS AND WEAK SALTS			
Dichlorocadmium	$CdCl_2(aq) = Cd^{2+} + 2Cl^{-}$	2.5×10^{-3}	2.60
Tetrachloroaurate(III) ion	$AuCl_4^{-} = Au^{3+} + 4Cl^{-}$	5×10^{-22}	21.3
Trichloroiron(III)	$FeCl_3(aq) = Fe^{3+} + 3Cl^{-}$	8×10^{-2}	1.9
Dichloroiron(III) ion	$FeCl_2^{+}(aq) = Fe^{3+} + 2Cl^{-}$	8×10^{-3}	2.9
Chloroiron(III) ion	$FeCl^{2+} = Fe^{3+} + Cl^{-}$	3.5×10^{-2}	1.46
Mercury(II) chloride	$HgCl_2(aq) = HgCl^{+} + Cl^{-}$	K_1: 3.3×10^{-7}	6.46
Chloromercury(II) ion	$HgCl^{+} = Hg^{2+} + Cl^{-}$	K_2: 1.8×10^{-7}	6.74
Tetrachloromercurate(II)	$HgCl_4^{2-} = Hg^{2+} + 4Cl^{-}$		15.07
Tin(II) chloride	$SnCl_2(aq) = Sn^{2+} + 2Cl^{-}$	5.7×10^{-2}	2.24
Tetrachlorostannate(II) ion	$SnCl_4^{2-} = Sn^{2+} + 4Cl^{-}$	3.3×10^{-2}	1.48
Hexachlorostannate(IV) ion	$SnCl_6^{2-} = Sn^{4+} + 6Cl^{-}$	7×10^{-4}	4
Dichloroargentate(I) ion	$AgCl_2^{-} = Ag^{+} + 2Cl^{-}$	5×10^{-6}	5.3
OTHER COMPLEX IONS AND WEAK SALTS			
Tetracyanocadmate(II) ion	$Cd(CN)_4^{2-} = Cd^{2+} + 4CN^{-}$	8×10^{-18}	17.1
Thiocyanatoiron(III) ion	$FeSCN^{2+} = Fe^{3+} + SCN^{-}$	1×10^{-3}	3.0
Lead(II) acetate	$Pb(C_2H_3O_2)_2(aq) = Pb^{2+} + 2C_2H_3O_2^{-}$	1×10^{-4}	4.0
Triacetatoplumbate(II) ion	$Pb(C_2H_3O_2)_3^{-} = Pb^{2+} + 3C_2H_3O_2^{-}$	2.5×10^{-7}	6.60
Dicyanoargentate(I) ion	$Ag(CN)_2^{-} = Ag^{+} + 2CN^{-}$	1×10^{-20}	20.0
Dithiosulfatoargentate(I) ion	$Ag(S_2O_3)_2^{3-} = Ag^{+} + 2S_2O_3^{2-}$	4×10^{-14}	13.4

ตารางที่ 7 ค่าของช่วง pH อินดิเคเตอร์และการเปลี่ยนแปลงของสี

Name of indicator	pH interval	Color change	Solvent
Methyl violet	0.2 - 3.0	Yellow, blue, violet	Water
Thylmol blue	1.2 - 2.8	Red to yellow	Water (+ NaOH)
Orange IV (tropeolin)	1.3 - 3.0	Red to yellow	Water
Benzopurpurin 4B	1.2 - 4.0	Violet to red	20% alcohol
Methyl orange	3.1 - 4.4	Red to orange to yellow	Water
Bromophenol blue	3.0 - 4.6	Yellow to blue violet	Water (+ NaOH)
Congo red	3.0 - 5.0	Blue to red	70 % alcohol
Bromocresol green	3.8 - 5.4	Yellow to blue	Water (+ NaOH)
Methyl red	4.4 - 6.2	Red to yellow	Water (+ NaOH)
Chlorphenol red	4.8 - 6.8	Yellow to red	Water (+ NaOH)
Bromceresol purple	5.2 - 6.8	Yellow to purple	Water (+ NaOH)
Litmus	4.5 - 8.3	Red to blue	Water
Bromothylmol blue	6.0 - 7.6	Yellow to blue	Water (+ NaOH)
Phenol red	6.8 - 8.2	Yellow to red	Water (+ NaOH)
Thymol blue	8.0 - 9.6	Yellow to blue	Water (+ NaOH)
Phenolphthalein	8.3 - 10.0	Colorless to red	70% alcohol
Thymolphthalein	9.3 - 10.5	Yellow to blue	70% alcohol
Alizarin yellow R	10.0 - 12.0	Yellow to red	20% alcohol
Indigo carmine	11.4 - 13.0	Blue to yellow	50% alcohol
Trinitrobenzene	12.0 - 14.0	Colorless to orange	70% alcohol

ตารางที่ 8 แฟกเตอร์สำหรับเปลี่ยนหน่วย

แฟกเตอร์สำหรับเปลี่ยนหน่วยมวลและน้ำหนัก

Metric System	English System
1 gram(g) = 1×10^{-3} kg	1 pound(lb) = 453.59 g
1 milligram(mg) = 1×10^{-3} g	1 ounce(oz) = 28.35 g
= 1×10^{-6} kg	1 (short) ton = 907.18 kg
1 metric ton = 1×10^{3} kg	1 kg = 2.2046 lb
1 atomic mass unit (amu) = 1.6606×10^{-27} kg = 1.6606×10^{-24} g	

แฟกเตอร์สำหรับเปลี่ยนหน่วยปริมาตร

Metric System	English System
1 liter(L) = 1×10^{-3} m^3	1 U.S. quart(qt) = 9.4635×10^{-4} m^3
= 1 dm^3	= 0.94635 L
= 1×10^{3} cm^3	1 cubic foot(ft^3) = 2.8317×10^{-2} m^3
1 milliliter(mL) = 1×10^{-6} m^3	1 cubic inch($in.^3$) = 16.387 cm^3
= 1 cm^3	1 L = 1.0567 qt

แฟกเตอร์สำหรับเปลี่ยนหน่วยแรง

1 dyne (dyn) = 1×10^{-5} N 1 newton (N) = 1×10^{5} dyn

Definitions

One newton (N) is the force that imparts an acceleration of one meter per second per second to a mass of one kilogram.

One dyne (dyn) is the force that imparts an acceleration of one centimeter per second per second to a mass of one gram.

แฟกเตอร์สำหรับเปลี่ยนหน่วยความดัน

1 atmosphere (atm) = 760 mm Hg = 1.01325×10^{5} Pa = 14.696 $lb/in.^2$

1 bar = 1×10^{5} Pa 1 torr = 1 mm Hg 1 $lb/in.^2$ = 6.895×10^{3} Pa

1 dyne per square centimetere (dyn/cm^2) = 1×10^{-1} Pa

Definition

Pressure is force per unit area. One pascal (Pa) is the pressure exerted when a force of one newton is applied per square meter.

1 Pa = 1 N/m^2

ตารางที่ 9 แฟกเตอร์สำหรับเปลี่ยนหน่วย (ต่อ)

แฟกเตอร์สำหรับเปลี่ยนหน่วยพลังงาน

1 thermochemical calorie (cal) = 4.184 J (exactly)

1 erg = 1×10^{-7} J 1 J = 1×10^{7} erg

1 liter · atmosphere (L · atm) = 101.325 J = 24.217 cal

1 electron volt (eV) = 1.6022×10^{-19} J = 1.6022×10^{-12} erg

1 eV/particle is equivalent to 96.485 kJ/mol or 23.06 kcal/mol

1 million electron volts (MeV) = 1.602189×10^{-13} J

Definitions

One joule of energy is expended when a force of one newton is applied through a distance of one meter.

$$1 \text{ J} = 1 \text{ N} \cdot \text{m}$$

One calorie was originally defined as the amount of heat required to raise the temperature of one gram of water from 14.5 to 15.5°C. The thermochemical calorie is very close to, but not exactly the same as, the original calorie.

ตารางที่ 10 ค่าออกซิเดชันของโพลีอะตอมมิกไอออน

Major Formal Oxidation States of Polyatomic Ions			
1-	2-	3-	4-
Azide, N_3^-	Chromate, CrO_4^{2-}	Arsenite, AsO_3^{3-}	Hexacyanoferrate (II), $Fe(CN)_6^{4-}$
Benzoate, $C_7H_5O_2^-$	Dichromate, $Cr_2O_7^{2-}$	Citrate, $C_6H_5O_7^{3-}$	Pyrophosphate, $P_4O_7^{4-}$
Bromate, BrO_3^-	Hexachloroplatinate (IV), $PtCl_6^{2-}$	Hexacyanoferrate (III), $Fe(CN)_6^{3-}$	
Chlorate, ClO_3^-	Molybdate, MoO_4^{2-}		
Formate, CHO_2^-	Peroxide, O_2^{2-}		
Hypophosphite, $PH_2O_2^-$	Peroxydisulfate, $S_2O_8^{2-}$		
Metaphosphate, PO_3^-	Sulfite, SO_3^{2-}		
Nitrite, NO_2^-	Tellurate, TeO_4^{2-}		
Periodate, IO_4^-	Tetraborate, $B_4O_7^{2-}$		
Permanganate, MnO_4^-	Thiosulfate, $S_2O_3^{2-}$		
Peroxyborate, BO_3^-	Tungstate, WO_4^{2-}		
Thiocyanate, SCN^-			
Vanadate, VO_3^-			