SI Dimensions of Physical Quantities: Alphabetic List

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Quantity	Dimension	Alternatives	Definition/Notes
A:			
Abbé number | Constringence | V-number	1	Dimensionless	$V_D = (n_D-1)/(n_F-n_C)$
Absorbed radiation dose	$m^2.s^{-2}$	$J.kg^{-1}$, **Gy** (gray)	[Energy]/[Mass]
Absorbed dose rate	$m^2.s^{-3}$	$Gy.s^{-1}$	[Absorbed dose]/[Time]
Acceleration, angular	s^{-2}	$rad.s^{-2}$	[ΔAngular velocity]/[ΔTime]
Acceleration | Deceleration	$m.s^{-2}$		[ΔVelocity]/[ΔTime]
Acoustic impedance / resistance / reactance	$kg.m^{-4}.s^{-1}$	$Pa.s/m^3$, $reyl/m^2$	[Pressure]/[Volume flow rate]
Acoustic impedance, specific	$kg.m^{-2}.s^{-1}$	Pa.s/m , **reyl**	[ΔPressure]*[Velocity]. Also **s.acu. resistance / reactance**
Acoustic conductance, specific	$kg^{-1}.m^2.s$	$reyl^{-1}$	Inverse of s.acu. impedance. Also **s.acu. susceptance**
Action	$kg.m^2.s^{-1}$	J.s	[Energy]*[Time], [Moment of motion]*[Distance]
Activity of a radioactive source	s^{-1}	**Bq** (becquerel)	[Counts]/[Time]
Activity, katalytic	$mol.s^{-1}$	**katal**	[ΔQuantity]/[Time]. Same as **molar production rate**
Activity, transactions rate	s^{-1}	1/year	[Transactions]/[Time period]. Economy and finance
Admittance, inductive	$kg^{-1}.m^{-2}.s^3.A^2$	**S** (siemens)	1/[Inductive impedance]
Admittance, of a circuit	$kg^{-1}.m^{-2}.s^3.A^2$	**S** (siemens)	1/[Circuit impedance]
Advection velocity	$m.s^{-1}$	m/s	In **porous media**; actual progress along pressure gradient
Albedo, of a surface	1	Dimensionless	[Reflected elmag power]/[Incident elmag power]
Amplification | Attenuation (generic)	1	usually in **dB**	[Quantity(p)]/[Quantity(p')], with p being some parameter
Angular acceleration	s^{-2}	$rad.s^{-2}$	[ΔAngular velocity]/[ΔTime]
Angular moment of inertia	$kg.m^2$		[Mass]*[Distance^2]
Angular moment of motion	$kg.m^2.s^{-1}$	J.s	[Moment of motion]*[Distance]. Like [**action**]
Angular velocity	s^{-1}	$rad.s^{-1}$	[ΔPlane angle]/[ΔTime]
Annealing point	K		Temperature at which viscosity drops below 10^{12} Pa.s
Area	m^2		[Distance]*[Distance]
Area growth rate	$m^2.s^{-1}$		[ΔArea]/[Time]
Asset | Wealth	cur	**currency**	Economy and finance
Atomic number	1	Dimensionless	Number of protons in an atomic nucleus
Atomic weight | Relative atomic mass	au	atomic units	Average over a typical isotopic composition
Attenuation | Amplification (generic)	1	usually in **dB**	[Quantity(p)]/[Quantity(p')], with p being some parameter
Attenuation / amplification over a distance	m^{-1}	dB/m	[Attenuation]/[Distance]. Mostly in acoustic and electronics
Attenuation / amplification over a period	s^{-1}	dB/s	[Attenuation]/[Time]. Mostly in acoustic and electronics
B:			
Bandwidth	s^{-1}	Hz	[ΔFrequency]
Baud rate | Information flux	$bit.s^{-1}$	**baud**	[Information]/[Time]
Bond duration	s	year	Economy and finance
Bulk modulus	$kg.m^{-1}.s^{-2}$	$N.m^{-2}$, Pa	([ΔVolume]/[Volume])/[Pressure]. Inverse of **compressibility**
C:			
Capacitance, electric	$kg^{-1}.m^{-2}.s^4.A^2$	$C.V^{-1}$, **F** (farad)	[Charge]/[ΔPotential]
Capacitive reactance	$kg.m^2.s^{-3}.A^{-2}$	**Ω** (ohm)	1/(i[Angular frequency].[Capacitance])
Capacitive susceptance	$kg^{-1}.m^{-2}.s^3.A^2$	**S** (siemens)	1/[Capacitive reactance]
Cash flow	$cur.s^{-1}$	currency/year	[Value]/[ΔTime]. Economy and finance
Circulation	$m^2.s^{-1}$	$J.s.kg^{-1}$	[Angular moment]/[Mass], [Velocity]*[Loop length]
Characteristic impedance	$kg.m^2.s^{-3}.A^{-2}$	$V.A^{-1}$, Ω, ohm	√([Mag.Permeability]/[El.Permittivity])
Charge, electric	s .A	**C** (coulomb)	[Current]*[Time]
Charge, magnetic (bound)	$m^{-2}.A$		- ∇.[Magnetization] , -Divergence of **magnetization**

Charge, quantum	1	Dimensionless	[Charge]/[Elementary charge quantum]
Charge, molecular/ionic, quantum	1	Dimensionless	[Charge of a molecule or ion]/[Elementary charge quantum]
Charge density	m^{-3}.s.A	C.m^{-3}	[Charge]/[Volume]
Charge/mass ratio | Specific charge	kg^{-1}.s.A	C.kg^{-1}	[Charge]/[Mass]
Charge, molar	s.A.mol^{-1}	C.mol^{-1}	[Charge]/[Quantity]
Chemical potential, molar	kg.m^{2}.s^{-2}.mol^{-1}	J.mol^{-1}	[ΔInternalEnergy]/[ΔQuantity]
Circuit admittance	kg^{-1}.m^{-2}.s^{3}.A^{2}	**S** (siemens)	1/[Circuit impedance]
Circuit impedance	kg.m^{2}.s^{-3}.A^{-2}	**Ω** (ohm)	
Circulation / velocity of money	s^{-1}	1/year	[Transactions]/[Time period]. Economy and finance
Circumference | Perimeter	m		
Collision cross section | Cross section	m^{2}		[Distance]*[Distance]
Compressibility	kg^{-1}.m.s^{2}	Pa^{-1}	[Pressure]/([ΔVolume]/[Volume]). Inverse of **bulk modulus**
Compression	kg.m^{-1}.s^{-2}	N.m^{-2}, **Pa** (pascal)	[Force]/[Area]. Same as **pressure**
Compression factor of a real gas	1	Dimensionless	pV/(nRT). For ideal gas equals 1; temperature dependent
Compressive strength	kg.m^{-1}.s^{-2}	N.m^{-2}, Pa	[Force]/[Area]. Like **pressure**
Concentration, molar	m^{-3}.mol		[Quantity]/[Volume]. Same as **molar density**
Concentration gradient, molar	m^{-4}.mol		[Molarity]/[Distance]. Same as **molarity gradient**
Concentration ratio, molar	1	Dimensionless	[Partial quantity]/[Total quantity]
Concentration ratio, by mass	1	Dimensionless	[Partial mass]/[Total mass]
Concentration ratio, by volume	1	Dimensionless	[Partial volume]/[Total volume]. .
Concentration, by weight (obsolete)	1	Dimensionless	[Partial mass]/[Total mass]. Obsolete: use **by mass**
Conductance, electric	kg^{-1}.m^{-2}.s^{3}.A^{2}	A.V^{-1}, **S** (siemens)	1/[Resistance]
Conductivity, electric	kg^{-1}.m^{-3}.s^{3}.A^{2}	S.m^{-1}	1/[Resistivity]
Conductivity, hydraulic	m.s^{-1}	m/s	Used for **porous media**
Conductivity, molar	kg^{-1}.s^{3}.A^{2}.mol^{-1}	S.m^{2}.mol^{-1}	[El.conductivity]/[Concentration]
Conductivity, thermal	kg.m.s^{-3}.K^{-1}	W.m^{-1}.K^{-1}	[Heat flux]/([Distance]*[ΔTemperature])
Constringence | Abbé number | V-number	1	Dimensionless	$V_D = (n_D-1)/(n_F-n_C)$
Convergence	m^{-1}	**dioptry**	in optics, but not only
Cosmological constant Λ	m^{-2}		Present in Einstein's equation
Cosmological expansion rate	s^{-1}	km/s/Mpc	[Velocity]/[Distance]. Mpc stands for Megaparsec
Count of events/instances	1		This covers all kinds of **enumerations**
Count rate	s^{-1}		[Counts]/[Time]
Couple	kg.m^{2}.s^{-2}	N.m	2*[Force]*[Distance] for two non-aligned opposing forces
Critical angle of repose	rad	or degree	Steepest angle of a slope before a slide
Cross section	m^{2}		[Distance]*[Distance]
Cryoscopic constant	kg.mol^{-1}.K	K/(mol/kg)	[ΔTemperature]/[Molality]
Current, electric	A	**A** (ampere)	
Current density, electric	m^{-2}.A		[Current]/[Area]. Same as **current intensity**
Current intensity, electric	m^{-2}.A		[Current]/[Area]. Same as **current density**
Current noise, variance n_J^2	s.A^{2}	A^{2}/Hz	[Current]^{2}/[Bandwidth]
Curvature	m^{-1}		1/[Curvature radius]
Curvature radius	m		of a line in plane/space or surface in space
D:			
D'Alembert operator | D'Alembertian	m^{-2}		$(1/c^2)\partial^2/\partial\mathbf{t}^2 - \partial^2/\partial\mathbf{x}^2 - \partial^2/\partial\mathbf{y}^2 - \partial^2/\partial\mathbf{z}^2$
Debt | Liability	cur	**currency**	Economy and finance
Debt/GDP ratio	s	year	[Debt]/[Earnings]. Economy and finance
Deceleration | Acceleration	m.s^{-2}		[ΔVelocity]/[ΔTime]
Deceleration, angular	s^{-2}	rad.s^{-2}	[ΔAngular velocity]/[ΔTime]
Density of electric charge	m^{-3}.s.A	C.m^{-3}	[Charge]/[Volume]
Density of electric current	m^{-2}.A		[Current]/[Area]. Same as **current intensity**
Density of energy	kg.m^{-1}.s^{-2}	J.m^{-3}	[Energy]/[Volume]
Density of mass	kg.m^{-3}		[Mass]/[Volume]. Same as **specific density**
Density of mass, gradient of	kg.m^{-4}		[Mass density]/[Distance]. Same as **specific density gradient**
Density of particles	m^{-3}		[Count]/[Volume]. Obsolete: **number density**
Density of substance	m^{-3}.mol		[Quantity]/[Volume]. Same as **molar concentration**

Derivative with respect to **time**	s^{-1}		d/d**t**, ∂/∂**t**
Derivative with respect to a **length**	m^{-1}		d/d**r**, ∂/∂**r**, r = x | y | z
Dielectric constant | Relative permittivity	1	Dimensionless	[Permittivity]/[Permittivity of vacuum]
Dielectric strength/rigidity | Electric strength	kg.m.s^{-3}.A^{-1}	V.m^{-1}	[ΔPotential]/[Distance]
Diffusion coefficient	m^{2}.s^{-1}		[Distance]^{2}/[Time]
Diffusivity, thermal	m^{2}.s^{-1}		([∂Temperatute]/[∂Time])/[∇^{2}Temperature].
Dipole moment, electric	m.s.A	C.m	[Charge]*[Distance]
Dipole moment, magnetic	m^{2}.A	J.T^{-1}	[Current]*[Area]
Dispersive power	1	Dimensionless	Ratio of differences of refractive indices
Dispersivity quotient	m^{-1}		[ΔRefractive index]/[ΔWavelength]
Displacement, electric	m^{-2}.s.A	C.m^{-2}	[Charge]/[Area]. Same as **electric flux density**
Displacement four-tensor (relativistic $D^{\mu\nu}$)	m^{-1}.A		Like **magnetic intensity**
Distance	m		in all Euclidean n-dimensional spaces
Dose of absorbed radiation	m^{2}.s^{-2}	J.kg^{-1}, **Gy** (gray)	[Energy]/[Mass]
Dose rate	m^{2}.s^{-3}	Gy.s^{-1}	[Absorbed dose]/[Time]
Drift speed	m.s^{-1}		Steady-state speed of an object. .
Duration	s	**s** (second)	
Dynamic viscosity	kg.m^{-1}.s^{-1}	Pa.s	([Force]/[Area])/[ΔVelocity]
E:			
Earnings | Income rate	cur.s^{-1}	currency/year	[Value]/[Time period]. Economy and finance
Ebullioscopic constant	kg.mol^{-1}.K	K/(mol/kg)	[ΔTemperature]/[Molality]
Electric capacitance	kg^{-1}.m^{-2}.s^{4}.A^{2}	C.V^{-1}, **F** (farad)	[Charge]/[ΔPotential]
Electric charge	s .A	**C** (coulomb)	[Current]*[Time]
Electric conductance	kg^{-1}.m^{-2}.s^{3}.A^{2}	A.V^{-1}, **S** (siemens)	[Current]/[ΔPotential]. Inverse of **resistance**
Electric conductivity	kg^{-1}.m^{-3}.s^{3}.A^{2}	S.m^{-1}	1/[Resistivity]
Electric conductivity, molar	kg^{-1}.s^{3}.A^{2}.mol^{-1}	S.m^{2}.mol^{-1}	[El.conductivity]/[Concentration]
Electric current	A	**A** (ampere)	
Electric dipole moment	m.s.A	C.m	[Charge]*[Distance]
Electric displacement	m^{-2}.s.A	C.m^{-2}	[Charge]/[Area]. Same as **electric flux density**
Electric field strength | Electric intensity	kg.m.s^{-3}.A^{-1}	V.m^{-1}	[ΔPotential]/[Distance]
Electric field gradient	kg.s^{-3}.A^{-1}	V.m^{-2}	[ΔEl.field strength]/[Distance]
Electric flux density | Electric induction	m^{-2}.s.A	C.m^{-2}	[Charge]/[Area]
Electric inductance	kg.m^{2}.s^{-2}.A^{-2}	V.s.A^{-1}, **H** (henry)	[ΔPotential]/[dCurrent/dt]
Electric induction	m^{-2}.s.A	C.m^{-2}	[Charge]/[Area]. More properly **electric flux density**
Electric intensity	kg.m.s^{-3}.A^{-1}	V.m^{-1}	[ΔPotential]/[Distance]. More properly **electric field strength**
Electric permittivity	kg^{-1}.m^{-3}.s^{4}.A^{2}	F.m^{-1}	[El.flux density]/[El.field strength]
Electric permittivity, relative	1	Dimensionless	[Permittivity]/[Permittivity of vacuum]. Same as **dielectric constant**
Electric polarization	m^{-2}.s.A	C.m^{-2}	[Charge]/[Area]. Like **electric flux density**
Electric potential	kg.m^{2}.s^{-3}.A^{-1}	W.A^{-1}, J.C^{-1}, **V** (volt)	[Power]/[Current], [Energy]/[Charge]
Electric quadrupole moment	m^{2}.s.A	C.m^{2}	[Electric dipole]*[Distance], [Electric charge]*[Distance^{2}]
Electric resistance	kg.m^{2}.s^{-3}.A^{-2}	V.A^{-1}, **Ω** (ohm)	[ΔPotential]/[Current]
Electric resistivity	kg.m^{3}.s^{-3}.A^{-2}	Ω.m	([Resistance]*[Length])/[Area]
Electric strength | Dielectric strength	kg.m.s^{-3}.A^{-1}	V.m^{-1}	[ΔPotential]/[Distance]. .
Electromagnetic field tensor (relativistic $F^{\mu\nu}$)	kg.s^{-2}.A^{-1}	**T**	Like **magnetic flux density**
Electromagnetic displacement (relat. $D^{\mu\nu}$)	m^{-1}.A		Like **magnetic intensity**
Electromagnetic four-current (relativistic J^{α})	m^{-2}.A		Like **current density** and [Charge]*[c]
Electromagnetic four-potential (relativistic A^{α})	kg.m.s^{-2}.A^{-1}	m^{-1}.s.V, m.T	Like **magnetic vector potential** and [El.potential]/[c]
Electromotive force (emf)	kg.m^{2}.s^{-3}.A^{-1}	V	[ΔPotential]
Electron affinity (always molar)	kg.m^{2}.s^{-2}.mol^{-1}	J.mol^{-1}	Energy released binding an electron
Electronegativity, Pauling χ	1	Dimensionless	Relative tendency of an atom to attract electrons; χ(H)=2.20.
Electrostriction coefficient	kg^{-2}.m^{-2}.s^{6}.A^{2}	m^{2}.V^{-2}	([ΔVolume]/[Volume])/[Electric field strength]^{2}
Emittance, luminous	cd.sr.m^{-2}	lm.m^{-2}, **lx** (lux)	[Luminous flux]/[Area]. Same as **luminous exitance**
Energy	kg.m^{2}.s^{-2}	N.m, **J** (joule)	[Force]*[Distance], [Power]*[Time]
Energy, molar	kg.m^{2}.s^{-2}.mol^{-1}	J.mol^{-1}	[Energy]/[Quantity]
Energy, specific	m^{2}.s^{-2}	J.kg^{-1}	[Energy]/[Mass]

Energy density	$kg.m^{-1}.s^{-2}$	$J.m^{-3}$	[Energy]/[Volume]
Energy flux | Power	$kg.m^{2}.s^{-3}$	$J.s^{-1}$, **W** (watt)	[ΔEnergy]/[ΔTime]
Enthalpy	$kg.m^{2}.s^{-2}$	J	Like **energy** and **heat**
Enthalpy, molar	$kg.m^{2}.s^{-2}.mol^{-1}$	$J.mol^{-1}$	[Enthalpy]/[Quantity]. Like **molar heat**
Enthalpy, specific	$m^{2}.s^{-2}$	$J.kg^{-1}$	[Enthalpy]/[Mass]. Like **specific heat**
Entropy	$kg.m^{2}.s^{-2}.K^{-1}$	$J.K^{-1}$	[ΔHeat]/[Temperature]
Entropy, molar	$kg.m^{2}.s^{-2}.K^{-1}.mol^{-1}$	$J.K^{-1}.mol^{-1}$	[Entropy]/[Quantity]
Entropy, specific	$m^{2}.s^{-2}.K^{-1}$	$J.K^{-1}.kg^{-1}$	[Entropy]/[Mass]
Evolution rate, log-scale	s^{-1}		d{ln(Q)}/dt = (dQ/dt)/Q. Same as **relative evolution rate**
Expansion coefficient, thermal	K^{-1}		([ΔLength]/[Length])/[Temperature]
Expansion rate, cosmological	s^{-1}	km/s/Mpc	[Velocity]/[Distance]. Mpc stands for Megaparsec
Expectation frequency	s^{-1}		[Counts]/[Time]. Like **count rate**
Exposure	$kg^{-1}.s.A$	$C.kg^{-1}$	[Charge]/[Mass]. Used for ionising radiations
Extinction coefficient	m^{-1}	dB/m	[Ratio]/m. Used mostly for radiation
F:			
Field tensor, electromagnetic (relativistic $F^{\mu\nu}$)	$kg.s^{-2}.A^{-1}$	**T**	Like **magnetic flux density**
Fire point	K		Temperature at which ignited vapour keeps burning
Flash point	K		Temperature at which vapour can be kept burning
Flow	$cur.s^{-1}$	currency/year	[ΔValue]/[ΔTime]. Economy and finance: time derivative
Flow rate, of mass | Mass production rate	$kg.s^{-1}$		[ΔMass]/[Time]. For example, through a pipe
Flow rate, of volume	$m^{3}.s^{-1}$		[ΔVolume]/[Time]. For example, through a pipe
Force	$kg.m.s^{-2}$	**N** (newton)	[Mass]*[Acceleration]
Force, thermodynamic	$kg.m.s^{-2}.mol^{-1}$	N/mol	[ΔChemical potential]/[Distance]
Four-current (relativistic J^{α})	$m^{-2}.A$		Like **current density** and [Charge]*[c]
Four-potential (relativistic A^{α})	$kg.m.s^{-2}.A^{-1}$	$m^{-1}.s.V$, m.T	Like **magnetic vector potential** and [El.potential]/[c]
Four-tensor elmag displacement (relat. $D^{\mu\nu}$)	$m^{-1}.A$		Like **magnetic intensity**
Four-tensor elmag field (relativistic $F^{\mu\nu}$)	$kg.s^{-2}.A^{-1}$	**T**	Like **magnetic flux density**
Free energy	$kg.m^{2}.s^{-2}$	J	Also **Helmholtz function**. Like **energy**
Free energy, molar	$kg.m^{2}.s^{-2}.mol^{-1}$	$J.mol^{-1}$	[Free energy]/[Quantity]. Like **Helmholtz function**
Free energy, specific	$m^{2}.s^{-2}$	$J.kg^{-1}$	[Free energy]/[Mass]. Like **specific Helmholtz function**
Free enthalpy	$kg.m^{2}.s^{-2}$	J	Also **Gibbs function**. Like **energy**
Free enthalpy, molar	$kg.m^{2}.s^{-2}.mol^{-1}$	$J.mol^{-1}$	[Free enthalpy]/[Quantity]. Like **molar Gibbs function**
Free enthalpy, specific	$m^{2}.s^{-2}$	$J.kg^{-1}$	[Free enthalpy]/[Mass]. Like **specific Gibbs function**
Frequency of events	s^{-1}		[Counts]/[Time]
Frequency of waves	s^{-1}	**Hz**	**hertz**
Frequency drift rate	s^{-2}	$Hz.s^{-1}$	[ΔFrequency]/[Time]
Friction	$kg.m.s^{-2}$	**N**	Tangential force between two moving surfaces
Friction coefficient	1	Dimensionless	[Tangential force]/[Normal force]
Fugacity	$kg.m^{-1}.s^{-2}$	Pa	Effective pressure in real gases
G:			
Gain of a device	1	Dimensionless	[Output]/[Input], like-quantities ratio. Often in dB
GDP Gross domestic product	$cur.s^{-1}$	currency/year	[Earnings]. Economy and financee: of an administrative region
g-factor of a particle	1	Dimensionless	[Magnetic moment]/([Spin].[Bohr magneton])
Gradient, of electric field	$kg.s^{-3}.A^{-1}$	$V.m^{-2}$	[ΔEl.field strength]/[Distance]
Gradient, of magnetic field	$kg.m^{-1}.s^{-2}.A^{-1}$	$T.m^{-1}$	[ΔMag.flux density]/[Distance]
Gradient, of mass density	$kg.m^{-4}$		[Mass density]/[Distance]. Same as **specific density gradient**
Gradient, of pressure	$kg.m^{-2}.s^{-2}$	$N.m^{-3}$, **Pa/m**	[Pressure]/[Distance]
Gradient, thermal	$K.m^{-1}$		[ΔTemperature]/[Distance]. Same as **temperature gradient**
Gravitational constant G	$kg^{-1}.m^{3}.s^{-2}$		[Force]*[Distance]^2/[Mass]^2. Appears in Newton's equation
Gravitational field intensity | Gravity	$m.s^{-2}$		[Force]/[Mass], [Acceleration]
Gravitational field potential	$m^{2}.s^{-2}$		[Energy]/[Mass].
Gravity | Gravitational field intensity	$m.s^{-2}$		[Force]/[Mass], [Acceleration]
Growth rate, relative	s^{-1}		[Relative variation]/[Time]
Growth rate, linear	$m.s^{-1}$		[ΔLength]/[Time]
Growth rate, of area/surface	$m^{2}.s^{-1}$		[ΔArea]/[Time]

Growth rate, of volume	$m^3.s^{-1}$		[ΔVolume]/[Time]
Gyromagnetic ratio	$kg^{-1}.s.A$	$Hz.T^{-1}$	[Mag.moment]/[Angular moment of motion]
H:			
Half life	s		of a non-conservative / decaying quantity
Hamiltonian	$kg.m^2.s^{-2}$	J	[Force]*[Distance], [Power]*[Time]. Like **energy**
Hardness	$kg.m^{-1}.s^{-2}$	$N.m^{-2}$	[Force]/[Area]. Same as **pressure**
Heat	$kg.m^2.s^{-2}$	J	Like **energy**
Heat, molar	$kg.m^2.s^{-2}.mol^{-1}$	$J.mol^{-1}$	[Heat]/[Quantity]
Heat, specific	$m^2.s^{-2}$	$J.kg^{-1}$	[Heat]/[Mass]
Heat capacity	$kg.m^2.s^{-2}.K^{-1}$	$J.K^{-1}$	[ΔHeat]/[ΔTemperature]
Heat capacity, molar	$kg.m^2.s^{-2}.K^{-1}.mol^{-1}$	$J.K^{-1}.mol^{-1}$	[Heat capacity]/[Quantity]
Heat capacity, specific	$m^2.s^{-2}.K^{-1}$	$J.K^{-1}.kg^{-1}$	[Heat capacity]/[Mass]
Heat conductivity | Thermal conductivity	$kg.m.s^{-3}.K^{-1}$	$W.m^{-1}.K^{-1}$	[Heat flux]/([Distance]*[ΔTemperature])
Heat flux	$kg.m^2.s^{-3}$	J.s, W	[ΔHeat]/[ΔTime]. Like **power**
Heat flux density	$kg.s^{-3}$	$W.m^{-2}$	[Heat flux]/[Area]. Same as **irradiance**
Heat of fusion/evaporation, specific	$m^2.s^{-2}$	$J.kg^{-1}$	[Energy]/[Mass]
Heat of fusion | evaporation, molar	$kg.m^2.s^{-2}.mol^{-1}$	$J.mol^{-1}$	[Energy]/[Quantity]
Hydraulic conductivity	$m.s^{-1}$	m/s	Used for **porous media**
Hydraulic permeability	m^2	1 darcy = 10^{-12} m^2	[Velocity]*[Viscosity]/[Pressure gradient], in **porous media**
I:			
Illuminance	$cd.sr.m^{-2}$	$lm.m^{-2}$, **lx** (lux)	[Luminous flux]/[Area]
Impact resistance	$kg.s^{-2}$	$J.m^{-2}$	[Energy]/[Area]
Impedance, acoustic	$kg.m^{-4}.s^{-1}$	$Pa.s/m^3$, $reyl/m^2$	[ΔPressure]/[Volume flow rate]. Also **acu. resistance / reactance**
Impedance, acoustic, specific	$kg.m^{-2}.s^{-1}$	Pa.s/m , **reyl**	[ΔPressure]*[Velocity]. Also **s.acu. resistance / reactance**
Impedance, characteristic, electric	$kg.m^2.s^{-3}.A^{-2}$	$V.A^{-1}$, Ω, ohm	√([Mag.Permeability]/[El.Permittivity])
Impedance, inductive	$kg.m^2.s^{-3}.A^{-2}$	**Ω** (ohm)	i[Angular frequency].[Inductance]
Impedance, of a circuit	$kg.m^2.s^{-3}.A^{-2}$	**Ω** (ohm)	
Impulse	$kg.m.s^{-1}$		[ΔMoment of motion], [Force]*[ΔTime], [Mass]*[ΔVelocity]
Income rate | Earnings	$cur.s^{-1}$	currency/year	[Value]/[Time period]. Economy and finance
Inductance	$kg.m^2.s^{-2}.A^{-2}$	$V.s.A^{-1}$, $Wb.A^{-1}$, **H** (henry)	[ΔPotential]/[dCurrent/dt], [Mag.flux]/[Current]
Induction, electric	$m^{-2}.s.A$	$C.m^{-2}$	[Charge]/[Area]. Same as **electric flux density**
Inductive admittance	$kg^{-1}.m^{-2}.s^3.A^2$	**S** (siemens)	1/[Inductive impedance]
Inductive impedance	$kg.m^2.s^{-3}.A^{-2}$	**Ω** (ohm)	i[Angular frequency].[Inductance]
Information	bit^{-1}	**bit**	One bit is the elementary information quantum
Information flux | Baud rate	$bit.s^{-1}$	**baud**	[Information]/[Time]
Intensity of electric current	$m^{-2}.A$		[Current]/[Area]. Same as **current density**
Interest	1	%	[ΔWealth]/[Wealth]. Economy and finance
Interest rate	s^{-1}	%/year	[Interest]/[Time period]. Economy and finance
Internal energy	$kg.m^2.s^{-2}$	J	Like **energy** and **heat**
Internal energy, molar	$kg.m^2.s^{-2}.mol^{-1}$	$J.mol^{-1}$	[Internal energy]/[Quantity]. Like **molar heat**
Internal energy, specific	$m^2.s^{-2}$	$J.kg^{-1}$	[Internal energy]/[Mass]. Like **specific heat**
Ion mobility	$kg^{-1}.m^{-1}.s^2.A$	$m^2.s^{-1}.V^{-1}$	[Velocity]/[Electric field strength] .
Ionic force (strength)	$m^{-3}.mol$		Sum([Concentration]*[Ionic quantum charge]^2).
Ionic quantum charge	1	Dimensionless	[Ion charge]/[Elementary charge quantum]
Ionic strength (force)	$m^{-3}.mol$		Sum([Concentration]*[Ionic quantum charge]^2).
Ionization energy, molar	$kg.m^2.s^{-2}.mol^{-1}$	$J.mol^{-1}$	Energy to ionize a molecule/atom
Irradiance	$kg.s^{-3}$	$W.m^{-2}$	[Heat flux]/[Area]. Same as **heat flux density**
J:			
Joule-Thomson coefficient	$kg^{-1}.m.s^2.K$	$K.Pa^{-1}$	[ΔTemperature]/[ΔPressure]
K:			
Katalytic activity	$mol.s^{-1}$	**katal**	[ΔQuantity]/[Time]. Same as **molar production rate**
Kinematic viscosity	$m^2.s^{-1}$		[Dynamic viscosity]/[Density]
K-space vector | Reciprocal space position	m^{-1}		
L:			

Lagrangian	$kg.m^{2}.s^{-2}$	J	[Force]*[Distance], [Power]*[Time]. Like **energy**
Laplace operator | Laplacian	m^{-2}		$\nabla^2 = \partial^2/\partial \mathbf{x}^2 + \partial^2/\partial \mathbf{y}^2 + \partial^2/\partial \mathbf{z}^2$
Length	m	**m** (meter)	
Liability | Debt	cur	**currency**	Economy and finance
Linear stiffness	$kg.s^{-2}$	$N.m^{-1}$	[Force]/[Displacement]. ... of a structure
Logarithmic ratio log_b(A/A') in any base b	1		Applicable to any ratio of commensurable quantities
Logarithmic ratio ln(A/A')	1	**Np**	Neper. Uses natural logarithm
Logarithmic ratio Log(P/P')/10	1	**dB** (decibel)	Uses base-10 logarithm. Aplies only to power P
Logarithmic ratio Log(X/X')/20	1	**dB** (decibel)	Aplies to voltages (X=V) and currents (X=I)
Logarithmic scale differential	1	Dimensionless	dQ/Q, d{ln(Q)}, for any quantity Q. Also **relative differential**
Logarithmic scale probability density	1	1/Np	[Probability]/[Natural-logarithmic ratio]
Loss of a device	1	Dimensionless	[Output]/[Input], like-quantities ratio. Often in dB
Luminance	$cd.m^{-2}$		[Luminosity]/[Area]
Luminosity	cd	**cd** (candle)	Same as **luminous intensity**
Luminous coefficient	1	Dimensionless	[Luminous efficacy]/[683 lm/W]. Same as **luminous efficiency**
Luminous efficacy	$cd.sr.kg^{-1}.m^{-1}.s^{3}$	lm/W	[Luminous flux]/[Power]
Luminous efficiency	1	Dimensionless	[Luminous efficacy]/[683 lm/W]. Same as **luminous coefficient**
Luminous emittance	$cd.sr.m^{-2}$	$lm.m^{-2}$, **lx** (lux)	[Luminous flux]/[Area]. Same as **luminous exitance**
Luminous energy	cd.sr.s	lm.s	[Luminous flux]*[Time]. Known as **talbot**
Luminous flux	cd.sr	**lm** (lumen)	[Luminosity]*[Solid angle]. Same as **luminous power**
Luminous intensity	cd	**cd** (candle)	Same as **luminosity**
Luminous power	cd.sr	**lm** (lumen)	[Luminosity]*[Solid angle]. Same as **luminous flux**
M:			
Magnetic charge (bound)	$m^{-2}.A$		- ∇.[Magnetization] , -Divergence of **magnetization**
Magnetic dipole moment	$m^{2}.A$	$J.T^{-1}$	[Current]*[Area]. Same as **magnetic moment**
Magnetic field gradient	$kg.m^{-1}.s^{-2}.A^{-1}$	$T.m^{-1}$	[ΔMag.flux density]/[Distance]
Magnetic field strength | Magnetic intensity	$m^{-1}.A$		[Current]/[Distance]
Magnetic flux	$kg.m^{2}.s^{-2}.A^{-1}$	V.s, $W.s.A^{-1}$, **Wb** (weber)	[ΔPotential]*[Time], [Power]/[dCurrent/dt]
Magnetic flux density | Magnetic induction	$kg.s^{-2}.A^{-1}$	$Wb.m^{-2}$, **T** (tesla)	[Mag.flux]/[Area]
Magnetic induction	$kg.s^{-2}.A^{-1}$	$Wb.m^{-2}$, **T** (tesla)	[Mag.flux]/[Area]. More properly **magnetic flux density**
Magnetic intensity	$m^{-1}.A$		[Current]/[Distance]. More properly **magnetic field strength**
Magnetic moment	$m^{2}.A$	$J.T^{-1}$	[Current]*[Area]
Magnetic permeability	$kg.m.s^{-2}.A^{-2}$	$H.m^{-1}$	[Mag.flux density]/[Mag.field strength]
Magnetic permeability, relative	1	Dimensionless	[Permeability]/[Permeability of vacuum]
Magnetic quadrupole moment	$m^{3}.A$	$m.J.T^{-1}$	[Mag.dipole]*[Distance]
Magnetic susceptibility	1	Dimensionless	[Relative permeability]-1
Magnetic vector potential	$kg.m.s^{-2}.A^{-1}$	$m^{-1}.s.V$, m.T	[Mag.flux density]*[Distance], [El.field strength]*[Time]
Magnetization	$m^{-1}.A$		[Mag.moment]/[Volume]. Like **magnetic field strength**
Magnetogyric ratio	$kg.s^{-1}.A^{-1}$	$T.Hz^{-1}$	[Angular moment of motion]/[Mag.moment]
Magnetomotive force (mmf)	A		[Current]*[Number of turns]
Magnitude of a star	1	Dimensionless	m-m'=-$10^{0.4}$(S/S'), where S,S' are the luminous fluxes of two stars
Mass	kg	**kg** (kilogram)	
Mass density	$kg.m^{-3}$		[Mass]/[Volume]. Same as **specific density**
Mass density gradient | Specific density gradient	$kg.m^{-4}$		[Mass density]/[Distance]
Mass concentration	1	Dimensionless	[Partial mass]/[Total mass]
Mass flow (total)	$kg.s^{-1}$	kg	[ΔMass]/[Time]. For example, through a device
Mass production rate	$kg.s^{-1}$		[ΔMass]/[Time]. Same as **mass flow**
Mass, molar	$kg.mol^{-1}$		[Mass]/[Quantity]
Mass number of an isotope	1	Dimensionless	Number of protons+neutrons in the isotope nuclide
Mean anomaly	1	Dimensionless	Of a body on a Kepler orbit; t.sqrt(G(M_1+M_2)/r^3)
Mean motion	s^{-1}		Of a body on a Kepler orbit; sqrt(G(M_1+M_2)/r^3)
Modulus of compression	$kg^{-1}.m.s^{2}$	Pa^{-1}	[Pressure]/([ΔVolume]/[Volume]). Same as **compressibility**
Modulus of rigidity	$kg.m^{-1}.s^{-2}$	$N.m^{-2}$, Pa	[Stress]/[Strain]. Same as **shear modulus**
Mobility, ionic	$kg^{-1}.m^{-1}.s^{2}.A$	$m^{2}.s^{-1}.V^{-1}$	[Velocity]/[Electric field strength] .
Molality (intended as concentration)	$kg^{-1}.mol$	mol/kg	[Quantity]/[Mass]

Molar charge	s.A.mol^{-1}	C.mol^{-1}	[Charge]/[Quantity]
Molar concentration	m^{-3}.mol		[Quantity]/[Volume]. Same as **concentration** or **molarity**
Molar concentration gradient	m^{-4}.mol		[Molarity]/[Distance]. Same as **molarity gradient**
Molar concentration ratio	1	Dimensionless	[Partial quantity]/[Total quantity]
Molar conductivity, electric	kg^{-1}.m^{-3}.s^{3}.A^{2}.mol^{-1}	S.m^{-1}.mol^{-1}	[El.conductivity]/[Concentration]
Molar density	m^{-3}.mol		[Quantity]/[Volume]. Same as **concentration**
Molar energy	kg.m^{2}.s^{-2}.mol^{-1}	J.mol^{-1}	[Energy]/[Quantity]
Molar enthalpy	kg.m^{2}.s^{-2}.mol^{-1}	J.mol^{-1}	[Enthalpy]/[Quantity]. Like **molar heat**
Molar entropy	kg.m^{2}.s^{-2}.K^{-1}.mol^{-1}	J.K^{-1}.mol^{-1}	[Entropy]/[Quantity]
Molar free energy	kg.m^{2}.s^{-2}.mol^{-1}	J.mol^{-1}	[Free energy]/[Quantity]. Also **molar Helmholtz function**
Molar free enthalpy	kg.m^{2}.s^{-2}.mol^{-1}	J.mol^{-1}	[Free enthalpy]/[Quantity]. Also **molar Gibbs function**
Molar heat	kg.m^{2}.s^{-2}.mol^{-1}	J.mol^{-1}	[Heat]/[Quantity]
Molar heat capacity	kg.m^{2}.s^{-2}.K^{-1}.mol^{-1}	J.K^{-1}.mol^{-1}	[Heat capacity]/[Quantity]
Molar internal energy	kg.m^{2}.s^{-2}.mol^{-1}	J.mol^{-1}	[Internal energy]/[Quantity]. Like **molar heat**
Molar mass	kg.mol^{-1}		[Mass]/[Quantity]
Molar particle count	mol^{-1}		[Count]/[Mol]. For example, the Avogadro constant
Molar production rate	mol.s^{-1}		[ΔQuantity]/[Time].
Molar refractivity	m^{3}.mol^{-1}		[(r^{2}-1)/(r^{2}+2)]/[Concentration], where r is the refractive index
Molar relaxivity	s^{-1}.mol^{-1}		[Relaxation rate]/[Concentration]
Molar solubility	m^{-3}.mol		[Quantity]/[Volume]. Same as **concentration**
Molar volume	m^{3}.mol^{-1}		[Volume]/[Quantity]
Molarity	m^{-3}.mol		[Quantity]/[Volume]. Same as **concentration** or **molar density**
Molarity gradient	m^{-4}.mol		[Molarity]/[Distance]. Same as **concentration gradient**
Molecular quantum charge	1	Dimensionless	[Charge of a molecule]/[Elementary charge quantum]
Moment of force	kg.m^{2}.s^{-2}	N.m	[Force]*[Distance]
Moment of motion	kg.m.s^{-1}		[Mass]*[Velocity], [Mass flow]*[Distance]
Multiple derivatives with respect to **time**	s^{-p}		d^{p}/d**t**^{p}, ∂^{p}/∂**t**^{p}; for p = 1,2,3,..
Multiple derivatives with respect to a **length**	m^{-p}		d^{p}/d**r**^{p}, ∂^{p}/∂**r**^{p}; for p = 1,2,3,..., r = x | y | z
Mutual inductance	kg.m^{2}.s^{-2}.A^{-2}	V.s.A^{-1}, Wb.A^{-1}, **H** (henry)	[ΔPotential]/[dCurrent/dt], [Mag.flux]/[Current]
N:			
Nabla (∇) | div | grad | rot | curl	m^{-1}		Any derivative-like construct with respect to a distance
Notch resistance	kg.s^{-2}	J.m^{-2}	[Energy]/[Area]
Number of instances / events	1		This covers all kinds of **enumerations**
Number density	m^{-3}		[Particles]/[Volume]. Obsolete; see **particle density**
Number of turns	1		Often used in electric engineering
O:			
Osmotic pressure	kg.m^{-1}.s^{-2}	Pa	
P:			
Particle count, molar	mol^{-1}		[Count]/[Mol]. For example, the Avogadro constant
Particle density	m^{-3}		[Count]/[Volume]. Obsolete: **number density**
P/E Price/Earnings ratio	s	year	[Value]/[Earnings]. Economy and finance
Peltier coefficient	kg.m^{2}.s^{-3}.A^{-1}	W.A^{-1}, V	[Heat flux]/[Current]
Perimeter | Circumference	m		
Permeability, magnetic	kg.m.s^{-2}.A^{-2}	H.m^{-1}	[Mag.flux density]/[Mag.field strength]
Permeability, hydraulic	m^{2}	1 darcy = 10^{-12} m^{2}	[Velocity]*[Viscosity]/[Pressure gradient], in **porous media**
Permittivity, electric	kg^{-1}.m^{-3}.s^{4}.A^{2}	F.m^{-1}	[El.flux density]/[El.field strength]
Permittivity, relative	1	Dimensionless	[Permittivity]/[Permittivity of vacuum]. **Dielectric constant**
Phase | Phase angle	1	rad	φ typically in exp(i(ωt+φ))
Phase drift rate	s^{-1}	rad.s^{-1}	[Phase angle]/[Time]
Pi coefficient, molar	kg.m^{-1}.s^{-2}.mol^{-1}	J.m^{-3}	[ΔInternalEnergy]/[ΔVolume]
Piezzoelectric coefficient	kg.m.s^{-3}.A^{-1}	V.m^{-1}	[Electric field strength]/([ΔLength]/[Length])
Plane angle	1	**rad**	
Poisson's ratio	1	Dimensionless	[Transversal striction]/[Londitudinal elongation]
Polarization, electric	m^{-2}.s.A	C.m^{-2}	[Charge]/[Area]. Like **electric flux density**

Porosity, superficial	1	Dimensionless	[Void cross section]/[Total cross section], in **porous media**
Porosity, volume	1	Dimensionless	[Pores volume]/[Total volume], in **porous media**
Position vector	m		in all Euclidean n-dimensional spaces
Potential, electric	kg.m^{2}.s^{-3}.A^{-1}	W.A^{-1}, J.C^{-1}, **V** (volt)	[Power]/[Current], [Energy]/[Charge]
Power	kg.m^{2}.s^{-3}	J.s^{-1}, **W** (watt)	[ΔEnergy]/[ΔTime]. Equivalent to **energy flux**
Prandtl number	1	Dimensionless	[Kinematic viscosity]/[Thermal diffusivity]
Propagation loss	m^{-1}	dB/m	[Ratio]/m. Generic, usable for any quantity
Poynting vector	kg.s^{-3}	W.m^{-2}	[El.field strength]/[Mag.field strength]. Like **irradiance**
Pressure	kg.m^{-1}.s^{-2}	N.m^{-2}, **Pa** (pascal)	[Force]/[Area]
Pressure gradient	kg.m^{-2}.s^{-2}	N.m^{-3}, **Pa/m**	[Pressure]/[Distance]
Price | Value	cur	currency	Economy and finance
Probability of an event	1		Real number in a dimensionless interval [0,1]
Probability density on log-scale	1	Np^{-1}	[Probability]/[Natural-logarithmic ratio]
Purchase | Transaction value	cur	currency	Economy and finance
Q:			
Quadrupole moment, electric	m^{2}.s.A	C.m^{2}	[Electric dipole]*[Distance], [Electric charge]*[Distance^{2}]
Quadrupole moment, magnetic	m^{3}.A	m.J.T^{-1}	[Mag.dipole]*[Distance]
Quantity of substance	mol	**mol**	
Quantum charge	1	Dimensionless	[Charge]/[Elementary charge quantum]
Quantum charge, molecular or ionic	1	Dimensionless	[Molecule/ion charge]/[Charge quantum]
Quotient of dispersivity	m^{-1}		[ΔRefractive index]/[ΔWavelength]
R:			
Radiance	kg.s^{-3}.sr^{-1}	W.m^{-2}.sr^{-1}	([Power]/[Area])/[Solid angle]
Radiation dose	m^{2}.s^{-2}	J.kg^{-1}, **Gy** (gray)	[Energy]/[Mass]
Radiation dose rate	m^{2}.s^{-3}	Gy.s^{-1}	[Absorbed dose]/[Time]
Radioactivity	s^{-1}	**Bq** (becquerel)	[Counts]/[Time]
Radius of curvature	m		of a line in plane/space or surface in space
Rotational stiffness	kg.m^{2}.s^{-2}.rad^{-1}	N.m.rad^{-1}	[Moment of force]/[Angle]. ... of a structure
Ratio of commensurable quantities	1	Dimensionless	Q1/Q2, with Q1 and Q2 having the same dimension
Reactance, acoustic	kg.m^{-4}.s^{-1}	Pa.s/m^{3}, reyl/m^{2}	[ΔPressure]/[Volume flow rate]. Also **acu. impedance / resistance**
Reactance, acoustic, specific	kg.m^{-2}.s^{-1}	Pa.s/m , **reyl**	[ΔPressure]*[Velocity]. Also **s.acu. impedance / resistance**
Reactance, capacitive	kg.m^{2}.s^{-3}.A^{-2}	**Ω** (ohm)	1/(i[Angular frequency].[Capacitance])
Reciprocal space position | K-space vector	m^{-1}		
Redox potential	kg.m^{2}.s^{-3}.A^{-1}	**V** (volt)	Same as **reduction potential**
Reduction potential	kg.m^{2}.s^{-3}.A^{-1}	**V** (volt)	Same as **redox potential**
Refractive index	1	Dimensionless	Light speeds ration (in a medium)/(in vacuum)
Refractivity, molar	m^{3}.mol^{-1}		[(r^{2}-1)/(r^{2}+2)]/[Concentration]
Refractivity, specific	m^{3}.kg^{-1}		[(r^{2}-1)/(r^{2}+2)]/[Specific density],
Relative atomic mass | Atomic weight	au	atomic units	Average over a typical isotopic composition
Relative differential	1	Dimensionless	dQ/Q, d{ln(Q)}, for any quantity Q. Also **log-scale differential**
Relative evolution rate	s^{-1}		d{ln(Q)}/dt = (dQ/dt)/Q. Also **log-scale evolution rate**
Relative permeability, magnetic	1	Dimensionless	[Permeability]/[Permeability of vacuum]
Relative permittivity, electric	1	Dimensionless	[Permittivity]/[Permittivity of vacuum]. **Dielectric constant**
Relative variation	1	Dimensionless	ΔQ/Q, for any quantity Q
Relativistic displacement four-tensor ($D^{\mu\nu}$)	m^{-1}.A		Like **magnetic intensity**
Relativistic electromagnetic field tensor ($F^{\mu\nu}$)	kg.s^{-2}.A^{-1}	**T**	Like **magnetic flux density**
Relativistic four-current (J^{α})	m^{-2}.A		Like **current density** and [Charge]*[c]
Relativistic four-potential (A^{α})	kg.m.s^{-2}.A^{-1}	m^{-1}.s.V, m.T	Like **magnetic vector potential** and [El.potential]/[c]
Relaxation rate	s^{-1}		1/[Relaxation time]. Used for returns to equilibria
Relaxation time	s		Used for returns to equilibria
Relaxivity, molar	s^{-1}.mol^{-1}		[Relaxation rate]/[Concentration]
Reluctance, magnetic	kg^{-1}.m^{-1}.s^{2}.A^{2}	m.H^{-1}	1/[Permeability]
Resistance, acoustic	kg.m^{-4}.s^{-1}	Pa.s/m^{3}, reyl/m^{2}	[ΔPressure]/[Volume flow rate]. Also **acu. impedance / reactance**
Resistance, acoustic, specific	kg.m^{-2}.s^{-1}	Pa.s/m , **reyl**	[ΔPressure]*[Velocity]. Also **s.acu. impedance / reactance**
Resistance, electric	kg.m^{2}.s^{-3}.A^{-2}	V.A^{-1}, **Ω** (ohm)	[ΔPotential]/[Current]

Resistance, thermal	$kg^{-1}.m^{-2}.s^{3}K$	K/W	of a device. [ΔT]/[Power].
Resistance to impact	$kg.s^{-2}$	$J.m^{-2}$	[Energy]/[Area]. Like **notch resistance**
Resistivity, electric	$kg.m^{3}.s^{-3}.A^{-2}$	Ω.m	([Resistance]*[Length])/[Area]
Return on asset / equity	s^{-1}	%/year	([ΔValue]/[Value])/[Time period]. Economy and finance
Reynolds number	1	Dimensionless	[Velocity]*[length]/[Kinematic viscosity]
RF attenuation	m^{-1}	dB/m	[Ratio]/m. Used mostly for radiation
S:			
Sale | Transaction value	cur	currency	Economy and finance
Sales flow | Transactions volume	$cur.s^{-1}$		[Value]/[Time period]. Economy and Finance
Seeback coefficient	$kg.m^{2}.s^{-3}.A^{-1}.K^{-1}$	$V.K^{-1}$	[ΔPotential]/[ΔTemperature]. Same as **thermoelectric power**
Self-diffusion coefficient	$m^{2}.s^{-1}$		$[Distance^{2}]$/[Time]
Settling rate	s^{-1}	typically dB/s	[Ratio]/[ΔTime]
Settling time	s	typically dB/s	Used to describe transient phenomena
Shear modulus	$kg.m^{-1}.s^{-2}$	$N.m^{-2}$, Pa	[Stress]/[Strain]. Like **Young modulus**
Softening point	K		Temperature at which hardness drops below a level
Solid angle	1	**sr** (steradian)	
Solubility, molar	$m^{-3}.mol$		[Quantity]/[Volume]. Same as **concentration**
Sonic attenuation	m^{-1}	dB/m	[Power ratio]/m. Used in acoustics
Specific acoustic impedance	$kg.m^{-2}.s^{-1}$	Pa.s/m , **reyl**	[ΔPressure]*[Velocity]. Also **s.acu. resistance / reactance**
Specific acoustic conductance	$kg^{-1}.m^{2}.s$	$reyl^{-1}$	Also **specific acoustic susceptance**
Specific charge	$kg^{-1}.s.A$	$C.kg^{-1}$	[Charge]/[Mass]. **Charge/mass ratio**
Specific density	$kg.m^{-3}$		[Mass]/[Volume]. Same as **density of mass**
Specific density gradient	$kg.m^{-4}$		[Mass density]/[Distance]. Same as **mass density gradient**
Specific energy	$m^{2}.s^{-2}$	$J.kg^{-1}$	[Energy]/[Mass]
Specific enthalpy	$m^{2}.s^{-2}$	$J.kg^{-1}$	[Enthalpy]/[Mass]. Like **specific heat**
Specific entropy	$m^{2}.s^{-2}.K^{-1}$	$J.K^{-1}.kg^{-1}$	[Entropy]/[Mass]
Specific free energy	$m^{2}.s^{-2}$	$J.kg^{-1}$	[Free energy]/[Mass]. Also **specific Helmholtz function**
Specific free enthalpy	$m^{2}.s^{-2}$	$J.kg^{-1}$	[Free enthalpy]/[Mass]. Also **specific Gibbs function**
Specific heat	$m^{2}.s^{-2}$	$J.kg^{-1}$	[Heat]/[Mass]
Specific heat capacity	$m^{2}.s^{-2}.K^{-1}$	$J.K^{-1}.kg^{-1}$	[Heat capacity]/[Mass]
Specific internal energy	$m^{2}.s^{-2}$	$J.kg^{-1}$	[Internal energy]/[Mass]. Like **specific heat**
Specific refractivity	$m^{3}.kg^{-1}$		$[(r^{2}-1)/(r^{2}+2)]$/[Specific density]
Specific volume	$m^{3}.kg^{-1}$		[Volume]/[Mass]
Speed	$m.s^{-1}$		[Distance]/[Time]. Same as **velocity**
Spin	1	Dimensionless	of a quantum particle
Star magnitude	1	Dimensionless	$m\text{-}m' = -10^{0.4}(S/S')$, where S,S' are luminous fluxes of two stars
Stiffness, linear	$kg.s^{-2}$	$N.m^{-1}$	[Force]/[Displacement]. ... of a structure
Stiffness, rotational	$kg.m^{2}.s^{-2}.rad^{-1}$	$N.m.rad^{-1}$	[Moment of force]/[Angle]. ... of a structure
Strain (mechanical)	1	Dimensionless	[ΔLength]/[Length] Relative deformation
Strain point	K		Temperature at which viscosity drops below $10^{13.5}$ Pa.s
Strength, compressive	$kg.m^{-1}.s^{-2}$	$N.m^{-2}$, Pa	[Force]/[Area]. Like **pressure**
Strength, dielectric	$kg.m.s^{-3}.A^{-1}$	$V.m^{-1}$	[ΔPotential]/[Distance]. Same as **electric strength**
Strength, electric field | Electric intensity	$kg.m.s^{-3}.A^{-1}$	$V.m^{-1}$	[ΔPotential]/[Distance]
Strength, ionic	$m^{-3}.mol$		Sum([Concentration]*[Ionic quantum charge]^{2}).
Strength, magnetic field | Magnetic intensity	$m^{-1}.A$		[Current]/[Distance]
Strength, tensile	$kg.m^{-1}.s^{-2}$	$N.m^{-2}$, Pa	[Force]/[Area]. Same as **pressure**
Superficial porosity	1	Dimensionless	[Void cross section]/[Total cross section], in **porous media**
Superficial velocity	$m.s^{-1}$	m/s	In **porous media**; as if the space was filled only by the fluid
Surface area	m^{2}		[Distance]*[Distance]. Applicable to 3D bodies
Surface density of charge	$m^{-2}.s.A$	$C.m^{-2}$	[Charge]/[Area]
Surface element	m^{2}		[Distance]*[Distance]. Same as **area**
Surface energy	$kg.s^{-2}$	J/m^{2}	[Energy]/[Area]. Same as **surface tension**
Surface growth rate	$m^{2}.s^{-1}$		[ΔArea]/[Time]
Surface tension	$kg.s^{-2}$	N/m	[Force]/[Length]. Same as **surface energy**
Susceptance, acoustic, specific	$kg^{-1}.m^{2}.s$	$reyl^{-1}$	Also **specific acoustic conductance**

Susceptance, capacitive	$kg^{-1}.m^{-2}.s^{3}.A^{2}$	**S** (siemens)	1/[Reactance]
Susceptibility, magnetic	1	Dimensionless	[Relative permeability]-1
Stress	$kg.m^{-1}.s^{-2}$	Pa, $N.m^{-2}$	[Force]/[Area]. Same as **pressure**
T:			
Temperature	K	**K** (kelvin)	
Temperature gradient	$K.m^{-1}$		[ΔTemperature]/[Distance]. Same as **thermal gradient**
Tensile strength	$kg.m^{-1}.s^{-2}$	$N.m^{-2}$, Pa	[Force]/[Area]. Same as **pressure**
Tension	$kg.m^{-1}.s^{-2}$	Pa, $N.m^{-2}$	[Force]/[Area]. Like **pressure**
Thermal conductivity	$kg.m.s^{-3}.K^{-1}$	$W.m^{-1}.K^{-1}$	[Heat flux]/([Distance]*[ΔTemperature]). Same as **heat conductivity**
Thermal diffusivity	$m^{2}.s^{-1}$		([∂Temperatute]/[∂Time])/[∇^2Temperature].
Thermal expansion coefficient	K^{-1}		([ΔLength]/[Length])/[Temperature]
Thermal gradient	$K.m^{-1}$		[ΔTemperature]/[Distance]. Same as **temperature gradient**
Thermal resistance	$kg^{-1}.m^{-2}.s^{3}K$	K/W	of a device. [ΔT]/[Power].
Thermodynamic force	$kg.m.s^{-2}.mol^{-1}$	N/mol	[ΔChemical potential]/[Distance]
Thermoelectric power | Thermopower	$kg.m^{2}.s^{-3}.A^{-1}.K^{-1}$	$V.K^{-1}$	[ΔPotential]/[ΔTemperature]. Same as **Seeback coefficient**
Thickness	m		usually referred to planar structures
Thomson coefficient	$kg.m^{2}.s^{-3}.A^{-1}.K^{-1}$	$W.K^{-1}.A^{-1}$	[Heat flux]/([ΔTemperature]*[Current])
Time	s	**s** (second)	
Torque | Moment of force	$kg.m^{2}.s^{-2}$	N.m	[Force]*[Distance]
Traction	$kg.m.s^{-2}$	**N** (newton)	Maximum tangential force before slipping
Traction coefficient	1	Dimensionless	[Traction]/[Weight]
Transaction value | Sale | Purchase	cur	currency	Economy and finance
Transactions count	1	Dimensionless	Economy and finance
Transactions rate | Activity	s^{-1}	1/year	[Transactions]/[Time period]. Economy and finance
Transactions volume | Sales flow	$cur.s^{-1}$		[Value]/[Time period]. Economy and Finance
Transmission loss	m^{-1}	dB/m	[Ratio]/m. Generic, usable for any quantity
U:			
V:			
V-number | Abbé number | Constringence	1	Dimensionless	$V_D = (n_D-1)/(n_F-n_C)$
Value | Price	cur	currency	Economy and finance
van der Waals constant: a	$kg.m^{5}.s^{-2}.mol^{-2}$	$Pa.m^{6}$	a in $(p+a/V^2)(V-b)=RT$, where V is molar volume
van der Waals constant: b	$m^{3}.mol^{-1}$		b in $(p+a/V^2)(V-b)=RT$, where V is molar volume
Variance of current noise n_J^2	$s.A^{2}$	A^2/Hz	$[Current]^2/[Bandwidth]$
Variance of voltage noise n_V^2	$kg^{2}.m^{4}.s^{-5}.A^{-2}$	V^2/Hz	$[Voltage]^2/[Bandwidth]$
Vector potential, magnetic	$kg.m.s^{-2}.A^{-1}$	$m^{-1}.s.V$, m.T	[Mag.flux density]*[Distance], [El.field strength]*[Time]
Velocity	$m.s^{-1}$	m/s	[Distance]/[Time]. Same as **speed**
Velocity, advection	$m.s^{-1}$	m/s	In **porous media**; actual progress along pressure gradient
Velocity, of money (circulation)	s^{-1}	1/year	[Transactions]/[Time period]. Economy and finance
Velocity, superficial	$m.s^{-1}$	m/s	In **porous media**; as if the space was filled only by the fluid
Verdet constant	$kg^{-1}.m^{-1}.s^{2}.A^{1}$	$rad.m^{-1}.T^{-1}$	([Angle]/[Length])/[Magnetic flux density]
Virial coefficient: second	$m^{3}.mol^{-1}$		B in $pV/(nRT)=1+B(n/V)+C(n/V)^2+D(n/V)^3+$...
Virial coefficient: third	$m^{6}.mol^{-2}$		C in $pV/(nRT)=1+B(n/V)+C(n/V)^2+D(n/V)^3+$...
Virial coefficient: fourth	$m^{9}.mol^{-3}$		C in $pV/(nRT)=1+B(n/V)+C(n/V)^2+D(n/V)^3+$...
Viscosity, dynamic	$kg.m^{-1}.s^{-1}$	Pa.s	([Force]/[Area])/[ΔVelocity]
Viscosity, kinematic	$m^{2}.s^{-1}$		[Dynamic viscosity]/[Density]
Voltage | Electromotive force	$kg.m^{2}.s^{-3}.A^{-1}$	V	[ΔPotential]
Voltage noise, variance n_V^2	$kg^{2}.m^{4}.s^{-5}.A^{-2}$	V^2/Hz	$[Voltage]^2/[Bandwidth]$
Volume	m^{3}		[Area]*[Distance]
Volume concentration	1	Dimensionless	[Partial volume]/[Total volume]
Volume flow	$m^{3}.s^{-1}$		[Volume]/[Time]. For example, through a device
Volume growth rate	$m^{3}.s^{-1}$		[Volume]/[Time]. For example, of a crystal
Volume porosity	1	Dimensionless	[Pores volume]/[Total volume], in **porous media**
W:			
Wave function for N particles (quantum)	$m^{-3N/2}$	tentative	$\|\psi\|^2 d\tau^N$ is a dimensionless probability element.

Wavelength	m		[Wave velocity]/[Frequency]
Wavenumber	m^{-1}		[Number of waves]/[Distance]
Wealth | Asset	cur	**currency**	Economy and finance
Work function	$kg.m^2.s^{-2}$	J, eV	[Energy] needed to remove an electron
X:			
Y:			
Young modulus	$kg.m^{-1}.s^{-2}$	$N.m^{-2}$, Pa	[Stress]/[Strain]. Like **shear modulus**
Z:			

Notes

Purpose

Physical (or rather metrological) dimensions are often bewildering, even though the international SI system of units has simplified things a lot, compared to early 20th century and before. The main purpose of this page is to provide a **fast, handy reference** to the dimension you might need at the spur of a moment. Another, less evident, purpose is to **stimulate curiosity** and the desire to study Metrology and Dimensional Analysis.

Formats and editorial comments

- **Bold magenta symbols** in the **Alternatives** column indicate commonly used quantities, mostly defined by the SI system.
- **Square brackets** convert the quantity they enclose into its *dimension*.
- Abbreviations **El.** and **Mag.** stand for **Electric** and **Magnetic**, respectively.
- [Quantity] stands for [Quantity of substance] and its dimension is **mol**.
- Names of units are always written with small first letter, even when derived from names of persons (for example 1 newton).

Many links, other than those appearing below,

will be soon scattered through the text, accompanying the particular quantities. This feature will be intensified.

Feedback:

If you think a link, or a quantity, are missing, please, let me know. Such suggestions are most appreciated.

Disclaimer:

Since errors do happen, and also because not all metrological conventions are agreed upon and shared by everybody, the Editor of this page declines any responsibility for any damages that might result from its content, directly or indirectly. In other words, if you crash a spacecraft because some of your engineers used *meters* and others used *feet*, do not pretend that I should pay for it :-)

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15. For more, see References on Systems of Units of Measurements

Links

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NIST Units of Measurements page.
NIST Units Bibliography to official on-line publications about the SI system.
Unit Converters list.
SI Units. A related resource on this website.
Constants of physics and mathematics. A related resource on this website.
Math Constants. A related resource on this website.
SI Dimensions of Physical Quantities. A related resource on this website (sorted alphabetically).
Dimensions of Physical Quantities by Category. Link to this resource. You can also cite its **DOI link:** 10.3247/SL1Phys06.004.
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