Table 1 Conversion table to SI for magnetism related properties.

Quantity	Symbol	cgs-Gauss units $B = H + 4\pi M$)	Conversion factor to SI	MKSA units (E-H cor.) $B = \mu_0 H + I$	Conversion factor to SI	SI (E-B cor.) $B = \mu_0 (H + M)$
Magnetic flux density	B	G	10^{-4}	T, Wb/m^2	1	T, Wb/m^2
Magnetic flux	Φ	Mx	10^{-8}	Wb	1	Wb
Magnetomotive force	V_m	Gb	$10/4\pi$	A	1	A
Magnetic field strength	H	Oe	$10^3/4\pi$	A/m	1	A/m
Magnetization	M, I	emu/cm^3	10^3	Wb/m^2	$1/\mu_0$	A/m, J/(T・m^3)
Mass magnetization	σ	emu/g	1	(Wb・m)/kg	$1/\mu_0$	A・m^2/kgJ/(T・kg)
Magnetic moment	m	emu	10^{-3}	Wb・m	$1/\mu_0$	A・m^2, J/T
Susceptibility	χ	—, (emu/(cm^3・Oe))	4π	H/m [a]	$1/\mu_0$	— [b]
Permeability of vacuum	μ_0	1	$4\pi \times 10^{-7}$	H/m	1	H/m
Permeability	μ	—	$4\pi \times 10^{-7} = \mu_0$	H/m	1	H/m
Demagnetizing factor	N	— [c]	$1/4\pi$	— [d]	1	— [e]
Maximum energy product	$(BH)_{max}$	G・Oe	$10\text{-}1/4\pi$	J/m^3	1	J/m^3
Energy density	E, K	erg/cm^3	10^{-1}	J/m^3	1	J/m^3

[a] $I = \chi H$. χ_r defined by $\chi r = \chi/\mu_0$ is equal to χ in SI.
[b] $M = \chi H$
[c] $N_x + N_y + N_z = 4p$
[d] Demagnetizing field: $H_d = -(N / \mu_0) \cdot I$, $N_x + N_y + N_z = 1$
[e] Demagnetizing field: $H_d = - N M$, $N_x + N_y + N_z = 1$

Table 2 Conversion table for inch-unit quantities used in magnetic and optical recording.

Quantity	Inch-unit	Conversion factor to recommended unit	Recommended unit [f]	Notes
Linear recording density	bpi, frpi, fci	100/2.54	bit/m, fr/m, fc/m	Use prefix as Mfr/m [g]
Areal recording density	bit/in^2	10^4 / 6.45	bit/m^2	Use prefix as Tbit/m2 [g]

[f] These are not SI units.
[g] bit/mm, fr/mm and bit/mm^2 are also used.

TABLE I

UNITS FOR MAGNETIC PROPERTIES

Symbol	Quantity	Conversion from Gaussian and cgs emu to SI[a]
Φ	Magnetic flux	1 Mx $\rightarrow 10^{-8}$ Wb = 10^{-8} V s
B	Magnetic flux density, magnetic induction	1 G $\rightarrow 10^{-4}$ T = 10^{-4} Wb/m^2
H	Magnetic field strength	1 Oe $\rightarrow 10^3/(4\pi)$ A/m
m	Magnetic moment	1 erg/G = 1 emu $\rightarrow 10^{-3}$ A m^2 = 10 J/T
M	Magnetization	1 erg/(G cm^3) = 1 emu/cm^3 $\rightarrow$ 10^{-3} A/m
$4\pi M$	Magnetization	1 G $\rightarrow 10^3/(4\pi)$ A/m
σ	Mass magnetization	1 erg/(G g) = 1 emu/g $\rightarrow$ 1 A m^2/kg
j	Magnetic dipole moment	1 erg/G = 1 emu $\rightarrow 4\pi \times 10^{-4}$ T
J	Magnetic polarization	1 erg/(G cm^3) = 1 emu/cm^3 $\rightarrow 4\pi \times 10^{-4}$ T
χ, κ	Susceptibility	$1 \rightarrow 4\pi$
χ_o	Mass susceptibility	1 cm^3/g $\rightarrow 4\pi \times 10^{-3}$ m^3/kg
μ	Permeability	$1 \rightarrow 4\pi \times 10^{-7}$ H/m = $4\pi \times 10^{-7}$ Wb/(a m)
μ_r	Relative permeability	$\mu \rightarrow \mu_r$
w, W	Energy density	1 erg/cm^3 $\rightarrow 10^{-3}$ J/m^3
N, D	Demagnetizing factor	$1 \rightarrow 1/(4\pi)$