From: **http://physics.nist.gov/constants**

Energy Equivalents

	Relevant unit			
	J	kg	m^{-1}	Hz
1 J	$(1\ \text{J}) =$ 1 J	$(1\ \text{J})/c^2 =$ $1.112\,650\,056\ldots \times 10^{-17}$ kg	$(1\ \text{J})/hc =$ $5.034\,116\,651(62) \times 10^{24}\ \text{m}^{-1}$	$(1\ \text{J})/h =$ $1.509\,190\,205(19) \times 10^{33}$ Hz
1 kg	$(1\ \text{kg})c^2 =$ $8.987\,551\,787\ldots \times 10^{16}$ J	$(1\ \text{kg}) =$ 1 kg	$(1\ \text{kg})c/h =$ $4.524\,438\,411(56) \times 10^{41}\ \text{m}^{-1}$	$(1\ \text{kg})c^2/h =$ $1.356\,392\,512(17) \times 10^{50}$ Hz
1 m^{-1}	$(1\ \text{m}^{-1})hc =$ $1.986\,445\,824(24) \times 10^{-25}$ J	$(1\ \text{m}^{-1})h/c =$ $2.210\,219\,057(27) \times 10^{-42}$ kg	$(1\ \text{m}^{-1}) =$ $1\ \text{m}^{-1}$	$(1\ \text{m}^{-1})c =$ 299 792 458 Hz
1 Hz	$(1\ \text{Hz})h =$ $6.626\,070\,040(81) \times 10^{-34}$ J	$(1\ \text{Hz})h/c^2 =$ $7.372\,497\,201(91) \times 10^{-51}$ kg	$(1\ \text{Hz})/c =$ $3.335\,640\,951\ldots \times 10^{-9}\ \text{m}^{-1}$	$(1\ \text{Hz}) =$ 1 Hz
1 K	$(1\ \text{K})k =$ $1.380\,648\,52(79) \times 10^{-23}$ J	$(1\ \text{K})k/c^2 =$ $1.536\,178\,65(88) \times 10^{-40}$ kg	$(1\ \text{K})k/hc =$ $69.503\,457(40)\ \text{m}^{-1}$	$(1\ \text{K})k/h =$ $2.083\,6612(12) \times 10^{10}$ Hz
1 eV	$(1\ \text{eV}) =$ $1.602\,176\,6208(98) \times 10^{-19}$ J	$(1\ \text{eV})/c^2 =$ $1.782\,661\,907(11) \times 10^{-36}$ kg	$(1\ \text{eV})/hc =$ $8.065\,544\,005(50) \times 10^{5}\ \text{m}^{-1}$	$(1\ \text{eV})/h =$ $2.417\,989\,262(15) \times 10^{14}$ Hz
1 u	$(1\ \text{u})c^2 =$ $1.492\,418\,062(18) \times 10^{-10}$ J	$(1\ \text{u}) =$ $1.660\,539\,040(20) \times 10^{-27}$ kg	$(1\ \text{u})c/h =$ $7.513\,006\,6166(34) \times 10^{14}\ \text{m}^{-1}$	$(1\ \text{u})c^2/h =$ $2.252\,342\,7206(10) \times 10^{23}$ Hz
1 E_h	$(1\ E_\text{h}) =$ $4.359\,744\,650(54) \times 10^{-18}$ J	$(1\ E_\text{h})/c^2 =$ $4.850\,870\,129(60) \times 10^{-35}$ kg	$(1\ E_\text{h})/hc =$ $2.194\,746\,313\,702(13) \times 10^{7}\ \text{m}^{-1}$	$(1\ E_\text{h})/h =$ $6.579\,683\,920\,711(39) \times 10^{15}$ Hz

The values of some energy equivalents derived from the relations $E = mc^2 = hc/\lambda = h\nu = kT$, and based on the 2014 CODATA adjustment of the values of the constants; 1 eV $= (e/\text{C})$ J, 1 u $= m_\text{u} = \frac{1}{12}m(^{12}\text{C}) = 10^{-3}$ kg $\text{mol}^{-1}/N_\text{A}$, and $E_\text{h} = 2R_\infty hc = \alpha^2 m_\text{e} c^2$ is the Hartree energy (hartree).

From: **http://physics.nist.gov/constants**

Energy Equivalents

	Relevant unit			
	K	eV	u	E_h
1 J	(1 J)/k = $7.242\,9731(42) \times 10^{22}$ K	(1 J) = $6.241\,509\,126(38) \times 10^{18}$ eV	(1 J)/c^2 = $6.700\,535\,363(82) \times 10^{9}$ u	(1 J) = $2.293\,712\,317(28) \times 10^{17}$ E_h
1 kg	(1 kg)c^2/k = $6.509\,6595(37) \times 10^{39}$ K	(1 kg)c^2 = $5.609\,588\,650(34) \times 10^{35}$ eV	(1 kg) = $6.022\,140\,857(74) \times 10^{26}$ u	(1 kg)c^2 = $2.061\,485\,823(25) \times 10^{34}$ E_h
1 m^{-1}	(1 m^{-1})hc/k = $1.438\,777\,36(83) \times 10^{-2}$ K	(1 m^{-1})hc = $1.239\,841\,9739(76) \times 10^{-6}$ eV	(1 m^{-1})h/c = $1.331\,025\,049\,00(61) \times 10^{-15}$ u	(1 m^{-1})hc = $4.556\,335\,252\,767(27) \times 10^{-8}$ E_h
1 Hz	(1 Hz)h/k = $4.799\,2447(28) \times 10^{-11}$ K	(1 Hz)h = $4.135\,667\,662(25) \times 10^{-15}$ eV	(1 Hz)h/c^2 = $4.439\,821\,6616(20) \times 10^{-24}$ u	(1 Hz)h = $1.519\,829\,846\,0088(90) \times 10^{-16}$ E_h
1 K	(1 K) = 1 K	(1 K)k = $8.617\,3303(50) \times 10^{-5}$ eV	(1 K)k/c^2 = $9.251\,0842(53) \times 10^{-14}$ u	(1 K)k = $3.166\,8105(18) \times 10^{-6}$ E_h
1 eV	(1 eV)/k = $1.160\,452\,21(67) \times 10^{4}$ K	(1 eV) = 1 eV	(1 eV)$/c^2$ = $1.073\,544\,1105(66) \times 10^{-9}$ u	(1 eV) = $3.674\,932\,248(23) \times 10^{-2}$ E_h
1 u	(1 u)c^2/k = $1.080\,954\,38(62) \times 10^{13}$ K	(1 u)c^2 = $931.494\,0954(57) \times 10^{6}$ eV	(1 u) = 1 u	(1 u)c^2 = $3.423\,177\,6902(16) \times 10^{7}$ E_h
1 E_h	(1 E_h)$/k$ = $3.157\,7513(18) \times 10^{5}$ K	(1 E_h) = 27.211 386 02(17) eV	(1 E_h)$/c^2$ = $2.921\,262\,3197(13) \times 10^{-8}$ u	(1 E_h) = 1 E_h

The values of some energy equivalents derived from the relations $E = mc^2 = hc/\lambda = h\nu = kT$, and based on the 2014 CODATA adjustment of the values of the constants; 1 eV = (e/C) J, 1 u = $m_\mathrm{u} = \frac{1}{12}m(^{12}\mathrm{C}) = 10^{-3}$ kg mol$^{-1}/N_\mathrm{A}$, and $E_\mathrm{h} = 2R_\infty hc = \alpha^2 m_\mathrm{e} c^2$ is the Hartree energy (hartree).