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

Energy Equivalents

	Relevant unit			
	J	kg	m^{-1}	Hz
1 J	$(1\ \mathrm{J}) =$ 1 J	$(1\ \mathrm{J})/c^2 =$ $1.112\,650\,056\ldots \times 10^{-17}$ kg	$(1\ \mathrm{J})/hc =$ $5.034\,117\,47(25) \times 10^{24}\ \mathrm{m}^{-1}$	$(1\ \mathrm{J})/h =$ $1.509\,190\,450(75) \times 10^{33}$ Hz
1 kg	$(1\ \mathrm{kg})c^2 =$ $8.987\,551\,787\ldots \times 10^{16}$ J	$(1\ \mathrm{kg}) =$ 1 kg	$(1\ \mathrm{kg})c/h =$ $4.524\,439\,15(23) \times 10^{41}\ \mathrm{m}^{-1}$	$(1\ \mathrm{kg})c^2/h =$ $1.356\,392\,733(68) \times 10^{50}$ Hz
1 m^{-1}	$(1\ \mathrm{m}^{-1})hc =$ $1.986\,445\,501(99) \times 10^{-25}$ J	$(1\ \mathrm{m}^{-1})h/c =$ $2.210\,218\,70(11) \times 10^{-42}$ kg	$(1\ \mathrm{m}^{-1}) =$ $1\ \mathrm{m}^{-1}$	$(1\ \mathrm{m}^{-1})c =$ 299 792 458 Hz
1 Hz	$(1\ \mathrm{Hz})h =$ $6.626\,068\,96(33) \times 10^{-34}$ J	$(1\ \mathrm{Hz})h/c^2 =$ $7.372\,496\,00(37) \times 10^{-51}$ kg	$(1\ \mathrm{Hz})/c =$ $3.335\,640\,951\ldots \times 10^{-9}\ \mathrm{m}^{-1}$	$(1\ \mathrm{Hz}) =$ 1 Hz
1 K	$(1\ \mathrm{K})k =$ $1.380\,6504(24) \times 10^{-23}$ J	$(1\ \mathrm{K})k/c^2 =$ $1.536\,1807(27) \times 10^{-40}$ kg	$(1\ \mathrm{K})k/hc =$ $69.503\,56(12)\ \mathrm{m}^{-1}$	$(1\ \mathrm{K})k/h =$ $2.083\,6644(36) \times 10^{10}$ Hz
1 eV	(1 eV) = $1.602\,176\,487(40) \times 10^{-19}$ J	$(1\ \mathrm{eV})/c^2 =$ $1.782\,661\,758(44) \times 10^{-36}$ kg	$(1\ \mathrm{eV})/hc =$ $8.065\,544\,65(20) \times 10^{5}\ \mathrm{m}^{-1}$	$(1\ \mathrm{eV})/h =$ $2.417\,989\,454(60) \times 10^{14}$ Hz
1 u	$(1\ \mathrm{u})c^2 =$ $1.492\,417\,830(74) \times 10^{-10}$ J	(1 u) = $1.660\,538\,782(83) \times 10^{-27}$ kg	$(1\ \mathrm{u})c/h =$ $7.513\,006\,671(11) \times 10^{14}\ \mathrm{m}^{-1}$	$(1\ \mathrm{u})c^2/h =$ $2.252\,342\,7369(32) \times 10^{23}$ Hz
1 E_h	$(1\ E_\mathrm{h}) =$ $4.359\,743\,94(22) \times 10^{-18}$ J	$(1\ E_\mathrm{h})/c^2 =$ $4.850\,869\,34(24) \times 10^{-35}$ kg	$(1\ E_\mathrm{h})/hc =$ $2.194\,746\,313\,705(15) \times 10^{7}\ \mathrm{m}^{-1}$	$(1\ E_\mathrm{h})/h =$ $6.579\,683\,920\,722(44) \times 10^{15}$ Hz

The values of some energy equivalents derived from the relations $E = mc^2 = hc/\lambda = h\nu = kT$, and based on the 2006 CODATA adjustment of the values of the constants; 1 eV $= (e/\mathrm{C})$ J, 1 u $= m_\mathrm{u} = \frac{1}{12}m(^{12}\mathrm{C}) = 10^{-3}$ kg $\mathrm{mol}^{-1}/N_\mathrm{A}$, and $E_\mathrm{h} = 2R_\infty hc = \alpha^2 m_\mathrm{e} c^2$ is the Hartree energy (hartree).

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Energy Equivalents

	Relevant unit			
	K	eV	u	E_h
1 J	(1 J)/k = $7.242\,963(13) \times 10^{22}$ K	(1 J) = $6.241\,509\,65(16) \times 10^{18}$ eV	(1 J)/c^2 = $6.700\,536\,41(33) \times 10^{9}$ u	(1 J) = $2.293\,712\,69(11) \times 10^{17}$ E_h
1 kg	(1 kg)c^2/k = $6.509\,651(11) \times 10^{39}$ K	(1 kg)c^2 = $5.609\,589\,12(14) \times 10^{35}$ eV	(1 kg) = $6.022\,141\,79(30) \times 10^{26}$ u	(1 kg)c^2 = $2.061\,486\,16(10) \times 10^{34}$ E_h
1 m^{-1}	(1 m^{-1})hc/k = $1.438\,7752(25) \times 10^{-2}$ K	(1 m^{-1})hc = $1.239\,841\,875(31) \times 10^{-6}$ eV	(1 m^{-1})h/c = $1.331\,025\,0394(19) \times 10^{-15}$ u	(1 m^{-1})hc = $4.556\,335\,252\,760(30) \times 10^{-8}$ E_h
1 Hz	(1 Hz)h/k = $4.799\,2374(84) \times 10^{-11}$ K	(1 Hz)h = $4.135\,667\,33(10) \times 10^{-15}$ eV	(1 Hz)h/c^2 = $4.439\,821\,6294(64) \times 10^{-24}$ u	(1 Hz)h = $1.519\,829\,846\,006(10) \times 10^{-16}$ E_h
1 K	(1 K) = 1 K	(1 K)k = $8.617\,343(15) \times 10^{-5}$ eV	(1 K)k/c^2 = $9.251\,098(16) \times 10^{-14}$ u	(1 K)k = $3.166\,8153(55) \times 10^{-6}$ E_h
1 eV	(1 eV)/k = $1.160\,4505(20) \times 10^{4}$ K	(1 eV) = 1 eV	(1 eV)/c^2 = $1.073\,544\,188(27) \times 10^{-9}$ u	(1 eV) = $3.674\,932\,540(92) \times 10^{-2}$ E_h
1 u	(1 u)c^2/k = $1.080\,9527(19) \times 10^{13}$ K	(1 u)c^2 = $931.494\,028(23) \times 10^{6}$ eV	(1 u) = 1 u	(1 u)c^2 = $3.423\,177\,7149(49) \times 10^{7}$ E_h
1 E_h	(1 E_h)/k = $3.157\,7465(55) \times 10^{5}$ K	(1 E_h) = 27.211 383 86(68) eV	(1 E_h)/c^2 = $2.921\,262\,2986(42) \times 10^{-8}$ 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 2006 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 $\mathrm{mol}^{-1}/N_\mathrm{A}$, and $E_\mathrm{h} = 2R_\infty hc = \alpha^2 m_\mathrm{e} c^2$ is the Hartree energy (hartree).