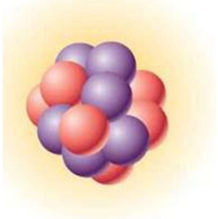
La Unidad de Masa Atómica (u)

Se define como la doceava parte de la masa de un átomo de $^{12}_{6}C$

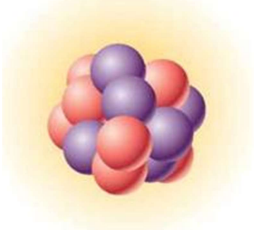
$$1\,u = \frac{m(^{12}_{6}C)}{12}$$

Carbono-12
Abundancia=98,9 %



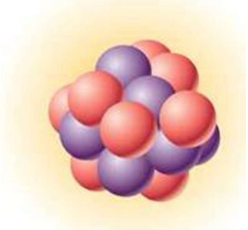
6 protones
6 neutrones

Carbono-13
Abundancia=1,1 %



6 protones
7 neutrones

Carbono-14
Abundancia < 0,1 %



6 protones
8 neutrones

¿Cuál es la masa de un átomo de $^{12}_{6}C$?

La masa de 1 mol **de átomos de** $^{12}_{6}C$ **es de** 12 gramos

La masa de 1 átomo de $^{12}_{6}C$ **es de** $\frac{12}{6{,}022 \cdot 10^{23}}\,gramos$

$$1\,u = \frac{m\,(^{12}_{6}C)}{12} = \frac{\frac{12}{6{,}022 \quad ^{23}}\,gramos}{12} = 1{,}66 \cdot \quad ^{-24}\,g = 1{,}66 \quad 10^{-27}\,kg$$

$$1\,u = 1{,}66 \cdot 10^{-27}\,kg$$

Energía equivalente a 1 u

$E = m \cdot c^2$

1 u = 1,49 . 10^{-10} J

1 u = 9,31 . 10^{8} eV

1 u = 931 MeV

CODATA Recommended Values of the Fundamental Physical Constants: 2014*

National Institute of Standards and Technology, Gaithersburg, Maryland 20899-8420, USA

(Dated: July 30, 2015)

This document gives the 2014 self-consistent set of values of the constants and conversion factors of physics and chemistry recommended by the Committee on Data for Science and Technology (CODATA). These values are based on a least-squares adjustment that takes into account all data available up to 31 December 2014. The recommended values may also be found at physics.nist.gov/constants.

TABLE I An abbreviated list of the CODATA recommended values of the fundamental constants of physics and chemistry based on the 2014 adjustment.

Quantity	Symbol	Numerical value	Unit	Relative std. uncert. u_r
speed of light in vacuum	c, c_0	299 792 458	m s^{-1}	exact
magnetic constant	μ_0	$4\pi \times 10^{-7}$	N A^{-2}	
		$= 12.566\,370\,614... \times 10^{-7}$	N A^{-2}	exact
electric constant $1/\mu_0 c^2$	ϵ_0	$8.854\,187\,817... \times 10^{-12}$	F m^{-1}	exact
Newtonian constant of gravitation	G	$6.674\,08(31) \times 10^{-11}$	m^3 kg^{-1} s^{-2}	4.7×10^{-5}
Planck constant	h	$6.626\,070\,040(81) \times 10^{-34}$	J s	1.2×10^{-8}
$h/2\pi$	$\hbar$	$1.054\,571\,800(13) \times 10^{-34}$	J s	1.2×10^{-8}
elementary charge	e	$1.602\,176\,6208(98) \times 10^{-19}$	C	6.1×10^{-9}
magnetic flux quantum $h/2e$	Φ_0	$2.067\,833\,831(13) \times 10^{-15}$	Wb	6.1×10^{-9}
conductance quantum $2e^2/h$	G_0	$7.748\,091\,7310(18) \times 10^{-5}$	S	2.3×10^{-10}
electron mass	m_e	$9.109\,383\,56(11) \times 10^{-31}$	kg	1.2×10^{-8}
proton mass	m_p	$1.672\,621\,898(21) \times 10^{-27}$	kg	1.2×10^{-8}
proton-electron mass ratio	m_p/m_e	1836.152 673 89(17)		9.5×10^{-11}
fine-structure constant $e^2/4\pi\epsilon_0\hbar c$	α	$7.297\,352\,5664(17) \times 10^{-3}$		2.3×10^{-10}
inverse fine-structure constant	α^{-1}	137.035 999 139(31)		2.3×10^{-10}
Rydberg constant $\alpha^2 m_e c/2h$	R_∞	10 973 731.568 508(65)	m^{-1}	5.9×10^{-12}
Avogadro constant	N_A, L	$6.022\,140\,857(74) \times 10^{23}$	mol^{-1}	1.2×10^{-8}
Faraday constant $N_A e$	F	96 485.332 89(59)	C mol^{-1}	6.2×10^{-9}
molar gas constant	R	8.314 4598(48)	J mol^{-1} K^{-1}	5.7×10^{-7}
Boltzmann constant R/N_A	k	$1.380\,648\,52(79) \times 10^{-23}$	J K^{-1}	5.7×10^{-7}
Stefan-Boltzmann constant $(\pi^2/60)k^4/\hbar^3 c^2$	σ	$5.670\,367(13) \times 10^{-8}$	W m^{-2} K^{-4}	2.3×10^{-6}
Non-SI units accepted for use with the SI				
electron volt (e/C) J	eV	$1.602\,176\,6208(98) \times 10^{-19}$	J	6.1×10^{-9}
(unified) atomic mass unit $\frac{1}{12}m(^{12}C)$	u	$1.660\,539\,040(20) \times 10^{-27}$	kg	1.2×10^{-8}