
Quantities and units —
Part 4:
Mechanics

Grandeurs et unités —
Partie 4: Mécanique





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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 12, *Quantities and units*, in collaboration with Technical Committee IEC/TC 25, *Quantities and units*.

This second edition cancels and replaces the first edition (ISO 80000-4:2006), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the table giving the quantities and units has been simplified;
- some definitions and the remarks have been stated physically more precisely.

A list of all parts in the ISO 80000 and IEC 80000 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Quantities and units —

Part 4: Mechanics

1 Scope

This document gives names, symbols, definitions and units for quantities of mechanics. Where appropriate, conversion factors are also given.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

Names, symbols, definitions and units for quantities used in mechanics are given in [Table 1](#).

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

Table 1 — Quantities and units used in mechanics

Item No.	Quantity			Unit	Remarks
	Name	Symbol	Definition		
4-1	mass	m	property of a body which expresses itself in terms of inertia with regard to changes in its state of motion as well as its gravitational attraction to other bodies	kg	The kilogram (kg) is one of the seven base units (see ISO 80000-1) of the International System of Units, the SI. See also IEC 60050-113.
4-2	mass density, density	ρ, ρ_m	quantity representing the spatial distribution of mass of a continuous material: $\rho(\mathbf{r}) = \frac{dm}{dV}$ where m is mass of the material contained in an infinitesimal domain at point $\mathbf{r}$ and V is volume of this domain	kg m^{-3}	
4-3	specific volume	v	reciprocal of mass density ρ (item 4-2): $v = \frac{1}{\rho}$	$\text{kg}^{-1} \text{m}^3$	
4-4	relative mass density, relative density	d	quotient of mass density of a substance ρ and mass density of a reference substance ρ_0 : $d = \frac{\rho}{\rho_0}$	1	Conditions and material should be specified for the reference substance.
4-5	surface mass density, surface density	ρ_A	quantity representing the areal distribution of mass of a continuous material: $\rho_A(\mathbf{r}) = \frac{dm}{dA}$ where m is the mass of the material at position $\mathbf{r}$ and A is area	kg m^{-2}	The name "grammage" should not be used for this quantity.