

Symbols and Units

The meaning of the symbols should be clearly understood from the context, and all symbols which are not commonly used should be defined on their first appearance in the Abstract and in the main text. The symbols should conform to the glossary of terms and symbols in respiratory physiology proposed by the International Union of Physiological Sciences (IUPS). The following are examples of main symbols and their modifiers. A more complete description of units, symbols and abbreviations is given in the Combined Index to Volumes 51-75 of *Respiration Physiology* (now *Respiratory Physiology & Neurobiology*).

Main Symbols:

F	Fractional concentration in dry gas phase	\dot{V}	Volume/unit time, e.g., flow, ventilation
P	Gas pressure in general	C	Concentration
D	Diffusing capacity	S	Saturation
f	Frequency	R	Respiratory exchange ration
V	Volume		

Modifiers (small capitals and ordinary small letters, on the same line as main symbol):

I	inspired	L	lung, pulmonary
E	expired	R	respiratory
ET	end-expired, end-tidal	b	blood in general
A	alveolar	a	arterial
T	tidal	c	capillary
D	dead space	c'	end capillary
B	barometric	v	venous
H	heart, cardiac	\bar{v}	mixed venous blood

STPD Standard temperature and pressure, dry (0°C, 760 mmHg)

BTPS Body temperature and pressure, saturated with water vapor

ATPS Ambient temperature and pressure, saturated with water

All symbols referring to gas species are in subscript, e.g. P_{CO_2}

Dash above a symbol designates a mean value, e.g. \bar{P}_V

Examples of Combinations:

$F_{E_{N_2}}$	Fractional concentration of nitrogen in dry expired gas
$P_{ET_{CO_2}}$	Partial pressure of CO_2 in end-tidal gas
P_{CO_2}	Partial pressure of oxygen in capillary blood (distinct from P_{CO_2})
$P_{AO_2} - P_{aO_2}$	Oxygen partial pressure difference between alveolar gas and arterial blood
P_B	Barometric pressure
$C_{V_{CO_2}}$	Concentration of carbon dioxide in venous blood
$\bar{S}_{V_{O_2}}$	Saturation of oxygen in mixed venous blood
\dot{V}_E	Expired ventilation or ventilation (not minute ventilation or minute volume)
V_T	Tidal volume
f_R	Respiratory frequency
f_H	Cardiac frequency

The basic quantities and units of the *Système International d'Unités* (SI) are recommended; abbreviations may be modified for clarity, e.g. sec instead of s, L instead of l (but ml). Amount of gases should be expressed as mole rather than gas volume (see Piiper et al., *Respir. Physiol.* 13: 292-204, 1971). For pressure, mmHg (= Torr), cmH₂O and atm may be used as well as the SI unit kPa (= 7.5 mmHg \approx 10 cm H₂O).

Typing these symbols and any others is simple with the Equation Editor, built into Microsoft Word. To access this tool, click on *Insert* \rightarrow *Object* and select *Equation Editor* from the drop-down menu. If this feature is not available, you must install on your computer (see e.g., <http://www.technipages.com/word-2007-enable-equation-editor.html>). This allows you to compose nearly every symbol. An even more advanced software for composing symbols and equations is MathType, which can be downloaded from the following site <http://www.dessci.com/en/products/mathtype/>. It inserts itself into Word (and other text editing software) and replaces (in Word) the Equation Editor.