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CEYLON STANDARD 84–PART II : 1969
විශ්ව දශම වර්ග කිරීම U. D. C. 53.081

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QUANTITIES AND UNITS OF PERIODIC AND RELATED PHENOMENA

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BUREAU OF CEYLON STANDARDS

Quantities and Units of Periodic and Related Phenomena

C. S. 84 — 1969 PART II : 1969

Gr. 3

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Ceylon Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This Standard does not purport to include all the necessary provisions of a contract.

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FOREWORD

This Ceylon Standard, containing a table of Quantities and Units of Periodic and Related Phenomena, is part of a series of Ceylon Standards dealing with quantities and units in various fields of science and technology. It was adopted as a Ceylon Standard by the Council of the Bureau of Ceylon Standards on 6th December, 1969.

The other parts of the series are:-

C.S. 84 — Part I : 1969 - Basic quantities and units of the SI and quantities and units of space and time.

.C.S 84 — Part III : 1969 - Quantities and units of mechanics.

C.S. 84 — Part IV : 1969 - Quantities and units of heat.

C.S. 84 — Part V : 1969 - Quantities and units of electricity and magnetism.

C.S. 84 — Part VII : 1969 - Quantities and units of acoustics.

C.S. 84 — Part XI : 1971 - Mathematical signs and symbols for use in physical sciences and technology.

This Standard is based on ISO Recommendation R 31 - Part II - 1958 - Quantities and Units of Periodic and Related Phenomena.

2. Periodic and related phenomena

Quantities

Item No.	Quantity	Symbol	Definition	Remarks
2-1.1	periodic time	T	Time of one cycle.	
2-2.1	time constant of an exponentially varying quantity	τ, (T)	Time after which the quantity would reach its limit if it maintained its initial rate of variation.	If F is a function of time given by $F(t) = A + Be^{-t/\tau}$, then τ is the time constant.
2-3.1	frequency	f, ν	$f = 1/T$	f is mainly used in electrical technology. ν is mainly used in physics.
2-3.2	rotational frequency	n	Number of revolutions divided by time	

2. Periodic and related phenomena

Units

Item No.	Name of unit and in certain cases abbreviation for this name	International symbolic abbreviation for unit	Definition	Conversion factors	Remarks
2-1	**second**	s	See 0-3*		
2-2	**second**	s			
2-3.a	hertz	Hz	1 Hz is the frequency of a periodic phenomenon of which the periodic time is 1s		Also called cycle per second, c/s. 1 Hz = $1\ s^{-1}$
2-3.b	reciprocal second	s^{-1}			
2-3.c	reciprocal minute	min^{-1}			

*C.S. 84 — *Part I:* 1969 Basic quantities and units of the S I and quantities and units of space and time

Item No.	Quantity	Symbol	Definition	Remarks
2-4.1	angular frequency	ω	$\omega = 2 \pi f$	
2-5.1	wave length	λ		
2-6.1	wave number	$\sigma, (\tilde{\nu})$	$\sigma = 1/\lambda$	$\tilde{\nu}$ is used in spectroscopy.
2-6.2	circular wave number	k	$k = 2 \pi \sigma$	
2-7.1	natural logarithm (Napierian logarithm) of the ratio of two amplitudes	$\log_e (A_1/A_2)$ [1]		[1] Not to be used in this form in electrical engineering for the amplitudes of energy and power

Item. No.	Name of unit and in certain cases abbreviation for this name	International symbolic abbreviation for unit	Definition	Conversion factors	Remarks
2-4	reciprocal second	s^{-1}			
2-5.a	**metre**	m	See 0-1*		
2-5.b	nanometre	nm	See-1.3c*		
2-6	reciprocal metre	m^{-1}			The "cm^{-1}" used in spectroscopy is equal to 10^{-8} A^{-1} see 1-3.c*
2-7	neper	Np			The name neper is used for the pure number 1 which is the unit of the quantity 2-7.1 If the amplitude ratio is equal to the square root of a power ratio, 1 Np corresponds to $(20.\log_{10}e)$ dB = 8.685 890 dB, see 2-8. The abbreviation N is generally used in the technology of telecomunication.

*C.S. 84 — *Part I* : 1969 Basic quantities and units of the S.I. and quantities and units of space and time

Item No.	Quantity	Symbol	Definition	Remarks
2-8.1	ten times the common (Briggsian) logarithm of the ratio of two powers (or energies)	$10 \log_{10} (P_1/P_2)$		
2-9.1	damping coefficient	δ	If F is a function of time given by $F(t) = Ae^{-\delta t} \sin \frac{2\pi (t-t_0)}{T}$ then δ is the damping cofficient.	
2-10.1	logarithmic decrement	Λ	$\Lambda = T\delta$, where T and δ are as in the formula of 2-9.1	This quantity is a pure number.
2-11.1	attenuation coefficient	α	If a quantity is a function of distance x given by $F(x) = Ae^{-\alpha x} \cos \beta (x-x_0)$. then α is the attenuation coefficient	
2-11.2	phase coefficient	β	and β is the phase coefficient.	
2-11.3	propagation coefficient	γ	$\gamma = \alpha + j\beta$	

Item No.	Name of unit and in certain cases abbreviation for this name	International symbolic abbreviation for unit	Definition	Conversion factors	Remarks
2-8	decibel	dB			The name decibel is used for the pure number 1 which is the unit of the quantity 2-8.1 If the power ratio is equal to the square of an amplitude ratio, 1 dB corresponds to $\left(\frac{\log_e 10}{20}\right)$ Np. = 0.115 129 3 Np. see 2-7. The abbreviation db is generally used in the technology of telecommunication.
2-9	reciprocal second	s^{-1}			In the technology of telecommunication often called neper per second.
2-11.a	reciprocal metre	m^{-1}			In the technology of telecommunication often called neper per metre.

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BUREAU OF CEYLON STANDARDS

The Bureau of Ceylon Standards (BCS) is the national standards organisation of Ceylon and was established by the Hon. Minister of Industries & Fisheries, as provided for by the Bureau of Ceylon Standards Act, No. 38 of 1964.

The principal objects of the Bureau as set out in the Act are to promote standards in industry and commerce, prepare national Standards Specifications and Codes of Practice and operate a Standardisation Marks Scheme and provide testing facilities, as the need arises.

The Bureau is financed by Government grants and the sale of its publications. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The detailed preparation of Standards Specifications is done by Drafting Committee composed of experts in each particular field assisted by permanent officers of the Bureau. These Committees are appointed by Divisional Committees, which are appointed by the Council. All members of the Drafting and Divisional Committees render their services in an honorary capacity. In preparing the Standard Specifications the Bureau endeavours to ensure adequate representation of all view points.

In the international field the Bureau represents Ceylon in the International Organisation for Standardisation (ISO) and will participate in such fields of Standardisation as are of special interest to Ceylon.