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भारतीय मानक मसौदा

हाइड्रोमीटरी–पारिभाषिक शब्दावली और प्रतीक

(*आई एस* 1191 *का चौथा पुनरीक्षण*)

Draft Indian Standard

HYDROMETRY – VOCABULARY AND SYMBOLS

(*Fourth Revision of IS 1191*)

Hydrometry Sectional Committee WRD 01

Last Date for Comments:
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NATIONAL FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Hydrometry Sectional Committee, WRD 01 had been approved by the Water Resources Division Council.

This standard was first published in 1959 under the title 'Glossary of terms used in measurement of flow of water in open channels'. Subsequently deriving assistance from ISO/R 772 : 1968 'Glossary of terms and symbols used in connection with the measurement of liquid flow with a free surface; the first revision was published in 1971 under the modified title 'Glossary of terms and symbols used in connection with the measurement of liquid flow with a free surface (first

revision) '. The second revision of this standard was published in 2003 under the title 'Hydrometric determination —Vocabulary and symbols (second revision)' wherein a great deal of assistance was derived from ISO 772 : 1996 'Hydrometric determination — Vocabulary and symbols'. The third revision of this standard was published in 2016 in the light of further modification/ improvement in the ISO 772 : 2011 'Hydrometric determination — Vocabulary and symbols'.

This is the fourth revision of the standard. This revision has been taken up to bring in further modifications/ improvements in the light of experience gained while using the earlier version of the standard. This revision has been prepared by largely deriving assistance from ISO 772 : 2022 'Hydrometric — Vocabulary and symbols'.

Further in this standard the following three principles as adopted in ISO 772 : 2022 were followed, wherever possible:

a) To standardize suitable terms and symbols without perpetuating unsuitable ones.

b) To discard any terms or symbol used with differing meanings and to replace that term or symbol by one which has an unequivocal meaning.

c) To exclude terms which are self-evident.

The terminology entire are presented in systematic order, grouped into sections according to particular methods of determination or in relation to particular subjects.

Annex A lists the symbols used in this standard. An alphabetical index is included at the end.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Annex A

(*Normative*)

SYMBOLS USED IN HYDROMETRY

Term	Symbol	Dimensions	Sl units
Acceleration due to gravity	g	LT^{-2}	m/s^2
Adjustment factor	k	a	a
Angle	α	b	rad
Area	A	L^2	m^2
Average value	$\bar{x}$	a	a
Boundary layer displacement thickness	δ	L	m
Breadth (width) (partial)	B	L	m
Bulk (or volume) modulus of elasticity	K	$ML^{-1}T^{-2}$	pa
Chezy coefficient	C	$L^{1/2}T^{1}$	$m^{1/2}/s$
Concentration	C	ML^{-3}	mg/1
Constant	K	a	a
Conveyance	K	L^3T^{-1}	m^3/s
Coordinate	x, y, z	L	m
Correction factor for measured discharge in open channels	F_m	a	a
Depth	D	L	m
Diameter	d	L	m
Difference between two values of the same quantity	Δ	a	a
Dilution ratio	N	b	b
Dimensional sensitivity coefficient	θ	a	a
Discharge	Q	L^3T^{-1}	m^3/s
Dynamic viscosity	η, μ	$ML^{-1}T^{-1}$	Pa.s
Effective roughness height	k	L	m

Efficiency	η	b	b
Electrical resistance	R	$ML^2T^{-3}1^{-2}$	Ω
Energy correction factor (Coriolis energy coefficient)	α	b	b
Equivalent sand roughness	k_s	L	M
Experimental standard deviation	s	a	a
Experimental standard deviation of the mean	$s(\bar{x})$	a	a
Experimental variance	s^2	a	a
Force, pull or thrust (tension)	F	MLT^{-2}	N
Frequency	f	T^{-1}	Hz
Friction factor	f	b	b
Froude number	Fr	b	b
Geometric mean particle diameter	d_g	L	m
Head loss per unit length	ς	b	b
Total head, energy head	H	L	m
Height of flume invert	p	L	m
Height of weir	p	L	m
Hydraulic mean depth	r_a	L	m
Hydraulic radius (hydraulic mean depth)	r_h	L	m
Kinematic viscosity	v	L^2T^{-1}	m^2/s
Length	l	L	m
Length (partial)	l	L	m
Loss of head per unit (or hydraulic gradient)	i	L	m
Manning coefficient	n	$L^{-1/3}T$	$s/m^{1/3}$
Mass	m	M	kg
Mass per unit volume (density or specific mass)	p	ML^{-3}	kg/m^3
Measured value	M	a	a
Number of degrees of freedom	v	a	a
Number of measurement in a set	n	b	b
Number of sources of error in a result	k	b	b
Particle diameter	d	L	m
Percentage error of x	X	b	b
Power	P	ML^2T^{-3}	W
Pressure	P	$ML^{-1}T^{-2}$	Pa (or N/m^2)

Probability	p	b	b
Radian measure	p	b	rad
Radius	r	L	m
Rate of injection of chemical tracer	q	L^3T^{-1}	ml/s
Rate of sampling	q	L^3T^{-1}	ml/s
Residual standard deviation	s_R	a	a
Residual variance	s^2_R	a	a
Result of a measurement	R	a	a
Reynolds number	Re	b	b
Rotation speed	n	T-1	rad/s
Sample size	n	a	a
Sensitivity coefficient	θx	b	b
Shape factor	Z	b	b
Shear stress	τ	$ML^{-1}T^{-2}$	Pa (or N/m^2)
Side slope	m	b	b
Slope, bed slope	S	b	B
Specific discharge	q	L^3T1	m^3/s
Standard deviation	σ	a	a
Student's *t* distribution	t	b	b
Sub-area	A	L^2	m^2
Surface tension	σ, y	MT^{-2}	N/m
Temperature (Celsius)	θ, τ	θ	∘C
Thermodynamic temperature	⊛	⊛	K
Thomson's *T*	τ	b	b
Time	t	T	s
Total head, energy head	H	L	m
Total breadth (width) of the channel	B	L	m
Transmissivity	T	L^2T^{-1}	m^2/s
Uncertainty	u	a	a
Uncertainty in a result (with various subscripts)	e	a	a
Unit discharge	q_u	L^2T^{-1}	m^2/s
Variable quantity	x	a	a
Velocity	v	LT^{-1}	m/s
Volume	V	L^3	m^3
Wave celerity, propagation velocity	C	LT^{-1}	m/s
Wavelength	λ	L	m

Weber number	We	b	b
Weight	W	MLT^{-2}	N
Weight of measurement	w_i	a	a
Weight average	$\bar{x}_w$	a	a
Weight perimeter	P_w	L	m
x velocity component	u	LT^{-1}	m/s
y velocity component	v	LT^{-1}	m/s
z velocity component	w	LT^{-1}	m/s

NOTES

1 The above symbols, expect when otherwise stated, are indicated in their most general form. For any specific use, such symbols may bequalified by a subscript, where necessary, and explained to indicate the exact meaning.

2 The subscripts “1” and “2” are used to indicate “upstream” and “downstream” respectively”.

a—Dimensional order depends on its meaning in context.

b—Non-dimensional quantity.