

ISO 1438:2008-04 (E)

Hydrometry - Open channel flow measurement using thin-plate weirs

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Symbols and abbreviated terms	1
5	Principle	2
6	Installation	2
6.1	General	2
6.2	Selection of site	2
6.3	Installation conditions	2
7	Measurement of head	4
7.1	Head measuring devices	4
7.2	Stilling or float well	5
7.3	Head-measurement section	5
7.4	Head-gauge datum (gauge zero)	5
8	Maintenance	6
9	Rectangular thin-plate weir	6
9.1	Types	6
9.2	Specifications for the standard weir	8
9.3	Specifications for installation	8
9.4	Determination of gauge zero	8
9.5	Discharge formulae -- General	11
9.6	Formulae for the basic weir form (all values of b/B)	11
9.7	Formulae for full-width weirs (b/B = 1,0)	14
10	Triangular-notch thin-plate weir	16
10.1	Specifications for the standard weir	16
10.2	Specifications for the installation	18
10.3	Specifications for head measurement	18
10.4	Discharge formulae -- General	19
10.5	Formula for all notch angles between $\frac{1}{9}$ and $\frac{5}{9}$ radians (20° and 100°)	19
10.6	Formula for specific notch angles (fully-contracted weir)	21
10.7	Accuracy of discharge coefficients -- Triangular-notch weirs	22
11	Uncertainties of flow measurement	22
11.1	General	22
11.2	Combining measurement uncertainties	23
11.3	Uncertainty of discharge coefficient ()* du C for thin-plate weirs	25
11.4	The uncertainty budget	25
12	Example	25
12.1	General	25
12.2	Characteristics -- Gauging structure	26
12.3	Characteristics -- Gauged head instrumentation	26
12.4	Discharge coefficient	26

12.5	Discharge estimate	26
12.6	Uncertainty statement	27
Annex A (informative) Flow measurement with small weir tanks		29
Annex B (informative) Guide to the design and installation of a flow straightener		31
Annex C (informative) Introduction to measurement uncertainty		33
Annex D (informative) Sample measurement performance for use in hydrometric worked examples		41
Annex E (informative) Specimen tables		43
Bibliography		59