Turbidity according to EN ISO 7027 – Measurement of the attenuation of a radiant flux

Application APP-PHM-0008

Principle

Turbidity is the reduction of a liquid caused by the presence of undissolved matter.
Measurements of turbidity can be affected by the presence of dissolved light-absorbing substances (substances imparting colour). Such effects can be minimized, however, by performing measurements at wavelengths greater than 800 nm.

The EN ISO 7027 specifies two quantitative methods for the determination of turbidity in water, using optical turbidimeters:

- Measurement of a diffuse radiation
- Measurement of the attenuation of a radiant flux

The measurement of the attenuation of a radiant flux that is described in this application is more applicable to highly turbid waters (for example waste water or polluted waters). Turbidity measured by this method is expressed in Formazin attenuation units (FAU); results typically range between 40 and 400 FAU.

The wavelength of the incident radiation shall be 860 nm.

Range of application
Water, wastewater

Material

LPV422.99.00001	Spectrophotometer DR 2800 or
LPV424.99.00001	Spectrophotometer DR 3800 sc or
LPV408.99.00001	Spectrophotometer DR 5000 or
LPV440.99.000x1	Spectrophotometer DR 3900 or
LPV441.99.000x1	Spectrophotometer DR 6000
	or older Spectrophotometer from Dr. Lange
LZP341	50mm plastic cuvettes

Literature
EN ISO 7027

DOC042.52.20131.Apr13

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CADAS 30 / 30S / 50 / 50 S
Programming

1. Select Mode „PRG“
2. Select „Test“
3. Test number: 747

λ - value:	860
Process:	1
Factor 1:	0
Factor 2:	272
Constant:	- 10
Lower limit:	40
Upper limit:	400
Unit:	FAU
Position:	
Control no.:	3

Evaluation

1. Select programmed test.
2. Insert blank-cuvette (cuvette filled with dest. water), and press the blue key.
3. Insert sample cuvette and press green key.

	Test-No.	
Parameter		***Range***
Turbidity	747	40 – 400 FAU

CADAS 100
Programming Instruction

Program No.		z.B. 1
Symbol		747
Name		TURBIDITY
Process: 1 2 3 STA FPRG		1
W: λ nm		860
Factor 1		354
Factor 2		- 9.0
Unit C1		FAU
Measuring range limits: yes	no	yes
Lower limit		40
Upper limit		400

Evaluation

1. Select „Test“ and Symbol „747“.
2. Insert blank-value cuvette (dest. water) and press the „NULL“ [zero] key.
3. Insert sample cuvette and press the „MESS“ [measure].

Parameter	**Symbol**	**Range**
Turbidity	747	40 – 400 FAU

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XION 500
Programming

1. Select mode „Programming“ and „Measure with factor“.
2. Test No. z. B. 47
   Testname: TURBIDITY
   Wavelength: 860
   Factor 1: 262
   Factor 2: - 7
   Lower limit: 40
   Upper limit: 400
   Unit: FAU
   Control no.: 9

Evaluation

1. Select „Analyse“ and „User“.
2. Select test (see above)
3. Insert blank-cuvette (cuvette filled with dest. water), and press the blue key.
4. Insert sample cuvette and press green key.

Test-No.	Display	Range
47	Turbidity	40 – 400 FAU

CADAS 200
Programming

1. Select mode „Prog“ and „User“.
2. No: 747
   Symbol: FAU
   Parameter: Turbidity
   Version: 53
   Barcode: no
   Band width: 5 nm
   Sequence: E1W1
   Evaluation 1:
   Ident.: FAU
   Name: C1
   Formula: E1*F1-F2
   Lower limit: 40
   Upper limit: 400
   Unit: FAU
   Res. in DB: yes
   Show res.: yes
   Variables:
   W1: 860
   F1: 348
   F2: 7
   Control No.: 4

Evaluation

1. Select ▸ Analysis, ▸ User
2. Select test **747, Turbidity**.
3. Insert blank-value cuvette (cuvette filled with dest. water), and press the blue key.
4. Insert sample cuvette and press green key.

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Test-No.	Symbol	Parameter	Range
747	FAU	Turbidity	40 – 400 FAU

DR 2800 / DR 3800 / DR 3900 / DR 5000 / DR 6000

Evaluation

1. Select test no. 747 from the Stored Programs
2. Insert blank-value cuvette (dest. water) and press **Zero**.
3. Insert sample cuvette and press **Read**.

Test-No.	Parameter	Range
747	Turbidity	40 - 400 FAU

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HACH LANGE GMBH
Willstätterstraße 11
D-40549 Düsseldorf
Tel. +49 (0)2 11 5288-0
Fax +49 (0)2 11 5288-143
info@hach-lange.de
www.hach-lange.de

DR. BRUNO LANGE GES. MBH
Industriestraße 12
A-3200 Obergrafendorf
Tel. +43 (0)27 47 74 12
Fax +43 (0)27 47 42 18
info@hach-lange.at
www.hach-lange.at

DR. BRUNO LANGE AG
Juchstrasse 1
CH-8604 Hegnau
Tel. +41(0)44 9 45 66 10
Fax +41(0)44 9 45 66 76
info@hach-lange.ch
www.hach-lange.ch

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