

Proficiency Testing Program

Organised by

Center for Laboratory Proficiency Testing,

Department of Science Service,

Ministry of Higher Education, Science, Research and Innovation, Thailand

Total hardness (as CaCO₃) and Chlorides (as Cl) in water

PTEN - W08 - 2101

15 February 2021

SUMMARY SHEET

Laboratory Name : Technical Training and Support Service, Center for Scientific and Technological Equipment, Walailak University

Laboratory Code : W08 - 2101 - 247

Test items (mg/L)	Sample	Number of results	Assigned value (X_{pt})	Standard deviation for proficiency assessment (σ_{pt})	Lab's result		z-score
					Value	MU	
Total hardness (as CaCO ₃)	A	245	156.9	6.3	155.0	2.2	-0.30
	B	245	79.1	4.0	78.0	1.5	-0.27
Chlorides (as Cl)	A	225	63.3	5.1	-	-	-
	B	225	97.3	5.8	-	-	-

Note

1. Assigned values (X_{pt}) are the robust averages of the participant results in this round, calculated by using Algorithm A (ISO 13528: 2015).
2. Standard deviations for proficiency assessment (σ_{pt}) are the target standard deviations by perception from expert judgement.
3. MU are measurement uncertainty at 95% confidence level.
4. Each z-score marked with "A" is an outlier ($|z| \geq 3.0$). Therefore, laboratory which is marked with "A" shall investigate result. Laboratory is also encouraged to review result which has an absolute z-score value between two and three ($2.0 < |z| < 3.0$) or marked with "W".
5. This summary sheet should be read in conjunction with the final report.

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