

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 CaCO<sub>3</sub>) and Chlorides (as Cl) in water

PTEN - W08 - 2401

19 February 2024

SUMMARY SHEET

Laboratory Name : Public Health Laboratory Development, Department of Health

Laboratory Code : W08 - 2401 - 019

Test items (mg/L)	Sample	Number of results	Assigned value ( $x_{pt}$ )	Standard deviation for proficiency assessment ( $\sigma_{pt}$ )	Lab's result		z-score
					Value	MU	
Total hardness (as CaCO <sub>3</sub> )	A	245	242.4	7.3	246.3	-	0.53
	B	244	118.5	4.7	120.1	-	0.34
Chlorides (as Cl)	A	219	44.6	4.0	42.2	-	-0.60
	B	220	190.1	9.5	190.7	-	0.06

Note

- Assigned values ( $x_{pt}$ ) are the robust averages of the participant results in this round, calculated by using Algorithm A (ISO 13528).
- Standard deviations for proficiency assessment ( $\sigma_{pt}$ ) are the target standard deviations by perception from expert judgement.
- MU are measurement uncertainties at 95% confidence level.
- 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".
- This summary sheet should be read in conjunction with the final report.

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