

Regulation No. - RDKL / FW / 2324 / SR00023

RDKL / FW / 2324 / SR00024

Date of Allotment - 01.11.23

Date of Submission - 15.11.23

Test Parameter - Total Hardness, Ca²⁺, Mg²⁺

Date of Analysis - 13.11.23

Test Material - Water

Name of Supervisor - Mr. Md. A. Refique

Sl No.	Sample Code	Sample vol.	Initial Reading	Final Reading	Diff	Total Hardness (mg CaCO ₃ /L)
1.	RDKL / FW / 2324 / SR23 2324 / RDKL / FW / L0024	50	0	7.7	7.7	154
2.	RDKL / FW / 2324 / SR0024 2324 / RDKL / FW / L0023	50	7.7	15.1	7.4	148

Sl No.	Sample Code / Lab Code	Sample vol. (ml)	Initial Reading	Final Reading	Diff	Ca-Hardness (mg CaCO ₃ /L)	Ca ²⁺ (mg/L)	Mg ²⁺ (mg/L)
1	RDKL / FW / 2324 / SR00023 2324 / RDKL / FW / L00024	50	0	4	4	81	32	18
2.	RDKL / FW / 2324 / SR00024 2324 / RDKL / FW / L0023	50	4	7.6	3.6	73	29	18

Calculation:

$$\text{Total Hardness (mg CaCO}_3\text{/L)} = \frac{TA \times D1 \times 1000}{\text{ml Sample}}$$

$$\text{Ca-Hardness (mg CaCO}_3\text{/L)} = \frac{TA \times D2 \times 1000}{\text{ml Sample}}$$

$$\text{Ca}^{2+} \text{ (mg/L)} = \frac{TA \times D2 \times 400.8}{\text{ml Sample}}$$

$$\text{Mg}^{2+} \text{ (mg/L)} = [(\text{Total Hardness} - \text{Ca-Hardness})] \times 0.243$$

Standardization: 10 ml of EDTA consumed for titration of 1 mg/ml CaCO₃ (10ml)

$$D1 = \frac{10 \times 1}{10} = 1$$

9.9 ml of EDTA consumed for titration of 1 mg/ml CaCO₃ (10ml) using murexide indicator.

$$D2 = \frac{10 \times 1}{9.9} = 1.01$$

Syed Yaqub Ali

Dr. Farid