Difficulties in Determination of Alkalinity
Use for alkalinity up to 20 mmol/l
Single end-point titration at pH = 4.5
Calculating the Result

\[ A_T = \frac{C \text{ (HCl)} \times V_6 \times 1000}{V_4} \]  \hspace{1cm} (1)

Where:

- \( V_6 \) - volume of the HCl solution used for titration in ml
- \( V_4 \) - volume of the sample used for determination in ml (usually 100ml)
- \( C \text{ (HCl)} \) - real concentration of the HCl solution, calculated by formula in mol/l (usually \( \sim 0.01 \text{N} \))
\[ C (HCl) = \frac{m \cdot V_1}{53 \cdot (V_2 - V_3)} \]  \hspace{1cm} (2)

Where:
- \( m \) - mass of the sodium carbonate, used for preparing the standard solution in grams
- \( V_1 \) - volume of standard solution of sodium carbonate used to be titrated in ml
- \( V_2 \) - volume of the HCl solution used for titrating the standard solution in ml
- \( V_3 \) - volume of the HCl solution used for the blank in ml
- 53 - equivalent of \( Na_2CO_3 \)
Quality Control

- pH meter check and calibration before measuring
- Use of buffer solutions
- Use of spike samples
- Checking all of the measuring vessels (e.g. cylinders)
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- Determination of alkalinity from 0,01 to 4,0 mmol/l
- Carbonate alkalinity equals to total alkalinity.
- Single end-point at pH = 5.4
\[ A = \frac{C(CHI) \times (V_5 - V_6) \times 1000}{V_4}, \quad (3) \]

Where:
- \( C(CHI) \) - concentration of HCl (usually 0.01 N)
- \( V_4 \) - volume of the sample (usually 50 ml)
- \( V_5 \) - volume of HCl used for titrating the sample
- \( V_6 \) - volume of HCl used for titrating the blank
Thank you