ISE DATASHEET

Chloride Ion

ELIT 8261 · ELIT Ion Selective Electrode · Anion

Cl-

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PHYSICAL SPECIFICATIONS

Body Length	130 mm (excl. contact) / 140 mm (incl.)
Body Diameter	8 mm
DC Resistance (25°C)	< 0.5 MOhm
Min. Sample Volume	5 ml

ELECTRODE SPECIFICATIONS

Electrode Model	ELIT 8261
Ion	Chloride (Cl^-)
Ion Type	Anion
Valence	1
Membrane Type	Solid-state poly-crystalline membrane
Molar Mass	35.453 g/mol
1000 ppm equiv.	0.028 M

OPERATIONAL PARAMETERS

Preconditioning	1000 ppm Chloride standard
Preconditioning Time	Min. 5 minutes
Detection Range	1 to 35,000 ppm (3×10^{-5} to 1 M)
Electrode Slope	54 ± 5 mV/decade
pH Range	pH 1 to 12
Temperature Range	0 to 80 °C
Response Time	< 10 seconds (90% response)
Potential Drift	< 3 mV/day in 1000 ppm (8 hours)

REAGENTS & STANDARDS

Reference Electrode	Double junction (ELIT 003). Outer filling solution: 0.1M CH_3COOLi.
ISAB / Buffer	5M $NaNO_3$ — Add 2% v/v.
Standard Prep	Dissolve 1.649 g anhydrous sodium chloride (NaCl) in 1 litre deionised water.

TYPICAL APPLICATIONS

- Food & Beverage Analysis
- Water Quality Monitoring
- Agriculture & Soil Analysis
- Industrial Process Control
- Environmental Monitoring

SELECTIVITY COEFFICIENTS (INTERFERENCE DATA)

Interfering Ion	Selectivity Coeff.	Note
Iodide (I^-)	>1	CRITICAL: the Cl membrane is far more sensitive to I^- than to Cl^-. High iodide will irreversibly damage the membrane.
Bromide (Br^-)	high	Strong interference — must be absent or at insignificant concentrations.
Cyanide (CN^-)	high	Strong interference. Do NOT add acid to cyanide-containing samples — risk of lethal HCN gas.
Sulphide (S^{2-})	high	All poly-crystalline (AgS-based) membranes are unreliable in presence of Ag or S ions.
Silver (Ag^+)	high	—

SC = approximate apparent increase in measured concentration caused by 1 unit of interferent. Error% = ((interferent conc × SC) / target conc) × 100.

CALIBRATION & SAMPLE PREPARATION

Calibrate with 1000, 100, 10, 1 ppm Cl solutions. For high ionic strength samples (> 0.01 M), add 2 ml ISAB to each 100 ml standard.

Low ionic strength: immerse in 50–100 ml sample. High ionic strength: add 2 ml ISAB to 100 ml sample and stir well.

SPECIAL ANALYTICAL PROCEDURES

Butter

Heat ~10 g butter with 100 ml dilute HNO_3 until fat melts. Stir to extract chloride. Cool until fat solidifies. Pipette 25 ml of solution through fat layer and dilute 1:1 with deionised water. Standards must be mixed 1:1 with dilute HNO_3 ISAB.

Milk

Mix 1 volume milk with 2 volumes dilute HNO_3 (60 ml conc. HNO_3 per litre) and shake for 1 minute. Nitric acid acts as ISAB. Measure by Direct Potentiometry. Add HNO_3 ISAB to all standards in 2:1 ratio.

Meat

Liquidise ~1 g meat with 100 ml water. Filter, mix 25 ml with 25 ml of 0.5M HNO_3 ISAB. Result: ppm × 100 ÷ sample weight = µg/g.

ANALYTICAL NOTES

- The chloride electrode will only give reliable results if iodide, bromide, cyanide, sulphide, and silver are absent or at insignificant levels.
- A sodium bromate buffer can remove up to 1000 ppm Br or I and 500 ppm sulphide. Prepare and use in a well-ventilated area.

SAFETY & HAZARDS

! Do NOT add sodium bromate buffer to samples containing significant cyanide — the acid solution may liberate lethal HCN gas.
! Irreversible membrane damage will result from exposure to high iodide concentrations.