ISE DATASHEET

Lead Ion

ELIT 8231 · ELIT Ion Selective Electrode · Cation

Pb2+

>> View full ion guide: elyxir.co.uk/resources/ions/lead

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PHYSICAL SPECIFICATIONS

Body Length	130 mm (excl. contact) / 140 mm (incl.)
Body Diameter	8 mm
DC Resistance (25°C)	< 2.5 MOhm
Min. Sample Volume	5 ml

ELECTRODE SPECIFICATIONS

Electrode Model	ELIT 8231
Ion	Lead (Pb^{2+})
Ion Type	Cation
Valence	2
Membrane Type	Solid-state crystal membrane
Molar Mass	207.2 g/mol
1000 ppm equiv.	0.005 M

OPERATIONAL PARAMETERS

Preconditioning	1000 ppm Lead standard
Preconditioning Time	Min. 5 minutes
Detection Range	0.2 to 20,800 ppm (1×10^{-6} to 0.1 M)
Electrode Slope	26 ± 4 mV/decade
pH Range	pH 3 to 7
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 lithium acetate (ELIT 003n). Outer filling solution: 0.1M CH_3COOLi.
ISAB / Buffer	5M $NaNO_3$ — Add 2% v/v (1 ml per 50 ml to give ~0.1M $NaNO_3$ background).
Standard Prep	Dissolve 1.599 g anhydrous lead nitrate ($Pb(NO_3)_2$) in 1 litre deionised water.

TYPICAL APPLICATIONS

- Environmental Monitoring
- Water Quality Monitoring
- Industrial Effluent
- Research

SELECTIVITY COEFFICIENTS (INTERFERENCE DATA)

Interfering Ion	Selectivity Coeff.	Note
Silver (Ag^+) / Sulphide (S^{2-})	very high	All poly-crystalline membranes — unreliable in presence of Ag or S ions.
Copper (Cu^{2+})	very high	Can only be tolerated at very small concentrations relative to Pb.
Iron (Fe^{2+} and Fe^{3+})	very high	—
Mercury (Hg^{2+})	very high	—
Cadmium (Cd^{2+})	>1	Causes significant positive error if present at > one tenth the lead concentration.

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, 0.1 ppm Pb solutions. Add 2 ml ISAB to 100 ml of each standard and sample. Stir with a magnetic stirrer at ~50 rpm during measurement.

Add 2 ml ISAB to 100 ml sample. Stir with magnetic stirrer during measurement. Wash electrodes between samples and allow 2–3 minutes stabilisation.

ANALYTICAL NOTES

- Note narrow pH range (3 to 7).
- Best results obtained in stirred solutions (unlike most ISEs).
- Divalent cation — slope ~26 mV/decade.

SAFETY & HAZARDS

! Lead compounds are toxic — handle with appropriate PPE and dispose of waste according to local regulations.