

Barium Ion

Ba²⁺

ELIT 8081 · ELIT Ion Selective Electrode · Cation

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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 8081
Ion	Barium (Ba ²⁺)
Ion Type	Cation
Valence	2
Membrane Type	Solid-state PVC polymer matrix membrane
Molar Mass	137.327 g/mol
1000 ppm equiv.	0.007 M

OPERATIONAL PARAMETERS

Preconditioning	1000 ppm Barium standard
Preconditioning Time	Min. 5 minutes
Detection Range	0.5 to 13,700 ppm (4×10 ⁻⁶ to 0.1 M)
Electrode Slope	21 ± 3 mV/decade
pH Range	pH 3 to 10
Temperature Range	0 to 50 °C
Response Time	< 10 seconds (90% response)
Potential Drift	< 3 mV/day in 1000 ppm (8 hours)

SELECTIVITY COEFFICIENTS (INTERFERENCE DATA)

Interfering Ion	Selectivity Coeff.	Note
Strontium (Sr ²⁺)	0.09	Highest interferent — unlikely in most samples.
Potassium (K ⁺)	0.02	Significant error if K > 10× Ba concentration.
Sodium (Na ⁺)	0.02	Significant error if Na > 10× Ba concentration.
Magnesium (Mg ²⁺)	0.006	Tolerated up to ~20× Ba concentration.
Ammonium (NH ₄ ⁺)	0.003	—
Calcium (Ca ²⁺)	0.002	Tolerated up to ~50× Ba concentration.
Lithium (Li ⁺)	0.002	—

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

REAGENTS & STANDARDS

Reference Electrode	Single junction AgCl (ELIT 001).
ISAB / Buffer	NONE — the barium electrode is interfered with by the most common ISAB constituents. For high ionic strength samples, use the Standard Addition or Sample Addition method.
Standard Prep	Dissolve 1.779 g barium chloride dihydrate (BaCl ₂ ·2H ₂ O) in 1 litre deionised water.

TYPICAL APPLICATIONS

- Environmental Monitoring
- Industrial Process Control
- Water Quality Monitoring
- Research

CALIBRATION & SAMPLE PREPARATION

For low ionic strength samples, use Direct Potentiometry with full calibration (1, 10, 100, 1000 ppm Ba). For high ionic strength, use Standard Addition: calibrate to find the slope, then enter slope and expected concentration into the software.

Measurements MUST be made in still (unstirred) solutions. After immersion, swirl beaker for ~30 seconds, then leave to stand. Record mV at the lowest point before values start to rise (typically < 2 min for 10 ppm and above; up to 5 min for < 1 ppm).

ANALYTICAL NOTES

- Unlike most ISEs, barium MUST be measured in still (not stirred) solutions.
- No ISAB is recommended — common ISAB constituents (K, Na, NH_4) interfere with the barium electrode.
- Divalent cation — slope (~21 mV/decade) is slightly lower than the theoretical Nernstian response.

This document is provided for guidance only. Specifications subject to change without notice. For technical support contact sales@nico2000.net or call 020 8422 6779.