Technical Specifications for the Lead Ion-Selective Electrode
ELIT 8231

Introduction
The Lead Ion-Selective Electrode has a solid-state crystal membrane. The electrode is designed for the
detection of lead ions (\(\text{Pb}^{+2}\)) in aqueous solutions and is suitable for use in both field and laboratory
applications.
The Lead Ion is a divalent cation.
One mole of (\(\text{Pb}^{+2}\)) has a mass of 207.200 grams; 1000ppm is 0.005M
Dissolve 1.599g anhydrous lead nitrate (\(\text{Pb(NO}_3\text{)}_2\)) in 1 litre water.

Physical Specifications
<table>
<thead>
<tr>
<th>Specification</th>
<th>Measurement</th>
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</thead>
<tbody>
<tr>
<td>Length of body excl gold contacts</td>
<td>130 mm</td>
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<tr>
<td>Length of body incl. gold contacts</td>
<td>140 mm</td>
</tr>
<tr>
<td>Diameter of body</td>
<td>8 mm</td>
</tr>
<tr>
<td>DC resistance at 25°C</td>
<td>&lt; 2.5 MOhm</td>
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<tr>
<td>Minimum feasible sample volume</td>
<td>5mls</td>
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Chemical / Operational Specifications
Preconditioning / Standard solution        Normally 1000ppm Pb +2 as Pb(NO\(_3\))\(_2\)
(But see General Operating Instructions)
Preconditioning time                         5 minutes
Optimal pH range                             pH 3 to pH 7
Temperature range                            0 to 80°C
Recommended ISAB                             5M NaNO\(_3\) (add 2% v/v)
Recommended reference electrode             Double junction (ELIT 003)
Reference electrode outer filling solution   0.1M CH\(_3\)COOLi
Electrode slope at 25°C                      26±4 mV/ decade
Concentration range                          0.2 to 20,800 ppm (1x10\(^{-6}\) to 0.1 Molar)
Response time                                < 10 seconds
(Defined as time to complete 90% of the change in potential after immersion in the new solution.)
Potential drift (in 1000 ppm)                < 3 mV/ day (8 hours)
(Measured at constant temperature and with ISE and Reference Electrode continually immersed)

Analytical Note: Best results obtained in stirred solutions.

Interference:
All poly-crystalline membranes contain Silver Sulphide and thus will not give reliable readings if Ag or S
ions are present in the solution. Copper, Iron, (Fe\(_{2+}\) and Fe\(_{3+}\)), Mercury all have very high interference
and, ideally, should also be absent. Any Cadmium present (selectivity coefficient >1) will cause a
significant positive error (>10%) if it has a concentration greater than one tenth of the Lead.
Note low pH range (3 to 7) for this electrode

For more information, see: www.nico2000.net.