



ION SELECTIVE ELECTRODES

Model: TISE_____

- * Direct Measurement of Ionic Concentration
- * Very Rapid Response
- * Wide Measuring Range
- * Robust and Versatile



TOSHCON ISEs are rugged solid state sensors with built in teflon double junction references that do not require filling solutions, membrane replacements or operator maintenance.

These combination ISEs can be stored dry and are submersible and waterproof. The solid state sensor and maintenance free reference makes these electrodes ideal for both laboratory and field work. The Epoxy tubular body provides complete protection to the electrode which allows these sensors to be used in field applications by unskilled operators.

There are two basic sensor constructions: PVC on a solid state substrate and Crystal membrane with a solid state contact. Crystalline electrodes maybe polished and cleaned as the electrode gets older.

The PVC equivalents are less prone to oxidation and can be rinsed after use but cannot be polished. The lack of internal solution means that lifetime is enhanced and submersion is possible as the sensor does not flex under reasonable pressure.

| Species | Limits (ppm) | Temp Range | Interferences | pH Range |
|-------------|----------------|------------|---|----------|
| Ammonia | 0.02 - 17,000 | 0-50°C | Hydrazine | 11-13 |
| Ammonium | 0.9 - 9,000 | 0-50°C | K ⁺ Na ⁺ | 0-8.5 |
| Barium | 1.4 - 13,700 | 0-50°C | K ⁺ Na ⁺ Sr ⁺⁺ | 3-10 |
| Bromide | 0.4 - 81,000 | 5-50°C | I ⁻ S ²⁻ CN ⁻ | 1-12 |
| Cadmium | 0.1 - 11,200 | 5-50°C | Cu ⁺⁺ Hg ⁺⁺ Ag ⁺ | 3-7 |
| Calcium | 0.02 - 4,010 | 0-50°C | Ba ⁺⁺ Al ⁺⁺⁺ Sr ⁺⁺ | 3.5-11 |
| Carbonate | 0.008 - 80 | 0-50°C | OAc ⁻ SCN ⁻ | 6.6-9.6 |
| Chloride | 1-35,500 | 5-50°C | I ⁻ Br ⁻ CN ⁻ S ²⁻ | 1-12 |
| Copper | 0.006 - 64,000 | 5-50°C | Hg ⁺⁺ Ag ⁺ S ²⁻ | 2-7 |
| Cyanide | 0.03 - 260 | 5-50°C | Br ⁻ I ⁻ S ²⁻ | 11-13 |
| Fluoride | 0.02 - 1,900 | 5-50°C | OH ⁻ | 4-8 |
| Iodide | 0.06 - 127,000 | 5-50°C | S ²⁻ CN ⁻ | 2-12 |
| Lead | 0.2 - 20,800 | 5-50°C | Hg ⁺⁺ Ag ⁺ Cu ⁺⁺ | 3-7 |
| Mercury | 0.2 - 201,000 | 5-50°C | Ag ⁺ S ²⁻ | 0-2 |
| Nitrate | 0.4 - 62,000 | 0-50°C | Cl ⁻ NO ³⁻ | 2-11 |
| Nitrite | 0.5 - 460 | 0-50°C | CN ⁻ | 4.6-8 |
| Perchlorate | 0.2 - 99,500 | 0-50°C | I ⁻ SCN ⁻ NO ³⁻ | 0-11 |
| Potassium | 0.04 - 39,000 | 0-50°C | Cs ⁺ NH ⁴⁺ | 1-9 |
| Silver | 0.01 - 107,900 | 5-50°C | Hg ⁺⁺ S ²⁻ | 1-9 |
| Sodium | 0.002 - 69,000 | 0-50°C | Li ⁺ K ⁺ Ba ⁺⁺ | 9-12 |
| Sodium | 1-35,000 | 0-50°C | K ⁺ NH ⁴⁺ Ca ⁺⁺ Mg ⁺⁺ | 1-12 |
| Sulphide | 0.003 - 32,000 | 0-50°C | Hg ⁺⁺ Ag ⁺ | 13-14 |
| Thiocyanate | 1 - 5,800 | 5-50°C | Cl ⁻ Br ⁻ I ⁻ S ²⁻ | 2-12 |

SPECIFICATIONS

| | |
|---------------------|--|
| Concentration Range | Wide range depending on ISE |
| Resistance at 25°C | <5 M |
| Slop | (Monovalent) 54 to 59 mV/ decade (Divalent) 25 to 29 mV/ decade |
| Temperature range | 5-50°C |
| Potential Drift | 2mV per Day |
| Endpoint time | Typically 10-60 seconds |
| Length | 155mm |
| Diameter | 12mm |
| Reference Type | Single Junction Ag/AgCl |
| Body Type | Polymer |
| Cable length | 1000mm |
| Connector | BNC |

Each Toshcon Combination ISE has a 1 metre cable and a BNC connector (other connectors available on request) allowing use on all types of pH/ION meter including laboratory bench and research models.

The solid state sensors have a huge advantage over conventional ISEs in that there is no internal fill solution to degenerate the sensor this means that TOSHCON combination ISEs have an unrivalled lifetime and a very low cost of ownership.

These ISEs are manufactured by TOSHCON for many prominent companies in the water testing sector. As a result our ISEs are very competitively priced and come complete with technical support provided from our vast library of applications and our in house electro-chemistry technicians.

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