Technical Specifications for the Nitrite Ion-Selective Electrode
ELIT 8071

Introduction

The Nitrite Ion-Selective Electrode has a solid-state PVC polymer matrix membrane and is designed for the detection of nitrite ions **(NO_2^-)** in aqueous solutions. It is suitable for use in both field and laboratory applications. However, it must be noted that, because of the ease of oxidation of nitrite, it may be necessary to soak the electrode in the pre-conditioning solution overnight or longer before use - depending on the length of time since last use; may need several days when new or if unused for several months !

The Nitrite Ion is a monovalent anion .

One mole of (NO_2^-) has a mass of 46.006 grams; 1000 ppm is 0.022 M

Dissolve 1.500g anhydrous sodium nitrite (NaNO2) in 1 litre water.

Physical Specifications

Length of body excl gold contact	130 mm
Length of body incl gold contact	140 mm
Diameter of body	8 mm
DC resistance at 25° C	< 2.5 MOhm
Minimum feasible sample volume	5 ml

Chemical / Operational Specifications

Preconditioning /Standard solution	Normally 1000 ppm NO_2^- as Na NO_2
(But see General Operating Instructions)	
Preconditioning time	at least 5 minutes
Optimal pH range	pH 4.5 to pH 8
Temperature range	0 to 50° C
Recommended ISAB	BS1 OR BS2 (1:1 v/v)

(BS-1 Buffer :(pH=3.8) for measuring the nitrite ion in meat extracts.
Consists of 3.26g sodium acetate and 10ml glacial acetic acid dissolved in 1000ml water.
BS-2 Buffer :(pH=3.2) for measuring in natural water samples.
Dissolve 14.32g Disodium Phosphate, and 15.37g Citric acid in 1000ml water)

Recommended reference electrode	Single junction **(ELIT 001)**
Electrode slope at 25° C	54± 5mV/ decade
Concentration range	0.5 to 500ppm (1x10-5 to 0.01 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 notes:
Best results obtained in stirred solutions. Low concentrations may take up to 10 mins to stabilise.

Interference:
Cyanide has avery high interference and can only be tolerated in very low concentration compared to NO2.
Other smaller interferencese are as follows (selectivity coefficients (SC) in brackets):
Acetate (0.001), Fluoride (0.0008), Chloride (0.00005), Nitrate (0.00001), Sulphate (0.00001). But these would only cause a significant error if they were present in concentrations several times that of the nitrite.
The SC is the approximate apparent increase in the measured concentration caused by 1 unit of the interferent.

Thus the likely effect of any interfering ion (% increase) can be calculated as follows:

((expected concentration) x (SC) / (expected NO2 concentration)) x 100.

For example, if the Chloride ion were present in equal concentration to the nitrite then it would contribute only 0.005% to the nitrite concentration measurement, so it would have to be 1000 times more concentrated to cause a 5% error.

Note low concentration range (about 0.5 to 500 ppm) and low pH tolerance (4.5 to 8)

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