



## For the correct preparation of working calibration solutions

Colorimetric techniques are widely used in the determination of nutrients in natural waters. The kinetics and often the chemistry of these techniques are generally affected by the presence of seawater matrix salts. To eliminate these 'salt effects', it is therefore essential that working calibration solutions (those to which the reagent solutions are added) be prepared in seawater matrix rather than in distilled or demineralised water.

Working calibration solutions are prepared by adding known quantities of nutrient salts to a low-nutrients seawater in such a way that there is negligible change to the overall concentrations of the matrix salts. A typical example of this 'spiking' process, as it is generally called, is the dilution of 1.0 ml of Nutrient Standard Solution (NSS) to 100 ml in a volumetric flask, using Low Nutrient Seawater (LNS) as diluent.

The **Marine Nutrients Standards Kit (MNSK)** contains concentrates of Nutrient Standard Solutions (NSS) and Low Nutrient Seawater (LNS). Detailed instructions are provided for the preparation of a range of working standards at concentrations most commonly required for environmental samples.

The **NSS** is prepared in de-ionised water. The Nutrient Standard Solution (NSS) is provided in 50ml. bottles for each of phosphate, nitrite, nitrate, silicate and ammonia at the following concentrations;

- Phosphate (NSSPO) 100 micromolar
- Nitrite (NSSNI) 100 micromolar
- Nitrate (NSSNA) 1000 micromolar
- Silicate (NSSSI) 1000 micromolar
- Ammonia (NSSAM) 10 millimolar



**Low Nutrient Seawater (LNS)** is provided in 2x1 litre bottles. It is prepared from naturally depleted open ocean surface water. The maximum quoted concentrations for each salt is less than 1 micromolar. However, we endeavour to collect the seawater when nutrient concentrations are at their lowest where a typical analysis would be significantly lower than the maximum quoted value.

**LNS** is intended for use as the diluent for **NSS** when preparing working calibration solutions for the analysis of nutrients in seawater samples. In continuous-flow analysis, **LNS** can be used as a 'refractive index blank' and, for lower precision studies, may also be used to define a zero-concentration calibration point.

**Freshwater Nutrients Standards Kit (FNSK)** is also available, containing the Nutrient Standard Solutions (NSS) and deionised water for dilution to working standards.



**FOR FURTHER INFORMATION PLEASE CONTACT:**

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