NexaFlo® for Seawater Testing

Reliable, Automated Analysis of Low-Level Nutrients in Marine Samples

Analytical Challenges in Seawater Nutrient Measurement

Seawater is a high-salinity matrix dominated by major ions at millimolar levels, while nutrient concentrations vary from elevated in coastal waters to sub-µmol/L or sub-ppb in open-ocean and deep-sea samples. Ultra-trace measurement therefore requires equipment with stable baselines, precise reagent handling and robust control of flow and reaction conditions to ensure reliable results across this wide concentration range.

NexaFlo® Excels in Low-Level Seawater Nutrient Analysis

NexaFlo® is engineered to meet these requirements, applying proven Grasshoff chemistries for nitrate, nitrite, phosphate and silicate, and the OPA fluorometric method for trace ammonium. Compared to Futura series CFA analyzer, NexaFlo® typically performs twice better for repeatability and has lower LOQs. These validated marine methods, combined with enhanced signal stability and low analytical noise, enable reproducible ppb nutrient detection in saline seawater matrices. Automation further reduces contamination and operator-induced variability.

Core advantages:

- High confidence in ultra-trace results, even in challenging seawater matrices
- More consistent data quality during long unattended runs
- Lower contamination risks through reduced manual handling
- More efficient workflows for high-throughput monitoring
- A scalable platform that grows with analytical needs

NexaFlo® Core Features

- Segmented Flow Analysis with controlled segmentation
- Low-noise electronics and stabilized optics
- Automated dilution/ mixing/ cleaning
- Up to 14 analytical channels
- Throughput up to 120 samples/hour
- Automated QC, blanks, calibrations and drift control
- LIMS-compatible data

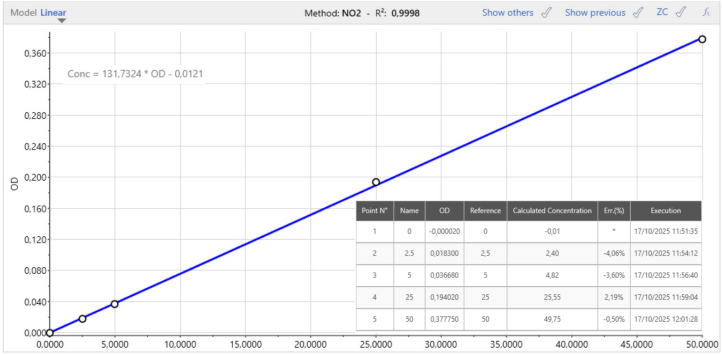
Seawater Nutrient Method Performance

NexaFlo® methods for nitrate, nitrite, silicate, phosphate and ammonia show excellent stability and very low detection limits.

Example calibration – Nitrite ($N–NO_2$): strong linear response and low variability.

Equivalent performance was obtained for all analytes.

LOD = 0,03 ppb
LOQ = 0,1 ppb
MDL = 0,03 ppb
std.dev. = 0,01



LOD and LOQ calculated according ISO 13530 - MDL based on EPA, sub.D-CFR Appendix B to Part 136

Dedicated Seawater Flow Manifolds for Nutrient Analysis in Seawater

Nitratres N-NO_3 [a]	Nitrites N-NO_2 [a]	Silicates Si-SiO_2 [a]	Phosphates P-PO_4 [a]	Ammonia N-NH_3 [b]
				
PN : FA19086 range 0-300 µg/L LOQ = 1 µg/L	**PN : FA19088** range 0-50 µg/L LOQ = 0,1 µg/L	**PN : FA19090** range 0-500 µg/L LOQ = 2 µg/L	**PN : FA19089** range 0-50 µg/L LOQ = 2.5 µg/L	**PN : FA14815** range 0-20 µg/L LOQ = 2 µg/L

a Grasshoff, K., Kremling, K., & Ehrhardt, M. (Eds). (2009). Methods of seawater analysis. John Wiley & Sons.
b Genfa, Z., & Dasgupta, P.K. (1989). Fluorometric measurement of aqueous ammonium ion in a flow injection system. Analytical Chemistry, 61(5), 408-412.

Other sea water methods are available, including **ammonia (standard or low-range fluorimetric method), total phosphorus TP, total nitrogen TN.**

Ordering Information

Item	Part number	Description
Suggested configuration		
5 consoles	20-05786-04	NexaFlo® 450 console with display. 5 consoles with one 4-channel power supply and one single channel power supply and NexaFlo Pro software.
Starter kit 5 consoles	05-05896-04	Starter kit NexaFlo® - 5 console
Auto Sampler	FA10806	Auto Sampler XYZ 240/360 Position Sampler
Auto Dilutor	FA10308	Auto dilutor Works for XYZ 240/360 sampler
5 Way Valve	FA5143	5 Way Valve Assy
Nitrates N-NO_3	FA19086	Macroflow manifold with 50mm flow cell for testing Nitrates in Sea water in 1-300 µg/l, cadmium coil with manual valve
Nitrites N-NO_2	FA19088	Macroflow manifold with 50mm flow cell for testing Nitrite in Sea water in 0.1-50 µg/l
Silicates Si-SiO_2	FA19090	Macroflow manifold with 50mm flow cell for testing Silicate in Sea water in 2-500 µg/l
Phosphates P-PO_4	FA19089	Macroflow manifold with 50mm flow cell for testing Phosphate in Sea water in 2,5-50 µg/l, standard low temp heating bath
Ammonia N-NH_3	FA14815	Macroflow manifold with fluorimeter for testing Ammonia in Sea water in 2-50 µg/l N
Other sea methods		
Ammonia	FA19083	Macroflow manifold with 50mm flow cell for testing Ammonia in Sea water in 3-100 µg/l, standard low temp heating bath
Total Phosphorus TP	FA15309	Macroflow manifold with 50mm flow cell for testing Phosphorous in Sea water in 5-500 µg/l PO4, 2 standard low temp heating bath, Need an external support module (A18537) or second console without heating bath, UV TN/TP Box (alt# W-E4-73 MF)
Total Nitrogen TN	FA18984	Macroflow manifold with 50mm flow cell for testing Total Nitorgen in Sea water in 5-500 µg/l, standard low temp heating bath, cadmium coil with manual valve, UV TN/TP Box (alt# W-E4-21 MF AMS A)

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