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Leading laboratories worldwide choose **SEAL** systems



SEAL Analyzers are monitoring environmental samples in every corner of the globe. They are manufactured in the USA, Germany, and the Netherlands. With full teams of engineering and chemistry support staff in facilities in Europe, USA, and China, laboratories can be sure of the best support, instruments, and methods, meeting the latest regulatory requirements. SEAL's global facilities are well supported by a worldwide network of specialist distributors and sales and service centers. Our specialist distributors maintain local stocks of SEAL Analytical parts and have factory-trained service staff.



SEAL ANALYTICAL • US



SEAL ANALYTICAL • GERMANY



SEAL ANALYTICAL • NETHERLANDS



SEAL ANALYTICAL • UK



SEAL ANALYTICAL • CHINA

Designed by chemists **for chemists**



WATER



WASTEWATER



SEAWATER



SOILS & PLANTS



FERTILIZER



TOBACCO

SEAL prides itself on designing, manufacturing, and supporting the best analyzers, sample preparation, and robotic equipment. For many of our thousands of customers around the globe this is no secret. But there are many other qualities that make SEAL a trusted brand. We have identified what sets SEAL apart and what drives our business to deliver you safer, smarter, and more dependable solutions.

► **Experience**

SEAL has over 60 years of experience in designing and manufacturing environmental and industrial automated analyzers.

► **Strong Engineering Capabilities**

We've demonstrated an ongoing commitment to building and maintaining strong internal engineering capabilities either through the acquisition of key technologies or through internal research and development.

► **Inhouse Expertise**

The depth of knowledge and end-to-end quality control achieved with our in-house technical team of chemists, engineers, and software programmers sets us apart from all others in the industry.

► **Focused on Integrity and Trust**

We operate with the highest integrity and focus on building strong customer relationships; in many cases we have spent decades as a trusted supplier. This trust is built on listening, understanding, and delivering the highest quality products and solutions.

► **Just Environmental and Industrial Samples**

SEAL Analyzers are widely acknowledged as the best-in-class and instrument of choice for monitoring nutrients in water and wastewater, seawater, soils and plant materials, as well as the quality control of industrial products, fertilizers and tobacco.

► **Products that solve your problems**

Our product development always starts with you, our customer. Understanding and addressing the pain points in a modern laboratory not only drives our product development, it also drives our business acquisition of industry-leading, proven technologies. Understanding your needs means we're developing products that are smaller, more automated, more reliable, and better for the environment.

► **Quality Emphasis**

We have invested heavily in ensuring our business and manufacturing processes meet or exceed quality standards. We are proud to have received external acknowledgment of our quality emphasis with ISO 14001 and ISO 9001 accreditation.

DISCRETE ANALYZERS

TP Phosphate Nitrate TKN Color Phenol
Silica Ammonia Nitrite Sulfate TP
Alkalinity

THE MOST POPULAR AND VERSATILE ANALYZERS

A SEAL discrete nutrient analyzer completely automates your manual wet chemistry methods, replicating the tasks of a laboratory chemist while enabling sequential measurement of multiple analytes in a single run.. With true walk away operation including automatic standard preparation, automatic pre- and post-dilution, and automatic spiking capabilities, a SEAL discrete analyzer is ideal for laboratories requiring high levels of automation and a wide range of chemistries.

METHODS INCLUDE

Alkalinity

Ammonia

Chloride

Cyanide

Nitrate + Nitrite

Nitrite

Phenol

Phosphate, ortho

Phosphorus, total

Silicate

Sulfate

Total Kjeldhal Nitrogen

PLUS MANY MORE



Features

Multiple Methods

Multiple chemistry parameters on a single sample in any order and without operator intervention. SEAL provides method procedures specific to wastewater and other applications.

No Cross Contamination

The only discrete analyzer with an integrated probe washer, eliminating cross-contamination between reagents and samples.

Integrated Cadmium Coil

The cadmium reduction method is the most widely accepted nitrate+nitrite test method. SEAL's AQ software automatically switches the coil inline for the reduction step, and includes in-situ regeneration. All four EPA approved nitrate+nitrite chemistries and reduction methods can be run, allowing flexibility and options for your lab.

Simplified Waste Disposal

Segregated chemical and wash waste minimizes hazardous waste disposal costs. Easy to access and collected outside of the analyzer.

Compact Design

The compact, enclosed, bench-top design allows for easy visual checks during operation and does not require a fume hood.

AQ300

Compact bench-top analyzer.

AQ400

High speed, automation
and detection levels.

AQ700

Highest throughput and speed,
automation and detection levels.

The right technology to completely replace your manual methods and deliver superior results.



NO CROSS-CONTAMINATION

The only discrete analyzer with an integrated probe washer, eliminating cross-contamination between reagents and samples. Keeps the probe free of reagents, oil, and grease. Ideal for wastewater.

COMPACT DESIGN

Compact, enclosed, bench-top design allows for easy visual checks during operation and does not require a fume hood.



INTEGRATED OPTICALLY PURE CUVETTE

10 mm pathlength or longer for maximum sensitivity and lower detection levels. SEAL's quartz cuvette is superior to styrene for sample analysis, ensuring the highest levels of precision.

USEPA, ASTM, ISO APPROVED METHODS

Also complies with other international regulatory methods



COMPLETE REACTION

Constant heating and programmable reaction time for a highly controlled reaction - allowing the reaction to be brought to completion increasing precision and accuracy of test results.

MULTIPLE METHODS

Up to 14 chemistry parameters on a single sample in any order and without operator intervention.

EFFECTIVE SAMPLE & REAGENT MIXING

Reproducible results thanks to sample and reagent mixing that replicates manual mixing in a flask.



DISPOSABLE REACTION WELLS

Inexpensive, disposable wells that reduce carryover and cost per test.



SIMPLIFIED WASTE DISPOSAL

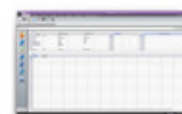
Segregated chemical and wash waste minimizes hazardous waste disposal costs. Easy to access and collected outside of the analyzer.

REAGENT WEDGES

With onboard cooling; built-in level sensor to verify reagent volume required for each test.

LOWER DETECTION LEVELS

Critical for environmental applications, lowest possible detection levels are a priority. This is made possible with the right combination of mixing technique, longer path length, optically-pure detection, accurate dispensing, and completion of chemical reaction.



LIMS READY

Customizable output for easy integration.

FAST, ON-DEMAND ANALYSIS

Easy, rapid colorimetric testing with minimal start-up time.



MINIMAL MOVING PARTS

Less maintenance and a more robust analyzer.

REDUCED REAGENT CONSUMPTION & WASTE GENERATION

Uses only μL dispense of reagents and samples to greatly reduced the amount of chemical used and waste generated with each test.

REMOVABLE SAMPLE TRAY

Allows pre-loading of samples. Interchangeable for optional larger vials.



INTEGRATED CADMIUM COIL

Allows flexibility in nitrate+nitrite testing. Software automatically switches the coil inline with easy in-situ regeneration.

Designed by chemists **for chemists**

CONTINUOUS FLOW ANALYZERS

Plants Wastewater Soil Seawater
Wine Drinking Water Tobacco
Fertilizer



AUTOANALYZERS FOR ENVIRONMENTAL ANALYSIS

Ideal for laboratories requiring high throughput, high reproducibility, and low detection limits, SEAL's segmented flow analyzers (SFA) are state-of-the-art nutrient analyzers. Systems are customizable to fit all workloads and method needs. Perfectly suited for standard chemistries as well as inline sample preparation including dialysis, distillation, gas diffusion and UV digestion.

APPLICATIONS INCLUDE

Seawater

Water and Wastewater

Drinking Water

Fertilizer

Soil and plants

Tobacco

Wine and Beer

Animal Feed

Not all features available on all models.

Total Automation

SEAL SFA systems are capable of full digital control of heaters, distillation, digestion, air injection, and reagents. The AA500 and QuAAtro are capable of total automation including automatic start-up and shut-down for true set and leave operation.

Multi-Test Chemistry Manifold

SEAL SFA systems can include multi-test chemistry manifolds. These allow flexibility in your testing so that each channel is not dedicated to one chemistry and what you test on the system can vary from one run to the next.

Dialysis

Dialyzers can remove interference from sample color or extraction solution plus extend the analytical range. The sample is passed over a dialyzer membrane and the analyte of interest is passed into a carrier solution, eliminating background color and interferences from extraction solutions.

In-line UV Digestion

SEAL segmented flow analyzers can perform UV-assisted persulfate digestion automatically within the chemistry module. This digestion is suitable for TN or TP and a multi-test option is available for TP and TN to be run in series on a single channel.

In-Line Distillation

For the measurement of analytes including phenol and free, WAD, and total cyanide. The distillation heating unit and coils are built into the chemistry manifold making these analyses much more compact and simpler to run.

Gas Diffusion

Gas diffusion manifolds can be used for analyzing chemistries such as ammonia and cyanide, eliminating sample analysis issues due to differing salinities and pH. This ensures reproducible, reliable results.

Featuring Innovative & Intelligent Technologies

- ▶ New, all-in-one housing design is both compact and modular
- ▶ True automatic startup and shutdown with pump platen engage and release
- ▶ Automatic standard preparation and auto dilution
- ▶ Multi-test manifolds for different nutrients with no hardware changes
- ▶ Easy reagent management with auto level sensing
- ▶ Ultra-low detection limits

Systems to fit all workloads

AA500

Flexible analyzer for varying workloads

Modular & Compact

The all-in one housing uses modular components to deliver a compact analyzer with more organization, more integration, and more powerful control - all while using less bench space. System modules can be ordered as a full unit or purchased individually to replace AA3 components piece-by-piece.

High Resolution Digital Photometer

The high resolution dual beam LED digital photometer delivers long life, low maintenance, and the lowest detection levels, even in extreme environments. Optional LED wavelength modules 250nm - 880nm. Optional 10 - 50 mm flow cells.

Total Automation

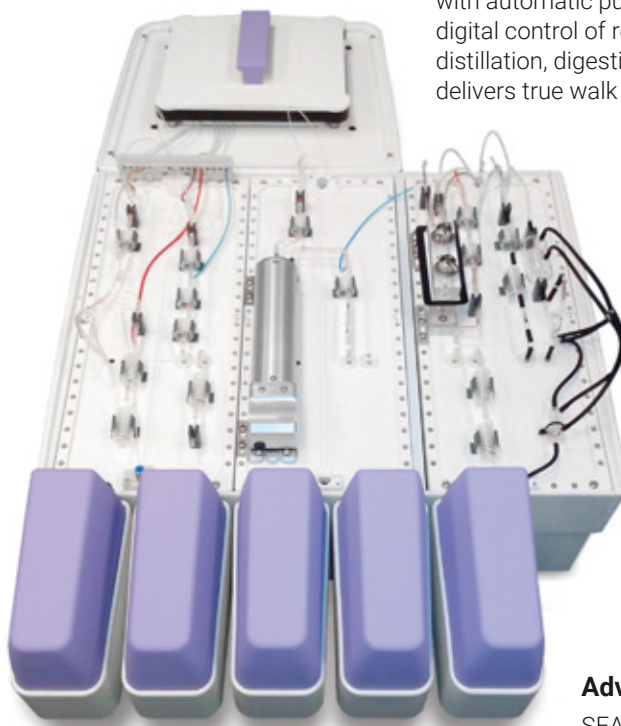
True auto startup and auto shutdown is now possible with automatic pump platen engage and release. Full digital control of reagent valves, heating coils, distillation, digestion, air injection, and reagents delivers true walk away operation.

High Performance Chemistry Module

The chemistry manifold uses an easy-fix system to position precision glass components. Glass is chemically inert and enables quick, easy visual checks and cleaning. Distillation, gas diffusion, dialysis and UV digestion can also be incorporated. Optional multitest manifolds available for quick method changeover.

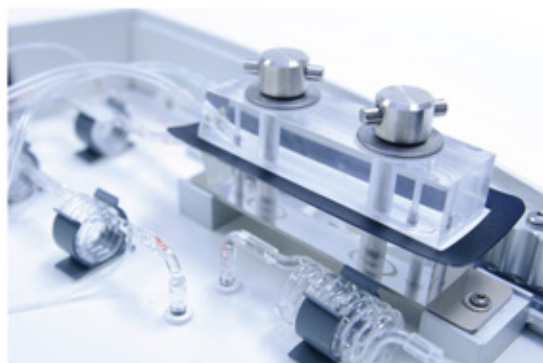
Advanced Sampling

SEAL samplers are designed specifically for flow analysis - fast, robust, and available with various rack sizes to meet your sample requirements. Samples can be added at any time during the run. .



Eliminate Manual Distillations

Gas Diffusion modules on segmented flow analyzers offer an approved, streamlined method of automating the distillation step for both ammonia and cyanide. Utilizing a PTFE membrane, this process allows for the compounds of interest to pass from the sample stream into a clean matrix stream ready for reaction, leaving interfering compounds and background sample color behind. Ammonia analysis can then continue with the typical colorimetric reaction, and cyanide can be analyzed via SEAL Analytical's new amperometric detectors.



AA100

Economical analyzer for small laboratories



The AA100 is ideal for all types of water analysis and laboratories needing a simple system to run one or two dedicated chemistries on up to two channels. The AA100 is also available for specialty methods like Ammonia with gas diffusion or inline distillation for Cyanide or Phenol.

QuAAtro39

High capacity nutrient analyzer

The QuAAtro39 offers our highest throughputs, utilizing an upright design for a condensed footprint. With heated manifolds and micro flow fluidics, it offers incredibly fast results and low detection limits.



ROBOTIC HANDLING SYSTEMS

EC
pH
Soil Quality
Dilutions

Sample Splitting
Filtration
Hardness

BOD

Turbidity
Alkalinity
SFC
Color



ADVANCED LABORATORY AUTOMATION

The SEAL MiniLab series includes a robotic platform for every size laboratory and workload. With its compact benchtop design, the MiniLab employs sample preparation steps in routine analysis.

Unique to the SEAL system is the ability to select from a range of MiniLab models that automate part or all of your sample preparation steps. You choose the levels of robotics, automation, and throughput that suits your laboratory. All MiniLab models come in a range of sizes, providing you a robotic solution for every lab and budget.

The MiniLab was designed for reliable “walk-away” operation. Integration with your LIMS ensures simple import and export of sample ID’s, procedures, and preferences. The intuitive versatile software allows analysts to easily set-up a run based on preset templates.

ADVANTAGES INCLUDE

- ▶ Automated sample pre-treatment and analysis in a single unit
- ▶ Flexibility to suit every lab and application
- ▶ Precision robotics for perfect alignment
- ▶ Robust construction and reliable operation
- ▶ Easy to use and easy to maintain
- ▶ In-house software development

MiniLab AR & AP Series

SEAL’s MiniLab AR & AP series is suitable for any size, space, and workload. Lower your cost per sample by reducing sample turn-around time, improving accuracy of results, eliminating errors and operator/sample interaction, and minimizing downtime.

The MiniLab AR - AutoRead station is your solution for the automated reading of various parameters such as pH & EC and is compatible with most meters and probes. Sample racks are available for a wide variety of sample vials and bottles from volumes of 10 ml to more than 1 liter.

The MiniLab AP - Auto Prep station can be used standalone as an automated preparation unit or as a modular upgrade to the MiniLab AR. It is ideal for providing a parent sample bottle with aliquots taken and diluted into vials on the MiniLab AR.



Biochemical Oxygen Demand (BOD)

Often a tedious and repetitive process, Biochemical Oxygen Demand (BOD) automation is a necessity in modern environmental labs. The MiniLab Robotics BOD Series ranges from compact models with 12 bottle capacity to larger custom models handling thousands of bottles per day. Correct alignment is ensured while accurately performing the specified automated function. The SEAL BOD software is fully customizable so your laboratory needs and regional regulations can be met.

AUTOMATION OPTIONS

- ▶ Barcode reading, bottle capping/de-capping
- ▶ Sample pipetting, pre-dilutions
- ▶ pH measurement and adjusting pH
- ▶ Addition of the nitrification inhibitor (ATU) and/or seed
- ▶ Sample aeration and sample homogenization
- ▶ Measurement of dissolved oxygen
- ▶ Optical probes for fast stabilization



Multi-Parameter

The Multi-Parameter MiniLab can be configured to prepare and automate a range of analytical parameters - all in one system. Ideal for water and soil applications, systems range from a simple single parameter unit, such as pH, to a multi-probe unit designed to measure many parameters. These can include sample preparation features such as sample splitting and filtration. The MiniLab is compatible with many current meters, probe types, and titration systems.

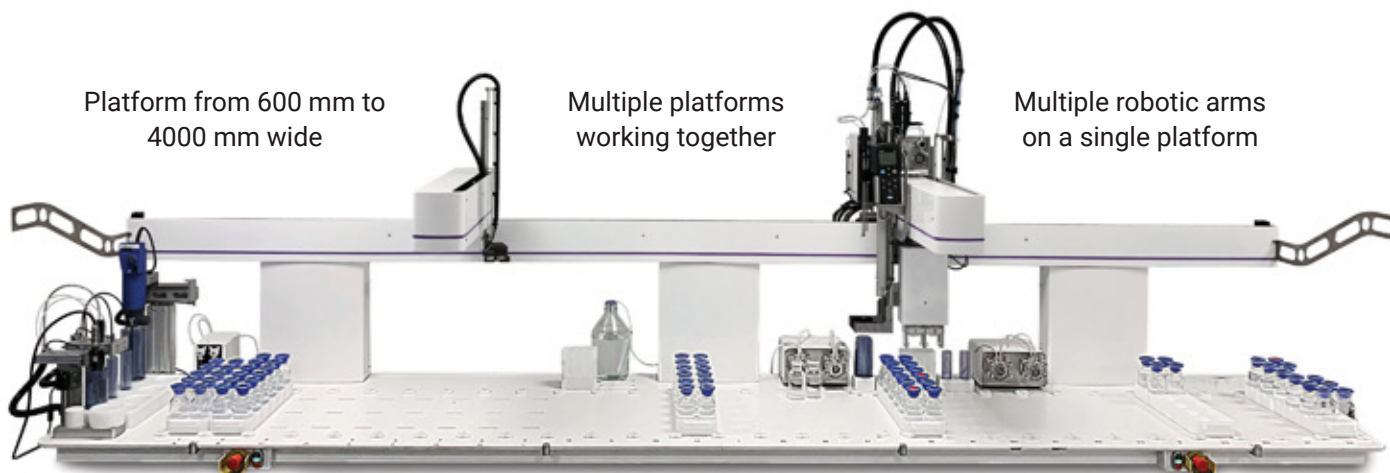


Automate one or more of the following parameters:

Alkalinity • pH • Conductivity • Turbidity • Color • Hardness • BOD

MiniLab ML Series

The MiniLab ML series provides complete automation of even the most complex sample preparation steps, including picking up bottles, reading barcodes, sample splitting, filtering, dispensing of reagents, stirring, weighing, decapping and capping, crimping and more - giving you true “walk-away” operation.



DIGESTION SYSTEMS

IMPROVED DIGESTION
RESULTS IN BETTER ANALYSIS

SEAL has many different ways to simplify the sample digestion process depending on the level of automation required and the digest temperature.

DEENA 4 *Automated Metals Digestion and Sample Preparation*

The **new** DEENA 4 is ideal for trace metals and fully automating the digestion process insuring each sample is treated exactly the same, safeguarding against human error. The DEENA 4 significantly increases laboratory safety by eliminating the manual dispensing of corrosive acids and other dangerous reagents.

The DEENA 4 automates all aspects of the digestion process, including accurate dispense of small volumes of reagents into sample tubes, thorough mixing, heating up to 200 C°, and reconstitution of the sample volume after digesting. The DEENA 4 is designed to eliminate cross-contamination throughout the digestion process with touch-free automation, keeping the sample purity in-tact.



Suitable for EPA Approved Methods:
3005, 3010, 3050A, 3050B, 200.2, 200.7, 200.8, 7470A,
7471A, 241.1, 1631, 245.7 and more!

FEATURES INCLUDE

- ▶ Internal air purge
- ▶ Upgraded mechanics & precision
- ▶ Self-contained fume hood for Operation directly on the bench
- ▶ Optional syringe for sample spiking
- ▶ Improved ultra-sonic sensor for precise fill-to-volume
- ▶ 8-way valve reagent pump and/or dedicated, individually-calibrated pumps for up to 12 total reagents

BD50 & BD28 *Programmable High-Temperature Digestion System*

The BD50 and BD28 Programmable Digestion Systems perform acid digestion of samples under controlled conditions and are available in two different formats:

- ▶ 28 place for 250 mL digestion tubes
- ▶ 50 place for both 75 mL and 100 mL digestion tubes

Designed for durability and robustness, BD50 and BD28 digestion systems include a block digestion unit, programmable controller, tube rack with draft shield, digestion tubes, and an optional cooling stand that supports the tube rack above the block. Ideal for applications such as Total Kjeldahl Nitrogen (TKN) and Phosphorus (TKP), the unique heating element provides uniform heating throughout the solid aluminum block ensuring reproducible digestions. If you are looking to automate your digestions, the BD50 and BD28 offer enhanced productivity, better quality digestions, and increased safety.



SEAL Parts & Consumables

Genuine SEAL parts for optimum performance

For any instrument, long-term reliability and reproducibility depends on regular maintenance and using quality parts. SEAL simplifies this process by offering high quality, genuine parts and consumables directly from our locally stocked warehouses for your SEAL instruments and other laboratory systems. SEAL offers specialized kits to make ordering and maintenance streamlined and simple.

Join our Autoship Program

Save time and money and never run out of supplies again!



Continuous Flow Analyzers

To guarantee best performance, best reproducibility, and lowest detection limits, always use SEAL flow rated pump tubing on your segmented flow analyzer. Specialist glass pieces, flow cells, sample cups, specialized parts for inline sample preparation including UV lamps, dialyzer membranes, and patented heating coils for current and older models of analyzers are available.



Discrete Analyzers

Along with sample cups, reagent wedges, and reaction segments, SEAL maintains an inventory of cadmium coils for nitrate reduction, probe wash assemblies, probes, syringes, lamps and other specialized spares parts. The 3, 6, and 12 months kits make regular maintenance simple and will keep your analyzer in shape for years to come.



Flared Pump Tubing for ICP

Flared end pump tubing makes connecting your small ID tubing to larger tubing simple! No more frustration and wasted time. SEAL can supply flared end tubing for any size and material. Ideal for ICP/ICP-MS applications. Any pump tubing type can be supplied with flared ends; including both 2-shoulder and 3-shoulder tubing types. Call us for free samples.



Other Supplies

SEAL Analytical offers a wide range of consumables for digestion, sample preparation, chromatography and spectroscopy applications. From plastic and glass sample vials, specialist glassware, teardrop stoppers, and reflux caps, SEAL has you covered.



See our website for a listing of our common parts or contact us to inquire about our auto-ship program.

www.seal-analytical.com

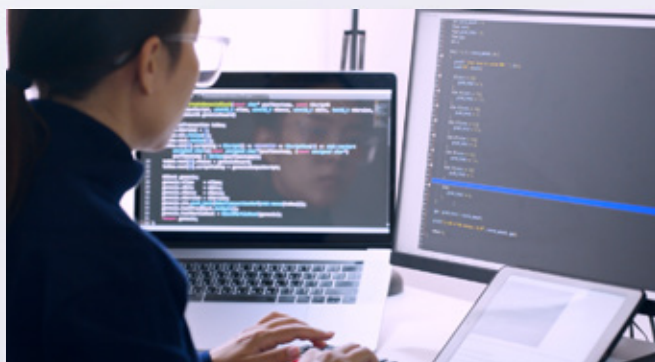
Experience SEAL Analytical

At SEAL Analytical we focus on one thing — the best analytical and sample preparation solutions for environmental and industrial samples. You've never experienced peace of mind until you've discovered the SEAL Analytical ownership experience.

We want you to have a faster return on your investment by improving your laboratory productivity and helping you utilize the capabilities of your SEAL solutions. For this reason we have designed an ownership experience that includes everything from the essential initial training, to maximizing your uptime, helping you maintain regulatory compliance, keeping you running smoothly, and one-on-one support from in-house chemistry experts when you need it. Peace of mind starts with SEAL Analytical.



Technical support from in-house chemistry experts, when and where you need it.



Software developed and maintained in-house.



In-house applications and product development for keeping you up-to-date and regulatory compliant.



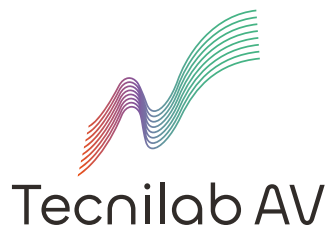
Spares and consumable stocks located close to you and dispatched quickly.



Designed by chemists for chemists

SEAL Analytical is a global company with offices worldwide, contact your nearest location at www.seal-analytical.com.

LEARN MORE AT



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