

Three qualities successful analytical labs look for in their research chemicals



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Analytical chemistry labs operate in a world of increasing complexity and precision. Scientists are expected to analyse challenging samples, deliver reliable results quickly, and support critical decisions across industries. All day. Every day.

From semiconductor manufacturing to advanced materials research, analytical methods play a central role in some of the world's most technically demanding industries. That growing reliance is driving major industry expansion. The global analytical chemistry market is projected to grow from nearly \$60 billion in 2025 to more than \$109 billion by 2034, according to a recent study by Precedence Research.

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Alongside growth comes greater pressure to generate data that can meet elevated scrutiny. That's why the quality of lab and research chemicals plays an increasingly important role in overall performance. Leading laboratories are not simply evaluating chemicals based on availability alone—the typical bar for routine inputs. They are looking for materials that also support reproducibility, stability, traceability, and long-term confidence across complex analytical environments.

Remarkable science is built on reliability in analytical chemistry labs. When teams can trust the quality and consistency of their analytical materials, they can spend less time investigating variability and more time focusing on outcomes. Analytical chemistry brands like Fluka™, engineered by Solstice Advanced Materials, play a valuable role in helping meet the daily demands.

Here are three qualities analytical labs prioritise when selecting acids, bases, buffers, salts, and solvents they can depend on for the science of tomorrow.

1. Lot-to-lot consistency

Analytical methods must perform the same way over time, across instruments and between operators. Even small variations in the chemicals used during analysis can introduce uncertainty into the workflow and affect the reliability of results.

Lot-to-lot consistency refers to the ability of a chemical product to maintain the same composition and performance characteristics across different manufacturing batches over time. This consistency reduces variability that could

affect analytical results. Without it, labs may experience unexpected shifts in retention times, baseline behavior, calibration performance, or instrument efficacy—all are changes that can lead to time-consuming repeat testing and unnecessary delays.

As analytical methods become more sensitive, the impact of small inconsistencies becomes increasingly pronounced. Minor differences in impurity profiles or chemical composition may affect detection limits and data quality. Labs working in regulated environments also depend on lot-to-lot consistency to support method validation, reproducibility, and audit readiness.

What to look for: High-quality lab and research chemicals help address these challenges through tightly controlled manufacturing processes and rigorous quality testing. Fluka analytical chemicals are manufactured under ISO-certified quality systems, with batches tested for purity, concentration, and key analytical specifications to help support reproducible performance over time.

2. Traceability and documentation

Analytical labs conducting research for pharmaceutical, biotechnology, environmental, and industrial research must demonstrate that their methods and data are defensible. Small questions around data integrity can carry enormous scientific, regulatory, and even financial consequences.

This requires more than instrument performance alone. Research chemicals must have:

- **Traceable documentation:** Records that allow laboratories to track a chemical product's manufacturing history, testing data, and quality controls throughout the supply chain.
- **Detailed certificates of analysis:** COAs are product-specific documents that provide verified testing results and key specifications such as purity, concentration, impurity levels, and batch information.
- **Safety Data Sheets:** An SDS provides standardised safety, handling, storage, and hazard information to ensure proper chemical management practices.
- **Validated purity specifications:** Confirmed quality standards verify a chemical meets defined purity requirements for its intended analytical application.
- **Transparent quality information:** Clear, accessible data about how a chemical was tested, manufactured, and qualified, helping laboratories evaluate its suitability and reliability for use.



Together, these materials create a stronger foundation for analytical reliability by helping labs better understand exactly what is entering the workflow and whether it is appropriate for the research at hand. Scientists can maintain confidence in the integrity of their workflows.

What to look for: Complete and easily accessible quality documentation, including lot-specific COAs, up-to-date SDS documentation, clearly defined purity specifications, and transparent testing methodologies. Every Fluka product is backed by extensive documentation and analytical data for each lot.

3. Expert support for complex challenges

Modern analytical workflows are increasingly specialised, which means small workflow issues can become difficult and time-consuming to diagnose.

Access to technical expertise via a research chemical supplier is an overlooked advantage when it comes to navigating complex analytical challenges and optimising method performance.

Technical support teams with deep analytical chemistry expertise can help laboratories:

- Select the right inputs for specific applications
- Interpret analytical performance issues
- Improve workflow consistency



- Support method development and validation
- Identify opportunities to reduce variability within the process

This collaborative support becomes especially valuable in advanced applications where analytical performance often depends on carefully controlled conditions.

What to look for: Knowledgeable, easy-to-reach partners who understand the challenges behind the workflow and can help support long-term analytical success. Fluka has global technical experts who can help with product selection, application guidance, compliance documentation, and method-related questions across a wide range of analytical workflows.

Trust your analytical chemistry with Fluka

Today's analytical chemistry labs can't afford uncertainty in the materials that support their workflows. From reproducibility and traceability to technical guidance and long-term analytical confidence, the quality of lab and research chemicals directly impacts the quality of the results that follow.

Generations of scientists have trusted Fluka as the workhorse in their labs. Built for the daily demands of analytical chemistry, Fluka acids, bases, buffers, salts, and high-purity solvents are manufactured under ISO-certified quality systems and supported by rigorous testing, transparent documentation, and expert technical support.

As analytical methods continue to evolve, and scientific expectations continue to rise across research, quality, regulatory, and industrial environments, dependable chemistry needs more than a routine laboratory input. It needs a trustworthy foundation for reliable discovery. Fluka offers that foundation for confident decision-making—so labs can drive the science shaping tomorrow.

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