



# Reference Standards

*Build a rock-solid analytical foundation  
with Restek reference standards:*

- *ISO-Recognized Quality*
- *Full-Service Custom Flexibility*
- *Easy-to-Find Documentation*



**RESTEK**

[www.restek.com/standards](http://www.restek.com/standards)



**CHROMATOGRAPHIC  
SPECIALTIES INC.**

1-800-267-8103 • [www.chromspec.com](http://www.chromspec.com) • [tech@chromspec.com](mailto:tech@chromspec.com)





## Crack open the best organic reference standards in the industry.

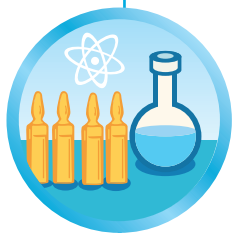
Your business, your accreditations, your reputation, and even your livelihood.... they are all supported by your reference standards. Those tiny ampuls are hugely important for your ability to identify analytes and validate methods. Whether you are processing environmental samples or petroleum products, testing pharmaceuticals or food, your laboratory cannot stand without a trusted source of high-quality organic reference standards, reference materials (RMs), and certified reference materials (CRMs).

Even with Restek's industry-leading GC and LC columns, sample prep materials, and accessories, you won't get the results your customers demand without support from the finest reference standards available. We have an experienced team working two shifts per day to make sure that Restek reference standards offer you the extended shelf life, unsurpassed stability, and outstanding chromatographic performance you need to get your work done right.



# Restek's Standards Labs: Built for Your Continued Success

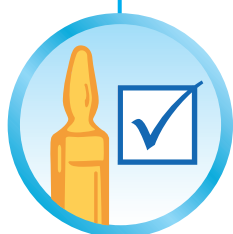
By 1990, chromatographers were searching for a source of reference standards that could meet the increasingly stringent requirements of the CLP (Contract Laboratory Program), EPA methodology, and other environmental monitoring efforts in the United States. Not satisfied with the options available to us, Restek started our own standards laboratory to support our rapidly growing column business and our applications chemists. We have since expanded our standards manufacturing capabilities to cater to Europe, Asia—our entire global customer base—to help you meet the needs of tomorrow's emerging analyses.



**State-of-the-Art Facilities:** Our ISO-accredited laboratories in Bellefonte, Pennsylvania, feature cutting-edge environmental controls and web-based monitoring systems to help guarantee the safety of our personnel and the performance of our reference standards. Creating a new lab space from the ground up in 2008, and then expanding it by 33% in 2014, has allowed us to capitalize on work triangles and cross-training to bolster the strength of our bench chemists, increase throughput, and better manage costs—so you can get a better-quality product faster, and with less impact on your budget.



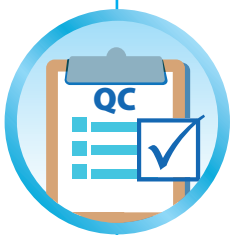
**Automated Production System:** From formulation through production, testing, and the generation of certificates, Restek's production process is automated to engineer out variability and error. All raw materials are barcoded to eliminate technician calculations and downstream data entry—a must when you're managing multiple lots of more than 4200 neat compounds! With a simple scan of a label, our proprietary system calculates weights, then validates and transfers the exact amount of material needed for the given mix. To remove another common source of human error, our data pack builder programmatically generates documentation every time a new batch is produced instead of our chemists creating it manually.



**Robust Product Development:** Every standard in the Restek catalog goes through feasibility, stability, scale-up, and operational stage gates; a red flag at any checkpoint stops development until it's resolved. We have also added the ability to synthesize our own high-purity neat materials to minimize our exposure to material shortages and purity issues in the marketplace. To ultimately determine which organic reference standards will make it into the pipeline, our experts closely monitor the shifting legislative and regulatory landscape around the globe and actively engage with our customers. Once a product is chosen, a veteran chemist formulates a stable reference standard containing an ideal mix of compounds and concentrations based on our years of experience and the lessons learned from creating the 50,000+ batches of standards that have left our facility over 30+ years.

*"As we were looking for quality and reliability, Restek appeared to be the obvious choice [for custom standards]. There was no competition when it came to manufacturing process, systematic tests of the products, and especially when it came to expertise. Indeed, our needs and requirements as an official laboratory... are entirely fulfilled by the stability of the Restek solutions..."*

*- Vincent Gohier, Hydrological Department Manager—Organic Micropollutants  
Laboratoire Départemental d'Analyses de la Corrèze*



**Rigorous Screening Processes:** Restek does not simply accept purity as reported by our vendors. Our Quality Control (QC) lab fully characterizes all incoming raw materials to confirm the chemical identity and purity of both mixture components and solvents, adjusting for anything less than 99%. All developed formulations are subjected to a thorough review of accuracy, compatibility, and solubility by a second Restek chemist, and during production, compound compatibility is continuously scrutinized. We also conduct ongoing, long-term stability studies to ensure reliability and precise shelf-life reporting.

"Restek is able to supply a comprehensive range of analytical standards and mixes not often available elsewhere. The speed of service and swift delivery enable us to meet, or in most cases exceed, our customers' high expectations with regards to rapid result turnaround."

- **Neil Donovan**, Environmental Forensics Manager—i2 Analytical Ltd.

## Why Should You Switch to Restek Reference Standards?

Restek was founded by chemists and has succeeded by providing fellow chemists like you with the right tools for the job. When it comes to the time-consuming labor of mixing reference standards—not to mention sourcing, verifying, and storing your own raw materials—Restek's internationally recognized experts have already done the work for you. Turn to Restek for the ISO quality, custom flexibility, and easy-to-find documentation you require to fit your workflows and trust your results.

"UKAS-accredited laboratories require ISO [17034] and ISO 17025 accreditation for analytical reference standards. I use Restek analytical standards as they fulfill these requirements, as clearly stated in the Certificate of Analysis received with each standard, along with the certified reference value of each component."

- **David Bowen**, Chemistry Supervisor (Organics)—Terra Tek Limited

### → Did You Know?

Restek has been manufacturing top-quality, highly stable reference standards since 1990!





## ISO QUALITY

A certified reference material, or CRM, from Restek is in an exclusive subset of reference standards that meets the following set of strict criteria defined under ISO 17034 and ISO/IEC 17025:

- Made of raw materials characterized via qualified methods on qualified instruments.
- Produced in an ISO-accredited lab under documented procedures.
- Falls under the manufacturer's scopes of accreditation.

Over 98% of the Restek-manufactured reference standards in our catalog are certified reference materials, and that includes both singles and multicomponent mixes. Restek has also maintained ISO 9001 registration since 1994. Put another way, almost all of our stock reference standards are officially recognized as being manufactured and QC tested under the world-class quality standards established by the International Organization for Standardization (ISO). Many laboratories are required to purchase CRMs to satisfy their own ISO requirements, but even if you are not, you can still benefit from the performance, reliability, and consistency of Restek certified reference materials.

Learn more about Restek's ISO quality credentials and view our certificates (including scopes of accreditation) at [www.restek.com/iso](http://www.restek.com/iso)



## CUSTOM FLEXIBILITY

Our labs develop 200+ new custom standard formulations each month. In fact, more than  $\frac{1}{3}$  of the ampuls that leave our facility are custom-ordered reference standards, and almost all of them are certified reference materials (CRMs). That's because, unlike some manufacturers, Restek's ISO scopes of accreditation cover not only our catalog standards but also your custom orders. All custom standard requests are reviewed by our experienced team of formulations chemists to confirm feasibility, to make you aware of any chemical compatibility concerns, and to detail our recommendations for the most robust formulation possible. In short, we give you the flexibility to order Restek standards to your exacting specifications—and the confidence of knowing that you will receive the same top-quality, highly stable product whether it's a stock, off-the-shelf standard or a one-of-a-kind, custom-formulated solution.

For less waiting and lower cost—visit [www.restek.com/solutions](http://www.restek.com/solutions) to immediately request a custom standards quote!



# EASY-TO-FIND DOCUMENTATION



Every analyst and every lab is different. That's why Restek exclusively offers three levels of fully ISO-compliant documentation for our reference standards.

- **Certificate of Analysis *gravimetric*** includes all raw material information, lot numbers and purity, isomer ratios for isomeric compounds, and calculated concentration(s). Associated uncertainties are also included for Certified Reference Materials (CRMs).
- **Certificate of Analysis *chromatographic*** includes all raw material information, lot numbers and purity, isomer ratios for isomeric compounds, and calculated concentration(s). Associated uncertainties are also included for Certified Reference Materials (CRMs). Additionally, a single sample is withdrawn from the packaged units and is tested via an appropriate technique to verify mixture composition. A chromatogram of the analyzed standard, with each peak identified, is included on the certificate.

- **Certificate of Analysis *chromatographic plus*** includes all raw material information, lot numbers and purity, isomer ratios for isomeric compounds, and calculated concentration(s). Associated uncertainties are also included for Certified Reference Materials (CRMs).

Additionally, a sample of the packaged units is analyzed in triplicate, and the peak areas are statistically compared to a second lot—either a previous lot (if available) or a freshly produced independent second lot. A chromatogram of the analyzed standard, with each peak identified, is included on the certificate. Plus, a detailed data pack containing the product certificate, all quantitative assay data and statistics, and the Reference Material Batch Record are available at [www.restek.com/documentation](http://www.restek.com/documentation)

	Gravimetric Data	Chromatogram	Data Pack
Certificate of Analysis <i>chromatographic plus</i>			
Certificate of Analysis <i>chromatographic</i>			
Certificate of Analysis <i>gravimetric</i>			

Electronic and archived on Restek's servers, certificates as well as safety data sheets (SDSs) for your stock or custom standard are available any time and from anywhere. In addition, SDSs for stock standards are automatically prepared in multiple languages, and non-English translations can be requested for custom reference standards. You no longer need filing cabinets and boxes full of paper... only an Internet connection. And, your information is protected because a lot # is required to view certificates for all custom standards.

For even more convenience, every Restek reference standard offers personalized, instant access to documentation. Simply scan the QR code on your ampul storage tube label to go directly to the certificate of analysis for your specific standard and lot # on Restek.com. In addition, large pictograms on our GHS-compliant labels better promote safety in your lab, helping you meet OSHA, CLP, and other government requirements.



Documentation for all of your stock and custom Restek reference standards is a few clicks away at [www.restek.com/documentation](http://www.restek.com/documentation)



# Choose a Restek Reference Standard for Your Next Application

Regardless of your line of work or type of analysis, Restek can precisely formulate the ideal reference standard tailored to your needs. We are the world's premier supplier of stock and custom organic chemical standards servicing all major analytical markets, including the following:



## ENVIRONMENTAL

- Volatile organic compounds (VOCs)
- Pesticides
- Polychlorinated biphenyls (PCBs)
- Base, neutral & acid extractables (BNAs)
- Polycyclic aromatic hydrocarbons (PAHs)
- Petroleum hydrocarbons
- Explosives



## FOOD SAFETY

- Residual solvents
- Pesticides
- Fatty acid methyl esters (FAMES)
- QuEChERS
- Derivatization reagents
- Cannabis



## PETROCHEMICAL

- Biodiesel
- Finished motor oil & aviation gasoline
- Simulated distillation (SimDist)
- Detailed hydrocarbon analysis (DHA)
- Sulfur



For targeted help in your specific area of testing, contact your local Restek representative.

## On the Shelf and Ready to Ship



We maintain an active inventory of more than 1500 different reference standards—routinely stocking multiple independently produced lots of our most popular calibration standards—and we pull inventory months before its expiration date. If it's in our catalog, your next standard is likely in our warehouse and waiting for your order.

## Convenience and Safety Included with Each Ampul



By attaching vial and notebook labels to the ampul and each other, our two-part labels are hard to lose and easy to use. Full handling instructions are included on both labels to help ensure the integrity of your standards before and after transfer. As a bonus, we include a deactivated screw-top vial with each stock reference standard <5 mL for worry-free transfer. Every order also includes a free Restek Safe Cracker.

## Make Restek Reference Standards an Integral Part of Your Workflow

Restek's reference standards are the bedrock on which solid analyses are built. Give your data and everyone that relies on it the support they deserve; visit [www.restek.com/standards](http://www.restek.com/standards) and place your order today.



# Great Standards are Just the Beginning

Reference standards manufactured and tested in our ISO-accredited labs are the first and best choice for robust methods and the quantitative determination of target analytes, but Restek does not stop there—and neither should you. We offer an integrated solution to help you run faster with more accuracy and maximized uptime!

## Products

From collection to detection, if you need it for your analysis, you'll find it in Restek's comprehensive product line.

**GC Columns** | [www.restek.com/GC](http://www.restek.com/GC)

**GC Accessories** | [www.restek.com/GCacc](http://www.restek.com/GCacc)

**Reference Standards** | [www.restek.com/standards](http://www.restek.com/standards)

**Air Sampling** | [www.restek.com/air](http://www.restek.com/air)

**Sample Preparation** | [www.restek.com/sample-handling](http://www.restek.com/sample-handling)

**LC Columns** | [www.restek.com/LC](http://www.restek.com/LC)

**LC Accessories** | [www.restek.com/LCacc](http://www.restek.com/LCacc)

## Technical Service

Restek's Technical Service team is staffed by individuals with extensive experience in chemistry, chromatography, engineering, and related fields covering the environmental, food safety, petro, chemical, forensic, and pharmaceutical industries. This highly skilled group collectively represents hundreds of years of hands-on chromatography experience and specializes in providing information about Restek products, applications, instrument troubleshooting, method development, and more. For fast, personalized, and thorough answers to your most challenging technical questions, just send us an email!

**Customers Inside the U.S.** | [support@restek.com](mailto:support@restek.com)

**Customers Outside the U.S.** | Contact your local representative or email [support@restek.com](mailto:support@restek.com)

## Technical Resources

**EZGC Online Tools** | [www.restek.com/ezgc](http://www.restek.com/ezgc)

Our free EZGC online tools help you create model chromatograms, get column recommendations, translate methods, and calculate flows!

**EZLC Online Tools** | [www.restek.com/ezlc](http://www.restek.com/ezlc)

Our free and powerful LC tools make it easy to develop and optimize new LC methods or translate existing ones quickly and accurately.

**ChromaBLOGraphy** | [blog.restek.com](http://blog.restek.com)

Restek's blog is where we share our thoughts on current trends, best practices, and troubleshooting tips. Best of all, you can weigh in yourself.

**Literature Library** | [www.restek.com/library](http://www.restek.com/library)

Read product brochures, guest editorials, application notes from Restek chemists, and much more.

**Chromatogram Database** | [www.restek.com/chromatograms](http://www.restek.com/chromatograms)

Thousands of GC and LC chromatograms are at your fingertips—search and filter to find the exact application you are running.

**Web Search Tools** | [www.restek.com](http://www.restek.com)

From any page on our website, you can easily find documentation, resources, products, and chromatograms.



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