

Agilent 7696A Sample Prep WorkBench

CONSISTENT, ACCURATE, AND SAFE SAMPLE PREPARATION INSTRUMENT

The Measure of Confidence



Agilent Technologies

7696A SAMPLE PREP WORKBENCH

Gain confidence
in your sample prep by:

- Maintaining precision at significantly lower volumes
- Minimizing variability between analysts
- Reducing the need for costly rework
- Lowering health and safety risks

Manual sample prep is tedious and inherently variable. Such inconsistency can lead to time-consuming rework, wasted supplies, and the lingering uncertainty that your samples are not prepared the way your protocols – or regulatory requirements – dictate. In addition, direct exposure to hazardous chemicals can jeopardize the health of you and your team.

Now Agilent has eased these frustrations with a *standalone* sample preparation instrument that is as *reliable, precise, and accurate* as our GC and LC instruments.

The Agilent 7696A Sample Prep WorkBench automates tedious – and error prone – steps in your sample prep process. It is suitable for most HPLC, GC, LC/MS, and GC/MS applications.



Enhance the consistency of manual sample preparation and standards development

Your results are only as reliable as your sample prep. That is why Agilent's 7696A Sample Prep WorkBench combines precise automation with an intuitive software interface to eliminate variability in dilution, extraction, standards addition, and other key steps. This versatile tool also significantly reduces exposure to hazardous solvents for greater long-term peace-of-mind.

All prepared samples are finished in 2 mL vials that are compatible with most GC and LC autosamplers – *regardless of manufacturer* – for direct analysis without transferring to other sample containers.

"Drag-and-drop" software simplifies your common sample prep steps

Unlike cumbersome sample prep robots, the 7696A Sample Prep WorkBench requires no complex programming and can run unattended for hours. Its user-friendly, templated software is easy to master, allowing you to concentrate on the *chemistry* – not the programming.

Sample preparation backed by decades of chromatography innovation

Agilent's 7696A Sample Prep WorkBench is backed by four decades of Agilent GC and LC expertise, so you know it will perform as reliably as our world-renowned analytical instruments. In addition, Agilent's top-rated service professionals understand your workflow, and are always ready to deliver the personalized support you need for maximum productivity.

Sophisticated automation to fit your unique applications

These versatile tools and capabilities ensure that your sample prep meets the standards of your high-quality workflow.



Dilution, aliquoting, and reconstitution



Reagent and standard addition



Spin-vortex mixing



Liquid/liquid extraction



Barcode reading



Flexible sample tray heating and Peltier cooling



Optional WeighStation for gravimetric confirmation of liquid dispensing

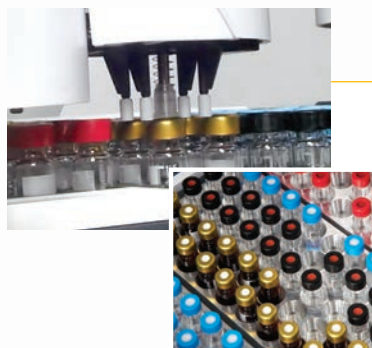
JUMP START YOUR WORKFLOW WITH THE VERY LATEST AUTOMATION TECHNOLOGY

From small, specialized runs to high-volume studies, Agilent's 7696A Sample Prep WorkBench can help you process samples more consistently, so you can generate your best data right from the start. Features and benefits include:

- The capacity to hold 150 2 mL vials
- Single-position heater (25 °C-80 °C)
- Vortex mixing action
- Liquid handling towers for precise, reproducible dispensing and transfer
- Maintain a safe working environment by placing the entire unit in a fume hood
- Simultaneously heat a single 50-vial tray (25 °C-80 °C) and cool a **second** 50-vial tray (40 °C-5 °C) through energy-efficient optional Peltier cooling
- Provide accurate sample weights out to five decimal places with optional WeighStation

Dramatically decrease variability errors

Manual sample prep adds variability day to day and from analyst to analyst, which can lead to questionable results and frequent costly rework. But Agilent's 7696A WorkBench virtually eliminates variability concerns – and provides tracking with a written record of steps performed and resources used.



Save time and money, while protecting the environment

With Agilent's 7696A WorkBench, you can be confident that your samples are prepared correctly the **first** time – reducing the amount of wasted solvent, glassware, pipette tips, and reagents. The instrument's automation capabilities, along with its ability to fit under most fume hoods, also reduces lab workers' exposure to derivatizing reagents, acids, bases, and other hazardous chemicals.

Meet your sample prep challenges for virtually any analytical technique

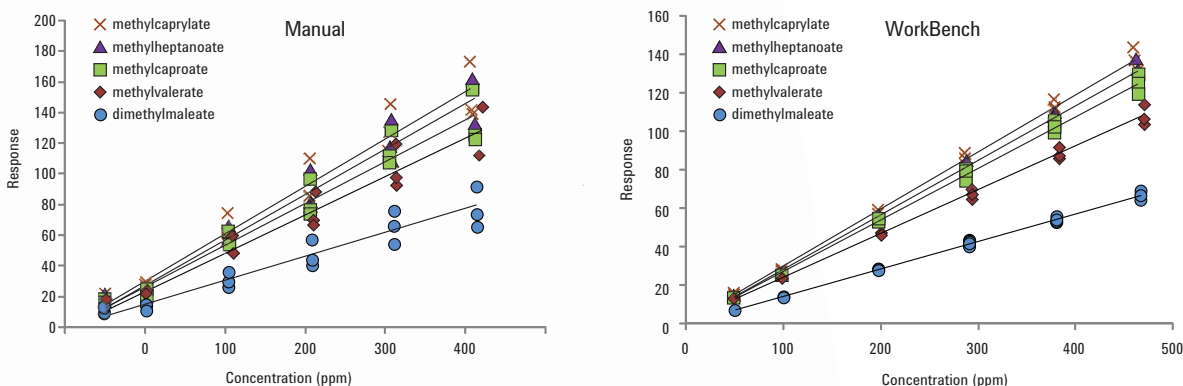
The standalone 7696A WorkBench can be used for HPLC, GC, LC/MS, GC/MS sample prep – **regardless of system manufacturer**. It is also flexible enough to accommodate analytical techniques used in industries such as pharmaceutical, petrochemical, food safety, consumer products, forensics, and environmental.

Genuine Agilent supplies ensure sample prep consistency

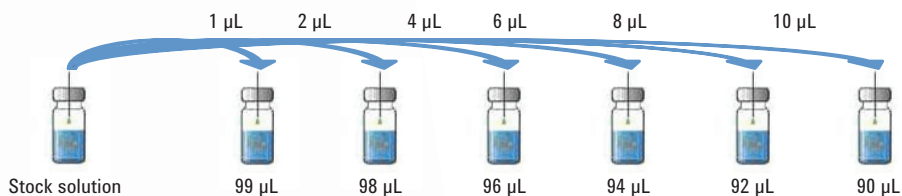
As the world's premier measurement company, Agilent can offer you the widest selection of both GC **and** LC vials, syringes, and other sample prep supplies. All are manufactured to our demanding specifications, tested under the strictest conditions, and backed by unmatched technical support – plus a 90-day warranty from the date of shipment.

MAINTAIN SAMPLE PREP CONSISTENCY AND REPRODUCIBILITY, DAY IN AND DAY OUT

Creating standards can be less of a chore. Here you see a side-by-side time comparison of calibration curves created manually and with Agilent's 7696A Sample Prep WorkBench. Note that the linearity of standards prepared by the 7696A WorkBench is as good – *or better* – than those prepared manually.



Linear dilution: calibration curve standard preparation. Calibration standard preparation with the 7696A WorkBench is consistently more reproducible than manual preparation.

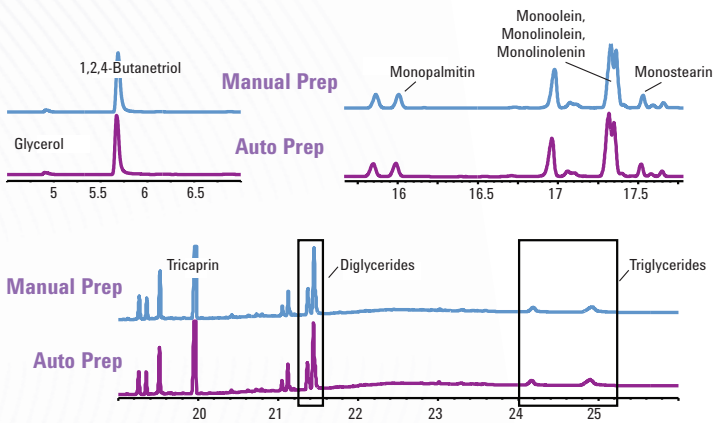


Analysis of glycerins in biodiesel.

In this example, the following steps were performed both manually and with Agilent's 7696A WorkBench:

1. Addition of ISTDs (butanetriol & tricaprin)
2. Derivatization with MSTFA
3. Reaction for 15 minutes
4. Quenching with n-heptane

The chromatograms highlight the outstanding precision and reliability of the 7696A WorkBench for free and total glycerins.



To learn more about the Agilent 7696A Sample Prep WorkBench, visit agilent.com/chem/workbench

CONFIRM LIQUID DISPENSING TO 5 DECIMAL PLACES WITH THE WEIGHSTATION

Agilent teamed up with Mettler Toledo to create a gravimetric WeighStation for the 7696A Sample Prep WorkBench

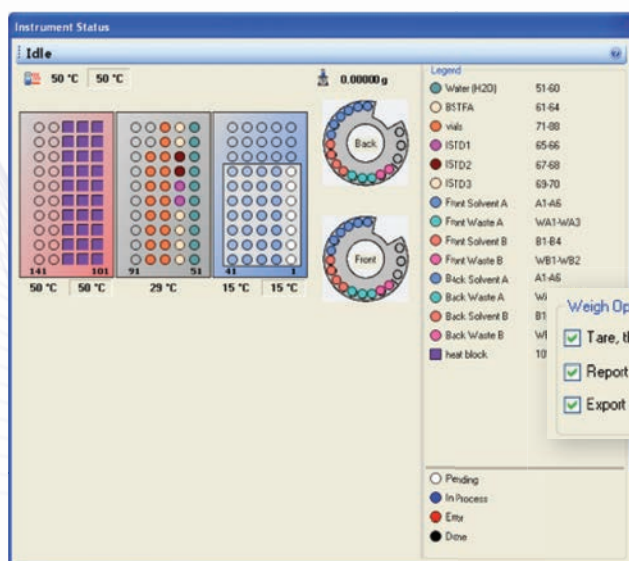
Gravimetric weighing techniques give you greater accuracy, precision, and reproducibility, as compared to volumetric determination.

When it comes to weighing small samples, **Mettler Toledo** leaves nothing to chance, which is why you can count on their integrated WeighStation to deliver reliable – and reproducible – readings. Advantages include:

- Semi-micro integrated balance with 5 decimal place readability (0.00001g)
- Integrated OMIL reference weight for automated weight calibration
- Truly automated measuring due to built-in reference weight
- Greater accuracy with the integrated vial de-ionizer that minimizes static influence
- Fully automated weighing of dispensable liquids and semi-automated weighing of solids and viscous liquids
- Repeatability of 0.00005g under recommended operating conditions

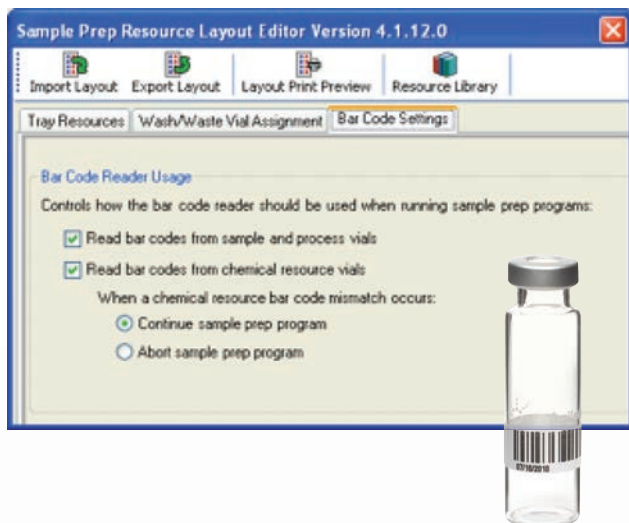


Small in size, high in performance. Agilent and Mettler Toledo have collaborated to bring truly automated weighing capabilities to your sample and standards prep.



With just the touch of a button, you can quickly and precisely weigh both solids and viscous liquids – and there's no extensive training required.

DATA SECURITY AND SEAMLESS TRACEABILITY FOR GC AND LC SAMPLE PREPARATION



Barcode support for samples and resources

- Confirms sample identity.
- Ensures that the correct solvent vial is being used.



Transferrable well-plate LC vial rack option

- Makes it easy to transfer finished samples and standards to an LC sampler that accepts well-plate vial racks.
- Both the LC vial rack and WorkBench adapter tray are automatically recognized by the hardware and software for fast, easy transfer of your sample and sequence information.



You can use the transferrable well-plate LC vial rack to integrate centrifugation and evaporation into a WorkBench Prep Method. It is necessary, however, to manually transfer the rack to a centrifuge or vacuum evaporator equipped with an appropriate rotor.

To learn more about the Agilent 7696A Sample Prep WorkBench, visit agilent.com/chem/workbench

CONVERT A MANUAL METHOD FOR USE WITH WORKBENCH WITH WEIGHSTATION

WorkBench has the ability to automate sample preparation procedures. However, there are some instances when they must be scaled for the appropriate volumes. This example – Biodiesel analysis based on EN14105:2011 regulations – demonstrates the ability of WorkBench with WeighStation to prepare samples for analysis on the 7890B GC. The method exceeds the regulated requirements and provides greater consistency in the results than manual preparation.

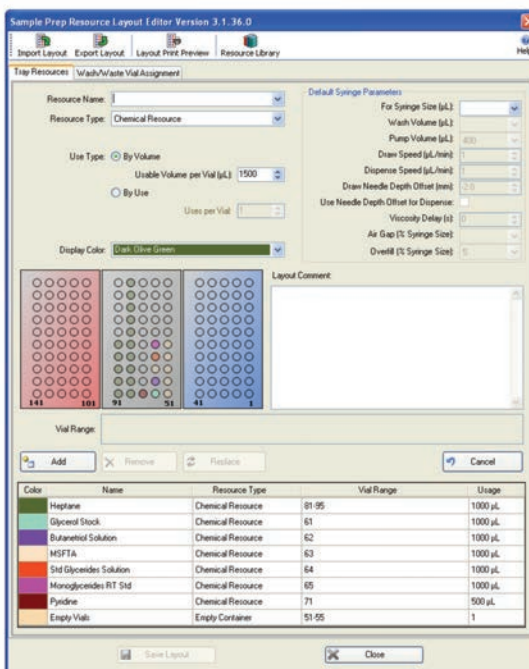
Scaling a method can be a simple procedure. In the table to the right, you see the conversion of the manual method to one on WorkBench with WeighStation. The homogeneous nature of the sample coupled with the sensitivity of the GC system makes scaling possible. Each of the steps in the sample preparation procedure has been scaled to fit the size of the vials, while still achieving the required sensitivity and precision for the method.

Step	Manual Method	Convert	WorkBench Method 10:1 Scaling
1	Accurately weight 100 mg sample into 10 mL vial	→	Accurately weigh 10 mg sample into 2 mL vial
2	Add 200 uL of pyridine	→	Add 20 uL of pyridine
3	Add 80 uL of butanetriol solution	→	Add 8 uL of butanetriol solution
4	Add 200 uL of glycerides solution	→	Add 20 uL of glycerides solution
5	Add 200 uL of MSTFA	→	Add 20 uL of MSTFA
6	Mix	→	Mix
7	React for 15 minutes	→	React for 15 minutes
8	Add 8 mL of n-heptane	→	Add 800 uL of n-heptane
9	Mix	→	Mix

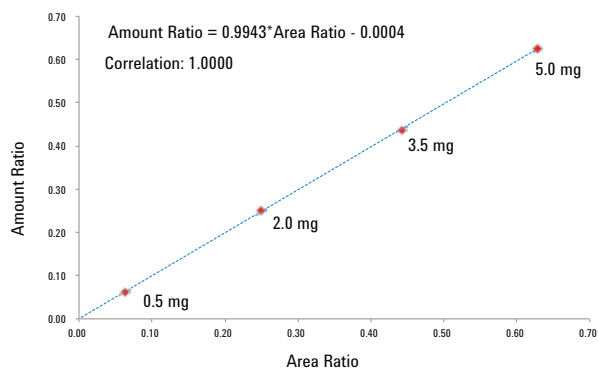
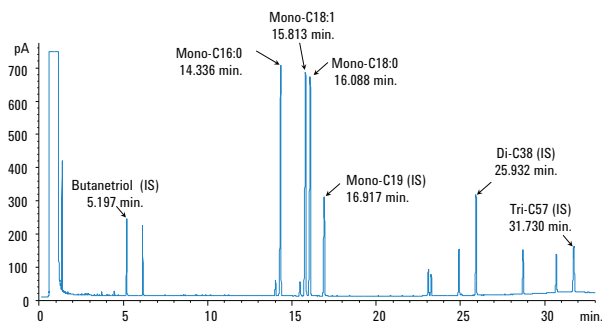
Conversion of manual method sample preparation to automated WorkBench with WeighStation. The 7890B GC system has more than enough sensitivity to allow for scaling and to meet expected results.

The resource map for WorkBench with WeighStation provides a visual representation to assist setup of the sample preparation method. Use of colored vials, found in the Quick Reference Guide ensures an easy to understand and simple to operate method.

Resource Name	Vial Range
Heptane	81-95
Glycerol Stock	61
Butanetriol Solution	62
MSTFA	63
Std Glycerides Solution	64
Monoglycerides RT Std	65
Pyridine	71
Empty Vials	51-55



Layout of the resources WorkBench with WeighStation will use to prepare the standards and samples.



WorkBench prepared monoglyceride retention time standard

Once the sample preparation procedure has been setup, standards are prepared by WorkBench with WeighStation. This figure shows one of the standards that was prepared using the method from the analyzer. The retention time standard is used to ensure that the method criteria retention time repeatability is met and maintained over time.

Glycerol calibration prepared using WorkBench

The calibration curve, shown in this figure, demonstrates WorkBench with WeighStation ability to provide a set of calibration samples automatically. It is still possible to manually create the calibration to the same level, however, WorkBench with WeighStation is able to provide this, freeing the chemist to perform other tasks.

Analysis results demonstrating the ability of the WeighStation

A comparison was done using WeighStation and manual weighing. Tables below show a comparison of four manually weighed and four automatically weighed samples using WorkBench with WeighStation. The percent relative standard deviations (%RSD) were compared to manual results. The manual results were 1.475% and the WorkBench with WeighStation provided 0.379%. The manual results in this case were actually quite good. However, WorkBench with WeighStation was able to provide these results while the chemist was reviewing other data.

EN14105 - WeighStation

Run	Sample Weight (mg)	% Free Glycerin	% Glycerides Mono-	% Glycerin	
				Bound	Total
WS 1	10.64	0.155	0.064	0.09	0.245
WS 2	10.63	0.157	0.065	0.09	0.247
WS 3	10.72	0.156	0.064	0.09	0.246
WS 4	10.67	0.155	0.064	0.09	0.245
Mean	10.67	0.156	0.064	0.09	0.246
StdDev	0.04	0.001	0.001	0.00	0.001
RSD	0.379%	0.615%	0.778%	0.000%	0.390%

EN14105 - Manual Weigh

Run	Sample Weight (mg)	% Free Glycerin	% Glycerides Mono-	% Glycerin	
				Bound	Total
Man 1	10.72	0.147	0.065	0.09	0.237
Man 2	11.00	0.148	0.066	0.09	0.237
Man 3	10.92	0.147	0.065	0.09	0.239
Man 4	11.10	0.149	0.067	0.09	0.238
Mean	10.94	0.148	0.066	0.09	0.238
StdDev	0.16	0.001	0.001	0.00	0.001
RSD	1.474%	0.648%	0.456%	0.000%	0.397%

To learn more about the Agilent 7696A Sample Prep WorkBench, visit agilent.com/chem/workbench

DEDICATED, INTUITIVE SOFTWARE MAKES SAMPLE PREPARATION AS EASY AS 1-2-3

Agilent's 7696A WorkBench Software puts the power of automation at your fingertips. Using an intuitive, icon-driven interface, you can create customized sample prep routines in three simple steps.

1. Define your sample prep resources

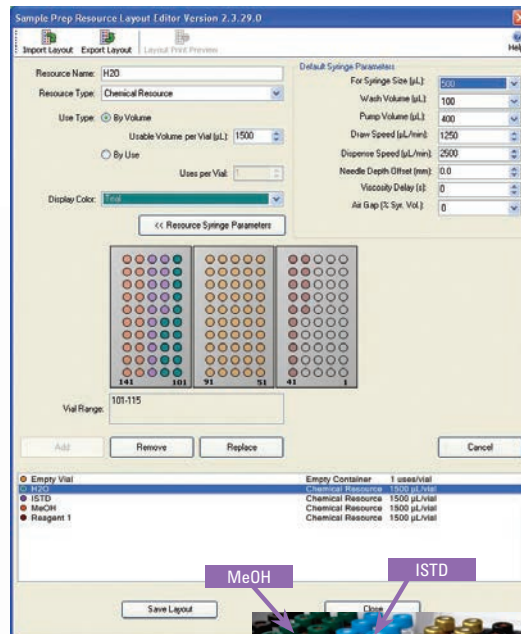
The Resource Manager Screen makes it easy to designate and keep track of solvents, reagents, standards, empty vials, and other key supplies using a color-coded graphic interface. The software also monitors chemical supply levels and automatically prompts you when replenishment is needed.

2. Create your method

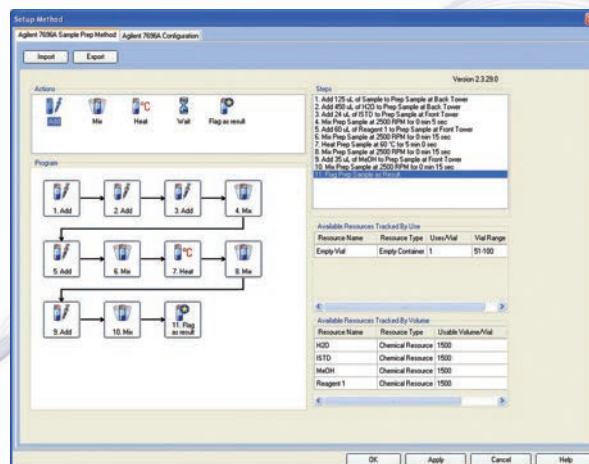
The WorkBench Software Method Editor Screen lets you automate and sequence the most common sample prep tasks, such as adding, mixing, heating, and waiting, with drag-and-drop speed. Graphical and textual displays tell you at-a-glance which steps will be performed, and in what order. And method templates allow anyone – regardless of skill level – to develop customized sample prep methods with confidence.

3. Decide how many samples you want to prep

Once you have identified your sample prep resources and method steps, the Easy Sequence Screen allows you to specify how many samples you wish to prepare.



Resource Manager Screen



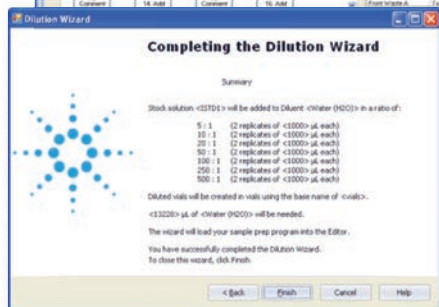
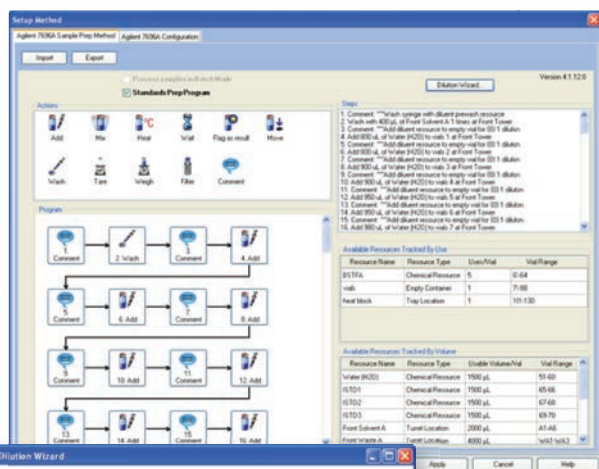
Method Editor Screen

Dilution Wizard

This integrated software tool lets you create a standards prep method in just three easy steps:

1. Enter the final volume of each standard
2. Input the number of vials you need for each standard level
3. Specify your desired dilution ratios

The Dilution Wizard will then create a ready-to-use standards prep method that can be edited as easily as any other WorkBench method.



Spend *more time* analyzing and *less time* worrying about instrument performance

Only Agilent offers a multi-layered commitment to keeping your laboratory running at maximum productivity.

- **Agilent Advantage Service and Support**
Whether you need support for a single instrument or a multi-lab, multi-vendor operation, Agilent helps you solve problems quickly, increase your uptime, and optimize your resources – from installation and upgrade to operation and repair.
- **Agilent Value Promise**
We *guarantee* you at least 10 years of instrument use from your date of purchase, or we will credit you with the residual value of the system toward an upgraded model.
- **Agilent Service Guarantee**
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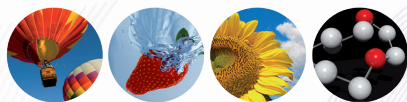
The Agilent 7696A Sample Prep WorkBench is a simply better way to...

- Automate repetitive manual sample preparation steps
- Save money on glassware, solvents, reagents, and solvent disposal – without sacrificing precision and reproducibility
- Reduce the need for rework due to analyst-to-analyst variability
- Increase productivity and lower your cost per sample
- Minimize exposure to hazardous chemicals
- Automate gravimetric confirmation of liquid dispensing



Agilent vials, caps, and syringes ensure maximum uptime and peak performance

Designed to complement your Sample Introduction device, our certified vials, caps, syringes, and other supplies are engineered and packaged with the same reliability you expect from Agilent instruments.



SOLUTION

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