GLASS ANALYSIS
FOCUSED AND FLEXIBLE

COMPREHENSIVE AND COMPLIANT SOLUTIONS FOR GLASS ANALYSIS

PerkinElmer®
For the Better

TRIED. TRUE. TRUSTED.

It's clear, glass has a variety of uses, from practical to technological to decorative. In particular, float glass is widely used in architecture, automotive, transportation, photovoltaic, and solar industries.

For glass testing labs like yours, we offer complete tailored solutions – instrumentation, accessories, software, and services – so you get the most out of your analysis. Our technology enables you to determine efficient energy storage and test raw materials for the properties you need.

Our rich experience and proven expertise with global organizations, as well as insights from customers like you, allow us to provide solutions that align with the latest glass regulations (EN, ISO, and CIE), improve the flow of your lab, and increase your throughput and value to customers.

From sample to results, our solutions help make your analysis clear as glass.

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GLASS ANALYSIS IN ARCHITECTURAL GLASS

See Glass from Every Angle

The quality of architectural glass is extremely important. Does it let in the right amount of light and heat? Is it safe and secure? Does it insulate against noise and promote privacy? Does it complement the design of the building?

For glass analyzers like you, all these questions can be answered through rigorous testing. A variety of samples and forms can be generated, and the appropriate accessories are required to ensure glass meets QA/QC standards. Conforming to these standards allows you to optimize development and production and troubleshoot during any process, from beginning to end.

To determine color, light transmission, absorbance, thermal, and solar properties, glass is tested against ISO9050, CIE, EN410, EN673, Haze, and NFRC standards.

For more information, read our application note: Material Characterization for Building Glass Measurements

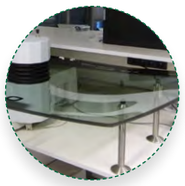
CLICK ON EACH PRODUCT BELOW TO LEARN MORE ABOUT ITS ROLE IN ARCHITECTURAL GLASS ANALYSIS.

LAMBDA™ 1050+ UV/Vis/ UV/Vis/NIR

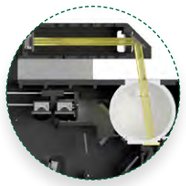
Integrating Spheres

Universal Reflectance Analyzer (URA)

Total Automated Measurement System (TAMS)



Large Sample Reflectance/ Transmittance (LSRT)



UL 150

UL 270

Spectrum 3™ FT-IR Emissivity Testing

NexION® ICP-MS

PerkinElmer® For the Better

GLASS ANALYSIS IN AUTOMOTIVE AND TRANSPORTATION

Testing for High Performance

From windshields to mirrors to electronic screens, glass analysis in the automotive and transportation industry is crucial to ensure safety and security.

With so many different types of optical properties that need to be analyzed, it's important to have flexible, reliable technology for the most accurate results. To analyze a variety of sample types, forms, and sizes, you must use the appropriate accessory that tests to QA/QC standards. Our solutions allow for optimized development and production as well as the ability to troubleshoot at any stage.

To determine color, light transmission, absorbance, thermal, and solar properties, glass is tested against ISO13837, CIE, EN410, EN673 standards.

For more information, read our flyer: Paving the Way to Innovation

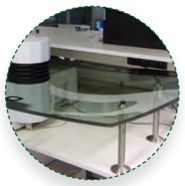
CLICK ON EACH PRODUCT BELOW TO LEARN MORE ABOUT ITS ROLE IN AUTOMOTIVE AND TRANSPORTATION GLASS ANALYSIS.

LAMBDA™ 1050+ UV/Vis/ UV/Vis/NIR

Integrating Spheres

Universal Reflectance Analyzer (URA)

Total Automated Measurement System (TAMS)



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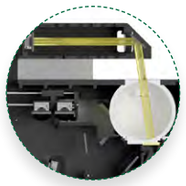

UL 150

UL 270

Spectrum 3™ FT-IR Emissivity Testing

NexION® ICP-MS

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GLASS ANALYSIS IN SOLAR PANEL AND PHOTOVOLTAIC MARKET

A Green Perspective on Glass Analysis

With the ever-growing need to source efficient renewable energy, it's more important than ever to ensure products like solar glass are properly analyzed. Common applications for analyzing its properties include optical components, materials, and color measurements on specular substrates.

Samples are typically tested to determine the following:

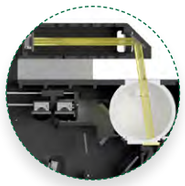
- Bidirectional reflectance distribution function (BRDF) and bidirectional transmittance distribution function (BRDF), other scattering measurements on diffusers, patterned and diffused coatings, and materials for straylight suppression
- Directional transmittance and reflectance properties on thin foils
- Directional reflectance properties on front surface mirrors
- Angular color measurements of samples and measurements of optical filters

For more information, read our application note: The Use of UV/Vis/NIR Spectroscopy in the Development of Photovoltaic Cells

CLICK ON EACH PRODUCT BELOW TO LEARN MORE ABOUT ITS ROLE IN SOLAR GLASS ANALYSIS.

LAMBDA™ 1050+ UV/Vis/ UV/Vis/NIR

Integrating Spheres



UL 150

Total Automated Measurement System (TAMS)

Automated Reflectance/ Transmittance Analyzer (ARTA)

Spectrum 3™ FT-IR Emissivity Testing

NexION® ICP-MS

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GLASS ANALYSIS FOR EFFICIENT ENERGY STORAGE

More to Glass Than Meets the Eye

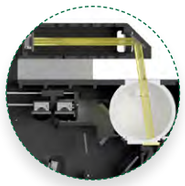
Light-diffusing glass – covered, patterned, textured, and coated – are widely used in solar panels, buildings, and greenhouses. This type of glass captures and traps light better within a structure, ensuring maximum thermal energy efficiency and an optimized distribution of light.

The ability to accurately measure the transmission and reflection properties of these materials is a key requirement in the development and manufacturing of high-efficiency solar cells and light-diffusing glazing. To quantify high efficiency, these materials are tested and measured according to NCRF standards.

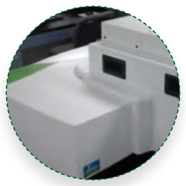
CLICK ON EACH PRODUCT BELOW TO LEARN MORE ABOUT ITS ROLE IN ANALYZING EFFICIENT ENERGY STORAGE.

LAMBDA™ 1050+ UV/Vis/ UV/Vis/NIR

Integrating Spheres



UL 150



UL 270

Total Automated Measurement System (TAMS)

Automated Reflectance/ Transmittance Analyzer (ARTA)

Spectrum 3™ FT-IR Emissivity Testing

NexION® ICP-MS

PerkinElmer®
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LAMBDA 1050+ Series UV/VIS and UV/VIS/NIR

Whether you're testing optics and thin films or solar panels and architectural glass, materials characterization calls for a UV/Vis/NIR instrument that's flexible and accurate and can handle any sample that comes your way. That's the LAMBDA 1050+.

With a two-sample compartment and a variety of universal and specialized accessory options, the LAMBDA 1050+ spectrophotometer delivers superior sensitivity, resolution, and scanning speed for your toughest sampling challenges.

▶ For more information, read our interactive brochure: Measure Your World from Every Angle

Integrating Spheres

Integrating spheres are the industry standard for measuring total reflectance, diffuse reflectance, and diffuse transmittance measurements for a large range of glass sample types.

We offer three different sphere types: 60 mm, 100 mm, and 150 mm spheres. The most commonly used 150 mm sphere supports port fraction of recommended calculations such as International Commission on Illumination (CIE) and standard methods like EN410, ISO9050, JIS316 and more. The other sphere types are typically used for legacy accessories and special applications.

▶ For more information, read our technical note: Integrating Sphere Functionality: The Scatter Transmission Measurement

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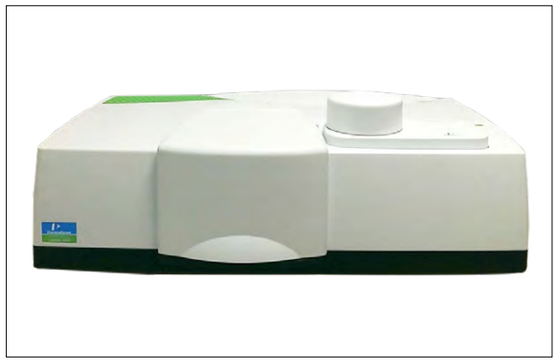
Universal Reflectance Analyzer (URA)



For front-surface analysis, our URA is a must-have for glass testing labs. When it comes to measuring small, difficult samples, this tool uses an adjustable beam spot size. Samples lie flat on the measuring plate, and internal optics directs a beam to a measurement port.

To maintain ideal path lengths and angles of incidence between background and sample measurement, our URA has its own kinematic detector module and pathlength compensator. The multiangle, high-sensitivity URA automatically changes the incidence angle without having to adjust the sample or optics.

Total Automated Measurement System (TAMS)

The most flexible platform of its kind, the TAMS unit allows you to choose the right detector for angular-dependent measurements of optical properties of thin and thick samples, using a concentric rotation stage for sample and detector.

Most glass analysis labs use the indium gallium arsenide (InGaAs) sphere detector within the TAMS, as it offers flexibility of measurement type and sample size and can handle most applications.

Direct detectors are also available to use for specific applications. Both are sensitive, but the sphere is least prone to misalignment and other systematic errors, and it offers the highest accuracy for transmittance and reflectance.

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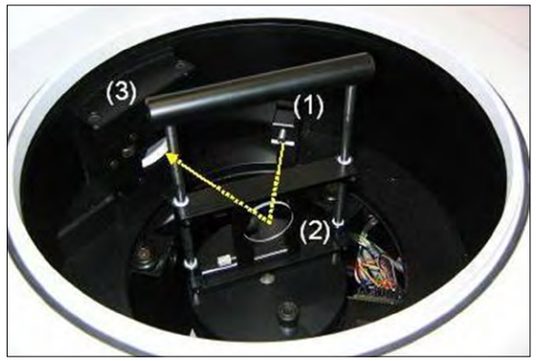
Automated Reflectance Transmittance Analyzer (ARTA)

Looking for the highest-level accuracy and sensitivity for your glass analysis samples? Look no further. The ARTA uses our TAMS technology and enhances it to reach the level of precision you need.

The ARTA includes a 60 mm integrating sphere detector, a built-in polarized driver capable of measuring BRDF/BTDF with a variable slit and sample holder, and a GlanTompson polarizer. The ARTA provides more energy due to its fixed polarizer assembly and high signal-to-noise ratio.

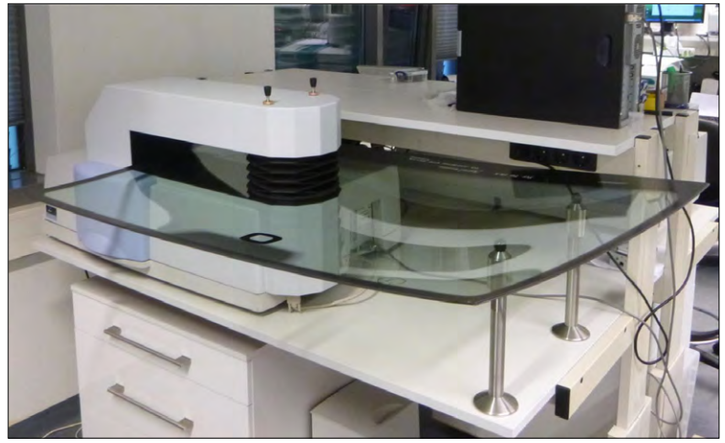
Mostly used in niche applications, the ARTA provides more options for scattering measurement and allows for smaller beam use.



Large Sample Reflectance/Transmittance (LSRT)

Analyzing larger samples? Our LSRT accessory accurately tests large samples such as car windows, windscreens, and toughened glass panes. Its advanced capabilities enable you to analyze any type of laminated and bended glass.

Measurements are taken with a 60 mm sphere detector, and our user-friendly software allows you to seamlessly switch between transmission and reflection modes as needed.



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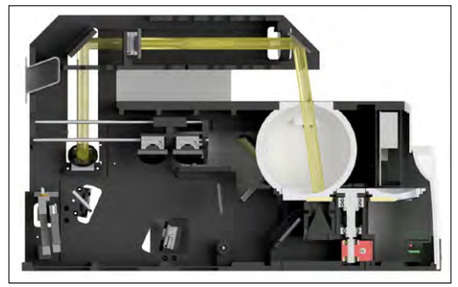
Upward-Looking (UL) 150

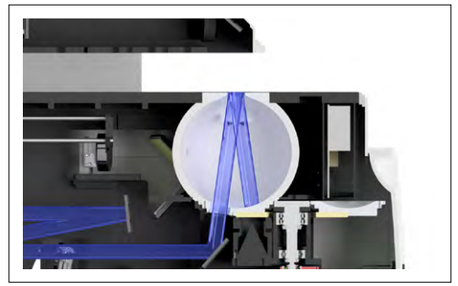
If you're tasked with analyzing horizontal samples, our upward-looking (UL) 150 accessory is perfect for measuring scattering light and haze in airplane glass and glazing according to EN410, ISO9050, ASTM E903, or ASTM1003-95.

Our UL 150 accessory was crafted with an open port design – samples don't have to be clamped, as gravity holds them in place on top of the sphere. This innovative design requires measurements to be done in a dark room. You may also use a cover for added protection.

▶ For more information, read our application note: Measurement of Total Solar Reflectance of Paint Panels Using PerkinElmer UV/Vis/ NIR Spectrophotometers and UV WinLab Software



UL150 Reflectance

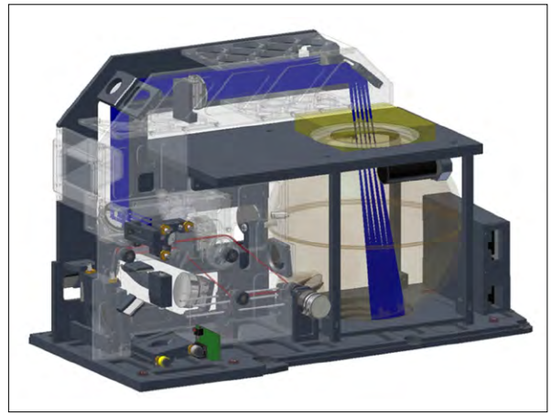


UL150 Transmittance

Upward-Looking (UL) 270

Together with our LAMBDA 1050+ system, the upward-looking (UL) 270 mm integrating sphere is a unique accessory that provides superior accuracy and results. It's perfect for measuring diffused transmittance in materials such as glazing, frits, pyramid, and textured glass.

The National Fenestration Rating Council (NRFC) 300-2017 testing method requires a sphere larger than 250 mm to accommodate the ideal ratio of less than 0.04 mm between the aperture area and sphere area. Our exclusive UL 270 meets and exceeds those requirements.



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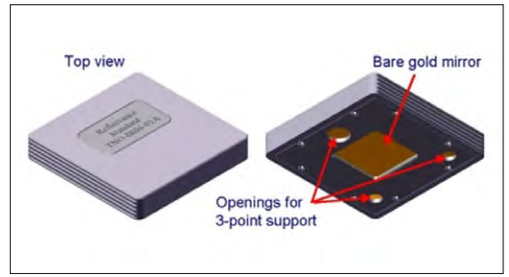
Fourier Transform Infrared (FT-IR) Technology

When analyzing the surface of glass, you're often testing its emissivity, or effectiveness in emitting energy as thermal radiation. This is a key property in determining the glass' energy-saving ability according to EN673.

Our Spectrum 3 FTIR system, coupled with our IR reflectance accessories, provides an easy, novel technique for emissivity testing. How's *that* for saving energy?



▶ For more information, read our product note: IR Specular Reflection Set for Measuring Emissivity – A Proven Tool for Measuring Emissivity of Coated Glass

Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS)

In glass, if the elemental distribution of silicate or silicon is incorrect, problems in manufacturing will most likely occur. That's why it's so important to identify and understand its raw materials.

Our NexION LA-ICP-MS system performs fast and accurate elemental analysis of glass samples. It enables you to collect and compare information for research and development, forensic applications, and more.

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OUR SOFTWARE SUITE

Our four robust software packages are compatible with Windows and are designed to fit your unique glass analysis needs.

COLOR METHODS SOFTWARE

Dedicated for color indices of materials, this software includes the following calculations: CIE Lab, Hunter Lab, DCIE Lab, and Yxy Chromaticity graphics plots, ISO 11664 Part 1-6, Din99, Haze ground values, ASTME308-95 and more.

For more information, click here.

ARCHITECTURAL GLASS SOFTWARE

Designed for thin-film coatings applied to architectural glass, this software includes the following calculations: ISO9050, DIN67507, ASTME891, EN410, JIS3105, ASTMG173, ISO13837, ASTMD1003.

For more information, click here.

PROTECTION GLASS SOFTWARE

Created for personal and industrial eye protection, this software includes the following calculations: I EN 1836, ANSI Z87.1, CSA, EN 166/172, AS/NZS 1337, BS /DIN/EN 13758, AS/NZS 4399, AATCC 183, AS/NZS 2604 2012, Colipa 2011, ISO -24443, ISO -24444.

For more information, click here.

FILTER TESTING SOFTWARE

Dedicated for optical thin-film coatings, this software includes the following calculations: bandpass filter, non-bandpass filter.

For more information, click here.

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Get the Most Out of Your Instruments *and* Your Analysis

You invest great efforts into your research – and we do the same with our consumables and accessories, tested and validated to fit your testing needs. That's why we developed a full range of quality consumables and accessories designed only for glass analysis. Below is a selection of our most commonly required accessories.

TAMS SMALL-SAMPLE HOLDER

Enables UV/Vis/NIR measurements of 200-mm wafers

Part No. L6310249

TAMS HIGH-RESOLUTION APERTURE SET

Two sets of apertures to control the sample spot and the detector's acceptance angle

Part No. L6310253

SMALL-SPOT ACCESSORY KIT (150-MM INTEGRATING SPHERE)

Enables UV/Vis/NIR measurements of 200-mm wafers

Part No. L6020211

CENTER-MOUNT CUVETTE HOLDER (150-MM INTEGRATING SPHERE)

For measurement of total absorbance of scattering solutions

Part No. PELA9041

CLIP-STYLE CENTER-MOUNT SAMPLE HOLDER (150-MM INTEGRATING SPHERE)

Used with film and paper samples

Part No. PELA9039

REFLECTANCE APERTURE KIT (150-MM INTEGRATING SPHERE)

Three high-performance coated apertures that reduce the port diameter for small spots and samples

Part No. L6020314

SAMPLE-COMPARTMENT I RIS ASSEMBLY (150-MM INTEGRATING SPHERE)

Mounted at the cuvette position, reduces the spot size at the reflectance port

Part No. L6020316

CALIBRATED ALUMINUM REFERENCE MIRROR

US NIST-traceable mirror covering the 250 nm - 2500 nm range

Part No. N1010504

UV/VIS/NIR SECOND-SURFACE REFERENCE MIRROR

Optimized for checking the accuracy of absolute and to correct the spectra of nonabsolute specular reflectance accessories

Part No. L6310204

These products offer reliable performance, help control operating costs, and maximize instrument uptime. Like our trusted instruments, our consumables and accessories offer the best performance, over and over. Click here to browse and shop our complete consumables portfolio.

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Smarter Questions, Faster Answers

Looking for industry-leading informatics software? Yeah, we've got that, too. Overcome challenges like volatile pricing, increased environmental regulation, and data complexity. Browse our suite of informatics software and improve collaboration, spark R&D innovation, and deliver predictive analytics in real time.

CHEMDRAW

Accelerate the drawing and publishing of chemical and biological compounds.

SIGNALS™ NOTEBOOK

A cloud-native electronic lab notebook that captures, reuses, and shares experimental data.

E-NOTEBOOK™

Document your analyses and leverage the knowledge gained from previous experiments.

LEAD DISCOVERY

Discover actionable insights by seamlessly integrating chemical and biological molecules with activity results.

TIBCO SPOTFIRE®

Quickly analyze disparate data from multiple sources and create a complete picture of what's happening in real time.

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For the Better

Complete Services for Increased Productivity and Efficiency

Today's lab leaders are facing several challenges, from tighter deadlines to increased budget scrutiny to teams with various degrees of comfort with lab equipment. Time that could be spent getting ahead is spent on noncore activities.

To help you overcome barriers to success, OneSource® Laboratory Services has built a team of trained scientists and engineers who bring their real-life knowledge to you, helping increase your productivity with recommendations on how to best utilize your assets. With this knowledge, you can get back to your core mission.

Labs of all sizes need to know their equipment will work as expected, every time they turn it on. From contracts and performance maintenance available for our instruments as well as other manufacturers' equipment to full lab asset management delivered globally, we can help you make the most of your important lab assets.

And for labs looking to introduce new equipment and techniques, we offer training at our facilities and at yours.

Click here to read about our multivendor and educational services

OneSource® Laboratory Services

OneSource Services

- Asset optimization
- Lab environment and instrument monitoring
- Asset location
- Education and training
- Technology and descriptive analysis
- Internet of lab things/lab of the future
- Remote support
- Multivendor services
- Compliance
- Lab support
- IT solutions
- Instrument qualifications

PerkinElmer® *For the Better*

Multivendor Services

With so many different vendors' instruments in your lab, it can be challenging to ensure everything is being maintained properly. Some labs struggle to get the most productivity and efficiency from all their instruments. Others streamline and simplify workflows to maintain regulatory compliance – and reduce the risk of noncompliance. Either way, you're always scrambling to figure out who to call for service as quickly as possible before you lose too much time…and money.

But what if there were a one-stop service contract option for your lab – from a company with decades of deep-seated multivendor experience – that repaired all your instruments, offered state-of-the-art validation and compliance services, and provided reliable preventative maintenance? There is. That's what OneSource Multivendor Service is all about.

Information on Educational Services

Whether you are looking for a basic instrument refresher course, simple troubleshooting techniques, general application support, or method optimization, our field application scientists or service engineers will come directly to your lab.

Through education, you will gain knowledge and insights into the latest techniques, not only increasing your confidence, but also unlocking the full potential of your instrument.

For more information on our glass analysis solutions, visit www.perkinelmer.com/glass

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