Defining the standards for FT-IR technology for over 65 years

For over 65 years, PerkinElmer has been the world leader in Infrared Spectroscopy because we are committed to providing solutions to the challenges you face in your laboratory.

We continually pioneer technology to help you produce more insightful results with greater reliability and ease of use. Through several industry firsts and patented innovations, as well as in-depth training and unmatched service, we are committed to providing you with the ultimate in FT-IR systems.

Spectrum 100 FT-IR and FT-NIR Spectrometers:

The PerkinElmer Spectrum™ 100 FT-IR Spectrometer is the gold standard for routine materials testing applications in industry and academia. The system's high sensitivity, sampling speed and stability, enables laboratories to achieve high quality, reproducible results with ease.

Features and Benefits

- Exclusive source design for accurate, repeatable measurements
- Go button and LCD display for increased productivity and ease-of-use
- Smart, zero-alignment, modular accessories for quick, predictable and reproducible sampling
- Absolute Virtual Instrument (AVI) standardizes the instrument's wavenumber scale to a far higher accuracy than can be achieved with conventional calibration methods
- Spectrum software provides intuitive user operation and helps ensure consistent results, day-to-day, user-to-user

Spectrum 100 System

The Spectrum 400

The Spectrum 400 is a dual range (either FT-IR/FT-NIR or FT-IR/FT-FIR) system that combines the latest developments in design, sampling and data-handling.

Incorporating sophisticated automated range switchover, this amazing instrument provides you with fully optimized performance across the entire measurement range. The Spectrum 400 is ideally suited to a wide range of applications in product development, product and process troubleshooting and method development environments.

See page 10 for details on the new Spectrum 65 FT-IR.

Microscopy and Imaging Systems — designed to meet every challenge of even the most demanding analyses

The PerkinElmer line of IR Microscopy and Imaging Systems is designed to allow your laboratory to analyze even the smallest sample with pinpoint accuracy. We are the only instrument manufacturer to achieve the maximum spatial resolution across our entire product range. Our instruments are engineered to the highest quality specifications, providing high throughput, reproducibility and, ultimately, confidence in every result.

Microscopy vs. Imaging

While infrared microscopy provides the highest sensitivity and widest spectral range for small area FT-IR measurements, collecting a microscopic chemical picture of your sample can be time consuming, depending on the data collection and sample size requirements.

Unlike IR microscopes that employ a single detector measuring a single point at a time, FT-IR Imaging systems contain multi-element detectors, producing IR images almost as fast as an optical microscope presents a visible image.

Spotlight 400 FT-IR and 400N FT-NIR Imaging Systems

The Spotlight 400 Imaging System is the ultimate in IR imaging, allowing rapid collection of data from virtually any material. It's combination of high-sensitivity and speed extends IR imaging to many new applications, and provides valuable information about structure and molecular composition.

Features and Benefits

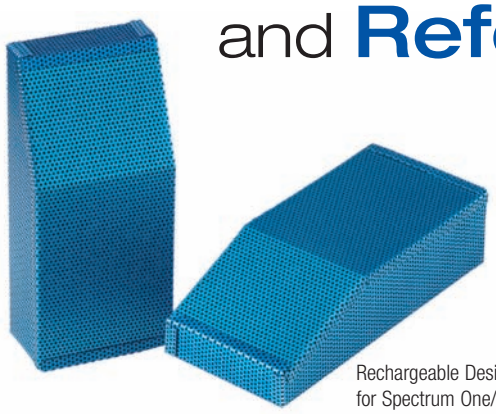
- Best-in-class signal-to-noise ratio — typically better than 12,000:1
- Rapid-scan IR imaging in transmission reflectance and ATR
- Fully automated focus, stage movement and illumination
- Duet detector design containing single element microscopy and array imaging detectors
- Solid-state white light illumination
- 1.56, 6.25, 25 and 50 µ pixel size

TG-IR Hyphenated technique

PerkinElmer offers a TG-IR Interface which can connect a TGA 4000 or STA 6000 to a Spectrum 100, 100N, or 400. Spectrum One and Spectrum One NTS are also compatible with the Interface. For more information on hyphenated techniques see page 50.

See **page 2** for ordering information and a complete listing of PerkinElmer offices.

Desiccant and Laser Kits, Sources and Reference Materials



Rechargeable Desiccant Kit for Spectrum One/One NTS

Rechargeable Desiccant Kits

The desiccant is contained in rigid metal cages which are user-installable. Depending on the instrument either one or two cages are required. It is recommended to have spare cages of desiccant so when a desiccant change is required recharged desiccant can be available to be installed immediately.

Description	Part No.
For Spectrum Spectrum 65/100/100N/400 Includes: four (4) Desiccant Packs, two to be used in the instrument and two spares for recharging.	L1250311
For Spectrum One/One NTS Includes: four (4) Desiccant Packs, two to be used in the instrument and two spares for recharging.	L1200219
For Spectrum 1000/BX/RX, Model 1600, Paragon 500/1000 Includes: one (1) Desiccant Pack. One pack required for each desiccant change.	L1180480
For Spectrum 400 Second Desiccant area Includes: one (1) Desiccant Pack. One required for each desiccant change.	L1251840

Replacement Laser Head Kit and Sources

Description	Part No.
Laser Head (HeNe) and Laser Power Supply User-installable spare for Spectrum One 65/100/400 and Spectrum One NTS/100N systems.	L1200253
NIR Source Lamp for Spectrum One/65/100/400	L1240098
Mid-IR Source Assembly for Spectrum One/100/400	L1200406
Mid-IR Source Element for Spectrum One/65/100/400	L1200443

Instrument Performance Validation (IPV) Kits

Instrument Performance Validation Kits are available for both Mid-IR and Near-IR FT-IR instruments. All the kits include a polystyrene Traceable Reference Material (TRM) for abscissa calibration valid for three years. The Mid-IR IPV kits also include NG11 Schott Glass Reference Material (RM) for checking the repeatability of ordinate measurement. Upgrade kits are available to replace the polystyrene TRM once the validity period has expired.

Description	Part No.
Mid Infrared IPV kit for Spectrum Software V.6 or lower	L1365335
Mid Infrared IPV upgrade kit for Spectrum Software V.6 or lower	L1365341
Mid Infrared IPV kit for Spectrum 10 Software	L1250404
Mid Infrared IPV upgrade kit for Spectrum 10 Software	L1250474
Near Infrared IPV kit for Spectrum Software V.6 or lower	L1180479
Near Infrared IPV upgrade kit for Spectrum Software V.6 or lower	L1180490
Near Infrared IPV kit for Spectrum 10 Software	L1250405
Near Infrared IPV upgrade kit for Spectrum 10 Software	L1250475
Polystyrene Test Film – 0.038 mm thickness (not traceable)	L1202057

Disposable Desiccant Kit

Desiccant Kits

These kits are required for all the PerkinElmer FT-IR Spectrometers to keep the optical path free from moisture. It is recommended that the desiccant is replaced every six months. Follow the instructions in the appropriate instrument manual to install the desiccant.

Disposable Desiccant Kit

User-installable desiccant includes two desiccant packs. Four packs (two kits) required for each desiccant change. Six packs (three kits) required for use with Spectrum 65, Spectrum 100, Spectrum 100N and Spectrum 400.

Description	Part No.
For use with Model 1600, Paragon 500/1000, System 2000, Spectrum One/One NTS/400/1000/2000/BX/GX/RX/65	N0171159

PerkinElmer offers a **wide selection** of liquid **sampling cells** and **window materials**

PerkinElmer offers a versatile product line of liquid sampling cells which utilize a specially designed Universal mount suitable for both FT-IR and dispersive instruments, and a wide variety of high-quality window materials to meet your analytical needs. These windows are polished to precise tolerances of flatness.

The first criteria to consider when selecting a window material is the wavelength range over which the spectrum must be measured.

Other important considerations include solubility, reactivity, and the refractive index of the window material with respect to the sample. Sometimes mechanical and thermal characteristics may also be important.

PerkinElmer offers a variety of cell options for analyzing liquid samples

Liquids are traditionally analyzed as thin films in cells. A cell consists of two FT-IR transparent windows. A Teflon® spacer is generally used to produce a film of the desired thickness or pathlength.

Demountable Cells – using circular windows, the Universal Demountable Cell is ideal for use with mulls, capillary films, cast films and very viscous liquids.

Semi-demountable Cells – using rectangular windows, the Universal Demountable Cell is designed for use with high viscosity liquids or mull samples.

Sealed Liquid Cells – designed as a preassembled, integral unit, Sealed Liquid Cells are great for highly volatile samples and quantitative analysis.

PerkinElmer cells feature both rugged construction and flexibility. All can easily be cleaned for re-use and, depending on the cell you choose, can be disassembled so that cell windows can be cleaned and polished regularly.

Selecting Window Materials

The following information may be helpful in selecting window materials:

Sodium Chloride (NaCl) is one of the most versatile window materials available, due to its spectral range and low cost. Samples should not contain water because NaCl is hygroscopic. This will cause the windows to fog and become unusable. Store NaCl cells in a desiccator when not in use. NaCl withstands mechanical stress and can be used up to 400 °C.

Potassium Bromide (KBr) has a slightly wider spectral range than NaCl but is more hygroscopic. Although able to provide good resistance to mechanical shock, KBr is easily cleaved. KBr can be used up to 300 °C.

Calcium Fluoride (CaF_2) is extremely hard and stable. CaF_2 is not significantly affected by moisture and does not fog. While resistant to most acids and bases, CaF_2 should not be used with ammonium salts.

Barium Fluoride (BaF_2) is a relatively hard material, similar to CaF_2. Though less resistant to water than CaF_2, BaF_2 has a wider spectral range. The useful temperature range extends to 500 °C. Also, BaF_2 should not be used with ammonium salts.

Thallium Bromide-Iodide (KRS-5) has a broad spectral range and a high refractive index, making it ideal for internal reflectance accessories. KRS-5 is slightly soluble in water and bases but insoluble in acids; KRS-5 is toxic and should not be repolished.

Silver Bromide (AgBr) is easily scratched and has a tendency to cold flow at room temperature. Although only minimally degraded by water, AgBr will corrode after prolonged contact with moisture and metals. Avoid exposure to ultraviolet lights, as the crystal has a tendency to darken.

Zinc Selenide (Irtran-4™) is similar to Cleartran except that it is somewhat softer and more easily scratched. Irtran-4 is used in total reflectance accessories because of its high refractive index.

Window Material	Transmission Range µm	Transmission Range cm^{-1}	Refractive Index at 1,000 cm^{-1}	Solubility G/ 100 G H_2O at 20 °C
Sodium Chloride, NaCl	0.25 – 16	40,000 – 625	1.49	36.0
Potassium Bromide, KBr	0.25 – 26	40,000 – 385	1.52	65.2
Potassium Chloride, KCl	0.25 – 20	40,000 – 500	1.46	34.7
Cesium Iodide, CsI	0.30 – 50	33,000 – 200	1.74	160.0 (at 61 °C)
Fused Silica, SiO_2	0.20 – 4	50,000 – 2,500	1.42 (at 3,333 cm^{-1})	Insoluble
Calcium Fluoride, CaF_2	0.20 – 9	50,000 – 1,100	1.39 (at 2,000 cm^{-1})	1.51×10^{-3}
Barium Fluoride, BaF_2	0.20 – 13	50,000 – 770	1.42	0.12 (at 25 °C)
Thallium Bromide-Iodide, KRS-5	0.60 – 40	16,600 – 250	2.37	$< 4.76 \times 10^{-2}$
Silver Bromide, AgBr	0.50 – 35	20,000 – 285	2.00	12×10^{-6}
Zinc Sulfide, ZnS (Cleartran)	1.0 – 14	10,000 – 715	2.20	Insoluble
Zinc Selenide, ZnSe (Irtran-4)	1.0 – 19.5	10,000 – 515	2.41	Insoluble
Polyethylene (high-density)	16 – 333	625 – 30	1.54 (at 5,000 cm^{-1})	Insoluble

See **page 2** for ordering information and a complete listing of PerkinElmer offices.

Window Materials

Sealed Cell

Demountable Cell

The Universal Cell Mount for Mulls, Capillary Films, Cast Films and Very Viscous Liquids

Circular windows are used to construct a demountable cell where the sample is placed on one window and the second window is pressed lightly on top of the first. Spacers of various thicknesses can be used to vary the cell pathlength. The Universal Demountable Cell is supplied without windows or spacers – circular windows and spacers should be ordered separately. The windows are demountable and can be easily changed and repolished when necessary.

Universal Demountable Cell Mount and Cell Parts

Description	Part No.
Universal Demountable Cell Mount	**L1270986**
Window Aligner	**04821132**
Neoprene Gasket	**L1270512**
Teflon® Plugs (pkg. 6)	**04821008**
Quick Release Nut	**04821131**

Circular Demountable Cell Windows (Pair)

Description (Diameter, Thickness)	Part No.
Sodium Chloride (25 mm, 4 mm)	**L1271102**
Potassium Bromide (25 mm, 4 mm)	**L1271202**
Calcium Fluoride (25 mm, 4 mm)	**L1271602**

Note: For a full list of windows visit www.perkinelmer.com/irsupplies

Circular Spacers for Circular Demountable Cell Windows

Description	Qty.	Part No.
Teflon 0.05 mm	10	**51001135**
Teflon 0.1 mm	6	**51001137**
Teflon 0.2 mm	3	**51001140**

Note: For a full list of spacers visit www.perkinelmer.com/irsupplies

Semi-demountable Cells and Cell Windows for High-viscosity Liquids or Mull Samples

By using rectangular windows instead of circular windows, the demountable cell becomes a semi-demountable cell. The Semi-demountable Cell can be used either as a demountable cell or as a sealed cell for high-viscosity liquids or mull samples. Combining two different requirements into one cell allows a myriad of different sampling applications. To order a Semi-demountable Cell, order the Universal Demountable Cell and your choice of windows and spacers.

Rectangular Semi-demountable Cell Windows

Rectangular Semi-demountable Cell Windows are available in a variety of window materials. All windows come in pairs and measure 41 x 23 mm (H x W).

Description (Thickness)	Part No.
Sodium Chloride (4 mm)	**L1271191**
Potassium Bromide (4 mm)	**L1271192**
Calcium Fluoride (4 mm)	**L1271193**

Rectangular Spacers for Rectangular Semi-demountable Cell Windows

Description	Qty.	Part No.
Teflon 0.05 mm	6	**L1270402**
Teflon 0.10 mm	6	**L1270404**
Teflon 0.20 mm	3	**L1270408**

Note: For a full list of windows and spacers visit www.perkinelmer.com/irsupplies

Sealed Liquid Cells

For highly volatile samples and quantitative analysis. The Sealed Liquid Cells have a corrosion-resistant construction, making them ideal for highly volatile samples. Each sealed liquid cell has a precise pathlength which is calibrated using the interference pattern generated by an empty cell in the beam of a spectrometer.

Rectangular Sealed Liquid Cells

Material	Pathlength	Part No.
Calcium Fluoride	0.025 mm	**L1270961**
Calcium Fluoride	0.100 mm	**L1270964**
Potassium Bromide	0.025 mm	**L1270951**
Potassium Bromide	0.100 mm	**L1270954**
Sodium Chloride	0.025 mm	**L1270941**
Sodium Chloride	0.100 mm	**L1270944**

KBr Press, Mini Press and Quick Press

Manual Hydraulic Press

Evacuable Potassium Bromide Die

Hydraulic Press and Evacuable Potassium Bromide Die

The KBr pellet technique is probably the one most often used to prepare solid samples for infrared analysis. First the sample is ground to a fine particle size and then mixed uniformly with dry KBr powder. Finally, this sample is placed in an evacuable KBr die and a 13 mm clear disk is pressed in a hydraulic press to form a KBr pellet. Pellets can also be prepared using less expensive and quicker methods.

Manual Hydraulic Press

This compact and easy-to-operate press is used with the KBr die to prepare KBr pellets. The pressure is produced by operating a pump lever.

Part No.
51004599

Evacuable Potassium Bromide Die

The Evacuable Potassium Bromide Die will prepare 13 mm diameter pellets of the highest quality and clarity. The pellet is formed inside an evacuated chamber and pressed between a highly polished anvil and plunger. This die is precisely constructed to produce pellets of uniform quality and will continue to provide many years of service in your laboratory.

Part No.
51001144

Die Accessories

The following parts are included with the Evacuable Potassium Bromide Die, but can also be ordered separately:

Description	Part No.
Plunger	51001152
Set of Upper and Lower Anvils	04820519
Set of O-rings	04800514
Perspex™ Extractor Ring	04977042

Potassium Bromide Pellet Holder

A KBr Pellet Holder is required, but must be ordered separately.

Part No.
04810949

Adjustable Adapter

The Adjustable Adapter is required in order to mount the Potassium Bromide Pellet Holder in your FT-IR spectrometer.

Part No.
L1060351

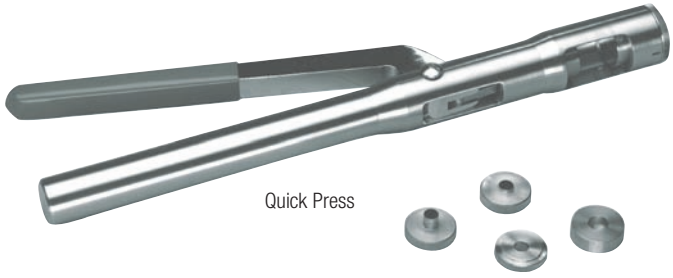
Evacuable KBr Mini-press

The Mini-press is designed for those situations where you occasionally need to make KBr pellets. This is the simplest solid sample device and is ideal for student use, where very low cost is an important factor. Two highly polished bolts turn against each other in a steel cylinder. The pellet is formed right inside the cylinder which becomes the sample holder. Once formed, the pellet cannot be removed from the cylinder without being destroyed. The Mini-press requires, but does not include, the holder.

Description	Part No.
Evacuable KBr Mini-Press	51002592
Holder for Evacuable KBr Mini-Press	51002593

KBr Pellet Quick Press

The Quick Press provides a fast and economical way to prepare good quality KBr pellets. A hydraulic press is not needed and pellets with diameters of 1, 3 or 7 mm can be prepared, depending on the die sets used. The Quick Press is simple and easy to use. Simply load the sample and potassium bromide mixture into the selected die. Place the die in position in the Quick Press. Then apply a steady pressure to the handle, equivalent to that of a firm handshake.



Quick Press

The Quick Press consists of a handpress, a 7 mm die set and a metal collar. Micropellets can be prepared in the Quick Press by purchasing the optional 1 or 3 mm die. The KBr pellet is formed in a metal collar that fits into an adjustable Pellet Holder.

Description	Size	Part No.
Quick Press with Die	7 mm	01860436
Optional Die	1 mm	01862295
Optional Die	3 mm	01862292
Spare Die	7 mm	01862289
Adjustable Pellet Holder Adapter*		L1060351

**Required, but not included, with Quick Press.*

See **page 2** for ordering information and a complete listing of PerkinElmer offices.

Near Infrared Reflectance Accessory (NIRA) and NIR Probes

Near Infrared Reflectance Accessory (NIRA) for the Spectrum 400/100N/One NTS

PerkinElmer's Near Infrared Reflectance Accessory (NIRA) with it's range of accessories is the ideal accessory for analyzing many sample types including tablets, powders, granular solids, blister packs, samples in glass vials, gels and viscous liquids.

For the Spectrum 400 there is a special version which is installed on the right hand side of the instrument which leaves the sample compartment free for other applications.

Features and Benefits

- For a wide variety of sample types in various containers
- Integrated, zero alignment, zero set-up design. Once locked into the sample compartment the accessory becomes an integral part of the system and is ready to use
- Self-referencing for increased reproducibility and ease of use
- Horizontal sample platform for convenient sample positioning
- Wide collection angle and large spot size the most representative sampling
- Integrated, high performance stabilized InGaAs detector system standard
- Range of optional accessories available for inhomogeneous solids or liquids samples
- Removed and replaced in seconds via quick-release lever with automatic parameter setup

Supplied with standard accessories kit including sample positioner, reference materials, sample handling tools.

Description	Part No.
Near Infrared Reflectance Accessory (NIRA) Right hand side mounted for Spectrum 400 only	**L125401N**
Near Infrared Reflectance Accessory (NIRA) Sample compartment mounted for Spectrum 400/100N/One NTS	**L1240050**
Near Infrared Reflectance Accessory (NIRA) Right hand side mounted for Spectrum 100 only	**L125403L**

Accessories and Consumables for NIRA

Description	Qty.	Part No.
Solids Rotating Sample Holder for RHS NIRA	1	**L1250042**
Solids Rotating Sample Holder for Sample Compartment NIRA	1	**L1240053**
NIRA Transflectance Liquids Sampling Accessory Starter Kit	1	**L1185153**
Spare Glass Sample Dish for NIRA Solids Rotating Sample Holder	5	**L1181257**
High Performance Sample Dish for NIRA Solids Rotating Sample Holder	1	**L1185305**
Disposable 4 mL Glass Vial with Cap, 15 mm x 45 mm	100	**L9001029**
NIRA Spectralon Reference	1	**L1245028**

NIR Remote Solids Sampling Systems

Designed for the remote sampling of solids or powders for up to 10 m from the instrument. It incorporates a handset user interface and LCD display to increased productivity by allowing continuous remote operation. The design facilitates easy and rapid decontamination and is electrically safe for use in hazardous environments.

Available for Spectrum 400 and Spectrum 100N.

Features and Benefits

- Comprising high performance triggered fiber optic probe for sampling of solids or powders
- Automatic recognition of the fiber optic sampling interface within Spectrum software
- Handset user interface and LCD display allowing continuous remote operation
- Electrically safe for use in hazardous environments. No electrical connections
- Larger optical depth of field allows improved measurement as samples through thicker glass containers
- Large spot size (-6 mm) for improved performance with more granular, inhomogeneous materials
- Complete with protective cap and probe holster with Spectralon reference for background collection
- Modular, expandable and smart – in common with other Spectrum 400 and 100 premium sampling options. Simple accessory changeover, full plug 'n play operation
- Probe tip features sapphire window for robustness and ease of cleaning

Description	Length	Part No.
Remote Solids Sampling System	2 m	**L1250030**
Remote Solids Sampling System	3 m	**L1250037**
Remote Solids Sampling System	5 m	**L1250031**
Remote Solids Sampling System	10 m	**L1250032**

For a full listing of Fiber Probes for liquid sampling, please visit:
www.perkinelmer.com/irsupplies

UATR Accessory

Sampling options for all your sampling needs

Universal Attenuated Total Reflectance (UATR) Accessories

For the Spectrum 400/100/One/65 Spectrometers

The universal ATR is an excellent general accessory for the analysis of solids and liquids. The UATR produces high quality spectra through the use of a pressure arm allowing good contact of the sample with the diamond crystal. The pressure arm force indicator ensures first-class sample-to-sample and operator-to-operator reproducibility.

Features and Benefits

- **Automatic recognition** – as soon as the accessory is placed in the sample compartment the Universal ATR module is recognized along with its serial number, type of ATR crystal (1, 3 or 9 Reflection) and system suitability checks can be carried out. Spectrum 400/100/One only
- **Automatic optimization** – the optics are automatically optimized for the different top-plate options. Spectrum 400/100/One only
- **Zero alignment, zero set-up** – once locked into the Spectrum 100 sample compartment, the accessory is ready to be used without any alignment necessary
- **Integrated** – the plug-in module design means the accessory becomes an integral part of the instrument once installed
- Pressure arm with pressure sensor supplied as standard
- Volatiles cover (9 reflection UATR only)

Description	Part No.
Diamond/ZnSe UATR	
With 1 Reflection Top-plate and Pressure Arm	**L1250050**
With 3 Reflection Top-plate and Pressure Arm	**L1250051**
With 9 Reflection Top-plate and Pressure Arm	**L1250052**
Diamond/KRS-5 UATR	
With 1 Reflection Top-plate and Pressure Arm	**L1250053**
Ge/Ge UATR	
With 1 Reflection Top-plate and Pressure Arm	**L1250054**

Note: Spectrum software v.6 or higher is required to support the UATR Accessory.

Spare/Replacement Top-plates and Consumables for UATR Accessory

Description	Qty.	Part No.
UATR – 1 Reflection Diamond Top-plate – ZnSe	1	**L1250240**
UATR – 3 Reflection Diamond Top-plate – ZnSe	1	**L1250241**
UATR – 9 Reflection Diamond Top-plate – ZnSe	1	**L1250242**
UATR – 1 Reflection Diamond Top-plate – KRS-5	1	**L1250046**
UATR – 1 Reflection Ge/Ge Top-plate	1	**L1250048**
UATR 0.5 mm Shoe	1	**L1202049**
UATR 6.0 mm ATR Shoe	1	**L1202050**
UATR Cone Shoe	1	**L1201980**
UATR 3.0 mm Sample Position Plate	1	**L1202023**
UATR 7.0 mm Sample Position Plate	1	**L1202024**

Miracle ATR

Miracle ATR Accessories

A single reflection ATR accessory designed for the analysis of highly absorbing solid, semi-liquid and liquid samples. The sampling plate configuration features a small round crystal allowing reliable analysis of small sample volumes (5 µL and higher).

Solid materials can be put in a good physical contact with the crystal, yielding high quality, reproducible spectra. Supplied with micrometer-controlled compression clamp, volatiles cover, purge attachments and a choice of crystal material.

Description	Part No.
Miracle Single Reflection ATR	
Diamond for Spectrum RX/BX	**L1272239**
ZNSE for Spectrum RX/BX	**L1272107**
ZNSE for Spectrum 400/100/One/65	**L1272126**
GE for Spectrum 400/100/One/65	**L1272127**
ZNSE for Spectrum GX	**L1272103**
GE for Spectrum GX	**L1272104**

Note: Please contact your local PerkinElmer representative for a complete list of Miracle ATR accessories with different crystal materials.

See **page 2** for ordering information and a complete listing of PerkinElmer offices.

Reflectance Accessories

Diffuse Reflectance Accessory

Diffuse Reflectance Accessory

Ideal for measurement of opaque or highly scattering samples, the Diffuse Reflectance Accessory provides a convenient and sensitive method for analyzing opaque or highly scattering solid samples such as pharmaceuticals, food products, soap powders, coal, clay, paper, painted surfaces, polymer foam and catalysts.

Features and Benefits

- **Automatic recognition** – as soon as the accessory is placed in the sample compartment, the diffuse reflectance accessory is recognized along with its serial number
- **System suitability checks** – including noise, throughput and contamination can be carried out as soon as the accessory is inserted or on demand
- **Automatic optimization** – sample position is automatically optimized for all sampling methods: powder, silicon carbide pads or diamond sticks
- **Zero alignment, zero set-up** – once locked into the sample compartment, the accessory is ready to be used. No alignment is necessary
- **Integrated** – the plug-in module design means the accessory becomes an integral part of the instrument once installed

Supplied with multi-purpose sample holder, 2 macro- and 2 micro-sample cups, 25 metal-coated abrasive pads, 25 metal-coated abrasive sticks with holder and 30 gram bottle of KBr powder.

Description	Part No.
For Spectrum 400/100/One	**L1200351**

Consumables for Diffuse Reflectance Accessory

Description	Qty.	Part No.
Macro Cup	1	**L1201654**
Micro Cup	1	**L1201655**
Multi-purpose Sample Holder	1	**L1201865**
Metal-coated Abrasive Pads	100	**L1275106**
Metal-coated Abrasive Sticks	100	**L1275105**
Silicon Carbide Abrasive Pads	100	**L1271021**
Diamond Abrasive Sticks	100	**L1275102**

Horizontal ATR Accessories

Based on an attenuated total reflectance principle, the PerkinElmer Horizontal ATR (HATR) Accessory offers a fast, reliable means for analyzing a wide range of solid, liquid and paste samples not easily examined by conventional transmission techniques.

Features and Benefits

- **Automatic recognition** – as soon as the accessory is placed in the sample compartment, the HATR accessory is recognized along with its serial number, and system suitability checks can be carried out
- **Automatic optimization** – the optics are automatically optimized for all various types of crystal
- **Zero alignment, zero set-up** – once locked into the sample compartment, the accessory is ready to be used without any alignment necessary
- **Integrated** – the plug-in module design means the accessory becomes an integral part of the instrument once installed
- Pressure arm with pressure sensor supplied as standard (Flat top-plate version only)

Supplied with flat top-plate fitted with ZnSe 45° crystal, powder press and volatiles cover.

Description	Part No.
For Spectrum 400/100/One	
HATR Accessory with ZnSe Flat Top-plate and Pressure Arm	**L1200311**
HATR Accessory with ZnSe Trough Top-plate	**L1200312**

Spare/Replacement Top-plates and Consumables for HATR Accessory

Description	Qty.	Part No.
HATR ZnSe 45° Flat-plate	1	**L1200313**
HATR ZnSe 45° Trough-plate	1	**L1200314**
HATR Ge 45° Flat-plate	1	**L1200333**
HATR Ge 45° Trough-plate	1	**L1200334**
HATR Pressure Arm Kit	1	**L1200321**
Powder Press	1	**L1201944**
Volatiles Cover	1	**L1205436**

For a full listing of Diffuse Reflectance Accessories and Top-plates, please visit: www.perkinelmer.com/irsupplies

VeeMax II, 10Spec, 80Spec and Silver Gate Evolution Reflectance Accessories

VeeMAX™ II - Variable Angle Specular Reflectance Accessory

For the Spectrum 400/100/One/65 Spectrometers

The VeeMAX™ II is a highly versatile specular reflectance accessory designed to analyze a wide range of samples from thin films and monolayers to relatively thick films. The angle of incidence can be varied continuously from thirty to eighty five degrees by the rotation of a single control. The unique optical design enables the accessory to be in alignment for all angles of incidence. The VeeMAX II has a built-in polarizer mount to permit selection of polarization angle without disturbing purge.

Features and Benefits

- Angle of incidence selectable fro 30 to 80 degrees in one degree increments
- Optional IR polarizer for monolayer analysis and study of sample orientation
- Includes 3 sample masks to define smaller areas on a sample

Description	Part No.
VeeMAX II Variable angle specular reflectance accessory	**L1272240**
KRS-5 Polarizer for VeeMAX II	**L1272243**

80Spec – Grazing Angle Specular Reflectance Accessory

For the Spectrum 400/100/One/65 Spectrometers

The 80Spec™ is ideal for the measurement of relatively thin films and mono-molecular layers by specular reflectance. The use of a polarizer is recommended for the measurement of ultra-thin film samples, especially monolayers. The 80Spec includes polarizer mounts on both incoming and outgoing beams.

Features and Benefits

- Gold-coated reflective optics for highest throughput grazing angle analysis
- Dual polarizer mounts for optional IR polarizer's
- Includes 3 sample masks to define smaller areas on a sample

Description	Part No.
80Spec Grazing angle specular reflectance accessory	**L1272248**
KRS-5 Polarizer for 80Spec	**L1272243**

10Spec™ – Specular Reflectance Accessory

For the Spectrum 400/100/One/65 Spectrometers

The 10Spec™ is an optimized specular reflectance accessory designed to make high performance measurements of sample reflectivity. The 10Spec can be used to measure near-normal reflectivity of a wide variety of surfaces including military devices, reflecting optics, anti-reflective (AR) coated surfaces, and other reflecting and non-reflecting materials.

Features and Benefits

- Sample illumination precisely fixed at 10 degrees
- Measure glass reflectivity per ASTM Standard E1585-93
- Includes 3 sample masks to define smaller areas on a sample

Description	Part No.
10Spec Specular reflectance accessory	**L1272247**

Silver Gate Evolution Accessory

For the Spectrum 400/100/One/65 Spectrometers

The Silver Gate™ Evolution single reflection ATR system is capable of analyzing solids, liquids and pastes with little or no sample preparation. The accessory is available with a choice of ZnSe or Ge and flat or recessed crystal plates. The crystal plates are interchangeable and additional plates can be ordered for different application requirements. Each accessory includes a clamp bridge, standard anvil, pellet anvil, purge bellows and volatiles cover.

Description	Part No.
Silver Gate with Flat ZnSe crystal plate	**L1272270**
Silver Gate with Flat Ge crystal plate	**L1272271**
Silver Gate with Recessed ZnSe crystal plate	**L1272272**
Silver Gate with Recessed Ge crystal plate	**L1272273**
Silver Gate ZnSe Flat Crystal Plate	**L1272274**
Silver Gate Ge Flat Crystal Plate	**L1272275**
Silver Gate ZnSe Recessed Crystal Plate	**L1272276**
Silver Gate Ge Recessed Crystal Plate	**L1272277**

See **page 2** for ordering information and a complete listing of PerkinElmer offices.

A comprehensive range of long path gas cells to satisfy all your gas sampling requirements

Fixed Long Pathlength Gas Cells

For the Spectrum 400/100/One/65

The Tornado™ fixed long pathlength gas cells are designed for measuring the infrared spectra of gases and vapors at ambient temperature and pressures. They are based on the White cell principle of multiple light passes between an arrangement of reflecting mirrors to achieve long pathlengths. The cells are available in three sizes:

- Tornado™ T5 with pathlength ranging from 1 m to 8 m and cell volume 1.33 litres
- Tornado™ T10 with pathlength ranging from 2.1 m to 10.6 m and cell volume 2.6 litres
- Tornado™ T20 with pathlength ranging from 2.0 m to 20 m and cell volume 4.7 litres

Features

- Wide pathlength range (1 m – 20 m)
- Vacuum to 15 p.s.i. operation
- Ambient temperature operation
- Borosilicate glass body
- Anodized components
- Gold mirrors (protected)
- Viton 'O' ring seals
- KBr windows
- Purgeable transfer optics box
- Optional vacuum/gas inlet and outlet taps
- Optional purge bellows
- Optional desiccant storage caps

Description	Part No.
Tornado™ T5 Fixed Pathlength Gas Cell Note: Fixed pathlengths available to order are 1, 2, 3, 4, 5, 6, 7 or 8 m	L1272301
Tornado™ T10 Fixed Pathlength Gas Cell Note: Fixed pathlengths available to order are 2.1, 3.2, 4.2, 5.3, 6.3, 7.4, 8.5, 9.5 or 10.6 m	L1272302
Tornado™ T20 Fixed Pathlength Gas Cell Note: Fixed pathlengths available to order are 2, 4, 6, 8, 10, 12, 14, 16, 18 or 20 m	L1272303
Vacuum/Gas Inlet and Outlet Taps	L1272307
Gas Cell Desiccant Storage Caps	L1272152
Purge Bellows	L1272227

Variable Long Pathlength Gas Cell

For the Spectrum 400/100/One/65

The Cyclone™ C5 variable long pathlength gas cell allows the measurement of infrared spectra of gases and vapors at a wide range of temperatures and pressures. It is based on the White cell principle of multiple light passes between an arrangement of reflecting mirrors to achieve long pathlengths. The C5 is available with either a glass body or metal body which is required for high pressure applications. The pathlength is variable between 1 m and 8 m and has a cell volume of 1.33 liters.

Features

- Variable pathlength range (1 m – 8 m)
- Ambient temperature operation or up to 200°C with heating jacket/controller
- Borosilicate glass body (vacuum to 15 p.s.i. operation) or nickel-plated aluminium body (high pressure operation up to 125 p.s.i.)
- Nickel-plated aluminium components
- Gold mirrors (protected)
- Viton 'O' ring seals
- CaF2 windows
- Purgeable transfer optics box
- Vacuum/gas inlet and outlet taps
- Optional purge bellows
- Optional desiccant storage caps
- Optional pressure gauge kit) vacuum to 125 p.s.i.)
- Optional heating jacket/controller with temperature stability of +/- 1°C

Description	Part No.
Cyclone™ C5 Variable Pathlength Gas Cell with glass body	L1272299
Cyclone™ C5 Variable Pathlength Gas Cell with metal body	L1272300
Cell Heating Jacket/Temperature Controller for C5 Cell (220V UK)	L1272304
Cell Heating Jacket/Temperature Controller for C5 Cell (220V Europe)	L1272305
Cell Heating Jacket/Temperature Controller for C5 Cell (110V, 60Hz)	L1272306
Gas Cell Pressure Gauge for C5 Cell*	L1272307
Gas Cell Desiccant Storage Caps	L1272152
Purge Bellows	L1272227

**Recommended for high pressure applications*

Variable Temperature Cell

The Variable Temperature Cell can be used for the transmission study of liquid or solid samples between a temperature range from between -190 °C and 250 °C. The Variable Temperature Cell consists of a vacuum jacket that contains a refrigerant dewar/cell holder assembly and a heating block that contains the appropriate sample cell. There are liquid sample cells with different pathlengths and a solid sample cell available. These are not included with the variable temperature cell and should be specified separately.

The whole assembly is operated within a vacuum environment maintained by the outer jacket. The external windows are also heated to prevent condensation and these and the heating block are operated by a separate high stability controller supplied with the system. The cell is supplied with NaCl external windows as standard but KBr windows are available as an option.

Description	Part No.
Variable Temperature Cell (220V, UK)	L1272288
Variable Temperature Cell (220V, Europe)	L1272289
Variable Temperature Cell (110V, 60Hz)	L1272290
Sealed Liquid Cell with KBr windows, 1.00 mm pathlength	L1272292
Sealed Liquid Cell with KBr windows, 0.50 mm pathlength	L1272293
Sealed Liquid Cell with KBr windows, 0.10 mm pathlength	L1272294
Solids holder. Accommodates sample sizes from 12 mm to 30 mm diameter and 0.1 mm to 8 mm thick	L1272298
Cell Jacket KBr windows (pair)	L1272291

ATR Imaging upgrade for Spotlight systems

ATR Imaging Upgrade for Spotlight Systems

Recommended option for the Spotlight 400 or 400N which allows convenient Imaging of samples up to 10 mm thick. A large precision aligned crystal enables 400 µm areas to be collected to get more information from the sample quickly.

Features and Benefits

- High quality optical and mechanical assemblies provide the highest performance
- Alignment tools speed operation and improve data quality
- Largest area size for the most information from your ATR samples
- Flexible imaging area sizes for efficient data collection
- Comprehensive software assistance guides operation and minimizes mistakes
- Extensive software data processing allows the rapid extraction of information from ATR images

	Part No.
	L1860319

ATR Imaging Accessory Supplies

Description	Qty.	Part No.
Spare Germanium Crystal	1	L1860317
ATR Imaging Sample Supports	10	L1860318

Micro ATR Objective Upgrade Kit

This kit upgrades Spotlight 400 and Microscope Systems without ATR Objective to include micro ATR facility. Includes an ATR Objective consisting of a cassegrain, mount and Germanium micro ATR crystal with holder. It covers the range 5,500 – 600 cm^{-1}. A spare Germanium crystal and holder is provided. An optional Silicone crystal is available with working range 7,800 – 800 cm^{-1}.

Description	Part No.
Micro ATR Objective Upgrade for Spotlight 400 Systems	L1860334
Micro ATR Objective for AutoIMAGE Systems	L1860275
Micro ATR Objective for Multiscope Systems	L1860298
Optional/Spare Silicone Crystal with Holder	L1860269
Spare Germanium Crystal with Holder	L1860268

Microsampling Tools

PerkinElmer offers a range of carefully selected tools and supplies which allow you to prepare and manipulate samples for infrared microspectroscopy.

Description	Part No.
Microsampling Tool Kit	N1870151
Includes:	**Part No.**
Dissecting Forceps	N9302610
Roller Knife	N9302619
Micro Specimen Tweezers	N9302609
Straight Micro Probe	N9302605
Aluminum Probe Handle	N9302622
Pin Vise	N9302603

Microscope Supplies

Description	Part No.
Holder for 13 mm Sampling Disks	L1861634
Holder for 13 mm Sampling Disks Includes gold mirror.	L1860409
Base Microscope Slides Optical quality glass, 1 x 3 in., 1 mm thick for visible observations (box of 72).	N9302600
Low-e Microscope Slides Optical quality with infrared reflective coating, 1 x 3 in., 1 mm thick for visible observations and infrared reflectance measurements (box of 25).	L1272249

Diamond Compression Cell

The cell consists of two Hastelloy plates containing a pair of diamond windows that enable samples to be compressed to an ideal thickness for transmission measurements. The screw down compression system gives non-rotating uniform pressure across the sample and the large clear aperture is ideal for multiple sample loading. Fits MultiScope™, AutoIMAGE Systems and Spotlight Systems.

	Part No.
	L1272282

Crystal Compression Cell

This is a device for flattening soft materials and holding specimens flat and in optical contact with salt windows. 1 and 2 mm thick windows of 13 mm outer diameter can be used with the cell. Two KBr windows (2 mm thickness) are included. The cell can apply pressure without rotating (and therefore scratching) the windows. Fits MultiScope™, AutoIMAGE Systems and Spotlight Systems.

	Part No.
	N1870185

Infrared Windows

Infrared windows allow you to support microsamples for infrared analysis with the microscope. All windows are 13 mm diameter and are available in the infrared crystals designated below.

Window Material	Dimensions	Part No.
Barium Fluoride	13 x 1 mm	N9302611
Barium Fluoride	13 x 2 mm	N9302612
Sodium Chloride	13 x 2 mm	N9302614
Potassium Bromide	13 x 2 mm	N9302615

See **page 2** for ordering information and a complete listing of PerkinElmer offices.

Educational packages to advance student understanding of FT-IR

FT-IR Sampling Kits

Two FT-IR Sampling Kits are available to help the newcomer to FT-IR spectroscopy choose the more frequently required items, and to simplify ordering and storage. KBr has been chosen for the transmitting material. The two kits are packaged in attractive storage and carrying cases.

Liquid and Mull FT-IR Sampling Kit

This kit will satisfy the needs of most new users of FT-IR spectroscopy and has been designed to provide all the necessary equipment for handling liquids and mulls. A magnetic film holder is also included.

Part No.
L1365311

General Purpose FT-IR Sampling Kit

This kit includes all of the necessary equipment for handling liquids, mulls and KBr pellets and also includes a magnetic film holder and a Microfocus Accessory. It should be noted that a laboratory press for making KBr pellets should be ordered separately.

Part No.
L1365312

Special Educational Packages

PerkinElmer Spectrum 10 Educational Software Package provide schools and colleges with software to advance students understanding of FT-IR. IR-Tutor software guides students through the background and theory of FT-IR spectroscopy as well as how to interpret the spectra they collect.

Spectrum 10 Educational Software Package

NEW!

Includes:

- IR-Tutor software CDs and 5-user license
- Spectrum 10 software CD and 5-user license

Part No.
L1108527

Also available is a PerkinElmer Educational Starter Pack which provides the sampling tools needed to perform the HCl gas experiment and general purpose FT-IR spectroscopy within the teaching laboratory.

PerkinElmer Educational Starter Pack

Includes:

- 10 cm gas cell
- Gas cell holder
- Rechargeable desiccant
- KBr Mini-pellet Press and Pellet Holder

Spectrum Model	Part No.
RX/BX	L1270800
65/100/400	L1270802

FT-IR Starter Packs

Description	Part No.
KBr Disc Starter Pack Includes Adjustable Adaptor, KBr Die (13 mm) and KBr Pellet Holder.	L1272265
KBr Disc Complete Starter Pack Includes Adjustable Adaptor, KBr Die (13 mm), KBr Pellet Holder, 15 ton press and KBr Powder (100 g).	L1272266
Gas Sampling Starter Pack Includes 10 cm short-pathlength demountable gas cell, Spare KBr windows (47 mm diameter) and Universal gas cell mount.	L1272267
Liquid Sampling Starter Pack Includes Universal Demountable Cell Mount, Circular KBr Windows (pair), Rectangular KBr Windows (pair), 0.1 mm Circular Teflon Spacers (contains 6) and Assorted Rectangular Spacers.	L1272268

FT-IR Sampling Kit Supplies

Description	Size	Part No.
Nujol	100 mL	04960691
Flurolube	1 oz bottle	01862301
KBr Powder	100 g	04977043
KBr Random Cuttings	100 g	N9300086
Micro Spatula	10 cm	04967843
Luer Syringe	2 mL	04967845