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Spectra-Tech ARK Attenuated Total Reflectance Kits

Research-grade accessory provides high sensitivity

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The Spectra-Tech ARK research-grade accessory is one of the most stable, durable, and sensitive horizontal ATR accessories available. The accessory uses a patented ATR crystal that provides high energy throughput. It is ideally suited for qualitative and quantitative analyses ranging from neat samples to trace concentrations of less than 1%. Trough sample plates for liquids, pastes and soft powders and flat sample plates for films and semisolids are available with a variety of crystal materials and crystal angles. Samples ranging from low to high pH or samples requiring a necessary pathlength from 0.6 to 45 micrometers can be analyzed. An optional Spectra-Tech IR Polarizer (see page 44 for details) is available to enhance the sensitivity of the Spectra-Tech ARK accessory. For those who already own a polarizer, an optional holder is available to mate the polarizer to the accessory.



Applications

- Rubbers
- Polymer films, packaging
- Soft, compressible powders
- Highly infrared absorbing liquids such as aqueous solutions, solvents, and hydrocarbons in solution

Features

- Tool-free installation and alignment
- High throughput optics
- Cast aluminum sealed body to protect optics
- Integral purge and low volume body for quick and optimal purge
- Easy-to-use and easy-to-clean Teflon-coated sample plates
- For soft solids and films, the Flat Plate Kit includes a 45° ZnSe sample plate, Gripper pressure device and powder press
- For liquids, pastes and powders*, the Trough Plate Kit includes a 45° ZnSe sample plate and volatile liquid cover
- Combination Plate Kit consists of Flat Plate and Trough Plate Kits with 45° ZnSe crystal
- Extensive selection of other crystal materials and angles available

** For analyzing powders with a trough plate, an optional Gripper is required.*

Product Configuration	Part Number
Spectra-Tech ARK with Trough Plate Kit	0055-3XXT
Spectra-Tech ARK with Flat Plate Kit (shown above)	0055-3XX
Spectra-Tech ARK with Combination Plate Kit	0055-2XX

Options/Replacements	Part Number
Gripper pressure device for ARK Kits configured for PerkinElmer 1600, 2000 and Paragon	0055-106
Gripper pressure device for all other spectrometers	0055-105
Powder press	2005-098
Volatile liquid cover	0050-901
Spectra-Tech IR Polarizer and holder for Spectra-Tech ARK** for Thermo Scientific spectrometers (for use with other spectrometers, please call)	0056-9XX
Holder for mating an existing polarizer to Spectra-Tech ARK**	0056-4XX

*** Spectra-Tech ARK must be returned for upgrade when purchasing Spectra-Tech IR Polarizer or holder.*

For Flow cell options, see page 32. For thermal cell and sample plate options, see page 33.



High-energy throughput and reproducibility without optical alignment

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Trough Plates and Flat Plates for Spectra-Tech ARK

A patented crystal design ensures high-energy throughput and reproducibility without the need for optical alignment when changing samples and sample plates. This design also guarantees that the cell will not leak and minimizes crystal damage. The ATR crystals have the ideal pathlength for the analysis of strongly absorbing materials, such as aqueous solutions, polymer films, and carbon filled elastomers. The different available crystal materials and incident angles allow the user to tailor the optimal pathlength for strongly absorbing samples.



Applications

- Highly infrared absorbing liquids, such as aqueous solutions, solvents, and hydrocarbons in solution
- Soft, compressible powders

Features

- Trough plate crystal is permanently bonded to plate for leak-proof sampling
- Flat plate's proprietary clip mounting minimizes crystal damage
- Extensive selection of crystal materials and angles
- Precision pin alignment eliminates need for additional optical alignment
- Teflon-coated sample plates
- Quick turn-around time for crystal replacements

Product Configuration						Part Number
Trough Plate for Spectra-Tech ARK (shown above)						0055-###
Angle	ZnSe ###	Ge ###	ZnS ###	AMTIR ###	Si ###	
30°	N/A	614	N/A	N/A	N/A	
40°	602	612	N/A	N/A	N/A	
45°	603	613	633	643	653	
50°	606	N/A	N/A	N/A	N/A	
55°	607	N/A	N/A	N/A	N/A	
60°	605	615	N/A	645	N/A	
70°	608	N/A	N/A	N/A	N/A	

Note: Please call for other crystal configurations.

Flat Plate for Spectra-Tech ARK				0055-###
Angle	ZnSe ###	Ge ###	Si ###	
30°	N/A	714	N/A	
40°	702	712	N/A	
45°	703	713	753	
60°	705	715	N/A	
65°	N/A	716	N/A	
70°	708	N/A	N/A	

Dynamic quantitative and qualitative liquid studies

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HATR Flow Cell for Spectra-Tech ARK

The HATR Flow Cell extends the versatility of the Spectra-Tech ARK accessory by allowing dynamic studies of aqueous and nonaqueous liquids. The volume of the cell is 65 µl. The HATR Flow Cell has the unique capability to allow samples to be analyzed at elevated pressures from ambient to 500 psi. An extensive selection of crystal materials and angles are available for optimization of specific applications. The cell is constructed with a mechanically installed o-ring seal making it leakproof, durable, and demountable for easy crystal removal and replacement.



Applications

- Dynamic quantitative and qualitative liquid studies
- Strongly absorbing liquids
- Flow studies
- Quality control for repetitive sample analysis
- Viscous liquids
- Oil analysis

Features

- Available with a choice of crystal materials
- Pressure range: ambient to 500 psi
- Easy to flush and clean
- Includes Teflon tubing
- Demountable for easy crystal removal and replacement

HATR Flow Cell for Spectra-Tech ARK	Part Number
ZnSe 40°	0056-302
ZnSe 45°	0056-303
ZnSe 60°	0056-305
AMTIR 45°	0056-343
Ge 45°	0056-313

Heated HATR Flow Cells for Spectra-Tech ARK

Allows thermal dynamic studies of aqueous and nonaqueous liquids

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The Heated HATR Flow Cell greatly extends the versatility of the Spectra-Tech ARK accessory by allowing thermal dynamic studies of aqueous and nonaqueous liquids. The Heated HATR Flow Cell has the unique capability to allow samples to be analyzed at elevated temperature and pressure. The standard Heated HATR Flow Cell comes with a ZnSe 45° crystal that is ideal for a broad range of liquid samples, or a ZnSe 40° crystal, ideal for engine oil analyses. Other crystal materials and angles are available for optimization of specific applications and can be ordered in place of the standard crystals; however, not all materials are suitable for this cell. For example, Ge becomes infrared opaque and can be permanently damaged when heated above 50°C; therefore, call to determine the appropriate crystal material for the application.



Applications

- Aqueous and nonaqueous liquids
- Viscous samples
- Accurate quantitative measurements
- Oil analysis

Product Configuration	Part Number
Heated HATR Flow Cell for Spectra-Tech ARK with ZnSe 45° crystal	0056-303H
Heated HATR Flow Cell for Spectra-Tech ARK with ZnSe 40° crystal	0056-302H

Note: Alternative crystal materials and angles may be substituted for the standard crystals. Please call for more information.

Features

- Includes Temperature Controller, heating cartridges, safety cage and Teflon tubing
- Temperature range: ambient to 200°C
- Pressure range: ambient to 500 psi
- Cell volume: 65 µl
- Zero dead volume
- Easy to flush and clean
- O-ring seal makes cell leak-proof, durable and demountable for easy crystal removal and replacement

Temperature Controller Specifications

- 110/220V, switchable
- Heater wattage: 300 watts
- Accuracy: ± 0.1°C @ temperature
- Probe type: RTD temperature sensor



Accurate real-time sample temperature monitoring

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Thermal HATR Cells and Thermal Upgrade Packages for Spectra-Tech ARK



The Spectra-Tech ARK accessory is available with a thermal configuration. For those who already own a Spectra-Tech ARK Kit, a Thermal Upgrade Package is available. Thermal HATR Cells and Upgrade Packages include a thermal trough plate with a standard ZnSe 45° crystal. Other crystal materials and angles are available, however, not all materials are suitable for heated applications. For example, germanium becomes infrared opaque and can be permanently damaged when heated above 50°C. The sample temperature is precisely measured by placing a probe in close proximity to the sample/crystal interface.

Applications

- Thermal stabilization
- Determining thermal stability of materials
- Temperature degradation studies
- Shelf-life studies for perishable products
- Melting-point studies
- Biological samples
- Simulating process conditions

Features

- Heats samples to 100°C
- Thermocouple facilitates accurate real-time sample temperature monitoring
- Trough plate safety features include Teflon or Delrin® handles and insulation to minimize heat transfer
- Teflon gasket seal makes trough plate leak-proof, durable, and demountable for easy crystal removal and replacement

Temperature Controller Specifications

- 110/220V: switchable heater wattage for single-readout temperature controller: ~60W
- Single-readout temperature controller indicates trough plate temperature
- Accuracy: ± 0.1°C @ temperature
- Probe type: RTD temperature sensor

Product Configuration	Part Number
Spectra-Tech Thermal ARK with single-readout temperature controller	0056-0XX
Thermal upgrade package for Spectra-Tech ARK with single-readout temperature controller	0056-100

Note: Alternative crystal materials and angles may be substituted for the standard crystals. Please call for more information.

Options/Replacements*	Part Number
Vertical Gripper pressure device**	0055-108
Gripper pressure device for all other spectrometers	0055-105
Powder press	2005-098
Volatile liquid cover for ARK	0050-901

** Caution: For safety reasons, the options should not be used for applications exceeding 50°C. Standard Spectra-Tech ARK trough and flat plates (nonthermal) are compatible with the Thermal HATR Cells but must be used only for ambient applications that do not exceed 50°C.*

*** Vertical Gripper Pressure Device is made for ARK Kits configured to Thermo Scientific FT-IR Spectrometer.*

Designed for safe handling and easy cleaning

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Thermal Trough Plates for Spectra-Tech ARK



Thermal trough plates are available for the Spectra-Tech ARK and Spectra-Tech Thermal ARK™ accessories. Heat-resistant handles and a Teflon-coated aluminum plate enable safe handling of the heated plate. The crystal/plate interface is mechanically sealed with a Teflon gasket for easy crystal removal and replacement. In addition, other crystal materials* and angles are available for optimization of specific applications. The thermal trough plate is rated to 100°C.

** Germanium becomes infrared opaque and can be permanently damaged when heated above 50°C. Call to determine if the crystal material is appropriate for the application.*

Applications

- Thermal stabilization
- Determining thermal stability of materials
- Temperature degradation studies
- Shelf-life studies for perishable products
- Melting-point studies
- Biological samples
- Simulating process conditions

Features

- Teflon handles for safe handling
- Teflon-coated plate for easy cleaning
- Mechanically-sealed Teflon gasket for easy crystal removal and replacement
- Chemically resistant

Product Configuration	Part Number
Thermal Trough Plate for Spectra-Tech ARK with ZnSe 45° crystal (shown above)	0056-653
Thermal Trough Plate for Spectra-Tech ARK with ZnSe 60° crystal	0056-655

** Note: Alternative crystal materials and angles might be available. Please call for more information.*

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