FT-IR MICROSPECTROSCOPY ACCESSORIES, ADD-ONS AND SAMPLE PREPARATION TOOLS

Czitek

Spectroscopy Simplified

SurveyIR FT-IR Microspectroscopy Accessory Add-on Options and Accessories

View Through Diamond ATR

The SurveyIR diamond attenuated total reflection (ATR) options provide the ability to view samples and visualize contact (Fig 1). The ability to view the sample while initiating contact and subsequent spectral data collection results in a high confidence for spectral information gathered through the ATR. Further combination of oblique (dark field) illumination provides unparalleled imaging quality through the diamond ATR.

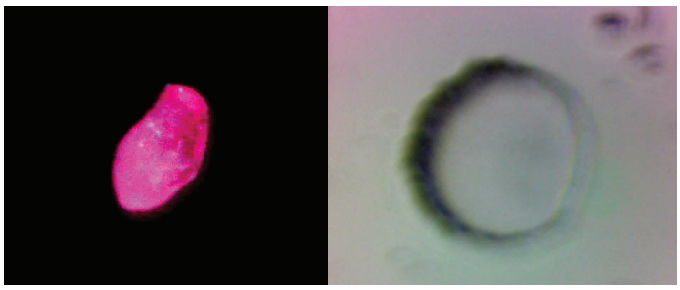


Figure 1: (Left) Pink microbead imaged with oblique illumination and viewed through the diamond ATR; (Right) Pink microbead in contact with the diamond ATR, viewed with transmitted illumination.

ATR Clip-on Options

- Constructed from 316 stainless steel
- Two locating pins and quick clips for easy attachment
- Force readout through contact alert
- Easy to clean

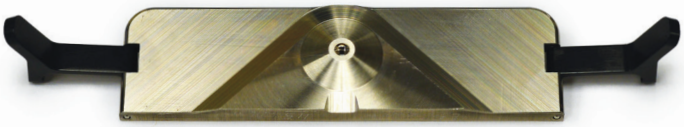


Figure 2: SurveyIR clip-on ATR Element.

Extended Range (XR) Diamond ATR

Diamond is the strongest and most chemically inert ATR crystal material. The clip-on diamond XR ATR for the SurveyIR covers the full spectrum range down to 10 cm^{-1}. View through the diamond to acquire crisp, high resolution images and visualize/verify contact with your sample. The added capability of the SurveyIR to remotely mask the sample allows for selective measurement with the ATR.

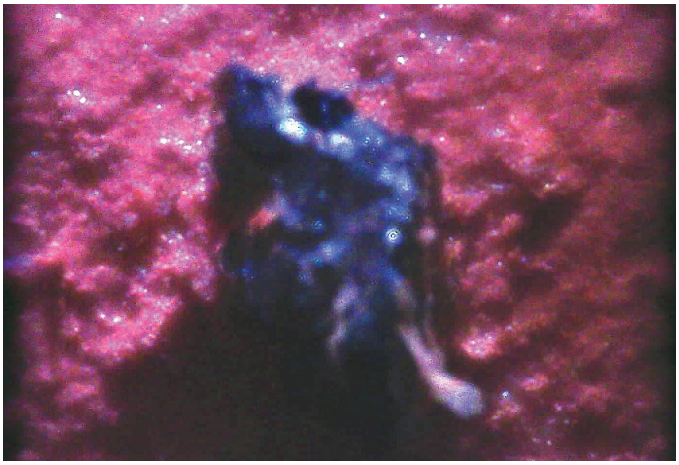


Figure 3: A contaminant on a pharmaceutical tablet imaged through the diamond XR ATR with oblique illumination. Reference: Czitek's Application Note, Identification of Visible Contaminants by Infrared Microspectroscopy.

Part Number	Description
101-00-0030	Clip-on diamond XR ATR, viewing w/contact alert

High Throughput (HT) Diamond ATR

With the same construction and viewing capabilities as seen in the diamond XR, the high throughput diamond ATR ensures the highest throughput and IR signal achievable with a diamond ATR on the SurveyIR, providing spectral range to 400 cm^{-1}.

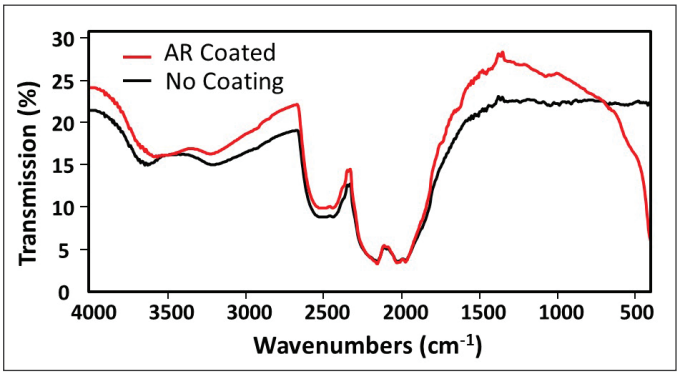


Figure 4: IR spectra showing throughput for diamond XR (Black) and diamond HT (red).

Part Number	Description
101-00-0016	Clip-on diamond HT ATR, viewing w/contact alert

Germanium (Ge) ATR

Germanium's high refractive index reduces the penetration depth of IR light. Ge is well suited for surface analysis and measurement of samples with carbon black filling. Although Ge is an opaque material without viewing capabilities, the clip-on Ge ATR for the SurveyIR is quickly fitted after positioning the sample for ATR analysis.

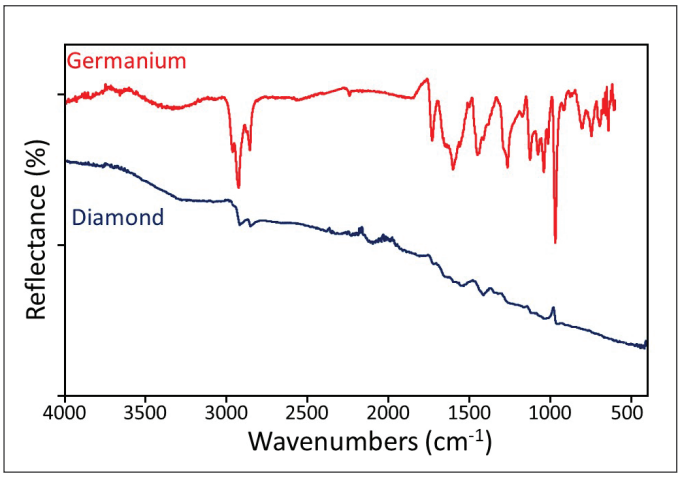


Figure 5: IR spectra of a large black O-ring taken with a Germanium ATR (top, red) and a diamond ATR (bottom, blue.

Part Number	Description
101-00-0017	Clip-on Ge ATR, Non-Viewing w/Contact Alert

Sample Supports - Microscope Slides and Infrared (IR) Windows

Low-E Glass Microscope Slides

Low-E glass slides are robust, 1 X 3 inch microscope slides that are visibly transparent and 95% reflective to IR light. The Low-E slide is strong enough to allow for samples to be flattened directly on the surface. Easily cleaned with general solvents and reusable. Ideal substrate for ATR and reflection measurements with FT-IR microscopes. Recommended storage in a desiccator for extended life.

Part Number	Description
101-00-0024	Box of 25 low-E slides

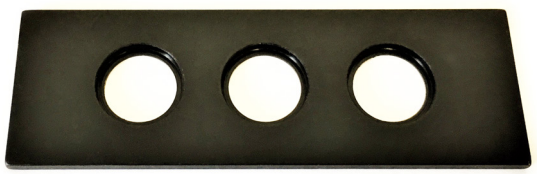
Gold Microscope Slides

With the highest reflectivity (approx. 98%), gold microscope slides are ideal for challenging small or weak IR absorbing samples. Unlike low-e slides, gold microscope slides are thin and are not recommended for ATR measurements or for flattening samples directly on the surface.

Part Number	Description
101-00-0026	1 piece
101-00-0034	10 pieces
101-00-0035	Box of 25 pieces

Three-hole Slides

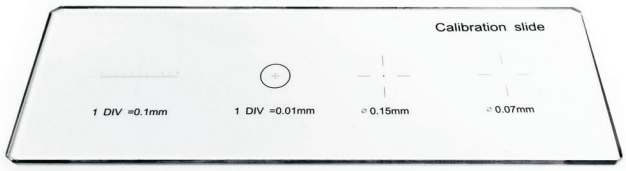
Standard 1 X 3 inch microscope slide with three slots for 13 mm diameter IR windows. Compatible with all 13 mm diameter IR windows including Czitek's diamond windows.



Part Number	Description
101-00-0027	Single, Three-hole microscope slide

Stage Micrometer Slide

Allows calibration of microscope field-of-view to ensure correct sizing of sample dimensions. Standard 1 X 3 inch design fits into SurveyIR, other FT-IR microscopes and stereomicroscopes. Comes in a small case.



Part Number	Description
03-000022	Stage micrometer slide

Diamond Windows

Single crystal, type IIa diamond windows are rugged, chemically inert and cover the IR spectral range from 4000 – 10 cm^{-1}. Resistant to scratching and harsh chemicals, diamond windows are an ideal substrate for materials that would scratch or degrade other IR windows.

Czitek Diamond Windows

Czitek diamond windows are for use with the Czitek low profile compression cell, three-hole slides that accommodate standard 13 mm IR windows, and other 13 mm accepting microscopy options. Diamonds have a 1.8 mm diameter clear aperture.

Part Number	Description
101-00-0020	Two matched diamond windows for compression cell
101-00-0038	Single diamond window

Potassium Bromide (KBr) IR Window

KBr is the most widely used material in the mid-IR region from 4000 – 400 cm-1. Great refractive index match for organic materials. Hydroscopic material and should be kept desiccated for extended use.

Part Number	Description
101-00-0022	Single 1 mm X 13 mm window
101-00-0023	Single 2 mm X 13 mm window

Zinc Selenide IR Window

Widely used material for work in the mid-IR region from 4000 – 650 cm^{-1}. ZnSe is non-hydroscopic and water-proof and chemically resistant with exception to strong acids and bases. Works with 13 mm accepting compression cells, Czitek's three-hole slide and other 13 mm accepting microscopy options.

Part Number	Description
101-00-0022	Single 1 mm X 13 mm window

Sampling Preparation and Handling Tools

FT-IR Microspectroscopy Sample Preparation Tool Kit

Czitek's starter sample preparation kit includes the basic tools necessary to prepare samples for microspectroscopic analysis. The contents of this kit allow for the removal, transfer and flattening of small particles. These tools are crucial for FT-IR microspectroscopic analysis as samples need to be flat and thin to acquire good spectral results in reflection or transmission. All tools included are constructed from stainless steel with the exception of the scalpel blade (carbon steel) and the tungsten needles (tungsten). The included case houses all of the tools and additional blades for the roller knife and scalpel.

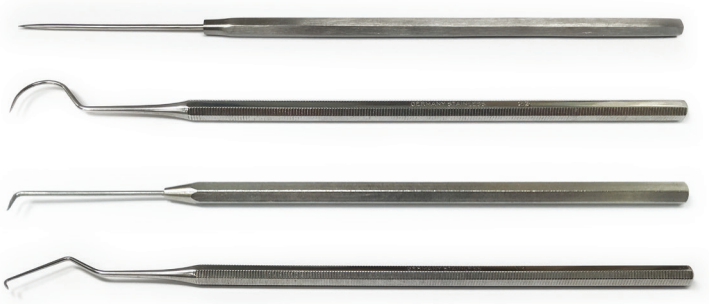
Includes

- Two tungsten needle probes (1.0 mm diameter and 0.5 mm diameter)
- Straight probe
- Bent probe
- Straight forceps, extra fine tips
- Curved forceps, extra fine tips
- Roller knife with 10 blades
- Scalpel with handle and 10 blades

Part Number	Description
101-00-0109	Starter microsample preparation kit

Probes

Sturdy needle construction for manipulating larger samples or for extracting small samples from hard substrates.



Part Number	Description
03-000270	Probe, straight, 14 cm
03-000287	Probe, hook curve, 14 cm
03-000269	Probe, bent, 14 cm
03-000283	Probe, large curve 14 cm
03-000282	Probe set of 4 with Pouch

Micro Pics

Fine stainless-steel needle with a long handle. Flexible needle is great for transferring or manipulating small samples.

Part Number	Description
03-000280	Micro Pic, straight 18.4 cm
03-000281	Micro Pic, angled 19 cm

Tungsten Needle Probe

Very strong and sturdy needle with an extremely sharp tip. The 0.5 mm diameter needle has an extremely thin tip (<10 µm) that can easily be remade in case the tip is bent or broken. The tungsten needles are 2.5 inches (63.5mm) long and the pin vice 3-1/8 inches (79.4 mm) long.

Part Number	Description
101-00-0107	Tungsten Needle Probe (1.0 mm diameter)
101-00-0108	Ultrafine Tungsten Needle Probe (0.5 mm diameter)
03-000273	Replacement tungsten needle (1.0 mm diameter)
03-000272	Replacement tungsten needle (0.5 mm diameter)

Forceps

Assortment of stainless steel forceps for handling small samples. Caution: Extra fine and ultra fine tips are delicate and can be damaged without proper care.

Part Number	Description
03-000284	Fine Curved Tip Forceps, 97 mm
03-000285	Fine Straight Tip Forceps, 115 mm
03-000274	Extra Fine Straight Tip Forceps, 108 mm
03-000275	Extra Fine Bent Tip Forceps, 108 mm
03-000286	Ultra Fine Straight Tip Forceps, 108 mm

Roller Knife

A modified X-acto™ knife with a steel ball bearing on one end. Use the knife to slice and manipulate your sample and the ball bearing to roll the sample thin for IR analysis. Universal tool for FT-IR microspectroscopy.

Features

- Sturdy X-acto™ knife for routine use
- Easy to use steel bearing for flattening samples
- One single tool to remove and flatten many samples
- Replaceable blade saves cost and adds versatility

Part Number	Description
101-00-0025	Roller Knife (10 blades included)

Micro-Touch Pic Pen

Especially helpful for manipulating small samples, such as thin films and samples difficult to pick up with tweezers. With the click of a button, the adhesive tip of the Micro TouchPick Pen extends out, so that you can pick up micro particles. Samples will stick securely to the adhesive tip until you release the button. The tip is then retracted and the sample is dropped to the desired location.

No IR detectable adhesive compound remains on your sample! The replaceable tip of the Micro TouchPick Pen can be used approximately 2000 to 4000 times. To maintain good tip adhesion, a cleaning compound is provided in order to remove dust impurities from the tip, if needed.

Part Number	Description
101-00-0047	Two pens included (1 w/0.62 mm and 1 w/0.17 mm tips),1 Roller knife, special tip adhesive cleaner

MiniPlane

The MiniPlane enables you to shave off the surface of a material such as a polymer and cut a controlled and consistent sized section of uniform thickness optimized for measurement. The blade depth can be adjusted, so that serial sections of the same thickness can be cut easily.

Features

- Provides excellent control & reproducibility of the section
- Adjustable knife edge to control the thickness of the sample
- Allows you to cut sections of various thickness with the same knife
- Reduces the mechanical damage to the specimen
- Ergonomically designed wooden handle provides ultimate control of blade
- Replaceable blades save cost and adds versatility

Part Number	Description
101-00-0043	MiniPlane with single crystal diamond blade (cut samples down to 0.7 mm thick)
101-00-0044	MiniPlane with steel carbide blade (cut samples down to 1.5 mm thick)
101-00-0045	Replacement blade (single crystal diamond), 1 blade
101-00-0046	Replacement blade (steel carbide), 1 blade

Czitek Base Low-Profile Compression Cell

The Czitek low-profile compression cell holds and flattens samples to create a larger sampling area through the use of force. Specifically designed to be versatile and easy to use, the Czitek compression cell works well with SurveyIR, and all other FT-IR microscopes from various manufacturers, and FT-IR spectrometers. The compression cell accommodates Czitek diamond windows as well as 13 mm diameter IR windows up to 2 mm thick. The low-profile compression cell can accommodate a wide range of samples through the flexibility in IR windows it accepts.

Features

- Mounts into 1 X 3 inch microscope stage clips
- Accommodates 13 mm diameter IR windows including Czitek diamond windows
- Easy to use pressure applicator – No tools needed
- Universal use with the SurveyIR, FT-IR microscopes and FT-IR spectrometers
- Large 8.6 mm clear aperture with general IR windows; 1.8 mm clear aperture with Czitek diamond windows

Part Number	Description
101-00-0019	Czitek low profile compression cell (Does not include windows)

Diamond EX'Press Compression Cell

The diamond EX'Press compression cell simplifies sample preparation for more difficult samples by applying more force than traditional compression cells. Excellent for analyzing hard materials such as minerals, rubbers, plastics, polymers and also pharmaceuticals. They can be compressed, crushed and flattened to a uniform thickness for IR measurements.

Note: Only compatible with Diamond EX'Press windows

Features

- Clear aperture (1.6 mm or 2.0 mm)
- Universal use with FT-IR spectrometers & FT-IR microscopes
- Two type IIa single crystal synthetic diamonds
- Mounts into 1 X 3 inch stage clips
- Spectral range 4000 – 10 cm^{-1}

Part Number	Description
101-00-0036	Clear 2.0 mm aperture High Pressure Diamond Cell (Includes 2 diamond windows)
101-00-0040	Clear 1.6 mm aperture High Pressure Diamond Cell (Includes 2 diamond windows)
101-00-0042	Single clear 1.6mm aperture diamond window
101-00-0041	Single clear 2.0 mm aperture diamond window

EZ-Pick III

See small samples while they are manipulated. Includes a selection of interchangeable tools.

The EZ-Pick III has the form of a pen with a mounting device to attach sampling probes like needles, knifes or forceps at the front end. The pen body includes a webcam style camera with built in focus and illumination controls and all displayed on the 7 inch LCD monitor or optional heads up display. According to your specific application, insert the appropriate type of sampling tool onto the head of the stylus.

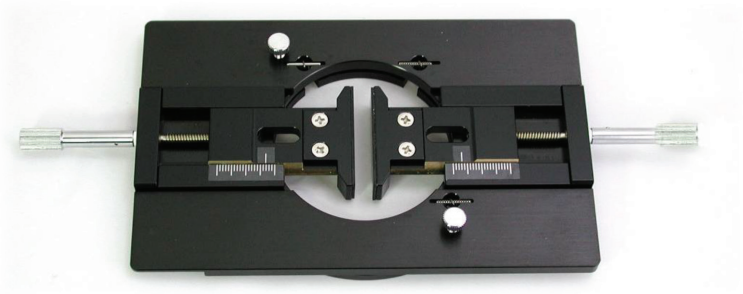
Available sampling tools:

Tungsten Needle Probes	1 inch X 5 mm each, with point diameters of 1, 2.5 and 5 micrometers (All three included with standard EZ-Pick III)
Knives	0 or 15° blades (10, 0° blades included with standard EZ-Pick III)
Tweezers	Regular curved tip and reverse action curved tip tweezers available

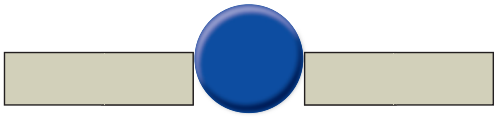
Part Number	Description
101-00-0087	EZ-Pick III (includes tweezer, needle and knife sets)
101-00-0088	Scrabbler for EZ-Pick III
101-00-0089	Head mount display for EZ Pick III camera
101-00-0090	Lens (2X)
101-00-0091	Lens (1.5X)
101-00-0092	Reverse action curved tweezers (X-type) with adapter for EZ-Pick III
101-00-0093	EZ-Pick micro-sampling knife, 15° blades (includes 10 blades plus holder)
101-00-0094	Knife blade, fan shaped for EZ-Pick III

Micro Vice - Sample Holder

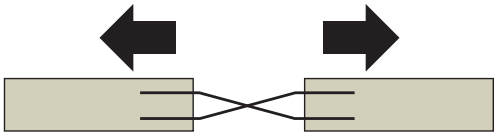
Designed to hold small samples for direct microanalysis or manipulation.



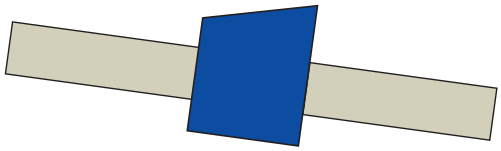
Holds spherical and
other difficult shaped samples



Holds and stretches fibers, polymer films, etc



Facilitates tilting of samples



Features

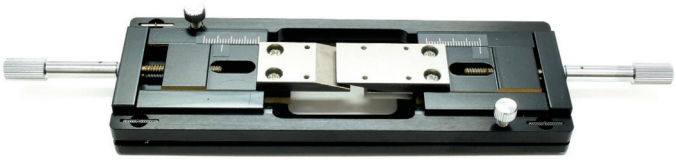
- Holds round and unevenly shaped samples
- Stretches fibers, polymer films, and hairs, by user defined increments
- Facilitates tilting of oblique samples
- Accommodation of samples up to 40 mm in diameter (Shimadzu & Thermo auto stage version can accommodate samples up to 100mm diameter)
- Available in a number of different versions to accommodate a broad range of microscopes
- Facilitates positioning of samples for examination with visible, light microscopes, stereoscopes, and IR-microscopes
- Supports FT-IR-microanalysis in pharmaceutical research and polymer analytics
- Ideal for mineralogical and gemological studies with stereo microscopes
- Facilitates forensic analysis of hair and fibers

Part Number	Description
1101-00-0105	Micro Vice Mini holder
101-00-0106	Micro Vice Mini holder for SurveyIR
101-00-0097	Micro Vice holder-A; Shimadzu autostage, Thermo autostage, 100 mm diameter
101-00-0098	Micro Vice holder; Olympus, Nikon clamp type stage
101-00-0099	Micro Vice holder; Thermo autostage
101-00-0100	Micro Vice holder; new Perkin Elmer Spotlight autostage
101-00-0101	Micro Vice holder; Bruker
101-00-0102	Micro Vice holder, Agilent/Varian Autostage
101-00-0103	Micro Vice holder, adapter only

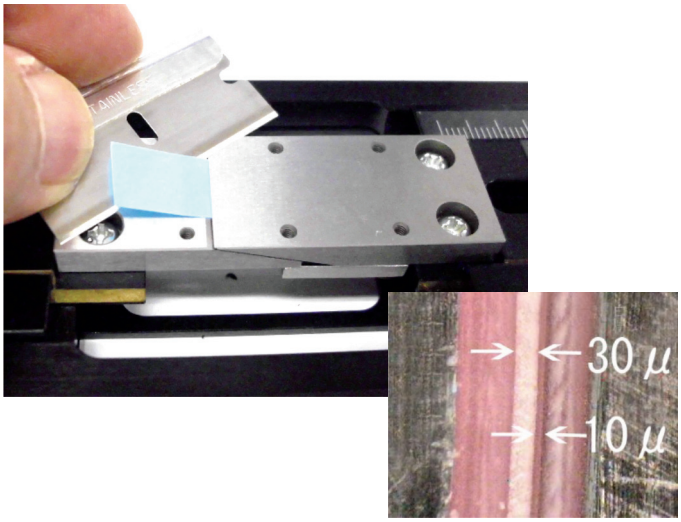
Micro Vice SliceIR

Easily cut and analyze your films with this new tool!

Cutting and analyzing films, paper, and multilayers can be very challenging. Users can accomplish tasks with ease.



The SliceIR is a unique attachment for the **Micro Vice - Sample Holder** for enhanced cross-section cutting. These adaptors allow the easy enlargement of the sample cutting surface.



Holding a sample with the standard Micro Vice clamps provides a cutting angle of 90°. Holding the sample with the SliceIR adaptors changes the cutting angle to 15° or 30°. The 15°/30° SliceIR attachments enlarge the cutting surface, by as much as 2-4x over the standard 90° clamps.

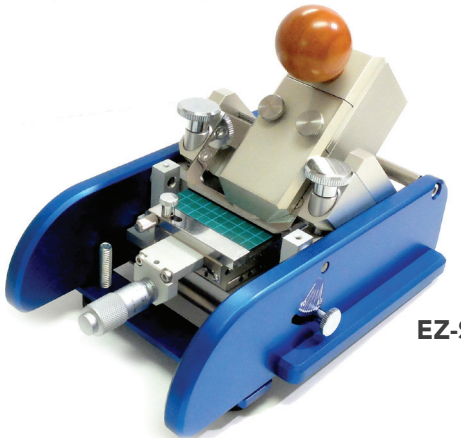
Part Number	Description
101-00-0049	15° SliceIR (Does not include Micro Vice, order separately)
101-00-0050	30° SliceIR (Does not include Micro Vice, order separately)

EZ SliceIR

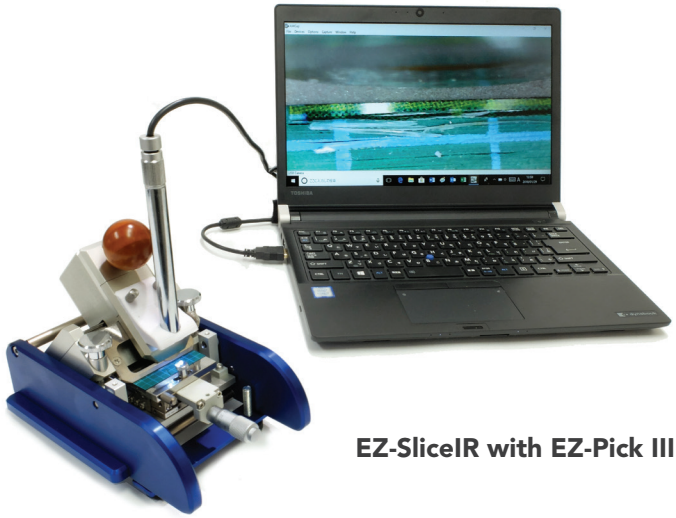
The EZ-SliceIR is a compact, precision cutting device for easily and accurately cutting sections of thin materials such as packaging materials, films, laminates, paper, fibers, etc.

This table top cutter is equipped with a circular steel blade mounted on a sliding shuttle. Simply place the sample on the sample stage and pull the sliding shuttle longitudinally through the sample material to be cut.

The section thickness can be easily fine-tuned with a micrometer adjustment knob. Additionally, the cutting angle can be set individually at any angle between 45° to 90°. Decreasing the cutting angle enlarges the visible cutting surface proportionally, making it easier to analyze thinner sections. To add even more versatility to meet your individual sample section requirements, the sample can be horizontally rotated to up to 10° and then cut in the desired position



EZ-SliceIR



EZ-SliceIR with EZ-Pick III

Features

- Easily adjustable cutting angle to ensure reproducible section thicknesses
- Magnetic sample holder for quick and easy sample loading
- Replaceable blade saves cost and adds versatility
- Additional camera package adds viewing of cutting edge (EZ-Pick III Camera)

Part Number	Description
101-00-0085	EZ SliceIR
101-00-0086	EZ SliceIR with EZ Pick III camera
101-00-0095	EZ SliceIR replacement round blade (3 blades)
101-00-0096	EZ SliceIR replacement mat
101-00-0089	Head mount display for EZ Pick III camera