

INFRARED

Accessories Catalog



BUCK

Scientific

Your Primary Source For IR/FTIR Supplies

About Buck Scientific

Buck Scientific, Inc. is a manufacturer of analytical instruments for laboratories worldwide. Founded in 1970, Buck has established a reputation for providing affordable instruments with excellent analytical capabilities and reliability. Our commitment to the discerning spectroscopist has resulted in high customer loyalty and our continued strong growth. Buck Scientific has a team of sales and spectroscopy specialists available to provide technical assistance. A network of representatives exists throughout the U.S., Canada, Mexico, and over 50 additional countries worldwide.

Please give us a call if you have any questions or would like additional information regarding our products, order placement and delivery. Our Customer Service and Technical Assistance Hotline is available Monday through Friday from 9:00am to 6:00pm EST.

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Ordering Information

Ordering is easy, just contact Buck Scientific using one of the methods described above.

Prompt service is guaranteed so please have the following information available when ordering: the quantity, part number and description of the item(s) desired, your purchase order number and shipping address.

Orders will be invoiced at the list price in effect at the time of your order.

We accept:



Delivery and Terms of Payment

Standard delivery service is UPS ground freight. We ship most orders the next working day provided the item is in stock. Non-stock items are shipped as soon as they become available. Special delivery requests are welcome. Overnight service from Federal Express or UPS Red (Next Day Air) and UPS Blue (Second Day Air) is also available. Please specify your preferred service at the time you place your order. Terms of payment are net 30 days on open accounts with established credit, otherwise C.O.D. All prices are subject to change without notice. Shipments F.O.B. Norwalk, Connecticut, unless quoted otherwise.

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Window Material Range (cm-1)	R.Index*	Solubility (g/100g)	General Properties	
Sodium Chloride (NaCl) 52,600 - 584	1.49	36	Soluble in water and glycerine and slightly soluble in alcohol. Fairly resistant to thermal and mechanical shock.	
Potassium Bromide (KBr) 48,800 - 388	1.52	65	Soluble in water and alcohol. Slightly soluble in ether. Fairly good resistance to thermal & mechanical shock. Hygroscopic.	
Potassium Chloride (KCl) 55,600 - 439	1.46	35	Less soluble than NaCl with lower reflection losses. Extended transmission range. Hygroscopic.	
Calcium Fluoride (CaF₂) 79,500 - 1,025	1.40**	0.0017	Insoluble in water, resists most acids & alkalis. Soluble in ammonium salts. Its high mechanical strength makes it particularly useful for high pressure work.	
Barium Fluoride (BaF₂) 66,600 - 782	1.42	0.17	Insoluble in water, soluble in acids. Wider spectral range. More sensitive to mechanical and thermal shock. Relatively hard material.	
Cesium Iodide (CsI) 42,000 - 172	1.73	44	Soluble in water and alcohol. Wide transmission range. Good resistance to shock. Soft and hygroscopic. Mildly toxic.	
Thallium Bromo-iodide (KRS-5) 17,900 - 232	2.37	0.05	Slightly soluble in water; soluble in bases, not in acids. Good transmission range, ideal for ATR work. Not hygroscopic. Soft - will deform. <i>Highly toxic.</i>	
Silver Bromide (AgBr) 22,000 - 292	2.22	1.2E-05	Insoluble in water, soluble in acids. Attacks base metals. Sensitive to mechanical shock. Crystal tends to darken when exposed to ultraviolet light. Easily scratched. Will cold flow.	
Silver Chloride (AgCl) 24,500 - 400	1.90	5.2E-02	Insoluble in water, slightly soluble in sodium hydroxide and some amines. Will blacken under UV radiation. Not recommended for use at temperatures above 200°C.	
Silicon (Si) 10,000 - 500	1,540	3.41	0	A hard, brittle material and is relatively inert. Can be attacked by a combination of HF and HNO ₃ , but withstands thermal shock. Has strong absorption band in infrared.
Fused Silica (SiO₂) 50,000 - 2,677	1.42***	0	Infrared grade SiO ₂ is insoluble in water and slightly soluble in bases. Extends into the near infrared region.	
Germanium (Ge) 5,500 - 574	4.0	0	Insoluble in water. Suitable for ATR work, but where high pressure contact is not required. Very brittle. High reflection losses due to low transmission levels.	
Zinc Selenide (ZnSe) 15,000 - 508	2.40	0	Insoluble in water. Slightly soluble in acids. High resistance to chemical attack. Organic solvents, dilute acids and bases have no effect. Ideal for ATR work because of its low absorption in the infrared region.	
Zinc Sulfide (ZnS) 17,000 - 722	2.20	0	Insoluble in water, normal acids and bases. Reacts to strong oxidizing agents. Good resistance to thermal and mechanical shock.	

Ranges based on 4mm crystals. * At 1,000cm⁻¹, ** at 2,000cm⁻¹, *** at 3,333cm⁻¹.

Discs

	13 x 2mm	25 x 4mm	32 x 3mm		38 x 6mm	49 x 6mm
				Drilled		
NaCl	500A1	500A3	500A4	500A4D	500A5	500A6
KCl	500B1	500B3	500B4	500B4D	500B5	500B6
KBr	500C1	500C3	500C4	500C4D	500C5	500C6
CaF ₂	500D1	500D3	500D4	500D4D	500D5	500D6
BaF ₂	500E1	500E3	500E4	500E4D	500E5	500E6
CsI	500F1	500F3	500F4	500F4D	500F5	500F6
KRS-5	500G1	500G3	500G4	500G4D	500G5	500G6
AgBr	500H1	500H3	500H4	500H4D	500H5	500H6
ZnS *	500J1	500J3	500J4	500J4D	500J5	500J6
ZnSe *	500K1	500K3	500K4	500K4D	500K5	500K6
SiO ₂	500N1	500N3	500N4	500N4D	500N5	500N6
AgCl	500S1	500S3	500S4	500S4D	500S5	500S6

Rectangles

	30 x 15 x 4mm		38 x 19 x 4mm		41 x 23 x 6mm		50 x 25 x 6mm	
		Drilled		Drilled		Drilled		Drilled
NaCl	511A2	511A2D	511A3	511A3D	511A4	511A4D	511A6	511A6D
KCl	511B2	511B2D	511B3	511B3D	511B4	511B4D	511B6	511B6D
KBr	511C2	511C2D	511C3	511C3D	511C4	511C4D	511C6	511C6D
CaF ₂	511D2	511D2D	511D3	511D3D	511D4	511D4D	511D6	511D6D
BaF ₂	511E2	511E2D	511E3	511E3D	511E4	511E4D	511E6	511E6D
CsI	511F2	511F2D	511F3	511F3D	511F4	511F4D	511F6	511F6D
KRS-5	511G2	511G2D	511G3	511G3D	511G4	511G4D	511G6	511G6D
AgBr	511H2	511H2D	511H3	511H3D	511H4	511H4D	511H6	511H6D
ZnS *	511J2	511J2D	511J3	511J3D	511J4	511J4D	511J6	511J6D
ZnSe *	511K2	511K2D	511K3	511K3D	511K4	511K4D	511K6	511K6D
SiO ₂	511N2	511N2D	511N3	511N3D	511N4	511N4D	511N6	511N6D
AgCl	511S2	511S2D	511S3	511S3D	511S4	511S4D	511S6	511S6D

* Note: Zinc Selenide (ZnSe) and Zinc Sulfide (ZnS) are supplied in half thicknesses, except for 2mm and 3mm thick discs.

ATR Trapezoid Reflection Plates

	KRS-5		ZnSe		Ge	
	45°	60°	45°	60°	30°	45°
50 x 20 x 2mm	645G4	660G4	645K4	660K4	630Q4	645Q4
50 x 20 x 1mm	645G3	660G3	645K3	660K3	630Q3	645Q3
50 x 10 x 2mm	645G9	660G9	645K9	660K9	630Q9	645Q9
50 x 10 x 3mm	645G10	660G10	645K10	660K10	630Q10	645Q10
50 x 20 x 3mm	645G13	660G13	645K13	660K13	630Q13	645Q13

ATR Parallelogram Reflection Plates

	KRS-5		ZnSe		Ge	
	45°	60°	45°	60°	45°	60°
25 x 10 x 3mm	545G4	560G4	545K4	560K4	545Q4	560Q4
25 x 20 x 3mm	545G7	560G7	545K7	560K7	545Q7	560Q7
50 x 10 x 3mm	545G10	560G10	545K10	560K10	545Q10	560Q10
50 x 10 x 2mm	545G9	560G9	545K9	560K9	545Q9	560Q9
50 x 20 x 3mm	545G13	560G13	545K13	560K13	545Q13	560Q13
50 x 20 x 2mm	545G12	560G12	545K12	560K12	545Q12	560Q12
60 x 6 x 6mm	545G17	N/A	545K17	N/A	545Q17	N/A

Calibration and Accuracy Test Pieces

BS186-0449 Polystyrene Test Film (0.05mm Thick)

Polystyrene is a generally accepted test film for performing the following tests on infrared spectrophotometers: performance, resolution, frequency, accuracy and stray light tests. The test film is 0.05mm thick and is pre-mounted for easy insertion into the sample slide of the instrument.

BS186-0450 Neutral Density Filter (0.50 Abs.)

The Neutral Density Filter is used for performing absorbance accuracy tests of the spectrophotometer. The Neutral Density Filter is set to measure 0.50 Abs. and comes pre-mounted for easy insertion into the sample slide of the instrument.

Crystal Polishing Kit

The Crystal Polishing Kit contains everything needed for polishing and buffing most infrared transmitting crystals, such as KBr, NaCl and KCl.



Warning: Due to the toxicity of KRS-5 dust, we recommend that KRS-5 crystals be re-polished professionally.



Ordering Information:

004-5906 Infrared Crystal Polishing Kit

Contains the following items:

- ◆ Mahogany Base
- ◆ Two Ground Glass Disks
- ◆ Two Self Adhering Pads
- ◆ Cerium Oxide Polishing Compound
- ◆ Instructions
- ◆ #400 grit Coarse Abrasive
- ◆ #600 grit Fine Abrasive
- ◆ Three Camel Hair Brushes
- ◆ Polyethylene Bottles

Replacement Parts

- CR001LT Polishing Pads (package of 6)
- 004-0001 Bottle of #400 grit Coarse Abrasive
- 004-0002 Bottle of #600 grit Fine Abrasive
- 004-0003 Bottle of Cerium Oxide Polishing Compound

Demountable Cell Holders

The Demountable Cell Holder is ideal for use when analyzing liquids, mulls and capillary films. Since the windows that are used in this holder are not amalgamated together (as in permanently sealed cells), the cell is easily convertible to accommodate many sampling types. Luer-Lok™ filling ports make filling and clean up easy.

Cell Assembly

When analyzing mulls or capillary films, the cell is assembled with one or two undrilled windows and when analyzing liquids, the cell can be assembled with one undrilled window, a Teflon® spacer, and a drilled window to create a cell with a specific pathlength. A Teflon gasket is used to help prevent leakage.

Ordering Information:

6500 Demountable Cell Holder Kit (Dispersive)

- ◆ 10 x 22mm aperture
- ◆ Window size: 38 x 19 x 4mm*
- ◆ Consists of the Stainless Steel Holder, rear neoprene gasket, Teflon gasket, two Teflon plugs, and a package of assorted Teflon spacers.



6500C Demountable Cell Holder Kit (FTIR)

- ◆ 14mm aperture
- ◆ Window size: 38 x 19 x 4mm*
- ◆ Consists of the Stainless Steel Holder, rear neoprene gasket, Teflon gasket, two Teflon plugs, and a package of assorted Teflon spacers.



* Windows are not included.

Spacers (12 per package)

Size (mm)	Teflon		Lead		Copper	
	Dispersive	FTIR	Dispersive	FTIR	Dispersive	FTIR
0.015	5209	5209C			5209CO	5209COC
0.025	5210	5210C			5210CO	5210COC
0.050	5211	5211C	5211L	5211CL		
0.10	5212	5212C	5212L	5212CL		
0.20	5213	5213C	5213L	5213CL		
0.50	5214	5214C	5214L	5214CL		
1.00	5215	5215C	5215L	5215CL		
Assorted	5216	5216C	5216L	5216CL		

Replacement Parts (12 per pkg.)

- | | |
|-----------------------------|----------------------------|
| 5233 Neoprene Gasket | 5234T Teflon Gasket |
| 5234L Lead Gasket | 5235 Teflon Plugs |

Precision Amalgam Cells

The Precision Amalgam Cell comes pre-assembled and ready to use with the Demountable Cell Holder (P/N 6500). They provide an inexpensive alternative to the permanent sealed cell. This cell consists of one drilled window and one undrilled window amalgamated together with a metal spacer of a specific pathlength. Window dimensions are 38 x 19 x 4mm.



Ordering Information:

Important:

When ordering Precision Amalgam Cells for FTIR cell holders **add** the letter “C” to the part number. For example, the part number for 0.015mm NaCl Cell for the dispersive holder is **5097** while the part number for the 0.015mm NaCl Cell for the FTIR holder is **5097C**.

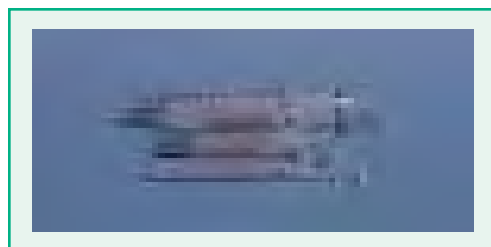
Window Material	Pathlength						
	0.015mm	0.025mm	0.050mm	0.10mm	0.20mm	0.50mm	1.0mm
NaCl	5097	5098	5099	5100	5101	5102	5103
KBr	5104	5105	5106	5107	5108	5109	5110
CaF ₂	5111	5112	5113	5114	5115	5116	5117
BaF ₂	5118	5119	5120	5121	5122	5123	5124
KRS-5	5139	5140	5141	5142	5143	5144	5145
ZnSe	7360	7361	7362	7363	7364	7365	7366

Syringes for Filling Cells

We recommend filling Permanent Sealed Cells using syringes. This avoids bubbles from forming inside the cell during filling. Two syringes are recommended - one containing the sample, the other for drawing the sample through the cell. **Do Not Push Down On The Plunger** containing the sample as the seal of the cell can be broken when too much pressure is applied.

Ordering Information:

- 5301 Syringe, tuberculine 1cc (without Luer-Lok tip)
- 5302 Syringe, 2cc, Luer-Lok tip
- 5310 Syringe, 10cc, Luer-Lok tip



Permanent Sealed Liquid Cells

The Permanent Sealed Liquid Cell consists of a stainless steel body, which is corrosion resistant. Each cell is permanently mounted and sealed in the stainless steel body and each has a precise pathlength. Permanent Sealed Liquid Cells are calibrated with the interference fringe calculation before leaving the factory. Since the cell thickness is permanently fixed it provides the user a means for accurate, reproducible results, making it ideal for performing quantitative measurements. The cell is filled through the Luer-Lok filling ports. Permanent Sealed Cells cannot be disassembled without destroying the cell. Should the cell become damaged it can be sent back to Buck Scientific to be repaired.

Ordering Information:

Important:

When ordering Permanent Sealed Cells with the FTIR design, **add** the letter “C” to the part number. For example, the part number for 0.015mm NaCl Permanent Sealed Cell for the dispersive holder is **5153** while the part number for the 0.015mm NaCl Permanent Sealed Cell for the FTIR holder is **5153C**.



Window Material	Pathlength						
	0.015mm	0.025mm	0.050mm	0.10mm	0.20mm	0.50mm	1.0mm
NaCl	5153	5154	5155	5156	5157	5158	5159
KBr	5160	5161	5162	5163	5164	5165	5166
CaF ₂	5167	5168	5169	5170	5171	5172	5173
BaF ₂	5174	5175	5176	5177	5178	5179	5180
KRS-5	5195	5196	5197	5198	5199	5200	5201
ZnSe	7216	7217	7218	7219	7220	7221	7222

Circular Demountable Cell Holders

The Circular Demountable Cell Holder is ideal for use when analyzing liquids because these cells are leak-proof and provide an even pressure. Since the windows that are used in this holder are not amalgamated together (as in permanently sealed cells), the cell is easily convertible to accommodate many sampling types, including mulls and capillary films. Luer-Lok filling ports make filling and clean up easy.

Cell Assembly

When analyzing mulls or capillary films, the cell is assembled with one or two undrilled windows and when analyzing liquids, the cell can be assembled with one undrilled window, a Teflon® spacer, and a drilled window to create a cell with a specific pathlength. A Teflon gasket is used to help prevent leakage.

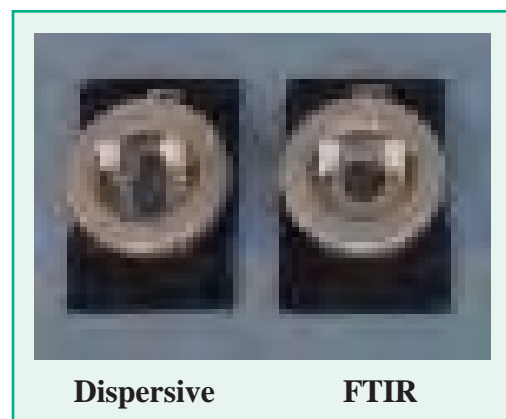
Ordering Information:

6500SD Demountable Cell Holder Kit (Dispersive)

- ◆ 10 x 22mm aperture
- ◆ Window size: 32 x 3mm*
- ◆ Consists of the Stainless Steel Holder, two sealing gaskets, Teflon “O”-rings, two Teflon plugs, a compensating ring, Teflon spacers, a needle plate, and a package of assorted spacers.

6500S Demountable Cell Holder Kit (FTIR)

- ◆ 14mm aperture
- ◆ Window size: 32 x 3mm*
- ◆ Consists of the Stainless Steel Holder, two sealing gaskets, Teflon “O”-rings, two Teflon plugs, a compensating ring, Teflon spacers, a needle plate, and a package of assorted spacers.



* Windows are not included

Spacers (12 pieces per package)

Size (mm)	Teflon	Lead	Copper
0.015	5209S		5209SC
0.025	5210S		5210SC
0.050	5211S	5211SL	
0.10	5212S	5212SL	
0.20	5213S	5213SL	
0.50	5214S	5214SL	
1.00	5215S	5215SL	
Assorted	5216S	5216SL	

Replacement Parts	
5235	Teflon Plugs (12 pcs.)
6505	Needle Plate (use with 6500SD)
6506	Needle Plate (use with 6500S)
6507	“O”-Ring (6 pcs)
6503	Gasket, Teflon (6 pcs.); use with 6500SD
6504	Gasket, Teflon (6 pcs.); use with 6500S

Note: The spacers listed above are used with both styles of the Circular Demountable Cell.

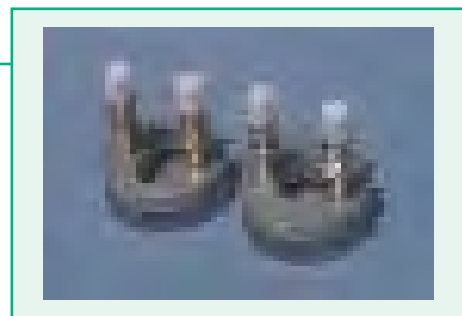
Circular Amalgam Cells

The Circular Amalgam Cell comes pre-assembled and ready to use with the Circular Demountable Cell Holder (P/N 65005). They provide an inexpensive alternative to the permanent sealed cell. This cell consists of one drilled window and one undrilled window amalgamated together with a metal spacer of a specific pathlength and then the assembly is amalgamated to the Needle Plate (the plate containing the Luer-Lok™ filling ports).

Ordering Information:

Important:

When ordering Circular Amalgam Cells for FTIR cell holders **remove** the letter “D” from the part number. For example, the part number for 0.015mm NaCl Circular Amalgam Cell for the dispersive holder is **5097SD** while the part number for the 0.015mm NaCl Circular Amalgam Cell for the FTIR holder is **5097S**.



Window Material	Pathlength						
	0.015mm	0.025mm	0.050mm	0.10mm	0.20mm	0.50mm	1.0mm
NaCl	5097SD	5098SD	5099SD	5100SD	5101SD	5102SD	5103SD
KBr	5104SD	5105SD	5106SD	5107SD	5108SD	5109SD	5110SD
CaF ₂	5111SD	5112SD	5113SD	5114SD	5115SD	5116SD	5117SD
BaF ₂	5118SD	5119SD	5120SD	5121SD	5122SD	5123SD	5124SD
KRS-5	5139SD	5140SD	5141SD	5142SD	5143SD	5144SD	5145SD
ZnSe	7360SD	7361SD	7362SD	7363SD	7364SD	7365SD	7366SD

High Purity Quartz Cells

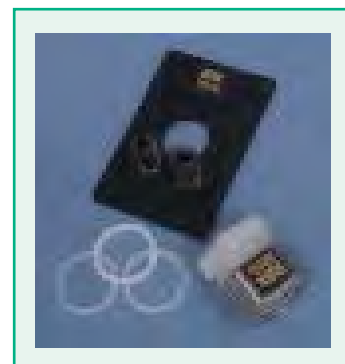
Ideal for transmission studies in the Near Infrared (i.e., ranges of 5,000 to 4,000cm⁻¹ and 3,500 - 2,500cm⁻¹). These cells are ideal for measuring oils and hydrocarbons in water and are especially useful for performing EPA Methods of Analysis for water pollution investigations. Fused quartz is not soluble in water and transmits light from 0.17 to 4 micrometers.

Ordering Information:

Part No.	Cell Type	Part No.	Holder Type
BS-21-I-10	10mm Rectangular Quartz Cell	5708	10mm Rectangular
BS-34-I-50	50mm Cylindrical Quartz Cell	5710	50mm Cylindrical
BS-34-I-100	50mm Cylindrical Quartz Cell	5707	100mm Cylindrical

Beta Cell

The Beta Cell is the most convenient, low-cost, easiest to use Demountable Cell available. Assembly is accomplished by placing the sample between two undrilled windows that are separated by a spacer. The windows are then placed into the holder and held secure with the threaded retaining ring. This type of cell is ideal for student use and is durable enough for continuous use. Recommended when analyzing unknown samples so as not to risk ruining more expensive cells. Uses standard 25 x 4mm discs.



Ordering Information:

6401 Beta Cell Kit

- ◆ Includes Demountable Cell Holder, Assorted Teflon Spacers, Slide Plate Holder, and Instructions

6402 Beta Cell Holder

- ◆ Includes Demountable Cell Holder and Assorted Teflon Spacers

6404 Beta Cell Only

6105 Slide Plate Holder

Teflon Spacers (12 pieces per package)

Part Number	Thickness (mm)
5244	0.015
5240	0.025
5241	0.05
5242	0.10
5245	0.20
5246	0.50
5247	1.00
5237	Gasket

Micro Flow Through Cells

These cells are designed for use with both Dispersive and FTIR Spectrophotometers. Used for analyzing very small volumes or analyzing HPLC/LC liquid fractions. Two 13 x 2mm windows are permanently amalgamated to the cell body forming a leak-proof seal. This cell is **not** designed to be taken apart and **will be** destroyed if it is disassembled. The complete assembly includes the cell body, leads, windows and mounting plate.



Ordering Information:

Pathlength	1.5mm	1.5mm	3.0mm	3.0mm
Volume	4.5µL	25µL	9µL	50µL
Clear Aperture	2mm	2 x 7mm	2mm	2 x 7mm
NaCl	5A01	5A02	5A03	5A04
KBr	5C01	5C02	5C03	5C04
CaF ₂	5D01	5D02	5D03	5D04
BaF ₂	5E01	5E02	5E03	5E04
KRS-5	5G01	5G02	5G03	5G04
ZnSe	5K01	5K02	5K03	5K04

Mini Cell®

The Mini Cell is the most economical approach for obtaining qualitative infrared spectra of liquids. The window fits into one portion of the cell. The second portion is then screwed in to form the seal. The AgCl cell windows each contain a 0.025mm circular depression. The rim of the window is flat to insure proper sealing. Because AgCl cold flows slightly under pressure, a tight seal is formed. The 0.025mm circular depression in each window enables the cell pathlength to be varied.

Ordering Information:

018-4041 Mini Cell Kit

- ◆ Complete with a Delrin cell holder, slide plate holder and six AgCl windows with 0.025mm depression

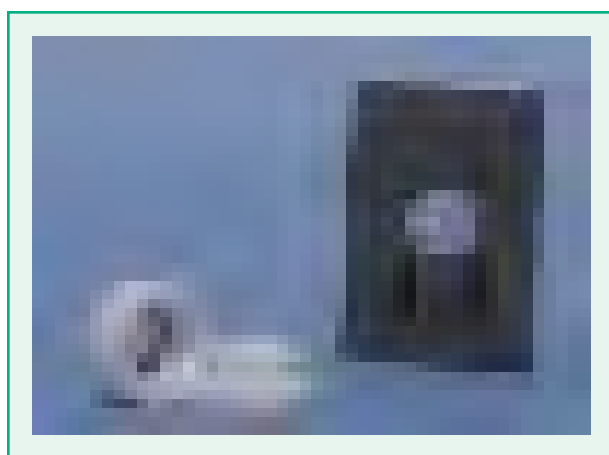
018-4045 Mini Cell AgCl Windows

- ◆ Package of 6 with 0.025mm depression

018-4044 Mini Cell Sample Holder

- ◆ Without windows

6105 Slide Plate Holder



Solid Sampling Accessories

Common items needed for the preparation of KBr Mulls, Pellets and films include the following:

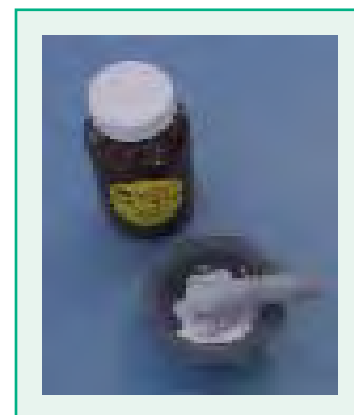
Ordering Information:

Sample Preparation Materials

- 6109 Nujol:**
- ◆ High Purity Mineral Oil (2oz)
 - ◆ Used in the 4,000 to 200 cm^{-1} range, except for hydrocarbon region of 3,000 to 2,900 cm^{-1} .
- 6610 Fluorolube:**
- ◆ Per-fluorinated Hydrocarbon Oil (1oz)
 - ◆ Used in the 4,000 to 1,370 cm^{-1} range.
- 5231 KBr Powder:**
- ◆ Used in the 40,000 to 400 cm^{-1} range.
- 6107 Micro Spatula**
- 6111 13mm Magnetic KBr Slide Holder**
- 6300 Magnetic Film Holder (Dispersive)**
- ◆ Aperture 10 x 20mm
- 6300C Magnetic Film Holder (FTIR)**
- ◆ Aperture 20mm Diameter

Agate Mortars and Pestles

5311	35mm OD Mortar and Pestle
5312	65mm OD Mortar and Pestle
5313	95mm OD Mortar and Pestle



Grinding Mill

The Grinding Mill is especially useful for grinding difficult samples or when a large number of mulls, pellets or diffuse reflectance samples have to be prepared. The sample is placed in the vial containing a ball pestle and is then vibrated rapidly; producing a well ground sample without the effort of typical grinding with a mortar and pestle.

Ordering Information:

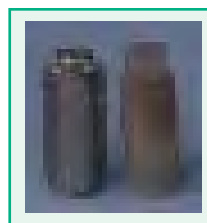
- S6800** Specamill (110V, 60Hz) US
S6000 Specamill (220V, 50Hz) UK
S6001 Specamill (220V, 50Hz) EU

Specamills require capsule sets

Capsule Sets

- S6100** Stainless steel capsule
S6200 Agate capsule

Capsule Set includes capsule, stopper and 3 spheres



KBr Beta Press

The Beta Press is a unique precision solid sampling device designed for making 7mm KBr pellets. The press is available as an evacuable or non-evacuatable design, consisting of two hardened and highly polished steel bolts and a stainless steel barrel (two bolt washers are included with the evacuable press for optimal evacuation of air). The KBr pellet is formed when the two bolts are turned against each other inside the barrel. Once the pellet is pressed, the two bolts are removed from the barrel and the barrel containing the pellet is then mounted in the sample compartment.

Ordering Information:

6101 Evacuatable KBr Beta Press

- ◆ Includes the evacuable barrel, two hardened and polished bolts, two bolt washers, a slide holder and instructions.

6102 KBr Beta Press

- ◆ Includes the non-evacuatable barrel, two hardened and polished bolts, a slide holder, and instructions.

6103 Deluxe Evacuatable KBr Beta Press

- ◆ Includes the evacuable barrel, two hardened and polished bolts, two bolt washers, a bench wrench kit, a slide holder, one micro spatula, KBr powder (100g), and instructions.



Evacuatable Beta Press



KBr Beta Press

Replacement Parts for Beta Press Assemblies

6104 Beta Press Bolts (Qty. of 2)

6105 Slide Holder

6106 Bench Wrench Kit

- ◆ Includes bench wrench, two mounting screws, and a 9/16" Combination Wrench

6112 Evacuatable Barrel

6113 Non-Evacuatable Barrel

Carver® Hydraulic Press

The 12-ton Hydraulic Press is a widely used piece of standard laboratory equipment and is ideal for pressing 13mm KBr pellets. The hydraulic press is compact and has a 4" diameter platen. The press includes a Safety Shield, buffer plate and counter-bored platen allowing for proper die alignment.



Ordering Information:

4350-L 12-ton Hydraulic Press

4350 12-ton Hydraulic Press
 ♦ Including a 13mm Die Set

Evacuatable 13mm KBr Die

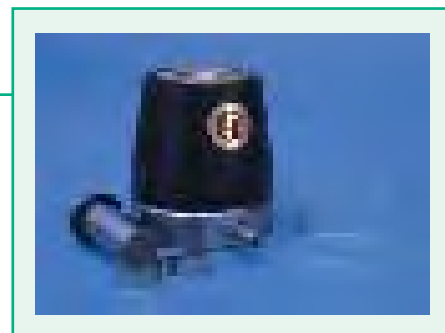
The Evacuatable 13mm KBr Die is the most popular and versatile die for producing 13mm pellets. The die is constructed of stainless steel and is precision machined. This die set requires the use of a 12-ton hydraulic press to produce the KBr pellets. Once the pellet is produced it is inserted into the Magnetic KBr Slide Holder, which in turn is inserted into the sample slide of the infrared spectrophotometer.

An assortment of paper rings, microframes and discs are included (1.5mm, 11mm and 1.5 x 9mm aperture) and is used when a small amount of sample is available for analysis allowing the user to produce micro pellets for analysis. They are used for preparing micropellets, and are necessary when there is a small amount of sample available.

Ordering Information:

0016-009 Evacuatable 13mm KBr Die

6111 13mm Magnetic KBr Slide Holder



Replacement Parts

13mm Die Set		Paper Inserts	
Part No.	Description	Part No.	Description (100/pkg.)
6230	Plunger	6220	1.5mm Aperture
6231	Body	6221	3mm Aperture
6232	Base	6222	5mm Aperture
6233	Pair of polished stainless steel pellets	6223	11mm Aperture
6234	Set of "O"Rings	6224	1.5 x 9mm Aperture
6235	Extractor Ring		

Quick Press

The Quick Press offers the user a quick and simple method for producing good quality KBr pellets. The Quick Press comes complete with the 7mm Die set. Using modest hand pressure, a clear pellet is produced. The pellet is formed inside of the metal collar. The 7mm collar is placed on the solid sample slide holder. Both a 1mm and 3mm Die set is available for micro sampling techniques. It is recommended that a Beam Condenser be used when analyzing micro samples of these two sizes (1 & 3mm).

Ordering Information:

6200 Quick Press

- ◆ With 7mm Die Set

6202 7mm Die Set

- ◆ Includes top anvil, lower anvil, and 7mm collar

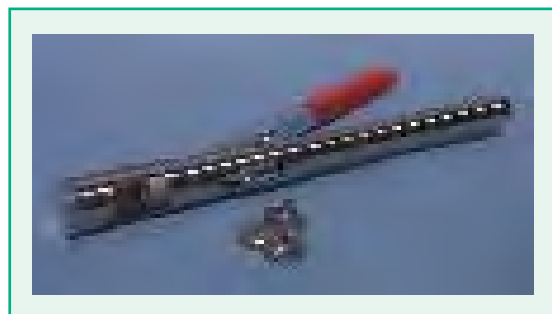
6203 3mm Die Set

- ◆ Includes top anvil, lower anvil, one 3 x 13mm collar, one 3 x 25mm collar, and two ejectors

6204 1mm Die Set

- ◆ Includes top anvil, lower anvil, one 1 x 13mm collar and 2 ejectors

6105 25mm Collar Holder



1mm Die Set		3mm Die Set		7mm Die Set	
Part Number	Description	Part Number	Description	Part Number	Description
6208	Top Anvil	6212	Top Anvil	6215	Top Anvil
6209	Bottom Anvil	6213	Bottom Anvil	6216	Bottom Anvil
6211	13mm Collar	6206	13mm Collar	6205	13mm Collar
6210	Ejector	6207	25mm Collar		
		6214	Ejector		

Sampling Accessory Kit

The Sampling Accessory Infrared Kit consists of a comprehensive collection of accessories for the infrared laboratory. In addition to liquid and mull sampling accessories, the kit also contains a demountable 10cm gas cell, and evacuable KBr Beta Press. The Sampling Accessory Kit is available with either NaCl or KBr windows and configured for Dispersive or FTIR Spectrophotometers. The following accessories are packaged in a suitable storage case.

- (2) Sealed Demountable Cell Holders
- (1) Evacuatable Beta Press
- (1) Beta-Gas Cell, 10cm
- (1) Magnetic Film Holder
- (1) 65mm Agate Mortar and Pestle
- (1) KBr Powder, 100g
- (1) Nujol Oil, 2oz
- (6) 38 x 19 x 4mm Windows
- (4) 38 x 19 x 4mm Drilled Windows
- (2) 25 x 4mm Windows



Ordering Information:

Dispersive Kit

BA-1 Basic Infrared Kit NaCl Windows

BA-2 Basic Infrared Kit KBr Windows

BA-3 Educational Sampling Accessory Kit

◆ Consists of:

- | | | |
|-----|-------|------------------------|
| (1) | 6101 | Evacuatable Beta Press |
| (1) | 5231 | KBr Powder, 100 grams |
| (1) | 5312 | 65mm Mortar & Pestle |
| (1) | 6801 | 10cm Beta Gas Cell |
| (1) | 6300 | Magnetic Film Holder |
| (1) | 500A3 | 25 x 4mm NaCl Discs |

FTIR Kit

BA-1C Basic Infrared Kit NaCl Windows

BA-2C Basic Infrared Kit KBr Windows

Gas Sampling Accessories

10cm Demountable Gas Cell

The 10cm Demountable Gas Cell provides the spectroscopist with a high quality yet relatively inexpensive method for performing gas studies by infrared. The gas cell consists of a Pyrex cell body with high vacuum oblique stopcocks. The cell body is mounted in a protective anodized aluminum safety sleeve. Connections are 18/9 spherical ball and socket joints. The cell can be operated at either reduced or positive pressures. Two 49 x 6mm windows* are used to complete the cell. A leak-tight seal is formed once the screw cap is in place. Windows are interchangeable and the procedure can be done quickly due to the demountable cell design.

* Windows are not included.

Ordering Information:

7200 10cm Demountable Gas Cell

Replacement Parts

7204 Pyrex Body, 10cm

7201 Viton O-rings (package of 6)

7202 Teflon O-rings (package of 6)

7203 Teflon Gaskets (package of 6)



Beta Gas Cell

The Beta Gas Cell is available in two pathlengths, 5cm and 10cm. The cell consists of a Pyrex body and two Pyrex filling stems fitted with replaceable rubber septa, Viton O-rings and a cell slide holder. A leak-tight seal is made when the cell is assembled. Fill the cell using a gas-tight syringe. Two 25 x 4mm windows* are required to complete the cell. Windows are interchangeable and the procedure can be done quickly due to the demountable cell design.

* Windows are not included.

Ordering Information:

6801 10cm Beta Gas Cell

6802 5cm Beta Gas Cell

Replacement Parts

6806 Pyrex Body, 10cm

6808 Pyrex Body, 5cm

6803 Septa (package of 6)

6804 Viton O-rings (package of 6)

6804T Teflon O-rings (package of 6)

6805 Teflon Gaskets (package of 6)



PLC-11M Single Reflection Prism Cell

“The Universal Sampling Accessory”

The Prism Cell is primarily used for analyzing highly absorbing materials, typically aqueous samples, pastes, films and soluble powders. The accessory utilizes a 45° single reflecting prism (permanently mounted Zinc Selenide or Germanium prism) and a two-mirror transfer optic design for high performance. The two-mirror transfer optical design means easy alignment. The accessory is slide-mounted to fit into the sample holder of the instrument.

Ordering Information:

- PLC-11M** **Single Reflection Prism Cell**
- ◆ Includes transfer optic, one Single Reflection ZnSe prism (45°), flow-through plate, and pressure plate.

Replacement Items

- PLC-100** Transfer Optics
EM11B4-M Single Reflection ZnSe prism (45°) mounted
EJ11B4-M GE prism (45°) mounted



Model 56 Horizontal Specular Reflectance Accessory

The Model 56 Horizontal Specular Reflectance Accessory is used for the analysis of coatings on reflective surfaces and epitaxial measurements. The accessory consists of a simple fixed two mirror optical system with a 30° angle of incidence. No mirror alignment is required, making this accessory simple to use. The only adjustment is for focusing the beam on the sample (fine adjustment) and this is performed with the three spring-loaded screws on the horizontal sample plate.

Ordering Information:

- Model 56** Horizontal Specular Reflectance Accessory
- ◆ Includes flat mirror.
- 103-1102** Replacement Flat Mirror



Model 57 ATR Accessory

The Model 57 Attenuated Total Reflectance accessory is ideal for sampling many types of samples - solids, plastics, adhesives, surface films, coatings, etc. The mirrors are mounted on Teflon bearings, which are easily rotated for alignment. Three sampling positions are available: 30°, 45°, and 60° allowing you to enhance the intensity of your spectrum. Greatest penetration into the sample is obtained when the sample holder is mounted in the 30° position, while the least penetration into the sample is obtained when the sample holder is mounted in the 60° position. Window materials used with this accessory are generally KRS-5, ZnSe and Germanium trapezoidal crystals with dimensions of 50 x 20 x 2mm for dispersive and 50 x 20 x 3mm for FTIR cut with a face angle of 30°, 45°, or 60°.

Ordering Information:

Model 57 ATR Accessory

- ◆ Includes optical bench complete with mirrors and pin plate, one Delrin holder, and one Solid Sample holder.
ATR crystals must be purchased separately.

5401 Delrin Fixed Plate Holder

- ◆ Used for self-adhering samples such as adhesives.

5402 Solid Sampler Holder

- ◆ Used for solid samples such as molded plastics, etc.
Requires the 5401 holder to complete the holder assembly.

5403 Liquid Sample Holder

- ◆ Used for liquid samples. Requires the 5401 holder to complete the holder assembly.



4X Beam Condenser

This accessory reduces an IR beam four times; for instance a typical 8mm beam is reduced to 2mm at the sample. The accessory can be easily and repeatably positioned in the sample compartment. Three different sample holders allow the microanalysis of liquids, mulls or solids that are 0.5mm and larger. A unique micro X-Y-Z translation stage is used for mounting cells, prisms and micro cell holders.

Useful for KBr micro pellets, micro volumes of liquid, particulates, paint chips, micro flow through studies, and micro ATR measurements.

Ordering Information:

0010-345

4X Beam Condenser

- ◆ Includes 4X Base Optical Unit, 10 x 5 x 1mm KRS-5 ATR crystal (45°), KBr micro pellet holder, micro ATR holder, X-Y-Z micro positioning stage and alignment tools.



Variable Angle Specular Reflectance Accessory

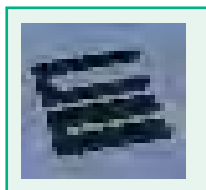
This accessory is useful for measuring films and coatings on reflective surfaces. The sample is rotated to obtain the desired angle to be measured. Reflectance measurements can be made at angles from near normal incidence (20°) for highly reflective surfaces to near grazing (85°), for extremely thin films.

Ordering Information:

0041-011S Model 501 Variable Angle Specular Reflectance Accessory

Replacement Parts

3000-230 13mm Slot Mask
 3000-231 6mm Slot Mask
 7004-001 Alignment Mirror



Foundation Series™

The Foundation Series utilizes a single common base module, “the Foundation”, which mounts inside the sample compartment. Each of the accessory Swap-Top™ modules drop into the Foundation for rapid change of analytical technique to a method which matches the precise needs of your application. Design features are as follows: No Alignment, low-cost Swap-Top upgrades and Cross platform compatibility of modules.

- ◆ Thunderdome™ ATR Accessory
- ◆ CPC Diffuse™ Reflectance Accessory
- ◆ Multi-Reflection HATR Accessory

Thunderdome™ ATR Accessory

The Thunderdome provides the user with rugged performance comparable to faceted diamond accessories, for thousands of dollars less. Germanium has a high refractive index and therefore a shallow depth of penetration, making it ideal for analysis of very strong absorbers such as carbon filled rubbers. Germanium has excellent chemical resistivity. The Thunderdome features a domed sampling surface, which focuses the infrared beam and a fail-safe pressure device that aides in obtaining a good spectrum on the first try. Standard Features include a single bounce ATR Germanium crystal high throughput, and a tilting pressure device for easy cleaning.

Lightning Viewer with 8.5X magnification for accurate positioning of minute samples.

Liquid Volume: Approximately 1.8mL

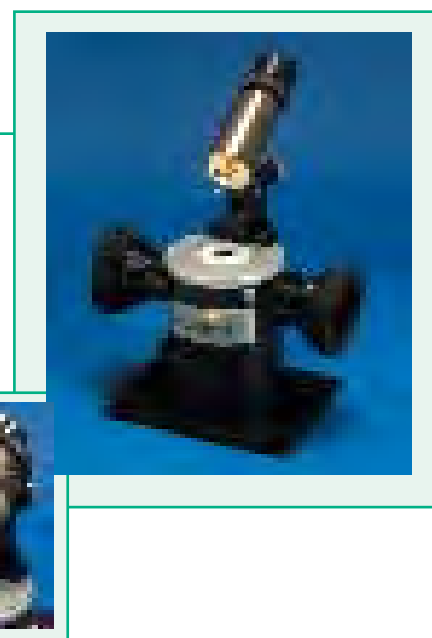
Useful pH Range: 1 - 14

Applications: Single polymer beads, rigid polymers, paint chips, O-rings, paper/contaminates, glass composites, liquids - including aqueous solutions that are corrosive and caustic*.

* Germanium is attacked by Aqua Regia and hot sulfuric acid.

Ordering Information:

- | | |
|-----------------|---|
| 0074-145 | Complete Thunderdome Accessory
(Includes Tilttable Pressure Tower) |
| 0074-245 | Complete Thunderdome Accessory
(Includes Lightning Viewer Pressure Tower)
<i>As Illustrated</i> |
| 0074-100 | Thunderdome Swap-Top with Tilttable Pressure Tower |
| 0074-200 | Thunderdome Swap-Top with Lightning Viewer Pressure Tower |



CPC Diffuse™ Reflectance Accessory

The Diffuse Reflectance Accessory is designed for analyzing most types of solid materials (with the exception of mirror-like substances) such as powders, tablets, minerals, even polymers without the need for pressing KBr pellets.

This accessory uses a novel optical element called a compound parabolic concentrator (CPC), which directs energy to the sample and collects the reflected energy. This design also minimizes unwanted specular bands from the final sample spectra.

Ordering Information:

- 0073-445 Complete Accessory
0073-400 Swap-Top Only

Replacement Accessories

- 0073-050 CPC Diffuse Sample Slide (two sample locations)
0073-051 CPC Diffuse Reference Slide (w/gold mirror)



Multi-Reflection HATR Accessory

The Multi-Reflection ATR Accessory is ideal for liquids, gels, films, and powders and requires little or no sample preparation. The pressure grip allows for even, reproducible pressure, which in turn provides intimate contact between the sample and crystal.

The accessory comes with a ZnSe crystal. Other available crystals include Ge and Si.

Ordering Information:

- 0072-245 Complete Combo Accessory
0072-200 Combo Swap-Tops Only
0072-345 Complete Flat Plate Kit
0072-300 Flat Swap-Top Only
0072-345 Complete Trough Plate Kit
0072-300T Trough Swap-Top Only

Window Material	Flat Plate	Trough Plate
45° ZnSe	0072-703	0072-603
45° Ge	0072-713	0072-613
45° Si	0072-753	0072-653



Chart Paper & Pens for the M500 IR Spectrophotometer





Paper		Pens	
500-1137B	Chart Size: 10" x 22"	LO 120/5	Black Pens (5pcs)
	50 charts per roll	LO 120/2	Red Pens (5pcs)
	4,000 - 600cm ⁻¹ , %T		

Perkin-Elmer Chart Paper

Part Number	Ordinate	Abscissa	Instrument Model
Chart Size: 8 1/2" x 23 1/2" - 40 Charts per Roll			
BS-5100-4366	Abs	4,000 - 200cm ⁻¹ *	X57, X67, X97, X98, 68X, 78X, 13XX, 14XX
BS-5100-4367	%T	4,000 - 200cm ⁻¹ *	
BS-199-1043	Linear A	4,000 - 200cm ⁻¹ *	X99, 68X, 78X
Chart Size: 8 1/2" x 12" - 66 Charts per Roll			
BS-199-1042	%T	4,000 - 200cm ⁻¹ *	X98, X99, 68X, 78X, 13XX, 14XX
BS-199-1041	Abs	4,000 - 200cm ⁻¹ *	
Chart Size: 8 1/2" x 12 1/2" - 75 Charts per Roll			
BS-283-1259	%T	4,000 - 200cm ⁻¹ *	281, 281B, 283, 283B
BS-283-1260	Linear A	4,000 - 200cm ⁻¹ *	
Chart Size: 10 5/8" x Continuous - 25 Meter Roll - Black Thermal Writing - Khaki Grid			
BS-L 106-1433	5 Div/cm	5 Div/cm	983, 983G, Model PP-1 Printer used with Models 1710, 1750, 1800

* All charts have 2:1 scale change at 2,000cm⁻¹.

Perkin Elmer Nylon Tip Disposable Recording Pens

	Red - BS-211-9001 (3pcs) Black - BS-211-9002 (3pcs)		Red - BS-211-9006 (3pcs) Black - BS-211-9007 (3pcs) Perkin-Elmer 221, 421, 521, 621, 350 and 450
	Red - BS-211-0670 (3pcs) Black - BS-211-0671 (3pcs) Perkin-Elmer X57, X67, X97, X99, 281, 180, 727B, 735B, 681, 781, 1310, 1420 and 1500		Red - BS-211-9004 (5pcs) Black - BS-211-9005 (5pcs) Beckman IR-18, 20, 33 Acculab 1, 2, 3, 4, 6, 7, 8, 9, 10 Microlab and 4200 Series

Buck Scientific has developed a new line of improved replacement sources for infrared spectrophotometers. Generally superior to original equipment sources with no change in power requirements.

Consider These Features

- ◆ Lifetime exceeds 1,250 hours even in ON/OFF duty cycles
- ◆ Silver or Platinum electrodes insure minimum resistance
- ◆ Constant output in infrared radiation
- ◆ Guaranteed uniform physical and electrical characteristics

Ordering Information:

Replacement Sources for the Buck M500

Part Number	Description
PE-1	Source Element
500-0001	Source Element Complete Assembly

Replacement Sources for Perkin-Elmer Instruments

Part Number	Description	Instrument
PE-1	Source Element	X37, X57, X67, X97, X98, X99 Series, 281, 282, 681, 682, 683, 684, 781, 782, 983, 1500.
PE-1I	Source Element Installed in your Holder	
PE-1H	Source Element Complete Assembly	

- ◆ PE-1 will fit most PE except 700, 1300, 180, 580, 21 Series

Replacement Sources for Wilks / Foxboro Instruments

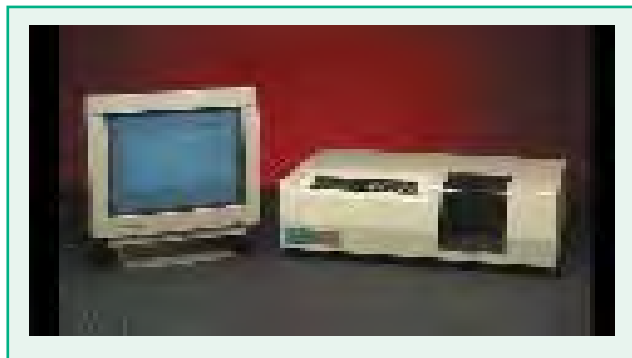
Part Number	Description	Instrument
FX-1	Source Element	Miran 1, 1A, 1B, 2, 101, 103, 80, 980
FX-1I	Source Element Complete Assembly	

Part Number	Description
PE-5	Free Standing Coil. 3V (AC or DC) 3 amps - 9 watts
PE-5CI	Ceramic Support Post. 3V (AC or DC) 3 amps - 9 watts
PE-5CIWL	Ceramic Support Post w/Extended Leads. 3V (AC or DC) 3 amps - 9 watts
PE-12CIWL	Grooved Ceramic Support Post w/ Extended Leads. 5V (AC or DC) 1.8amp - 9 watts
PE-7B	Grooved Ceramic Support Post. 1.8amp Long Leads 5V (AC or DC) 9 watts

The Buck M500 Quick-Scan I.R.

Overview

The M500 is a unique instrument with proven performance in a wide variety of applications including Industrial QA/QC, Cosmetics, Pharmaceuticals, Foods and Polymers and is easily operated, inexpensive to maintain and can be interfaced with either a PC or synchronous strip chart recorder. The M500 comes with EZ Scan Software for data acquisition. This software package allows you to print and save results. EZ Scan also allows you to overlay spectra and zoom in on a specific region of the spectrum (great for on-screen comparisons). For maximum flexibility and turnkey applications, we offer the popular windows based GRAMS™ software package, which also allows you to add applications software packages such as Search and Quant.



Ordering Information:

M500 Quick-Scan Infrared Spectrophotometer

- ◆ Wavenumber range: 4000 to 600 cm^{-1}
- ◆ 2 cm^{-1} Nominal Resolution
- ◆ EZ Scan Software

L250-1 Linseis Recorder

(See Chart Paper and Recording Pens, page 26)

Advanced Software Packages

GRAMS/IR GRAMS/IR Software for Windows

GRAMS/32 GRAMS/32 Software for Windows

Software Packages *(requires GRAMS/IR package)*

GRAMS-VAL Validation Software

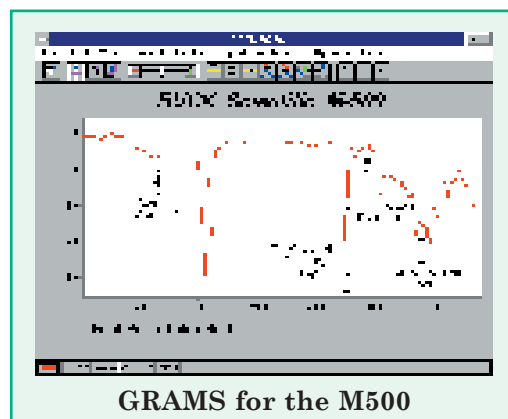
GRAMS-TPH Total Petroleum Hydrocarbon Software Macro

- ◆ For accurate quantitation for US EPA 418.1 and 413.2 methods

IR-SEARCH Library Search Option

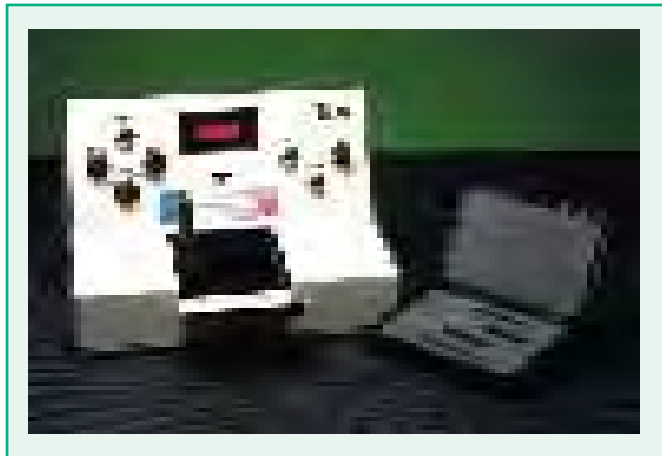
QUANT-B GRAMS Quantitative Analysis

GRAMS-ID Automatic Library Search



GRAMS for the M500

Buck Model HC-404 Total Hydrocarbon Analyzer



Overview

The Model HC-404 is a self contained, fixed infrared analyzer designed for rapid, accurate analysis of total petroleum hydrocarbons in water, soil and sludge samples.

Especially useful for EPA 418.1/413.2 Freon Methods and EPA 1664 Hexane Methods.

Features:

- ◆ Fixed wavelength 2924cm^{-1} (3.42μ) allows for quick analysis without unnecessary scanning.
- ◆ Digital readout in %T and absorbance or in concentration mode for direct ppm readings.
- ◆ Accommodates 10, 50, 100mm quartz cells for analysis to 1ppm or lower detection levels.

Ordering Information:

HC-404 Total Petroleum Hydrocarbon Analyzer

Cuvettes

BS-21-I-10 Infrasil quartz, 10mm pathlength
BS-34-I-50 Infrasil quartz, 50mm pathlength
BS-34-I-100 Infrasil quartz, 100mm pathlength
404-13 Vessel Cell for Non-Freon Method

HOLDERS

5708 10mm cuvette holder
5710 50mm cuvette holder
5707 100mm cuvette holder
6105 Vessel cell holder

Calibration Standards

Freon Method

404-11 Reference Standard for EPA Method 413.2 / 418.1 TPH
 (Photometric Certification - NIST / US FDA, ASTM)
404-12 Sealed Calibration Standards in Freon (0, 10, 50, 250 ppm)

Non-Freon Method

404-14 Calibration Standards in hexane 50ml. (10, 50, 250 ppm)
404-22 Sealed Calibration Standards (Carbon Tetrachloride)
404-23 Sealed Calibration Standards (Perchloroethylene)

Spectroscopy and Chromatography Instruments from Buck Scientific

210VGP Atomic Absorption Spectrophotometer**Features:**

- ◆ High energy optical system with unique in-line Deuterium and self-reversal background correction systems.
- ◆ Built-in software library with methods storage.
- ◆ Direct report generation to printer.
- ◆ High resolution alphanumeric graphical display.
- ◆ No external PC required.
- ◆ Three-lamp turret for multi-element analysis.
- ◆ Optional accessories include Graphite Furnace, Autosampler and Hydride Systems.

**910 Gas Chromatograph****Features:**

- ◆ High stability, fully programmable oven with multiple detector capabilities.
- ◆ PeakSimple software for complete control of GC and data handling.
- ◆ Electronic Pressure Control (EPC), purge and trap concentrators, injector options, gas sampling valves etc.

Model BLC-10/20 High Performance Liquid Chromatographs**Features:**

- ◆ Isocratic and Gradient systems with fixed or variable UV/VIS detectors.
- ◆ External fluorescence and refractive index detectors.
- ◆ PC-based PeakSimple data station for data handling.
- ◆ PEEK or Stainless Steel components

Cecil UV/VIS**Features:**

- ◆ Economical instruments for colorimetric tests and high performance UV/VIS for research.
- ◆ External source and coated optics for long life and reliability.
- ◆ Built-in software with “prompting” screens.
- ◆ 1500 Hour Deuterium Lamp Guarantee.

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