

## Contact / Ordering Information

### How to Reach New Era

#### Domestic

Phone 1-800-821-4667  
Fax 1-856-697-8727

#### International

Phone ++ 856-794-2005  
Fax ++ 856-697-8727

e-mail: [cs@newera-spectro.com](mailto:cs@newera-spectro.com)

Web page: [www.newera-spectro.com](http://www.newera-spectro.com)

### Remittance and Correspondence

New Era Enterprises, Inc.  
PO Box 747  
Vineland, NJ 08362-0747 USA

### Ordering

Place orders directly with New Era.

*To ensure the best service, when ordering be sure to include the following information:*

- shipping and invoicing addresses
- purchase order number
- complete catalog numbers and quantity
- a brief description of each item

### Payment

US Payments are accepted by check or by credit card.

International Payments, in US Dollars only, are accepted by credit card or by prepayment with a check drawn on a US bank or electronic transfer.

We accept Visa, MasterCard and American Express.

### Prices

All prices are in US Dollars and are subject to change without notice. If you have any questions, contact New Era for updates.

For international requests, a Pro Forma Invoice, showing all costs along with delivery time and payment terms, will be prepared for your review. No actions will be taken until a purchase order is received from you.

### Minimum Order / Terms / FOB

Minimum Order: \$50 USA, \$100 outside USA.  
Terms: Net 30 Days  
FOB: Vineland, NJ USA

### Delivery

Items are shipped promptly via UPS, FedEx or Air Parcel Post as you indicate when ordering. In the event of backorders, a partial shipment would be made at your request.

### Returns

Before a return is made, contact New Era to discuss the nature of the return. The original purchase order number, the catalog number and quantity of the item(s) in question are needed to resolve the matter quickly.

### Warranty

New Era Enterprises, Inc. warrants that the products listed in this catalog meet the descriptions and/or specifications so given. No other expressed or implied warranty is given. This supersedes all other warranties, representations and guarantees.

### Trademarks used in this catalog

Teflon, PTFE, Viton, Kalrez, Delrin - E.I. DuPont  
Pyrex - Corning Glass Works  
Nujol - Plough, Inc.  
Fluorolube - Hooker Chemical Co.  
Horizon, Mini-Horizon - Harrick Scientific Corp.  
Circle Cell, Contact Sampler - SpectraTech, Inc.

# Table of Contents

## Section One

### Infrared Optics

	Page No.
Properties of Infrared Optical Materials .....	2
Unpolished Transmission Windows .....	3
Crystal Polishing Kits .....	3
Polished Transmission Disc Windows .....	4-7
Polished Transmission Rectangle Windows .....	8-9
Internal Reflectance Plates (and Custom) .....	10
Internal Reflectance Rods (and Custom) .....	11
Prisms, Hemispheres, and Hemicylinders (and Custom) .....	11
Lenses .....	12
Coatings (Broad Band, Narrow Band and Single Wave Filter) .....	13

## Section Two

### Replacement Parts for Transmission Liquid (and Mull) Cells; Reconditioning of Transmission Liquid Cells and Horizontal ATR (HATR) Trough/Flat Crystal Plate Mounts

Spacers, Gaskets and Teflon Plugs .....	14
Interchangeable Sealed Liquid Cells and Reconditioning of Permanent Sealed Liquid Cells .....	15
Reconditioning of Horizontal ATR (HATR) Trough/Flat Crystal Plate Mounts for SpectraTech, Perkin-Elmer, and Harrick .....	16-17

## Section Three

### Accessories for Transmission

#### Liquid

Demountable Liquid Cells .....	18-19
Semi-Permanent Injectable Liquid Cells .....	20-21
Permanent Sealed Liquid Cells and Filling Syringes .....	22
Long-Path Liquid Cells and Quartz Sample Cells .....	23
Mini Liquid Cell and IR Crystal Sample Cards .....	24
High Pressure Liquid Cells .....	25
Temperature Controlled Liquid Cells .....	26
Temperature Controlled High Pressure Liquid Cell and Liquid Flow Cell .....	27

#### Solid

Demountable "Mull" Cells .....	28-29
Mini Press and Hand Press Die Sets .....	30
Evacuatable 13mm Die Sets and Sample Pellet Holders / Cards .....	31
Grinding Mills (Wig-L-Bug) .....	32
Film Holders, Film Cards, IR Crystal Sample Cards, Agate Mortars / Pestles and Powders and Oils for Solid Sample Preparation .....	33

#### Gas

Short-Path Gas Cells (Mini and Small Volume) .....	34
Short-Path Gas Cells (Medium Volume; including Teflon) .....	35
Short-Path Gas Cells (Medium Volume, including Stainless Steel and Large Volume) .....	36
Short-Path Gas Cells (Temperature Controlled) .....	37
Long-Path Gas Cells .....	38

## Section Four

### Reflectance Accessories

Vertical Internal Reflectance Systems .....	39
Horizontal Internal Reflectance Systems and Accessories, Prism Cell .....	40-41
MicroSampling Horizontal Internal Reflectance Systems and Accessories .....	42-44
Diffuse Reflectance Systems .....	45
Specular Reflectance Systems and Grazing Angle .....	46

## Section Five

### Miscellaneous Accessories

IR Reference Standards, Polarizers and Temperature Controller .....	47
<b>Catalog Number Index</b> .....	48

## Properties of Infrared Optical Materials

Material	Transmission Range	Refractive Index at 1000cm <sup>-1</sup> (10μ)	Water Solubility (g/100g Water)	Chemical/Physical Properties
Sodium Chloride (NaCl)	40,000-625 cm <sup>-1</sup> 0.25-16 μ	1.49	36.0 (20°C)	Hygroscopic; slightly soluble in lower alcohols; polishes easily.
Potassium Chloride (KCl)	40,000-500 cm <sup>-1</sup> 0.25-20 μ	1.46	34.7 (20°C)	Hygroscopic; slightly soluble in lower alcohols; polishes easily.
Potassium Bromide (KBr)	40,000-400 cm <sup>-1</sup> 0.25-25 μ	1.52	65.2 (20°C)	Hygroscopic; slightly soluble in lower alcohols; polishes easily.
Calcium Fluoride (CaF <sub>2</sub> )	66,666-1110 cm <sup>-1</sup> 0.15-9 μ	1.39 (5μ)	0.00151 (20°C)	Water insoluble; resistant to most acids and bases; soluble in ammonium salt solutions.
Barium Fluoride (BaF <sub>2</sub> )	50,000-770 cm <sup>-1</sup> 0.2-13 μ	1.42	0.12 (25°C)	Water insoluble; soluble in acids and ammonium salt solutions; sensitive to mechanical and thermal shock.
Cesium Iodide (CsI)	10,000-200 cm <sup>-1</sup> 1-50 μ	1.74	160 (61°C)	Hygroscopic; soluble in lower alcohols.
Thallium Bromide-Iodide (KRS-5)	15,385-250 cm <sup>-1</sup> 0.65-40 μ	2.37	<0.00476 (20°C)	Soluble in warm water, bases, complexing agents and ammonium salt solutions; insoluble in acids; soft; will cold-flow.
Zinc Sulfide (ZnS)	10,000-715 cm <sup>-1</sup> 1-14 μ	2.2	Insoluble	Water insoluble; hard material; reacts to strong acids, oxidizing agents and KOH.
Zinc Selenide (ZnSe)	10,000-500 cm <sup>-1</sup> 1-20 μ	2.4	Insoluble	Water insoluble; soluble in strong acids and strong bases; resistant to organic solvents; hard and brittle material.
Cadmium Telluride (CdTe)	5,000-320 cm <sup>-1</sup> 2-31 μ	2.67	Insoluble	Water insoluble; soluble in strong acids; resistant to organic solvents.
Silver Chloride (AgCl)	25,000-435 cm <sup>-1</sup> 0.4-23 μ	1.98	0.00015 (20°C)	Water insoluble; soluble in acids; attacks base metals; will cold-flow; sensitive to UV light.
Silver Bromide (AgBr)	20,000-285 cm <sup>-1</sup> 0.5-35 μ	2.2	0.000012 (20°C)	Water insoluble; soluble in acids; attacks base metals; will cold-flow; less sensitive to UV light than AgCl.
Infrared Quartz (SiO <sub>2</sub> )	50,000-2500 cm <sup>-1</sup> 0.2-4 μ	1.42 (3μ)	Insoluble	Water insoluble; slightly soluble in bases; soluble in HF.
Amtir (GeAsSe Glass)	11,000-725 cm <sup>-1</sup> 0.9-13.8 μ	2.5	Insoluble	Insoluble in water and acids; soluble in bases.
Sapphire (Al <sub>2</sub> O <sub>3</sub> )	50,000-1780 cm <sup>-1</sup> 0.2-5.6 μ	1.75	Insoluble	Water insoluble; slightly soluble in acids and bases; very hard material; heatable to over 400°C.
Germanium (Ge)	5,000-600 cm <sup>-1</sup> 2-16.7 μ	4.0	Insoluble	Water insoluble; soluble in hot H <sub>2</sub> SO <sub>4</sub> and aqua regia; chemically inert and brittle; higher reflection losses; temperature sensitive becoming opaque at ≥ 125°C.
Silicon (Si)	10,000-1540 cm <sup>-1</sup> 500-30 cm <sup>-1</sup> 1-6.5 μ 20-333 μ	3.4	Insoluble	Water insoluble; soluble in mixtures of HF and HNO <sub>3</sub> ; chemically inert and brittle; higher reflection losses; useable at temperatures up to 300°C.
Diamond (C)	45,450-2325 cm <sup>-1</sup> 1665-285 cm <sup>-1</sup> 0.22-4.3 μ 6-35 μ	2.4	Insoluble	Insoluble in water, acids and bases; attacked by K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> conc. H <sub>2</sub> SO <sub>4</sub> ; very hard material; used in high pressure conditions.

# Transmission Windows

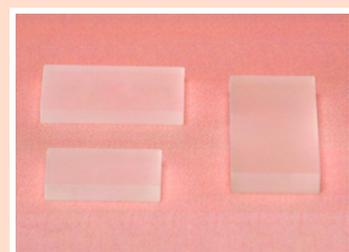
## Unpolished Discs

Size (mm) (Dia. x Thickness)	25 x 4	25 x 5	32 x 3
<b>NaCl</b>			
Cat. No.	600A09	600A10	600A11
Price / Pk/10	\$120.00	\$120.00	\$135.00
<b>KCl</b>			
Cat. No.	600B09	600B10	600B11
Price / Pk/10	155.00	155.00	180.00
<b>KBr</b>			
Cat. No.	600C09	600C10	600C11
Price / Pk/10	165.00	165.00	210.00



## Unpolished Rectangles

Size (mm) (Length x Width x Thickness)	29 x 14 x 4	38 x 19 x 4	41 x 23 x 6
<b>NaCl</b>			
Cat. No.	601A02	601A03	601A04
Price / Pk/10	\$160.00	\$160.00	\$260.00
<b>KCl</b>			
Cat. No.	601B02	601B03	601B04
Price / Pk/10	190.00	190.00	300.00
<b>KBr</b>			
Cat. No.	601C02	601C03	601C04
Price / Pk/10	210.00	210.00	385.00



## Crystal Polishing Kits

The crystal polishing kits contain the necessary items to polish and/or grind unpolished transmission windows or used windows that need refurbished and restored to proper transmission levels. Grinding operations are carried out on the ground glass discs (without polishing pads) and polishing operations are performed on the self-stick polishing pads which are affixed to the ground glass discs. NaCl, KCl, KBr and CsI are the recommended IR materials to use with these kits.

Aluminum Oxide polishing compound is available for reconditioning CaF<sub>2</sub>, BaF<sub>2</sub>, ZnSe, ZnS and CdTe. Alphasal polishing pads are suggested for this procedure.

Aluminum Oxide Polishing Compound, Alphasal Polishing Pads and Finger Cots are optional and **ordered separately** from kits.



Cat. No.	Description	Price
67000	Crystal Polishing Kit (includes mahogany base, instructions, two ground glass discs, two self-stick polishing pads, Cerium Oxide polishing compound, #400 grinding compound-coarse, #600 grinding compound-fine, polyethylene bottles and three camel hair brushes)	\$195.00 / each
67000-M	Mini Crystal Polishing Kit (includes one ground glass disc, two self-stick polishing pads, Cerium Oxide polishing compound, polyethylene bottle, one camel hair brush and instructions)	105.00 / each
67000-3	Cerium Oxide Polishing Compound	23.00 / each
67000-1	#400 Grinding Compound (Coarse)	23.00 / each
67000-2	#600 Grinding Compound (Fine)	23.00 / each
67000-5	Polishing Pads	41.00 / Pk/6
67000-7	Ground Glass Disc	63.00 / each
67000-4	Aluminum Oxide Polishing Compound	68.00 / each
67000-6	Alphasal Polishing Pads	69.00 / Pk/6
67000-8	Finger Cots	17.00 / Pk/12



# Transmission Windows

## Polished Discs

For window sizes not listed, please request.

For Broad Band, Narrow Band (Anti-Reflective) and Single Wavelength (Filter) **Coatings**, see **Page 13**.

Wedged windows are available with **one** surface angled. Please request with angle size (e.g. 1.5°, 30°).



(Prices are for single windows - not pairs)

Size (mm) (Dia. x Thickness)	6 x 1	13 x 1	13 x 2	15 x 2	19 x 2	20 x 2	22 x 4	25 x 2
<b>NaCl</b>								
Cat. No.	602A01	602A02	602A03	602A04	602A05	602A06	602A07	602A08
Price / each (1-9)	\$26.00	\$24.00	\$20.00	\$24.00	\$24.00	\$24.00	\$23.00	\$23.00
(10 and over)	-	-	19.00	-	-	-	-	22.00
<b>KCl</b>								
Cat. No.	602B01	602B02	602B03	602B04	602B05	602B06	602B07	602B08
Price / each (1-9)	35.00	28.00	24.00	28.00	35.00	37.00	34.00	36.00
(10 and over)	-	-	23.00	-	-	-	-	34.00
<b>KBr</b>								
Cat. No.	602C01	602C02	602C03	602C04	602C05	602C06	602C07	602C08
Price / each (1-9)	31.00	35.00	28.00	31.00	31.00	31.00	31.00	31.00
(10 and over)	-	-	27.00	-	-	-	-	30.00
<b>CaF<sub>2</sub></b>								
Cat. No.	602D01	602D02	602D03	602D04	602D05	602D06	602D07	602D08
Price / each	49.00	59.00	60.00	62.00	62.00	62.00	66.00	62.00
<b>BaF<sub>2</sub></b>								
Cat. No.	602E01	602E02	602E03	602E04	602E05	602E06	602E07	602E08
Price / each	54.00	86.00	84.00	89.00	90.00	90.00	102.00	93.00
<b>CsI</b>								
Cat. No.	602F01	-	602F03	602F04	602F05	602F06	602F07	602F08
Price / each	152.00	-	158.00	188.00	158.00	188.00	233.00	224.00
<b>KRS-5</b>								
Cat. No.	602J01	602J02	602J03	602J04	602J05	602J06	602J07	602J08
Price / each	105.00	172.00	172.00	209.00	245.00	245.00	320.00	255.00
<b>ZnS</b>								
Cat. No.	602K01	602K02	602K03	602K04	602K05	602K06	602K07*	602K08
Price / each	56.00	110.00	101.00	120.00	129.00	129.00	158.00	173.00

\*Windows are 2mm thick.

# Transmission Windows

## Polished Discs

For window sizes not listed, please request.

For Broad Band, Narrow Band (Anti-Reflective) and Single Wavelength (Filter) **Coatings**, see **Page 13**.

Wedged windows are available with **one** surface angled. Please request with angle size (e.g. 1.5°, 30').



(Prices are for single windows - not pairs)

Size (mm) (Dia. x Thickness)	6 x 1	13 x 1	13 x 2	15 x 2	19 x 2	20 x 2	22 x 4	25 x 2
<b>ZnSe</b>								
Cat. No.	602L01	602L02	602L03	602L04	602L05	602L06	602L07*	602L08
Price / each	\$60.00	\$113.00	\$104.00	\$128.00	\$134.00	\$134.00	\$163.00	\$178.00
							<b>*Windows are 2mm thick.</b>	
<b>CdTe</b>								
Cat. No.	602M01	-	602M03	602M04	602M05	602M06	-	602M08
Price / each	140.00	-	240.00	250.00	275.00	275.00	-	295.00
<b>AgCl</b>								
Cat. No.	-	602N02	602N03	-	-	602N06	602N07	602N08
Price / each	-	65.00	69.00	-	-	79.00	Request	83.00
<b>AgBr</b>								
Cat. No.	-	602P02	602P03	-	-	602P06	602P07	602P08
Price / each	-	130.00	145.00	-	-	Request	Request	Request
<b>SiO<sub>2</sub> (IR)</b>								
Cat. No.	602I01	-	602I03	602I04	602I05	602I06	602I07	602I08
Price / each	75.00	-	55.00	55.00	Request	72.00	94.00	62.00
<b>GeAsSe (Amtir)</b>								
Cat. No.	-	-	602R03	-	-	-	-	602R08
Price / each	-	-	99.00	-	-	-	-	198.00
<b>Al<sub>2</sub>O<sub>3</sub></b>								
Cat. No.	602S01	-	602S03	602S04	602S05	602S06	-	602S08
Price / each	39.00	-	58.00	61.00	79.00	85.00	-	99.00
<b>Ge</b>								
Cat. No.	602T01	-	602T03	602T04	-	602T06	-	602T08
Price / each	43.00	-	61.00	87.00	-	113.00	-	109.00
<b>Si</b>								
Cat. No.	602U01	-	602U03	602U04	-	602U06	-	602U08
Price / each	62.00	-	76.00	108.00	-	117.00	-	128.00

# Transmission Windows

## Polished Discs

For window sizes not listed, please request.

For Broad Band, Narrow Band (Anti-Reflective) and Single Wavelength (Filter) **Coatings**, see **Page 13**.

Wedged windows are available with **one** surface angled.  
Please request with angle size (e.g. 1.5°, 30°).



(Prices are for single windows - not pairs)

Size (mm) (Dia. x Thickness)	25 x 4	25 x 5	32 x 3	32 x 3 Drilled	38 x 6	41 x 3	49 x 6	50 x 3
<b>NaCl</b>								
Cat. No.	602A09	602A10	602A11	602A11D	602A12	602A13	602A14	602A15
Price / each (1-9)	\$20.00	\$21.00	\$29.00	\$32.00	\$41.00	\$41.00	\$59.00	\$69.00
(10 and over)	19.00	20.00	28.00	31.00	-	-	-	-
<b>KCl</b>								
Cat. No.	602B09	602B10	602B11	602B11D	602B12	602B13	602B14	602B15
Price / each (1-9)	27.00	29.00	31.00	34.00	52.00	75.00	83.00	99.00
(10 and over)	26.00	28.00	30.00	33.00	-	-	-	-
<b>KBr</b>								
Cat. No.	602C09	602C10	602C11	602C11D	602C12	602C13	602C14	602C15
Price / each (1-9)	28.00	28.00	41.00	44.00	61.00	79.00	109.00	105.00
(10 and over)	27.00	27.00	39.00	42.00	-	-	-	-
<b>CaF<sub>2</sub></b>								
Cat. No.	602D09	602D10	602D11	602D11D	602D12	602D13	602D14	602D15
Price / each	69.00	79.00	86.00	102.00	118.00	127.00	143.00	138.00
<b>BaF<sub>2</sub></b>								
Cat. No.	602E09	602E10	602E11	602E11D	602E12	602E13	602E14	602E15
Price / each	117.00	129.00	155.00	171.00	216.00	270.00	335.00	300.00
<b>CsI</b>								
Cat. No.	602F09	602F10	602F11	602F11D	602F12	602F13	602F14	602F15
Price / each	263.00	375.00	350.00	370.00	530.00	443.00	480.00	510.00
<b>KRS-5</b>								
Cat. No.	602J09	602J10	602J11	602J11D	602J12	-	602J14	602J15
Price / each	Request	Request	Request	Request	Request	-	Request	Request
<b>ZnS</b>								
Cat. No.	602K09	602K10	602K11	602K11D	602K12*	602K13	602K14*	602K15
Price / each	229.00	258.00	248.00	263.00	355.00	360.00	450.00	450.00

\*Windows are 3mm thick.

# Transmission Windows

## Polished Discs

For window sizes not listed, please request.

For Broad Band, Narrow Band (Anti-Reflective) and Single Wavelength (Filter) **Coatings**, see **Page 13**.

Wedged windows are available with **one** surface angled. Please request with angle size (e.g. 1.5°, 30').



(Prices are for single windows - not pairs)

Size (mm) (Dia. x Thickness)	25 x 4	25 x 5	32 x 3	32 x 3 Drilled	38 x 6	41 x 3	49 x 6	50 x 3
<b>ZnSe</b>								
Cat. No.	602L09	602L10	602L11	602L11D	602L12*	602L13	602L14*	602L15
Price / each	\$235.00	\$269.00	\$280.00	\$295.00	\$330.00	\$385.00	\$485.00	\$485.00
							*Windows are 3mm thick.	
<b>CdTe</b>								
Cat. No.	602M09	-	602M11	602M11D	-	-	-	-
Price / each	440.00	-	595.00	Request	-	-	-	-
<b>AgCl</b>								
Cat. No.	602N09	602N10	602N11	602N11D	602N12	-	602N14	602N15
Price / each	Request	Request	Request	Request	Request	-	Request	Request
<b>AgBr</b>								
Cat. No.	602P09	602P10	602P11	602P11D	602P12	-	602P14	602P15
Price / each	Request	Request	Request	Request	Request	-	Request	Request
<b>SiO<sub>2</sub> (IR)</b>								
Cat. No.	602I09	602I10	602I11	602I11D	602I12	-	602I14	602I15
Price / each	85.00	106.00	106.00	116.00	185.00	-	245.00	255.00
<b>GeAsSe (Amtir)</b>								
Cat. No.	-	-	602R11	602R11D	-	-	-	-
Price / each	-	-	235.00	265.00	-	-	-	-
<b>Al<sub>2</sub>O<sub>3</sub></b>								
Cat. No.	602S09	-	-	-	-	-	-	602S15
Price / each	130.00	-	-	-	-	-	-	285.00
<b>Ge</b>								
Cat. No.	602T09	-	602T11	602T11D	-	-	-	-
Price / each	153.00	-	175.00	190.00	-	-	-	-
<b>Si</b>								
Cat. No.	602U09	-	602U11	602U11D	-	-	-	-
Price / each	150.00	-	230.00	245.00	-	-	-	-

# Transmission Windows

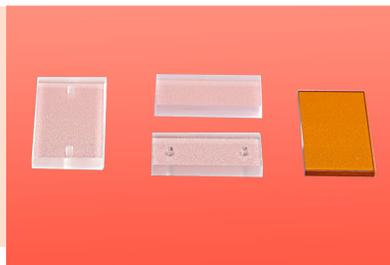
## Polished Rectangles

For window sizes not listed, please request.

For Broad Band, Narrow Band (Anti-Reflective) and Single Wavelength (Filter) **Coatings**, see **Page 13**.

Wedged windows are available with **one** surface angled. Please request with angle size (e.g. 1.5°, 30°).

(Prices are for single windows - not pairs)



Drilled (P-E) - Holes are 29mm apart center-to-center.  
Drilled (Wilks) - Holes are 30.25mm apart center-to-center.

Size (mm) (Length x Width x Thickness)	25 x 12 x 2	29 x 14 x 4	29 x 12 x 4 Drilled	38 x 19 x 4	38 x 19 x 4 Drilled (P-E)	38 x 19 x 4 Drilled (Wilks)	41 x 23 x 6	41 x 23 x 6 Drilled
<b>NaCl</b> Cat. No. Price / each (1-9) (10 and over)	603A01 \$23.00 -	603A02 \$23.00 -	603A02D \$28.00 -	603A03 \$26.00 25.00	603A03DPE \$30.00 29.00	603A03DW \$30.00 29.00	603A04 \$38.00 -	603A04D \$42.00 -
<b>KCl</b> Cat. No. Price / each (1-9) (10 and over)	603B01 31.00 -	603B02 28.00 -	603B02D 33.00 -	603B03 34.00 33.00	603B03DPE 38.00 37.00	603B03DW Request -	603B04 46.00 -	603B04D 50.00 -
<b>KBr</b> Cat. No. Price / each (1-9) (10 and over)	603C01 31.00 -	603C02 32.00 -	603C02D 37.00 -	603C03 34.00 32.00	603C03DPE 38.00 36.00	603C03DW 38.00 36.00	603C04 58.00 -	603C04D 62.00 -
<b>CaF<sub>2</sub></b> Cat. No. Price / each	603D01 49.00	603D02 65.00	603D02D 77.00	603D03 78.00	603D03DPE 97.00	603D03DW 97.00	603D04 107.00	603D04D 125.00
<b>BaF<sub>2</sub></b> Cat. No. Price / each	603E01 63.00	603E02 93.00	603E02D 105.00	603E03 120.00	603E03DPE 138.00	603E03DW 138.00	603E04 199.00	603E04D 218.00
<b>CsI</b> Cat. No. Price / each	- -	- -	- -	603F03 305.00	603F03DPE 325.00	603F03DW 325.00	- -	- -
<b>KRS-5</b> Cat. No. Price / each	603J01 220.00	603J02 Request	603J02D Request	603J03 Request	603J03DPE Request	603J03DW Request	- -	- -
<b>ZnS</b> Cat. No. Price / each	603K01 154.00	603K02* 134.00	603K02D* 149.00	603K03* 180.00	603K03DPE* 195.00	603K03DW* 195.00	603K04* 290.00	603K04D* 305.00

\*Windows are 2mm thick.

\*Windows are 3mm thick.

# Transmission Windows

## Polished Rectangles

For window sizes not listed, please request.

For Broad Band, Narrow Band (Anti-Reflective) and Single Wavelength (Filter) **Coatings**, see **Page 13**.

Wedged windows are available with **one** surface angled. Please request with angle size (e.g. 1.5°, 30').

(Prices are for single windows - not pairs)



Drilled (P-E) - Holes are 29mm apart center-to-center.  
Drilled (Wilks) - Holes are 30.25mm apart center-to-center.

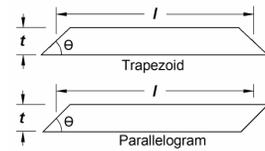
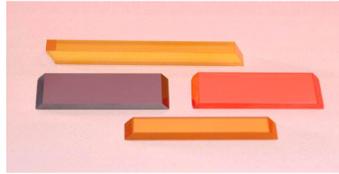
Size (mm) (Length x Width x Thickness)	25 x 12 x 2	29 x 14 x 4	29 x 14 x 4 Drilled	38 x 19 x 2	38 x 19 x 2 Drilled (P-E)	38 x 19 x 2 Drilled (Wilks)	41 x 23 x 6	41 x 23 x 6 Drilled
<b>ZnSe</b>								
Cat. No.	603L01	603L02*	603L02D*	603L03	603L03DPE	603L03DW	603L04+	603L04D+
Price / each	\$133.00	\$189.00	\$204.00	\$194.00	\$209.00	\$209.00	\$245.00	\$260.00
		*Windows are 2mm thick.					*Windows are 3mm thick.	
<b>CdTe</b>								
Cat. No.	-	-	-	603M03	603M03DPE	603M03DW	-	-
Price / each	-	-	-	695.00	Request	Request	-	-
<b>AgCl</b>								
Cat. No.	603N01	603N02	603N02D	603N03	603N03DPE	603N03DW	-	-
Price / each	160.00	Request	Request	195.00	220.00	220.00	-	-
<b>AgBr</b>								
Cat. No.	603P01	603P02	603P02D	603P03	603P03DPE	603P03DW	-	-
Price / each	265.00	Request	Request	Request	Request	Request	-	-
<b>SiO<sub>2</sub> (IR)</b>								
Cat. No.	603I01	603I02	603I02D	603I03**	603I03DPE**	603I03DW**	-	-
Price / each	Request	106.00	126.00	142.00	152.00	Request	-	-
				**Windows are 4mm thick.				
<b>GeAsSe (Amtir)</b>								
Cat. No.	-	-	-	603R03	603R03DPE	-	-	-
Price / each	-	-	-	298.00	328.00	-	-	-
<b>Al<sub>2</sub>O<sub>3</sub></b>								
Cat. No.	-	-	-	603S03	603S03DPE	603S03DW	-	-
Price / each	-	-	-	330.00	375.00	375.00	-	-
<b>Ge</b>								
Cat. No.	603T01	603T02	603T02D	603T03**	603T03DPE**	603T03DW**	603T04	603T04D
Price / each	108.00	136.00	151.00	155.00	170.00	170.00	225.00	240.00
				**Windows are 4mm thick.				
<b>Si</b>								
Cat. No.	603U01	-	-	603U03	603U03DPE	603U03DW	-	-
Price / each	95.00	-	-	176.00	196.00	196.00	-	-

# Internal Reflection Plates

Relative comparisons of sample/plate surface contact can be made by calculating the total number of reflections using the following equation:

$$N = \frac{l}{t \tan \theta}$$

N = total number of reflections  
 l = length of plate (mid-point)  
 t = thickness of plate  
 θ = face angle of plate (angle of incidence)



All lengths listed below are **mid-point** of face angle side.

## Trapezoid Plates



Material/Face Angle Size (mm) (Length x Width x Thickness)	KRS-5 / 45°		ZnSe / 45°		ZnS / 45°		Ge / 45°		Si / 45°	
	Cat.No.	Price/each	Cat.No.	Price/each	Cat.No.	Price/each	Cat.No.	Price/each	Cat.No.	Price/each
50 x 20 x 3	604J01	\$435.00	604L01	\$390.00	-	-	604T01	\$365.00	604U01	\$475.00
50 x 20 x 2	604J02	435.00	604L02	330.00	604K02	\$320.00	604T02	350.00	604U02	340.00
50 x 20 x 1	604J03	360.00	604L03	330.00	604K03	320.00	604T03	305.00	604U03	340.00
50 x 10 x 3	604J04	410.00	604L04	290.00	-	-	604T04	265.00	604U04	390.00
50 x 10 x 2	604J05	380.00	604L05	250.00	604K05	240.00	604T05	235.00	604U05	255.00

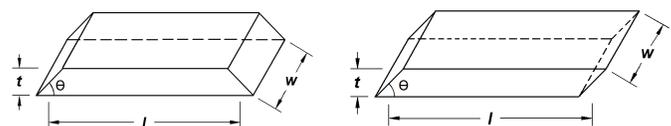
## Parallelogram Plates



Material/Face Angle Size (mm) (Length x Width x Thickness)	KRS-5 / 45°		ZnSe / 45°		ZnS / 45°		Ge / 45°		Si / 45°	
	Cat.No.	Price/each	Cat.No.	Price/each	Cat.No.	Price/each	Cat.No.	Price/each	Cat.No.	Price/each
50 x 20 x 3	605J01	\$575.00	605L01	\$390.00	-	-	605T01	\$365.00	605U01	\$450.00
50 x 20 x 2	605J02	520.00	605L02	335.00	605K02	Request	605T02	350.00	605U02	325.00
50 x 10 x 3	605J04	535.00	605L04	295.00	605K04	Request	605T04	265.00	605U04	355.00
50 x 10 x 2	605J05	385.00	605L05	260.00	-	-	605T05	235.00	605U05	240.00
25 x 20 x 3	605J06	275.00	605L06	230.00	-	-	605T06	195.00	605U06	225.00
25 x 20 x 2	605J07	Request	605L07	215.00	-	-	605T07	195.00	605U07	215.00
25 x 10 x 3	605J08	235.00	605L08	190.00	-	-	605T08	185.00	605U08	245.00
25 x 10 x 2	605J09	Request	605L09	155.00	-	-	605T09	165.00	605U09	155.00
10 x 5 x 1	605J10	Request	605L10	205.00	-	-	605T10	Request	605U10	Request
10 x 5 x 0.5	605J11	270.00	605L11	205.00	605K11	Request	605T11	Request	605U11	145.00

For plate sizes, materials (e.g. Amtir) and face angles (e.g. 30° and 60°) not listed above, please request with specifications below.

Material Configuration - Trapezoid or Parallelogram  
 Face Angle - θ Length - l  
 Width - w (Midpoint Length or Long Side Length for Trapezoid;  
 Thickness - t Midpoint Length or Tip-to-Tip Length for Parallelogram)



For Broad Band and Narrow Band (Anti-Reflective) Coatings, see Page 13.

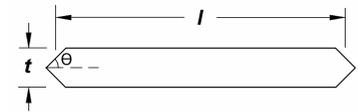
# Internal Reflection Elements

## Internal Reflection Rods

Fits SpectraTech Circle Cells.

For total number of reflections calculations, see **Page 10**.

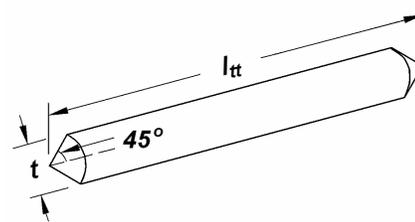
$l_{tt}$  = length of rod (Tip-to-Tip)  
 $l$  = length of rod (Mid-Point of face angle side)  
 $\theta$  = face angle of rod (angle of incidence)  
 $t$  = thickness (diameter)



Material/Face Angle Size (Length [Tip-to-Tip] x Diameter)	ZnSe / 45°	Ge / 45°	Si / 45°	Amtir / 45°
3.25" x 0.25" (Mid-Point Length = 3.125")	Cat. No. - Price/each 606L01 \$835.00	Cat. No. - Price/each 606T01 \$740.00	Cat. No. - Price/each 606U01 \$815.00	Cat. No. - Price/each 606R01 \$695.00
1.5" x 0.125" (Mid-Point Length = 1.44")	606L02 750.00	- -	- -	- -

For rod sizes and materials (e.g. KRS-5 and ZnS) not listed above, please request with specifications below.

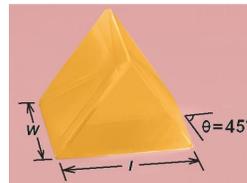
Material  
 Length -  $l_{tt}$  (Tip-to-Tip)  
 Thickness -  $t$  (diameter)



For **Broad Band** and **Narrow Band** (Anti-Reflective) **Coatings**, see **Page 13**.

## Prisms

Material Size (mm) (Length x Width)	ZnSe	Ge
25 x 20	Cat. No. - Price/each 607L01P \$860.00	Cat. No. - Price/each 607T01P \$875.00
25 x 18	607L02P 1,060.00	607T02P 1,080.00



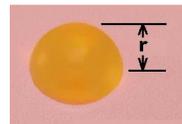
For prism sizes and materials (e.g. Si and ZnS) not listed here, please request with specifications (Length and Width).

$l$  = length       $w$  = width  
 $\theta$  = face angle of prism

For **Broad Band** and **Narrow Band** (Anti-Reflective) **Coatings**, see **Page 13**.

## Hemispheres

Material Size (mm) (Radius)	ZnSe	Ge
12.7	Cat. No. - Price/each 607L01HS \$965.00	Cat. No. - Price/each 607T01HS \$925.00
12.5	607L02HS 1,200.00	607T02HS 1,150.00



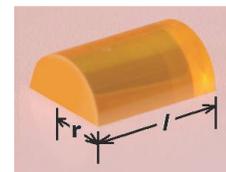
For hemisphere sizes and materials (e.g. Si and ZnS) not listed here, please request with specification (Radius).

$r$  = radius

For **Broad Band** and **Narrow Band** (Anti-Reflective) **Coatings**, see **Page 13**.

## Hemicylinders

Material Size (mm) (Radius x Length)	KRS-5	ZnSe	Ge
12.5 x 25	Cat. No. - Price/each 607J01HC Request	Cat. No. - Price/each 607L01HC Request	Cat. No. - Price/each 607T01HC Request
7.5 x 20	607J02HC Request	607L02HC Request	607T02HC Request



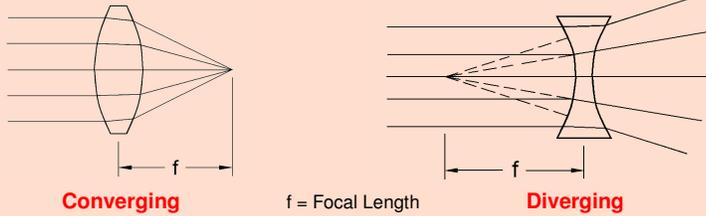
$r$  = radius       $l$  = length

For hemicylinder sizes and materials (e.g. Si and ZnS) not listed here, please request with specifications (Radius and Length).

For **Broad Band** and **Narrow Band** (Anti-Reflective) **Coatings**, see **Page 13**.

# Lenses

The following lenses are divided into two categories:



Six lens configurations are available. Common lenses are listed in the table below. For lenses not listed here, please request with specifications at the bottom of this page.

## Converging Lens Types

## Diverging Lens Types



Cat. No. (Coated) in table listing below is "Broad Band" Coating. See **Page 13** for Broad Band Information.

Cat. No. (Uncoated)	Cat. No. (Coated)	Lens Type	Material	Diameter (d)	Focal Length (f)	Price/each (Uncoated)	Price/each (Coated)
608D10PCX	-	Plano-Convex	CaF <sub>2</sub>	25mm	50mm	\$330.00	-
608D11PCX	-	Plano-Convex	CaF <sub>2</sub>	25mm	75mm	330.00	-
608D01PCX	-	Plano-Convex	CaF <sub>2</sub>	25mm	100mm	330.00	-
608D02PCX	-	Plano-Convex	CaF <sub>2</sub>	12.7mm	50mm	385.00	-
608D03BCX	-	Bi-Convex	CaF <sub>2</sub>	25mm	25mm	330.00	-
608D04BCX	-	Bi-Convex	CaF <sub>2</sub>	12.7mm	12.7mm	295.00	-
608D10PCV	-	Plano-Concave	CaF <sub>2</sub>	25mm	50mm	330.00	-
608D01PCV	-	Plano-Concave	CaF <sub>2</sub>	25mm	100mm	330.00	-
608E10PCX	-	Plano-Convex	BaF <sub>2</sub>	25mm	50mm	695.00	-
608E01PCX	-	Plano-Convex	BaF <sub>2</sub>	25mm	100mm	490.00	-
608L03PCX	608L03PCX-ARB	Plano-Convex	ZnSe	25mm	25mm	520.00	\$565.00
608L10PCX	608L10PCX-ARB	Plano-Convex	ZnSe	25mm	50mm	415.00	765.00
608L11PCX	608L11PCX-ARB	Plano-Convex	ZnSe	25mm	75mm	415.00	765.00
608L01PCX	608L01PCX-ARB	Plano-Convex	ZnSe	25mm	100mm	520.00	565.00
608L04PCX	608L04PCX-ARB	Plano-Convex	ZnSe	12.7mm	12.7mm	470.00	525.00
608L02PCX	608L02PCX-ARB	Plano-Convex	ZnSe	12.7mm	50mm	365.00	525.00
608U10PCX	608U10PCX-ARB	Plano-Convex	Si	25mm	50mm	395.00	530.00
608U01PCX	608U01PCX-ARB	Plano-Convex	Si	25mm	100mm	395.00	530.00
608T03PCX	608T03PCX-ARB	Plano-Convex	Ge	25mm	25mm	590.00	690.00
608T01PCX	608T01PCX-ARB	Plano-Convex	Ge	25mm	100mm	540.00	640.00
608T05PCX	608T05PCX-ARB	Plano-Convex	Ge	20mm	10mm	395.00	490.00
608T04PCX	608T04PCX-ARB	Plano-Convex	Ge	12.7mm	12.7mm	515.00	625.00
608T02PCX	608T02PCX-ARB	Plano-Convex	Ge	12.7mm	50mm	515.00	625.00
608T06PCX	608T06PCX-ARB	Plano-Convex	Ge	6.35mm	6.35mm	330.00	440.00
608T07PCX	608T07PCX-ARB	Plano-Convex	Ge	6.35mm	3.18mm	330.00	440.00
608T03MCX	608T03MCX-ARB	Meniscus-Convex	Ge	25mm	25mm	695.00	815.00
608T01MCX	608T01MCX-ARB	Meniscus-Convex	Ge	25mm	100mm	635.00	760.00
608T04MCX	608T04MCX-ARB	Meniscus-Convex	Ge	12.7mm	12.7mm	605.00	730.00
608T02MCX	608T02MCX-ARB	Meniscus-Convex	Ge	12.7mm	50mm	635.00	760.00

For lenses not listed above, please request with specifications below.

Material  
 Lens Type (Bi-Convex, Plano-Concave, etc.) - see above  
 Diameter - d  
 Focal Length - f  
 Thickness (if specific thickness is required)

### Coatings

For Broad Band, Narrow Band (Anti-Reflective) and Single Wavelength (Filter) **Coatings**, see **Page 13**.

**Transmission and properties of Infrared Optical Materials can be found on Page 2.**

# Optical Coatings

To enhance transmission levels of high refractive index (reflective) materials and single wavelength (filter) materials, special coatings can be applied and chemically-bonded to optic material surfaces.

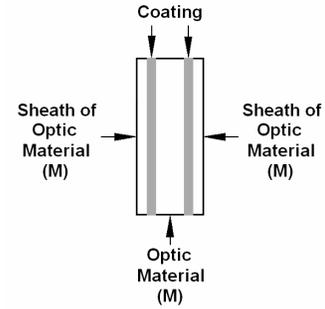
For **Broad Band** and **Narrow Band** coated optics, an outer thin sheath of the optic material is further chemically-bonded over the coating in order to protect the coating from sample/solvent contact.

For **Single Wavelength (Filter)** coated optics, an outer sheath of the optic material is **not** applied as the optic is positioned away from the sample/solvent environment.

Broad Band and Narrow Band Coatings are applicable to Transmission Windows (**Pages 4-9**); Internal Reflection Plates and Rods (**Pages 10-11**); Prisms, Hemispheres, Hemicylinders (**Page 11**); Lenses (**Page 12**) for optical materials listed below.

## Materials for Broad Band and Narrow Band Coatings

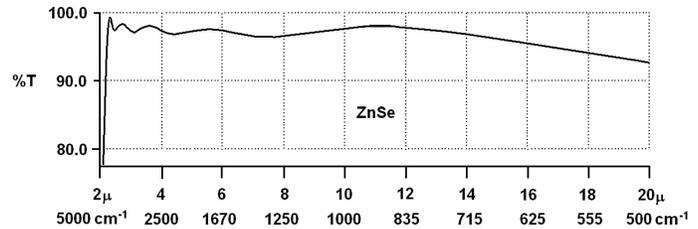
Material	Approx. %T (Uncoated)	Approx. %T (Uncoated)
ZnSe	70	95
ZnS	70	95
Ge	40	95
Si	50	95
CdTe	70	95
Amir	70	95



## Broad Band Coatings

Coatings are effective in the range of 2-14 $\mu$  (5000-715  $\text{cm}^{-1}$ ) or the limit of the optic material.

Cat. No. Add **"-ARB"** to Cat. No. of Optic (e.g. 602L08-ARB is ZnSe Disc - 25mm x 2mm with Anti-Reflective Broad Band Coating).  
Please request price.

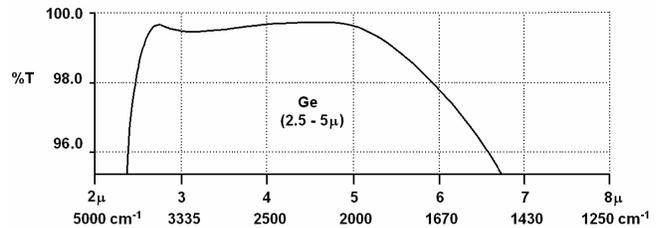


## Narrow Band Coatings

Coatings are effective in the desired range required by the user or the limit of the optic material.

Narrow Band Coatings are available for NaCl, KCl, KBr,  $\text{CaF}_2$ ,  $\text{BaF}_2$ , CsI,  $\text{SiO}_2$ , and  $\text{Al}_2\text{O}_3$  in addition to the materials listed in the above table.

Cat. No. Add **"-ARB/Wavelength or Wavenumber Range"** to Cat. No. of Optic (e.g. 602T03-ARN/10-16 $\mu$  or 602T03-ARN/1000-625/cm is Ge Disc - 13mm x 2mm with Anti-Reflective Narrow Band Coating for range of 10-16 $\mu$  or 1000-625 $\text{cm}^{-1}$ ).  
Please request price.



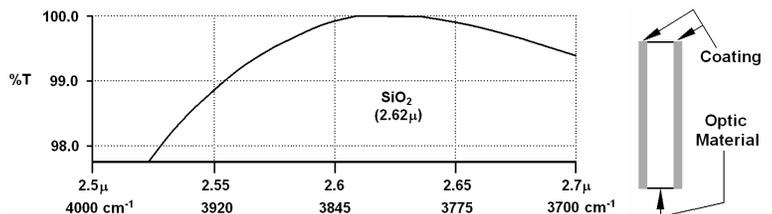
## Single Wavelength (Filter) Coatings

Coatings are effective at the desired wavelength (or wavenumber) required by the user.

The wavelength (or wavenumber) determines the optic material used.

Single Wavelength (Filter) Coatings are applicable to Transmission Windows (**Pages 4-9**) and Lenses (**Page 12**).

Cat. No. 609-###X##-SW/Wavelength or Wavenumber where ###X## is Cat. No. of Optic and "X" is material chosen for specific wavelength (or wavenumber) (e.g. 609-602X08-SW/23 $\mu$  or 609-602X08-SW/435/cm is coated single wavelength (filter) 25mm x 2mm polished disc for 23 $\mu$  or 435  $\text{cm}^{-1}$  and 609-608X03PCX-SW/13 $\mu$  or 609-608X03PCX-SW/770/cm is coated single wavelength (filter) 25mm diameter x 25mm focal length plano-convex lens for 13 $\mu$  or 770  $\text{cm}^{-1}$ ).  
Please request price.



## (and Mull) Cells and Reconditioning Transmission Liquid Cells and Horizontal ATR (HATR) Trough/Flat Crystal Plate Mounts

### Spacers

Spacers are inserted between the transmission windows to form the pathlength of the cell.



### Teflon Spacers

Pathlength (mm) (Thickness)	0.015	0.025	0.050	0.10	0.20	0.50	1.0
<b>Window Size (mm)</b> Diameter or Length x Width	<b>Cat. Nos.</b>		<b>Price: \$42.00 / Pk/12</b>				
13	620T11	620T12	620T13	620T14	620T15	620T16	620T17
19	620T21	620T22	620T23	620T24	620T25	620T26	620T27
20	620T31	620T32	620T33	620T34	620T35	620T36	620T37
25	620T41	620T42	620T43	620T44	620T45	620T46	620T47
32	620T51	620T52	620T53	620T54	620T55	620T56	620T57
29 x 14	621T11	621T12	621T13	621T14	621T15	621T16	621T17
38 x 19	621T21	621T22	621T23	621T24	621T25	621T26	621T27
41 x 23	621T31	621T32	621T33	621T34	621T35	621T36	621T37

### Lead Spacers

Pathlength (mm) (Thickness)	0.025	0.050	0.10	0.20	0.50
<b>Window Size (mm)</b> Diameter or Length x Width	<b>Cat. Nos.</b>		<b>Price: \$42.00 / Pk/12</b>		
25	620L42	620L43	620L44	620L45	620L46
32	620L52	620L53	620L54	620L55	620L56
38 x 19	621L22	621L23	621L24	621L25	621L26

### Assorted Teflon Spacers

(2 ea of 0.015, 0.025, 0.050, 0.10, 0.20, 0.50 mm)

<b>Window Size (mm)</b> Diameter or Length x Width	<b>Cat. No.</b>
13	620TA1
19	620TA2
20	620TA3
25	620TA4
32	620TA5
29 x 14	621TA1
38 x 19	621TA2
41 x 23	621TA3

**Price: \$42.00 / Pk/12**

### Copper Spacers

Pathlength (mm) (Thickness)	0.015	0.025	0.050
<b>Window Size (mm)</b> Diameter or Length x Width	<b>Cat. Nos.</b>		<b>Price: \$42.00 / Pk/12</b>
25	620C41	620C42	620C43
32	620C51	620C52	620C53
38 x 19	621C21	621C22	621C23

### Gaskets and Teflon Plugs for Transmission Liquid (and Mull) Cells

Gaskets are cushions inserted between transmission windows and the outer cell mount plates.



Cat. No.	Description	Window Size (mm) (Diameter)	Price	Cat. No.	Description	Window Size (mm) Length x Width	Price
625-01	Teflon Plugs	-	\$17.00/Pk/4	625-06	Front Gasket-Teflon	29 x 14	\$19.00/Pk/2
625-02	Front/Rear Gasket-Teflon	25	10.00/Pk/2	625-07	Rear Gasket-Neoprene	29 x 14	17.00/Pk/2
625-03	Front/Rear Gasket-Teflon (Oblong)	32	13.00/Pk/2	625-08	Front Gasket-Teflon	38 x 19	19.00/Pk/2
625-04	Front/Rear Gasket-Teflon (Circle)	32	13.00/Pk/2	625-09	Rear Gasket-Neoprene	38 x 19	17.00/Pk/2
625-05	Front Gasket-Teflon (O-Ring)	32	13.00/Pk/2	625-10	Front Gasket-Teflon	41 x 23	19.00/Pk/2
				625-11	Rear Gasket-Neoprene	41 x 23	17.00/Pk/2

## Interchangeable Sealed Cells

- An interchangeable sealed cell consists of a drilled and an undrilled window amalgamated (sealed) together with a metal spacer. Cells with 32mm x 3mm windows have a luer injection plate further amalgamated on to the drilled front window.
- for **Calibration** of exact pathlength, add "-C" to Cat. No. and add \$12.00 to the cell price below.
- For **Matching** of calibrated pathlengths to within +/- 3% of each other, add "-M" to Cat. No. and add \$22.00 (or \$44.00 per pair) to the cell price(s) below.

**Pathlengths (mm): 0.015, 0.025, 0.050, 0.10, 0.20, 0.50, 1.0.**

### Fits Perkin-Elmer, ICL, Buck, New Era

Window Size: 38mm x 19mm x 4mm  
Drilled Holes are 29mm apart center-to-center

Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	SiO <sub>2</sub>	ZnS*	ZnSe*
Cat. No.	626A01PE	626B01PE	626C01PE	626D01PE	626E01PE	626I01PE	626K01PE	626L01PE
Price/ea	\$102.00	\$108.00	\$122.00	\$225.00	\$295.00	\$315.00	\$420.00	\$445.00

*Please indicate pathlength*



### Fits Wilks, Wilmad

Window Size: 38mm x 19mm x 4mm  
Drilled Holes are 30.25mm apart center-to-center

Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	SiO <sub>2</sub>	ZnS*	ZnSe*
Cat. No.	626A01W	626B01W	626C01W	626D01W	626E01W	626I01W	626K01W	626L01W
Price/ea	\$102.00	\$108.00	\$122.00	\$225.00	\$295.00	\$315.00	\$420.00	\$445.00

*Please indicate pathlength*



### Fits Beckman, Specac

Window Size: 41mm x 23mm x 6mm  
Drilled Holes are 31mm apart center-to-center

Material	NaCl	KBr
Cat. No.	626A02	626C02
Price/ea	\$108.00	\$152.00

*Please indicate pathlength*



### Fits Perkin-Elmer, SpectraTech, ICL, New Era, Buck, Wilmad

Window Size: 32mm x 3mm  
Drilled Holes are 19mm apart center-to-center

Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	SiO <sub>2</sub>	ZnS	ZnSe
Cat. No.	626A03D	626B03D	626C03D	626D03D	626E03D	626I03D	626K03D	626L03D
Price/ea	\$130.00	\$139.00	\$147.00	\$249.00	\$315.00	\$295.00	\$450.00	\$510.00

*Please indicate pathlength*



### Fits Perkin-Elmer, SpectraTech, ICL, New Era, Buck, Wilmad

Window Size: 32mm x 3mm  
Drilled Holes are 19mm apart center-to-center

Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	SiO <sub>2</sub>	ZnS	ZnSe
Cat. No.	626A03F	626B03F	626C03F	626D03F	626E03F	626I03F	626K03F	626L03F
Price/ea	\$130.00	\$139.00	\$147.00	\$249.00	\$315.00	\$295.00	\$450.00	\$510.00

*Please indicate pathlength*



## Permanent Sealed Cell Reconditioning

- We recondition the cell mounts shown below that are **already in your possession**. Photos below are for identification.
- Please return cell mount(s) to New Era for refurbishing. Prices below are for full replacement of windows; if original windows can be re-worked, the price will be less.

**Pathlengths (mm): 0.015, 0.025, 0.050, 0.10, 0.20, 0.50, 1.0.**



### Above Cell Mounts for Perkin-Elmer, Nicolet/SpectraTech, ICL, New Era, Buck, Wilmad

Window Size: 38mm x 19mm x 4mm

Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	SiO <sub>2</sub>	KRS-5	ZnS*	ZnSe*
Cat. No.	627A01	627B01	627C01	627D01	627E01	627I01	627J01	627K01	627L01
Price/ea	\$94.00	\$100.00	\$107.00	\$215.00	\$305.00	\$315.00	Request	\$420.00	\$445.00

*Please indicate pathlength*

- A permanent sealed cell consists of a drilled and an undrilled window amalgamated (sealed) together with a metal spacer and then further amalgamated to the front metal mount plate.
- For **Calibration** of exact pathlength, add "-C" to Cat. No. and add \$12.00 to the cell price below.
- For **Matching** of calibrated pathlengths to within +/- 3% of each other, add "-M" to Cat. No. and add \$22.00 (or \$44.00 per pair) to the cell price(s) below.



### Above Cell Mount for Beckman, Specac

Window Size: 41mm x 23mm x 6mm

Material	NaCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>
Cat. No.	627A02	627C02	627D02	607E02
Price/ea	\$108.00	\$152.00	\$265.00	\$460.00

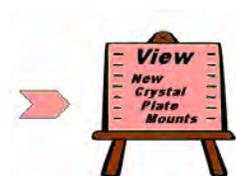
*Please indicate pathlength*

# Horizontal ATR (HATR) Reconditioning of Trough/Flat Crystal Plate Mounts

We can recondition HATR trough, flat and special purpose crystal plate mounts shown below that are **already in your possession**. Photos below are for identification..

Reconditioning a crystal plate mount is significantly less in cost than purchasing a complete new plate mount. Please return plate mount(s) to New Era for refurbishing. Prices below are for full replacement of the ATR crystal plate; if original crystal plate can be re-worked, the price will be less.

**New crystal plate mounts,**  
(complete mount with crystal plate)  
for SpectraTech Baseline, Gemini



## SpectraTech



### Trough Plate

**Baseline, Gemini**  
Crystal Plate Size: 55 x 5 x 2.5mm

Cat. No.	SpectraTech No.	Material/Face Angle	Price/each
628-11-L-1	0001-603	ZnSe / 45°	\$595.00
628-11-T-1	0001-613	Ge / 45°	595.00



### Flat Plate

**Baseline, Gemini**  
Crystal Plate Size: 55 x 5 x 2.5mm

Cat. No.	SpectraTech No.	Material/Face Angle	Price/each
628-12-L-1	0001-703	ZnSe / 45°	\$595.00
628-12-T-1	0001-713	Ge / 45°	595.00

Note: Other materials and/or face angles are available, please request.



(Arm Handles not shown)

### Trough Plate Contact Sampler

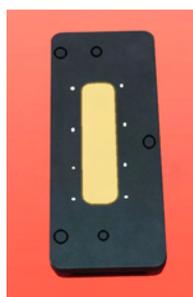
Crystal Plate Size: 80 x 10 x 3mm  
SpectraTech No. 0050-XXX



(Arm Handles not shown)

### Trough Plate ARK

Crystal Plate Size: 80 x 10 x 3mm  
SpectraTech No. 0055-XXX



### Flat Plate Contact Sampler

Crystal Plate Size: 80 x 10 x 3mm  
SpectraTech No. 0050-XXX



### Flat Plate ARK

Crystal Plate Size: 80 x 10 x 3mm  
SpectraTech No. 0055-XXX

Cat. No.	SpectraTech No.	Material/Face Angle	Price/each
628-13-L-1	0050-603	ZnSe / 45°	\$775.00
628-13-L-1	0055-603	ZnSe / 45°	775.00
628-13-T-1	0050-613	Ge / 45°	775.00
628-13-T-1	0055-613	Ge / 45°	775.00

Cat. No.	SpectraTech No.	Material/Face Angle	Price/each
628-14-L-1	0050-703	ZnSe / 45°	\$775.00
628-14-L-1	0055-703	ZnSe / 45°	775.00
628-14-T-1	0050-713	Ge / 45°	775.00
628-14-T-1	0055-713	Ge / 45°	775.00

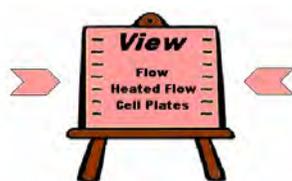
Note: Other materials and/or face angles are available, please request.



### Thermal Trough Plate (100°C)

**Contact Sampler**

Crystal Plate Size: 80 x 10 x 3mm  
SpectraTech No. 0051-XXX



### Reconditioning of Heated/Flow Plates



### Thermal Trough Plate (100°C)

**ARK**

Crystal Plate Size: 80 x 10 x 3mm  
SpectraTech No. 0056-XXX

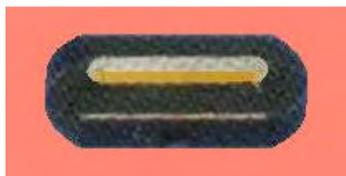
Cat. No.	SpectraTech No.	Material/Face Angle	Price/each
628-17-L-1	0051-653	ZnSe / 45°	\$775.00

Cat. No.	SpectraTech No.	Material/Face Angle	Price/each
628-17-L-1	0056-653	ZnSe / 45°	\$775.00

# Horizontal ATR (HATR) Reconditioning of Trough/Flat Crystal Plate Mounts

See top of Page 16.

## SpectraTech



**Trough Plate**

**Foundation Multi-Bounce**  
Crystal Plate Size: 55 x 5 x 2.5mm  
SpectraTech No. 0072-6XX



**Flat Plate**

**Foundation Multi-Bounce**  
Crystal Plate Size: 55 x 5 x 2.5mm  
SpectraTech No. 0072-7XX

Cat. No.	SpectraTech No.	Material/Face Angle	Price/each
628-07-L-1	0072-603	ZnSe / 45°	\$595.00
628-07-T-1	0072-613	Ge / 45°	595.00

Cat. No.	SpectraTech No.	Material/Face Angle	Price/each
628-08-L-1	0072-703	ZnSe / 45°	\$595.00
628-08-T-1	0072-713	Ge / 45°	595.00

Note: Other materials and/or face angles are available, please request.



**Trough Plate**

**Smart Multi-Bounce**  
Crystal Plate Size: 55 x 5 x 2.5mm  
SpectraTech No. 0028-6XX



**Flat Plate**

**Smart Multi-Bounce**  
Crystal Plate Size: 55 x 5 x 2.5mm  
SpectraTech No. 0028-7XX



**Trough Plate**

**Smart ARK/Thermal ARK**  
Crystal Plate Size: 80 x 10 x 3mm  
SpectraTech No. 0031-6XX



**Flat Plate**

**Smart ARK/Thermal ARK**  
Crystal Plate Size: 80 x 10 x 3mm  
SpectraTech No. 0031-7XX

Cat. No.	SpectraTech No.	Plate	Material/Face Angle	Price/each
628-09-L-1	0028-603	Trough	ZnSe / 45°	\$595.00
628-09-T-1	0028-613	Trough	Ge / 45°	595.00
628-10-L-1	0028-703	Flat	ZnSe / 45°	595.00
628-10-T-1	0028-713	Flat	Ge / 45°	595.00

Cat. No.	SpectraTech No.	Plate	Material/Face Angle	Price/each
628-05-L-1	0031-603	Trough	ZnSe / 45°	\$775.00
628-05-T-1	0031-613	Trough	Ge / 45°	775.00
628-06-L-1	0031-703	Flat	ZnSe / 45°	775.00
628-06-T-1	0031-713	Flat	Ge / 45°	775.00

Note: Other materials and/or face angles are available, please request.

## Perkin-Elmer



**Trough Plate**

**Spectrum 1000, 2000, BX, RX, GX, Paragon 1000**  
Crystal Plate Size: 50 x 20 x 2mm



**Flat Plate**

**Spectrum 1000, 2000, BX, RX, GX, Paragon 1000**  
Crystal Plate Size: 50 x 20 x 2mm

Cat. No.	P-E No.	Plate	Material/Face Angle	Price/each
628-21-L-1	L1360266	Trough	ZnSe / 45°	\$515.00
628-21-T-1	L1360268	Trough	Ge / 45°	525.00
628-22-L-1	L1360267	Flat	ZnSe / 45°	515.00
628-22-T-1	L1360269	Flat	Ge / 45°	525.00

## Harrick Scientific



**Trough Plate**

**Horizon, Mini-Horizon**  
Crystal Plate Size: 50 x 10 x 2mm



**Flat Plate**

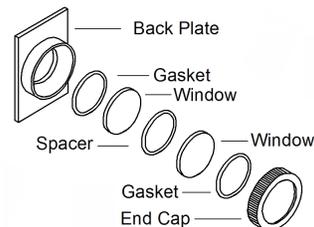
**Horizon, Mini-Horizon**  
Crystal Plate Size: 50 x 10 x 2mm

Cat. No.	Harrick No.	Plate	Material/Face Angle	Price/each
628-31-L-1	HOR-LSP-M(M)	Trough	ZnSe / 45°	\$405.00
628-31-T-1	HOR-LSP-J(M)	Trough	Ge / 45°	395.00
628-32-L-1	HOR-SSP-M(M)	Flat	ZnSe / 45°	405.00
628-32-T-1	HOR-SSP-J(M)	Flat	Ge / 45°	395.00

Note: Other materials are available, please request.

### Demountable Liquid Cells

With the cell assembled, samples are placed between the crystal windows. The cell is reassembled for spectral analysis. A spacer may be necessary to control the pathlength of the cell. This cell is most applicable for higher viscosity (boiling) liquids and mull type samples used in solid sampling.



### Screw-Type Demountable Cell Mount

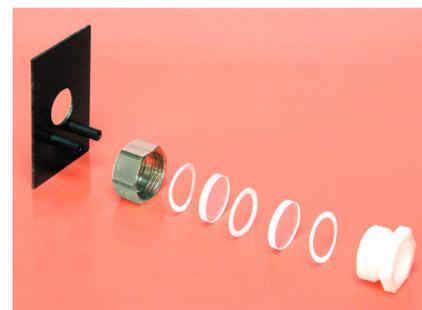
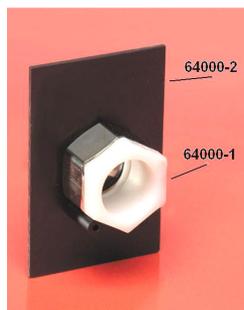
The threaded two-piece cell body provides a quick and easy method of preparing a liquid sample for infrared analysis. Many liquid samples do not require a spacer for pathlength control; if necessary, **spacers** can be **ordered separately**. Complete assembly includes two-piece threaded body, slide holder and two Teflon gaskets.

**Order Separately:** Two Polished Discs / Teflon Spacers (if required).

Cell accepts 25mm dia. x 4mm thick disc windows.  
25mm x 2mm windows can also be used.

Clear Aperture of cell is 19mm Dia.

If the window thicknesses below are not suitable for your application, please **see** complete window listing - **Pages 4-7**.



### Replacement Gaskets

Cat. No.	Description	Price / Pk/2
625-02	Front/Rear Teflon Gaskets	\$10.00

Cat. No.	Description	Price/each
64000	Demountable Cell Mount	\$43.00
64000-1	Cell Mount-No Slide Holder	32.00
64000-2	Slide Holder	25.00

### Polished Discs

(25mm x 4mm) (Prices are for single windows - not pairs)

Material Cat. No. Price / each (1-9) (10 and over)	NaCl 602A09 \$20.00 19.00	KCl 602B09 \$27.00 26.00	KBr 602C09 \$28.00 27.00	CaF <sub>2</sub> 602D09 \$69.00 -	BaF <sub>2</sub> 602E09 \$117.00 -	CsI 602F09 \$263.00 -	KRS-5 602J09 Request -	ZnS* 602K08 \$173.00 -	ZnSe* 602L08 \$178.00 -
---	------------------------------------	-----------------------------------	-----------------------------------	--	---	--------------------------------	---------------------------------	---------------------------------	----------------------------------

\*Windows are 2mm thick.

Material Cat. No. Price / each	CdTe* 602M08 \$295.00	AgCl 602N09 Request	AgBr 602P09 Request	SiO <sub>2</sub> 602I09 \$85.00	GeAsSe(Amtir)* 602R08 \$198.00	Al <sub>2</sub> O <sub>3</sub> * 602S08 \$99.00	Ge* 602T08 \$109.00	Si* 602U08 \$128.00
--------------------------------------	-----------------------------	---------------------------	---------------------------	---------------------------------------	--------------------------------------	---	---------------------------	---------------------------

### Teflon Spacers

Size: 25mm dia.  
Price: \$42.00 / Pk/12

Pathlength (mm) Cat. No.	0.015 620T41	0.025 620T42	0.050 620T43	0.10 620T44	0.20 620T45	0.50 620T46	1.0 620T47
-----------------------------	-----------------	-----------------	-----------------	----------------	----------------	----------------	---------------

### Assorted Teflon Spacers

Size: 25mm dia.  
(2 each of 0.015, 0.025, 0.050, 0.10, 0.20, 0.50 mm)

Cat. No. 620TA4 Price: \$42.00 / Pk/12

## PressFit Demountable Cell Mount

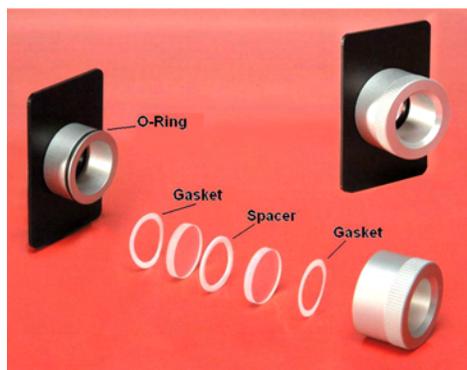
This cell mount is an alternate to the screw-type and bolt / thumb screw type cell mounts. The two-piece construction consists of an end cap barrel which slips on to an inner barrel. With the windows and sample contained in the inner barrel, the end cap barrel is simply pressed on to close and seal the cell. The compressed Viton o-ring holds the end cap in place. Many liquid samples do not require a spacer for pathlength control; if necessary, **spacers** can be **ordered separately**.

Assembly includes two-piece barrels (with slide holder) and two Teflon gaskets.

**Order separately:** Two Polished Discs / Teflon Spacers (if required).

Cell accepts 25mm dia. x 4mm thick disc windows.  
25mm x 2mm windows can also be used.

If the window thicknesses below are not suitable for your application, please **see** complete window listing - **Pages 4-7**.



**Replacement Gaskets**

Cat. No.	Description	Clear Aperture	Price/each
64001	PressFit Cell Mount	22mm Dia.	\$83.00

Cat. No.	Description	Price / Pk/2
625-02	Front/Rear Teflon Gaskets	\$10.00
64001-1	Viton O-Rings	10.00

### Polished Discs

(25mm x 4mm)

(Prices are for single windows - not pairs)

Material Cat. No. Price / each (1-9) (10 and over)	NaCl 602A09 \$20.00 19.00	KCl 602B09 \$27.00 26.00	KBr 602C09 \$28.00 27.00	CaF <sub>2</sub> 602D09 \$69.00 -	BaF <sub>2</sub> 602E09 \$117.00 -	CsI 602F09 \$263.00 -	KRS-5 602J09 Request -	ZnS* 602K08 \$173.00 -	ZnSe* 602L08 \$178.00 -
---	------------------------------------	-----------------------------------	-----------------------------------	--	---	--------------------------------	---------------------------------	---------------------------------	----------------------------------

\*Windows are 2mm thick.

Material Cat. No. Price / each (1-9)	CdTe* 602M08 \$295.00	AgCl 602N09 Request	AgBr 602P09 Request	SiO <sub>2</sub> 602I09 \$85.00	GeAsSe(Amtir)* 602R08 \$198.00	Al <sub>2</sub> O <sub>3</sub> * 602S08 \$99.00	Ge* 602T08 \$109.00	Si* 602U08 \$128.00
--	-----------------------------	---------------------------	---------------------------	---------------------------------------	--------------------------------------	---	---------------------------	---------------------------

### Teflon Spacers

Size: 25mm dia.

Price: \$42.00 / Pk/12

Pathlength (mm) Cat. No.	0.015 620T41	0.025 620T42	0.050 620T43	0.10 620T44	0.20 620T45	0.50 620T46	1.0 620T47
-----------------------------	-----------------	-----------------	-----------------	----------------	----------------	----------------	---------------

### Assorted Teflon Spacers

Size: 25mm dia.

(2 each of 0.015, 0.025, 0.050, 0.10, 0.20, 0.50 mm)

Cat. No. 620TA4 Price: \$42.00 / Pk/12

## Spring-Loaded Universal Sample Holder

The Universal Sample Holder contains a spring-loaded lever mechanism that is simply depressed and then released after insertion of the sample. Pressure from the spring holds the sample firmly in place. Solvent resistant treated anodized aluminum is used in the construction of the mount. A silicone rubber o-ring is included behind the stainless steel ring head.

**Order separately:** Polished Disc(s) / KBr disc holders/barrels  
Teflon Spacers (if pathlength control is required).

Sample Holder accepts 25mm dia. disc windows.



**Replacement O-Ring**

Cat. No.	Description	Clear Aperture	Price/each
64002	Universal Sample Holder	18mm Dia.	\$139.00

Cat. No.	Description	Price/each
64002-1	Silicone Rubber O-Ring	\$5.00

#### Applications

- Two windows are used for liquid and mull samples.
- One window is used for casting a film.
- Films are centered and held firmly.
- Mini KBr die barrels can be positioned in holder.
- KBr disc holders (25mm dia.) can be placed in holder.

### Polished Discs

For 25mm dia. x 2,4,5mm thick discs, see **Pages 4-7**.

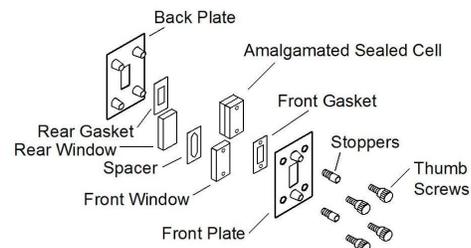
### Teflon Spacers

For 25mm dia. Teflon spacers, see **Page 14**.

## Semi-Permanent Liquid Cells

This type of cell allows for the sample to be injected through luer ports located on the front metal mount plate. The cell can be used in the completely demountable version where windows, spacer and gaskets can be removed for cleaning. This version of cell is used where frequent disassembly and cleaning are necessary.

The cell can also be used in a sealed version where an amalgamated sealed cell (two windows and a metal spacer) can be inserted in place of the separated windows and spacer. The amalgamated sealed cells are interchangeable allowing for material and/or pathlength changes to be made without the need for additional cell mounts. This version of cell is used for highly volatile liquids and where stable and reproducible pathlengths are needed such as for quantitative analysis.



## Semi-Permanent Rectangular Liquid Cells

Constructed of stainless steel, the cell mount can be used in both the completely demountable version or the amalgamated sealed cell version (see above). Assembly includes front gasket, rear gasket and Teflon plugs.

Filling **Syringes** are available, see **Page 22**.

**Order Separately:** One Drilled Rectangle / One Undrilled Rectangle / Teflon Spacers for completely demountable version.

One Amalgamated Sealed Cell for sealed cell version.

Cell Mount accepts 38mm x 19mm x 4mm thick rectangular windows.

Windows that are **2mm thick** will require a **space compensator**; order separately.



**Replacement Parts**

Cat. No.	Description	Price/each
64100-1	Space Compensator	\$24.00

Cat. No.	Description	Clear Aperture	Price/each
64100	Rectangular Liquid Cell Mount-Dispersive	22mm x10mm	\$70.00
64100-F	Rectangular Liquid Cell Mount-FTIR	14mm Dia.	70.00

Cat. No.	Description	Price
625-01	Teflon Plugs	\$17.00 / Pk/4
625-08	Front Gasket-Teflon	19.00 / Pk/2
625-09	Rear Gasket-Neoprene	17.00 / Pk/2

### Polished Rectangles

(38mm x 19mm x 4mm)

(Prices are for single windows - not pairs)

Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	CsI	KRS-5	ZnS*	ZnSe*
<b>Cat. No.-Undrilled</b>	603A03	603B03	603C03	603D03	603E03	603F03	603J03	603K03	603L03
<b>Price / each (1-9)</b>	\$26.00	\$34.00	\$34.00	\$78.00	\$120.00	\$305.00	Request	\$180.00	\$194.00
<b>(10 and over)</b>	25.00	33.00	32.00	-	-	-	-	-	-
<b>Cat. No.-Drilled</b>	603A03DPE	603B03DPE	603C03DPE	603D03DPE	603E03DPE	603F03DPE	603J03DPE	603K03DPE	603L03DPE
<b>Price / each (1-9)</b>	30.00	38.00	38.00	97.00	138.00	325.00	Request	195.00	209.00
<b>(10 and over)</b>	29.00	37.00	36.00	-	-	-	-	-	-

\*Windows are 2mm thick.

Material	CdTe*	AgCl*	AgBr*	SiO <sub>2</sub>	GeAsSe(Amtir)*	Al <sub>2</sub> O <sub>3</sub> *	Ge	Si*
<b>Cat. No.-Undrilled</b>	603M03	603N03	603P03	603I03	603R03	603S03	603T03	603U03
<b>Price / each</b>	\$695.00	\$195.00	Request	\$142.00	\$298.00	\$330.00	\$155.00	\$176.00
<b>Cat. No.-Drilled</b>	603M03DPE	603N03DPE	603P03DPE	603I03DPE	603R03DPE	603S03DPE	603T03DPE	603U03DPE
<b>Price / each</b>	Request	220.00	Request	152.00	328.00	375.00	170.00	196.00

### Teflon Spacers

Price: \$42.00 / Pk/12

### Assorted Teflon Spacers

(2 each of 0.015, 0.025, 0.050, 0.10, 0.20, 0.50 mm)

Pathlength (mm)	0.015	0.025	0.050	0.10	0.20	0.50	1.0	Cat. No.	Price: \$42.00 / Pk/12
Cat. No.	621T21	621T22	621T23	621T24	621T25	621T26	621T27	621TA2	

### Amalgamated Sealed Cells

The amalgamated sealed cell consists of a drilled and an undrilled window amalgamated (sealed) together with a metal spacer.

**Pathlengths (mm): 0.015, 0.025, 0.050, 0.10, 0.20, 0.50, 1.0.**

For **Calibration** of exact pathlength, add "-C" to Cat. No. and add \$12.00 to the cell price below.

For **Matching** of calibrated pathlengths to within +/- 3% of each other, add "-M" to Cat. No. and add \$22.00 (or \$44.00 per pair) to the cell price(s) below.

Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	SiO <sub>2</sub>	ZnS*	ZnSe*
<b>Cat. No.</b>	626A01PE	626B01PE	626C01PE	626D01PE	626E01PE	626I01PE	626K01PE	626L01PE
<b>Price/ea</b>	\$102.00	\$108.00	\$122.00	\$225.00	\$295.00	\$315.00	\$420.00	\$445.00

Please indicate pathlength

\*Windows 2mm thick



# Semi-Permanent Circular Liquid Cells

Constructed of aluminum and completely demountable, the cell mount has a front luer injection plate which is separate from the knurled end cap. See top of **Page 20** for an **exploded view** of the various components of this type of cell. A Teflon o-ring is located between the end cap and the luer injection plate as a cushion.

For use with 2mm thick windows, a space compensator ring is included and is located between the end cap and the luer injection plate. Assembly consists of mount with end cap and luer injection plate, front Teflon o-ring, front and rear gaskets, Teflon plugs and space compensator ring.

Filling **Syringes** are available, see **Page 22**.

**Order Separately:** One Drilled Disc / One Undrilled Disc / Teflon Spacers

For sealed amalgamated cell version, the sealed cells (bottom of this page) are ordered separately and used in place of the transmission windows, Teflon spacer and separate luer injection plate.

Cell Mount accepts 32mm x 3mm thick disc windows.

Cat. No.	Description	Clear Aperture	Price/each
64101	Circular Liquid Cell Mount-Dispersive	22mm x10mm	\$110.00
64101-F	Circular Liquid Cell Mount-FTIR	14mm Dia.	110.00



## Replacement Parts

Cat. No.	Description	Price
625-01	Teflon Plugs	\$17.00 / Pk/4
625-03	Front/Rear Teflon Gasket (Oblong)	13.00 / Pk/2
625-04	Front/Rear Teflon Gasket (Circular)	13.00 / Pk/2
625-05	Front Teflon O-Ring Gasket	13.00 / Pk/2
64101-1	Luer Injection Plate (Oblong)	44.00 / each
64101-F-1	Luer Injection Plate (Circular)	44.00 / each

## Polished Discs

(32mm x 3mm)

(Prices are for single windows - not pairs)

Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	CsI	KRS-5	ZnS
<b>Cat. No.-Undrilled</b>	602A11	602B11	602C11	602D11	602E11	602F11	602J11	602K11
<b>Price / each (1-9)</b>	\$29.00	\$31.00	\$41.00	\$86.00	\$155.00	\$350.00	Request	\$248.00
<b>(10 and over)</b>	28.00	30.00	39.00	-	-	-	-	-
<b>Cat. No.-Drilled</b>	602A11D	602B11D	602C11D	602D11D	602E11D	602F11D	602J11D	602K11D
<b>Price / each (1-9)</b>	32.00	34.00	44.00	102.00	171.00	370.00	Request	263.00
<b>(10 and over)</b>	31.00	33.00	42.00	-	-	-	-	-

Material	ZnSe	CdTe	AgCl	AgBr	SiO <sub>2</sub>	GeAsSe(Amtir)	Ge	Si
<b>Cat. No.-Undrilled</b>	602L11	602M11	602N11	602P11	602I11	602R11	602T11	602U11
<b>Price / each</b>	\$280.00	\$595.00	Request	Request	\$106.00	\$235.00	\$175.00	\$230.00
<b>Cat. No.-Drilled</b>	602L11D	602M11D	602N11D	602P11D	602I11D	602R11D	602T11D	602U11D
<b>Price / each</b>	295.00	Request	Request	Request	116.00	265.00	190.00	245.00

## Teflon Spacers

Price: \$42.00 / Pk/12

Pathlength (mm)	0.015	0.025	0.050	0.10	0.20	0.50	1.0
Cat. No.	620T51	620T52	620T53	620T54	620T55	620T56	620T57

## Assorted Teflon Spacers

(2 each of 0.015, 0.025, 0.050, 0.10, 0.20, 0.50 mm)

Cat. No. 620TA5 Price: \$42.00 / Pk/12

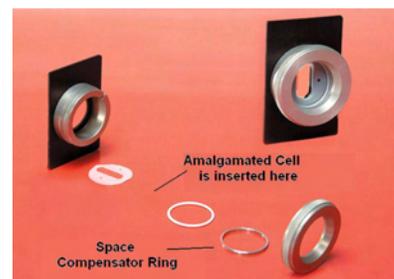
## Circular Amalgamated Sealed Liquid Cells

Cell Mount construction and assembly is the same as above, except a sealed amalgamated cell is used in place of the completely demountable components.

Assembly consists of mount with end cap, front Teflon o-ring, rear gasket, Teflon plugs and space compensator ring.

**Order Separately:** One Amalgamated Sealed Cell. Filling **Syringes** are available, see **Page 22**.

For completely demountable cell version, the transmission windows, Teflon spacer, front Teflon gasket and separate luer injection plate (top of this page) are ordered separately and used in place of the sealed cell.



## Replacement Parts

Cat. No.	Description	Clear Aperture	Price/each
64102	Circular Sealed Liquid Cell Mount-Dispersive	22mm x 10mm	\$73.00
64102-F	Circular Sealed Liquid Cell Mount-FTIR	14mm Dia.	73.00

Cat. No.	Description	Price
625-01	Teflon Plugs	\$17.00 / Pk/4
625-03	Rear Teflon Gasket (Oblong)	13.00 / Pk/2
625-04	Rear Teflon Gasket (Circular)	13.00 / Pk/2
625-05	Front Teflon O-Ring Gasket	13.00 / Pk/2

## Amalgamated Sealed Cells

The amalgamated sealed cell consists of a drilled and an undrilled window amalgamated (sealed) together with a metal spacer.

**Pathlengths (mm): 0.015, 0.025, 0.050, 0.10, 0.20, 0.50, 1.0.**

For **Calibration** of exact pathlength, add "-C" to Cat. No. and add \$12.00 to the cell price below.

For **Matching** of calibrated pathlengths to within +/- 3% of each other, add "-M" to Cat. No. and add \$22.00 (or \$44.00 per pair) to the cell price(s) below.

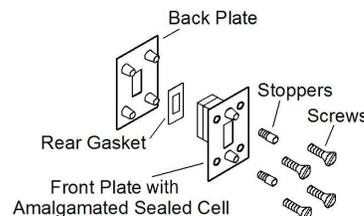
Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	SiO <sub>2</sub>	ZnS	ZnSe
<b>Cat. No.-Dispersive</b>	626A03D	626B03D	626C03D	626D03D	626E03D	626I03D	626K03D	626L03D
<b>Cat. No.-FTIR</b>	626A03F	626B03F	626C03F	626D03F	626E03F	626I03F	626K03F	626L03F
<b>Price/each</b>	\$130.00	\$139.00	\$147.00	\$249.00	\$315.00	\$295.00	\$450.00	\$510.00

Please indicate pathlength



## Permanent Sealed Liquid Cells

The Permanent Sealed Cell accepts the sample solution by syringe injection through the luer ports located on the front metal plate of the cell mount. The cell can only be used in the completely sealed version where a drilled and an undrilled window are amalgamated (sealed) together with a metal spacer and then further amalgamated to the front metal mount plate. This type of cell is ideal for highly volatile liquids and "cleaner" types of samples. Providing a stable pathlength being totally leak-proof, the cell is recommended for analyses requiring one window material and one fixed pathlength.



## Permanent Sealed Liquid Cells

Constructed of stainless steel, the cell is used only in the permanent complete sealed version.

When refurbishing of the cell becomes necessary, refer to **Page 15** for "Reconditioning" and return cell mount(s) to New Era.

Cell is furnished complete with all components and Teflon Plugs.

Rectangle window size: 38mm x 19mm x 4mm thick.

Clear Aperture for Dispersive is 22mm x 10mm.

Clear Aperture for FTIR is 14mm Dia.

Cell prices below are only dependent on window material - not pathlength.

The rectangle aperture cell is recommended for Dispersive; however, FTIR beams up to 10mm dia. at the focal point can be accommodated.



**Replacement Part**

Cat. No.	Description	Price / Pk/4
625-01	Teflon Plugs	\$17.00



**Heavy-Duty Perm Sealed Liquid Cells are available**

\*Windows used are 2mm thick.

Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	KRS-5	SiO <sub>2</sub>	ZnS*	ZnSe*
<b>Pathlength (mm)</b>	<b>Cat. Nos.</b>								
0.015-Dispersive 0.015-FTIR	64201A1 64201A1-F	64201B1 64201B1-F	64201C1 64201C1-F	64201D1 64201D1-F	64201E1 64201E1-F	64201J1 64201J1-F	64201I1 64201I1-F	64201K1 64201K1-F	64201L1 64201L1-F
0.025-Dispersive 0.025-FTIR	64201A2 64201A2-F	64201B2 64201B2-F	64201C2 64201C2-F	64201D2 64201D2-F	64201E2 64201E2-F	64201J2 64201J2-F	64201I2 64201I2-F	64201K2 64201K2-F	64201L2 64201L2-F
0.050-Dispersive 0.050-FTIR	64201A3 64201A3-F	64201B3 64201B3-F	64201C3 64201C3-F	64201D3 64201D3-F	64201E3 64201E3-F	64201J3 64201J3-F	64201I3 64201I3-F	64201K3 64201K3-F	64201L3 64201L3-F
0.10-Dispersive 0.10-FTIR	64201A4 64201A4-F	64201B4 64201B4-F	64201C4 64201C4-F	64201D4 64201D4-F	64201E4 64201E4-F	64201J4 64201J4-F	64201I4 64201I4-F	64201K4 64201K4-F	64201L4 64201L4-F
0.20-Dispersive 0.20-FTIR	64201A5 64201A5-F	64201B5 64201B5-F	64201C5 64201C5-F	64201D5 64201D5-F	64201E5 64201E5-F	64201J5 64201J5-F	64201I5 64201I5-F	64201K5 64201K5-F	64201L5 64201L5-F
0.50-Dispersive 0.50-FTIR	64201A6 64201A6-F	64201B6 64201B6-F	64201C6 64201C6-F	64201D6 64201D6-F	64201E6 64201E6-F	64201J6 64201J6-F	64201I6 64201I6-F	64201K6 64201K6-F	64201L6 64201L6-F
1.0-Dispersive 1.0-FTIR	64201A7 64201A7-F	64201B7 64201B7-F	64201C7 64201C7-F	64201D7 64201D7-F	64201E7 64201E7-F	64201J7 64201J7-F	64201I7 64201I7-F	64201K7 64201K7-F	64201L7 64201L7-F
<b>Price / each</b>	\$166.00	\$177.00	\$187.00	\$295.00	\$398.00	Request	\$395.00	\$515.00	\$540.00

Note: Other materials (except AgCl and AgBr) (See **Page 2**) and/or pathlengths can be assembled, please request.

For **Calibration** of exact pathlength, add "-C" to Cat. No. and add \$12.00 to the cell price above.

For **Matching** of calibrated pathlengths to within +/- 3% of each other, add "-M" to Cat. No. and add \$22.00 (or \$44.00 per pair) to the cell price(s) above.

## Syringes For Filling Cells

Cat. No.	Description	Subdivision	Price/each
64501-1	Syringe - 1ml - Luer Tip	0.01 ml	\$19.00
64501-2	Syringe - 2ml - Luer Lok	0.1 ml	16.00



## Long Path Liquid Cells

Used for analysis of dilute solutions and weak absorbing samples. Also, used for hydrocarbon analysis of oil in water according to EPA methods 413.2 and 418.1. Constructed from stainless steel, the cell mount contains a Pyrex glass body and sealing gaskets to form a leak-proof cell.

Cell assembly includes stainless steel mount, Pyrex glass body, two outer silicone rubber gaskets and two inner Teflon gaskets.

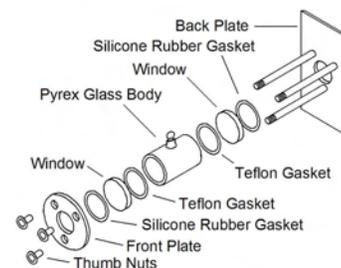
**Order separately:** Two Polished Disc Windows.

If inner Teflon gaskets are attacked by sample solution, Viton gaskets are available and must be **ordered separately**.

Cat. No.	Description	Price / Pk/2
64502-3	Viton Gaskets	\$21.00

Cell accepts 22mm dia. x 4mm thick disc windows.  
22mm x 2mm windows can also be used.

Clear Aperture of cells is 16mm Dia.



Cat. No.	Description	Pathlength	Price/each
64502-5	Long Path Liquid Cell Mount	5mm	\$165.00
66502-10	Long Path Liquid Cell Mount	10mm	160.00

### Replacement Gaskets

Cat. No.	Description	Price / Pk/2
64502-1	Teflon Gaskets	\$19.00
64502-2	Silicone Rubber Gaskets	17.00

### Polished Discs

(22mm x 4mm)

(Prices are for single windows - not pairs)

Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	SiO <sub>2</sub>	AgCl	ZnS*	ZnSe*
<b>Cat. No.</b>	602A07	602B07	602C07	602D07	602E07	602I07	602N07	602K07	602L07
<b>Price / each</b>	\$23.00	\$34.00	\$31.00	\$66.00	\$102.00	\$94.00	Request	\$158.00	\$163.00

Note: Other materials are available. See **Pages 4-5**.

\* Windows are 2mm thick.

## Quartz Sample Cells

Aside from general applications, these quartz cells are most used for hydrocarbon analysis of oil in water according to EPA methods 413.2, 418.1 and 1664. Soil and waste samples have also been analyzed using these cells.

Cells are fabricated from **Infrared Quartz** and completely heat-fused (no adhesives). For transmission and general properties, see **Page 2**.

Cells are provided as "Matched" (transmission) when two or more cells are ordered.

**Cells and Cell Holders are ordered separately.**



### Square Quartz Cell

Cat. No.	Description	Pathlength	Price/each
NE-21-I-10	IR Quartz Cell - Square	10mm	\$98.00

### Cell Holder

Clear Aperture is 20mm x 10mm.

Cat. No.	Description	Pathlength	Price/each
64503-1	Cell Holder	10mm	\$98.00



### Cylindrical Quartz Cells

Cat. No.	Description	Pathlength	Price/each
NE-34-I-50	IR Quartz Cell - Cylindrical	50mm	\$165.00
NE-34-I-100	IR Quartz Cell - Cylindrical	100mm	175.00

### Cell Holders

Clear Aperture is 16mm Dia.

Cat. No.	Description	Pathlength	Price/each
64503-2	Cell Holder	50mm	\$93.00
64503-3	Cell Holder	100mm	93.00



## Mini Liquid Cell

The Mini-Cell is a unique liquid cell that utilizes two AgCl or AgBr discs with depressions pressed into the centers of the discs. Being a soft material, the silver compound discs can be compressed together to form a seal, making the cell leak-proof and eliminating the need for spacers between the discs. The depressions form the pathlength, which can be varied, depending on how the discs face each other (see diagram below).

Transmission and properties of AgCl and AgBr are further discussed on **Page 2**.

Once assembled, the two-piece Delrin cell mount holds the disc windows in place. Because pathlengths may not be reproducible due to tightness of assembly, the cell is most applicable for qualitative experiments.

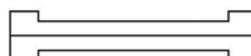
The Mini Liquid Cell Kit includes cell holder, slide holder and a Pk/6 AgCl windows with 0.025mm depression.

Cell can also be used for "mull" type samples.



Disc window diameter is 16mm and the diameter of the depression is 13mm. Clear Aperture of cell is 10mm Dia.

Cat. No.	Description	Price
64504	Mini Liquid Cell Kit	\$165.00 / each
64504-1	Cell Holder	58.00 / each
64000-2	Slide Holder	25.00 / each
64504N1	AgCl Windows - 0.025mm Depression	99.00 / Pk/6
64504N2	AgCl Windows - 0.1mm Depression	99.00 / Pk/6
64504P1	AgBr Windows - 0.025mm Depression	Request
64504P2	AgBr Windows - 0.1mm Depression	Request
64504-2	Replacement Viton O-Ring	9.50 / each



Windows positioned for smears



Windows positioned for 0.025mm and 0.10mm pathlengths



Windows positioned for 0.05mm and 0.2mm pathlengths

## IR Crystal Sample Cards

Sample cards contain an alkali halide transmission window disc coated with an infrared non-absorbing substrate. The substrate converts the window into a non-hygroscopic crystal, making it ideal for **aqueous** samples.

Used for qualitative analysis, the sample card is a quick and convenient method to examine liquid, "mull" and cast film (from solution) type samples. Further application includes semi-solids, pastes, gums and gels.

Transmission is approximately 90% with no interference bands and peaks, as are experienced with PTFE and Polyethylene film type sample cards.

The sample card is placed directly into the spectrometer compartment; fits all spectrometers; **no** separate slide holder required.

Transmission ranges of alkali halide materials can be found on **Page 2**.

To contain volatile liquid samples, square cover slip windows are available for the 19mm Dia. sample card.



Cat. No.	Sample Card Type	Square Cover Slip	Clear Aperture	Price / Pk/5	Price / Pk/25
64505A1	NaCl	-	9.5mm Dia.	\$35.00	\$105.00
64505B1	KCl	-	9.5mm Dia.	36.00	109.00
64505C1	KBr	-	9.5mm Dia.	37.00	132.00
64505A2	NaCl	-	15mm Dia.	39.00	117.00
64505B2	KCl	-	15mm Dia.	41.00	122.00
64505C2	KBr	-	15mm Dia.	43.00	141.00
64505A3	NaCl	-	19mm Dia.	44.00	131.00
64505B3	KCl	-	19mm Dia.	46.00	136.00
64505C3	KBr	-	19mm Dia.	48.00	155.00
64505A3-1	-	NaCl	For 19mm Dia.	31.00	88.00
64505B3-1	-	KCl	For 19mm Dia.	32.00	94.00
64505C3-1	-	KBr	For 19mm Dia.	33.00	103.00

## High Pressure Liquid Cells (Low Range)

### High Pressure Liquid Cell (≤60 PSI)

Constructed of heavy-duty stainless steel, this high pressure cell is ideal for investigations of liquids where low range pressures are needed only. The cell windows are amalgamated (cemented) together and further amalgamated to the stainless steel cell body with extra-strength seals. Besides using the cell in the dynamic (flow) mode, outside valves can allow liquid samples to be analyzed in the stationary (trapped) mode.

Cell Mount includes fittings with nut/ferrule (Delrin/Tefzel) for 1/8" OD tubing.

Window Material: **ZnSe**

Transmission and properties of ZnSe can be found on **Page 2**.

Pressure: Up to **60 psi**. (Note: 1 atm = 14.8 psi)

Clear Aperture of cell is 25mm Dia.



#### Replacement Parts

Pathlength (mm) Cat. No.	0.10	0.20	0.50	1.0
	64404L4	64404L5	64404L6	64404L7

Price: \$1,395.00 / ea

Cat. No.	Description	Price / Pk/2
64404-1	Tefzel Ferrules, for 1/8" OD tubing	\$7.50
64404-2	Delrin Nuts, for 1/8" OD tubing	7.50

### High Pressure Liquid Cell (≤35 PSI)

Used for studies where slightly above ambient pressures are needed. The cell windows are amalgamated (cemented) together and further amalgamated to the cell body with extra-strength seals. Besides using the cell in the dynamic (flow) mode, outside valves can allow liquid samples to be analyzed in the stationary (trapped) mode.

Cell Mount includes fittings with nut/ferrule (Delrin/Tefzel) for 1/8" OD tubing.

Window Material: **ZnSe**

Transmission and properties of ZnSe can be found on **Page 2**.

Pressure: Up to **35 psi**. (Note: 1 atm = 14.8 psi)

Clear Aperture of cell is 22mm x 10mm.



#### Replacement Parts

Pathlength (mm) Cat. No.	0.10	0.20	0.50	1.0
	64405L4	64405L5	64405L6	64405L7

Price: \$1,245.00 / ea

Cat. No.	Description	Price / Pk/2
64404-1	Tefzel Ferrules, for 1/8" OD tubing	\$7.50
64404-2	Delrin Nuts, for 1/8" OD tubing	7.50

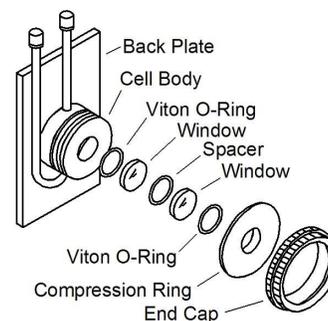
## High Pressure Liquid Cell (High Range)

Manufactured from stainless steel, this cell is used for the analysis of liquids (including "mulls" and smears) under conditions of high pressure. Condensed gases and viscous liquid flows can also be investigated with this cell. Besides the chemical resistance, the cell can be easily disassembled for cleaning. Although the maximum pressures are listed below, it is recommended that the cell be used up to 5000 psi.

Cell is supplied with two welded-on stainless steel tubes (1/16" OD), stainless steel Swagelok fittings and two Viton o-ring gaskets.

**Order separately:** Two Polished Disc Windows and Spacers.  
(Disc windows have **special surface** and **edge finishes** for proper cell operation.)

Cell accepts 13mm x 6mm thick windows.  
Clear Aperture of cell is 8mm Dia.



Cat. No.	Description	Price/each
64402	High Pressure Liquid Cell	\$3,530.00

#### Replacement O-Ring

Cat. No.	Description	Price/ Pk/2
64401-A1	Viton O-Ring Gasket	\$11.00

#### Polished Discs

(13mm x 6mm)

Material	ZnS	ZnSe
<b>Maximum Pressure</b>	7500 psi	6000 psi
<b>Cat. No.</b>	602K16	602L16
<b>Price / each</b>	\$245.00	\$260.00

Note: 1 atm = 14.8 psi

Pathlength (mm)	0.025	0.050	0.10	0.20	0.50	1.0
<b>Cat. No.- Teflon</b>	620T12	620T13	620T14	620T15	620T16	620T17
<b>Price / Pk/12</b>	\$42.00	\$42.00	\$42.00	\$42.00	\$42.00	\$42.00
<b>Cat. No.- S/S</b>	64401S12	64401S13	64401S14	64401S15	64401S16	64401S17
<b>Price / each</b>	Request	Request	\$113.00	\$113.00	\$113.00	\$113.00

#### Spacers

(S/S = Stainless Steel)

# Temperature Controlled Liquid Cells

Used for the analysis of liquids, "mulls" and smears at above and sub-ambient temperatures. Constructed from special stainless steel, the cell offers excellent chemical resistance and is easily dismantled for cleaning. Two removable heating cartridges allow the cell to be used up to 260°C. Temperatures beyond these can be reached; however, the sealing o-rings establish the limit here. The cooling conduits provide for sub-ambient temperatures and are dependent on the refrigerant used. Containing a K-Type thermocouple, the cell body is thermally and electrically isolated from the rear slide plate and therefore the spectrometer. With side injection ports, drilled windows and larger more expensive windows are not needed.

The **Temperature Controller** (Cat. No. 67001) found at the bottom of **Page 47** is recommended for use with these cells.

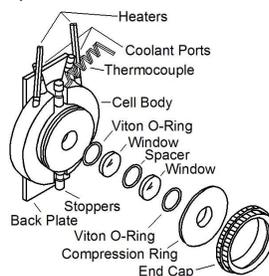
Filling **Syringes** are available, see **Page 22**.

Included with the cell mount are two Teflon plugs and two Viton o-ring gaskets.

**Order Separately:** Two Polished Disc Windows and Spacers.

Stainless steel spacers are suggested for temperatures >200°C.

**Kalrez** o-rings are highly recommended for the temperature range of **200 - 260°C** because of the softening and degradation of Viton in this range. **Order separately.**



Note: Pressed **Pellet Samples** (13mm Dia.) up to 1.0mm thickness can be analyzed using the **Cat. No. 64401-1 Cell Mount**. In place of the spacer (see above diagram), the sample pellet and two gaskets (one on each side of the pellet) are inserted. Two spacers (0.025mm thickness recommended) can be used as gaskets. The two transmission windows remain to eliminate temperature gradients across the sample pellet and the stoppered luer fittings become redundant.

## Replacement Parts

Cat. No.	Description	Price/each
64401-B1	Kalrez O-Ring Gasket-13mm OD	\$43.00
64401-B2	Kalrez O-Ring Gasket-25mm OD	56.00

Cat. No.	Description	Price
625-01	Teflon Plugs	\$17.00 / Pk/4
64401-A1	Viton O-Ring Gasket-13mm OD	11.00 / Pk/2
64401-A2	Viton O-Ring Gasket-25mm OD	11.00 / Pk/2

Cat. No.	Description	Window Size	Clear Aperture	Price/each
64401-1	Temperature Controlled Liquid Cell	13mm x 2mm	8mm Dia.	\$1,760.00
64401-2	Temperature Controlled Liquid Cell	25mm x 2mm	20mm Dia.	1,760.00

## Polished Discs

(Prices are for single windows - not pairs)

Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	CsI	KRS-5	ZnS	ZnSe
<b>Cat. No. -13mm x 2mm</b>	602A03	602B03	602C03	602D03	602E03	602F03	602J03	602K03	602L03
<b>Price / each (1-9)</b>	\$20.00	\$24.00	\$28.00	\$60.00	\$84.00	\$158.00	\$172.00	\$101.00	\$104.00
<b>(10 and over)</b>	19.00	23.00	27.00	-	-	-	-	-	-
<b>Cat. No. -25mm x 2mm</b>	602A08	602B08	602C08	602D08	602E08	602F08	602J08	602K08	602L08
<b>Price / each (1-9)</b>	23.00	36.00	31.00	62.00	93.00	224.00	255.00	173.00	\$178.00
<b>(10 and over)</b>	22.00	34.00	30.00	-	-	-	-	-	-

Material	CdTe	AgCl	AgBr	SiO <sub>2</sub>	GeAsSe(Amtir)	Al <sub>2</sub> O <sub>3</sub>	Ge	Si
<b>Cat. No. -13mm x 2mm</b>	602M03	602N03	602P03	602I03	602R03	602S03	602T03	602U03
<b>Price / each</b>	\$240.00	\$69.00	\$145.00	\$55.00	\$99.00	\$58.00	\$61.00	\$76.00
<b>Cat. No. -25mm x 2mm</b>	602M08	602N08	602P08	602I08	602R08	602S08	602T08	602U08
<b>Price / each</b>	295.00	83.00	Request	62.00	198.00	99.00	109.00	128.00

## Teflon Spacers

Price: \$42.00 / Pk/12

Pathlength (mm)	0.015	0.025	0.050	0.10	0.20	0.50	1.0
<b>Cat. No. -13mm OD</b>	620T11	620T12	620T13	620T14	620T15	620T16	620T17
<b>Cat. No. -25mm OD</b>	620T41	620T42	620T43	620T44	620T45	620T46	620T47

## Stainless Steel Spacers

Pathlength (mm)	0.025	0.050	0.10	0.20	0.50	1.0
<b>Cat. No. -13mm OD</b>	64401S12	64401S13	64401S14	64401S15	64401S16	64401S17
<b>Price / each</b>	Request	Request	\$113.00	\$113.00	\$113.00	\$113.00
<b>Cat. No. -25mm OD</b>	64401S42	64401S43	64401S44	64401S45	64401S46	64401S47
<b>Price / each</b>	Request	Request	Request	Request	Request	Request

## Assorted Teflon Spacers

(2 each of 0.015, 0.025, 0.050, 0.10, 0.20, 0.50 mm)

Price: \$42.00 / Pk/12

<b>Cat. No. -13mm OD</b>	620TA1
<b>Cat. No. -25mm OD</b>	620TA4

## Temperature Controlled High Pressure Liquid Cell

Used for the analysis of liquids, "mulls" and smears at above and sub-ambient temperatures under conditions of high pressure. Condensed gases and viscous liquid flows can also be investigated with this cell. Constructed from special stainless steel, the cell offers excellent chemical resistance and is easily disassembled for cleaning. Two removable heating cartridges allow the cell to be used up to 260°C. Temperatures beyond these can be reached; however, the sealing o-rings establish the limit here. The cooling conduits provide for sub-ambient temperatures and are dependent on the refrigerant used. Containing a K-Type thermocouple, the cell body is thermally and electrically isolated from the rear slide plate and therefore the spectrometer. Although the maximum pressures are listed below, it is recommended that the cell be used up to 5000 psi.

Cell is supplied with two welded-on stainless steel tubes (1/16" OD), stainless steel Swagelok fittings and two Viton o-ring gaskets.

Cell accepts 13mm x 6mm thick windows.

Clear Aperture of cell is 8mm Dia.

Stainless steel spacers are suggested for temperatures >200°C.

**Order Separately:** Two Polished Disc Windows and Spacers.

(Disc windows have **special surface** and **edge finishes** for proper cell operation.)

Cat. No.	Description	Price/each
64403	Temperature Controlled High Pressure Liquid Cell	\$4,730.00

### Replacement O-Ring

Cat. No.	Description	Price/ Pk/2
64401-A1	Viton O-Ring Gasket	\$11.00

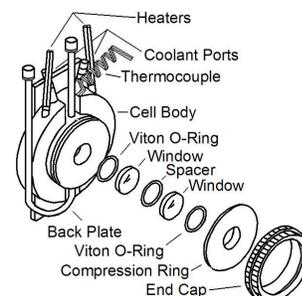
### Polished Discs

(13mm x 6mm)

Material	ZnS	ZnSe
<b>Maximum Pressure</b>	7500 psi	6000 psi
<b>Cat. No.</b>	602K16	602L16
<b>Price / each</b>	\$245.00	\$260.00

Note: 1 atm = 14.8 psi

Pathlength (mm)	0.025	0.050	0.10	0.20	0.50	1.0
<b>Cat. No.- Teflon</b>	620T12	620T13	620T14	620T15	620T16	620T17
<b>Price / Pk/12</b>	\$42.00	\$42.00	\$42.00	\$42.00	\$42.00	\$42.00
<b>Cat. No.- S/S</b>	64401S12	64401S13	64401S14	64401S15	64401S16	64401S17
<b>Price / each</b>	Request	Request	\$113.00	\$113.00	\$113.00	\$113.00



The **Temperature Controller** (Cat. No. 67001) found at the bottom of **Page 47** is recommended for use with this cell.

**Kalrez** o-rings are highly recommended for the temperature range of **200 - 260°C** because of the softening and degradation of Viton in this range. **Order separately.**

Cat. No.	Description	Price/each
64401-B1	Kalrez O-Ring Gasket-13mm OD	\$43.00

### Spacers

(S/S = Stainless Steel)

## Amalgamated Sealed Liquid Flow Cell

Constructed of aluminum, the cell mount contains an amalgamated sealed flow cell. The flow tube plate, located on the front of the sealed cell, is made from stainless steel allowing for the stainless steel flow tubes to be welded on to the plate. The weld prevents the flow tubes from easily bending off and dislodging.

The sealed cell with flow tubes is separate from the knurled end cap. A Teflon o-ring is placed between the end cap and the flow tube plate as a cushion. For use with cells containing 2mm thick windows, a space compensator ring is included and located between the end cap and the flow tube plate.

Cell Mount includes end cap, front Teflon o-ring, space compensator ring and rear gasket.

**Order separately:** One Amalgamated Sealed Flow Cell.



Compatible with SpectraTech.

### Replacement Gaskets

Cat. No.	Description	Clear Aperture	Price/each
64102-F	Circular Sealed Liquid Cell Mount	14mm Dia.	\$73.00

Cat. No.	Description	Price / Pk/2
625-04	Rear Teflon Gasket	\$13.00
625-05	Front Teflon O-Ring Gasket	13.00

### Amalgamated Sealed Flow Cells

The amalgamated sealed flow cell consists of a drilled and an undrilled window amalgamated (sealed) together with a metal spacer and further amalgamated to a front flow tube plate (stainless steel tubes are 1/8" OD).

Cells are constructed from 32mm x 3mm thick disc windows.

Pathlength (mm)	0.025	0.050	0.10	0.20	0.50	1.0	
Volume (µl)	11	23	45	90	225	450	
<b>Material</b>	<b>NaCl</b>	<b>KCl</b>	<b>KBr</b>	<b>CaF<sub>2</sub></b>	<b>BaF<sub>2</sub></b>	<b>ZnS</b>	<b>ZnSe</b>
<b>Cat. No.</b>	626A03FF	626B03FF	626C03FF	626D03FF	626E03FF	626K03FF	626L03FF
<b>Price/each</b>	\$250.00	\$260.00	\$270.00	\$370.00	\$425.00	\$530.00	\$640.00

**Please indicate pathlength**

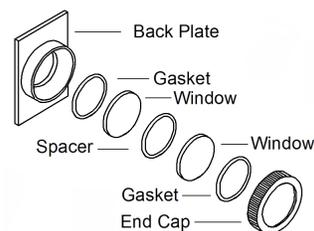


# Accessories for Transmission

## Solid Sampling Accessories

### Demountable Cells

With the cell assembled, samples are placed between the crystal windows. The cell is reassembled for spectral analysis. A spacer may be necessary to control the pathlength of the cell. This cell is most applicable for mull type samples used in solid sampling and higher viscosity (boiling) liquids.



### Screw-Type Demountable Cell Mount

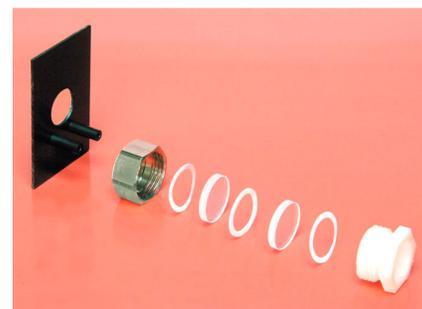
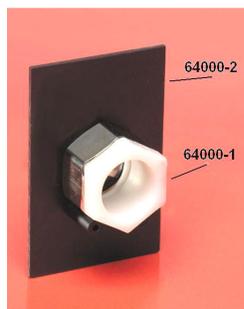
The threaded two-piece cell body provides a quick and easy method of preparing a mull sample for infrared analysis. Many mull samples do not require a spacer for pathlength control; if necessary, **spacers** can be **ordered separately**. Complete assembly includes two-piece threaded body, slide holder and two Teflon gaskets.

**Order Separately:** Two Polished Discs / Teflon Spacers (if required).

Cell accepts 25mm dia. x 4mm thick disc windows.  
25mm x 2mm windows can also be used.

Clear Aperture of cell is 19mm Dia.

If the window thicknesses below are not suitable for your application, please **see** complete window listing - **Pages 4-7**.



### Replacement Gaskets

Cat. No.	Description	Price/each
64000	Demountable Cell Mount	\$43.00
64000-1	Cell Mount-No Slide Holder	32.00
64000-2	Slide Holder	25.00

Cat. No.	Description	Price / Pk/2
625-02	Front/Rear Teflon Gaskets	\$10.00

### Polished Discs

(25mm x 4mm)

(Prices are for single windows - not pairs)

Material Cat. No. Price / each (1-9) (10 and over)	NaCl 602A09 \$20.00 19.00	KCl 602B09 \$27.00 26.00	KBr 602C09 \$28.00 27.00	CaF <sub>2</sub> 602D09 \$69.00 -	BaF <sub>2</sub> 602E09 \$117.00 -	CsI 602F09 \$263.00 -	KRS-5 602J09 Request -	ZnS* 602K08 \$173.00 -	ZnSe* 602L08 \$178.00 -
---	------------------------------------	-----------------------------------	-----------------------------------	--	---	--------------------------------	---------------------------------	---------------------------------	----------------------------------

\*Windows are 2mm thick.

Material Cat. No. Price / each	CdTe* 602M08 \$295.00	AgCl 602N09 Request	AgBr 602P09 Request	SiO <sub>2</sub> 602I09 \$85.00	GeAsSe(Amtir)* 602R08 \$198.00	Al <sub>2</sub> O <sub>3</sub> * 602S08 \$99.00	Ge* 602T08 \$109.00	Si* 602U08 \$128.00
--------------------------------------	-----------------------------	---------------------------	---------------------------	---------------------------------------	--------------------------------------	---	---------------------------	---------------------------

### Teflon Spacers

Size: 25mm dia.

Price: \$42.00 / Pk/12

Pathlength (mm) Cat. No.	0.015 620T41	0.025 620T42	0.050 620T43	0.10 620T44	0.20 620T45	0.50 620T46	1.0 620T47
-----------------------------	-----------------	-----------------	-----------------	----------------	----------------	----------------	---------------

### Assorted Teflon Spacers

Size: 25mm dia.

(2 each of 0.015, 0.025, 0.050, 0.10, 0.20, 0.50 mm)

Cat. No. 620TA4

Price: \$42.00 / Pk/12

### Other accessories applicable to "mull" samples

Mini Liquid Cell - see Page 24

High Pressure Liquid Cell - see Page 25

Temperature Controlled Liquid Cells - see Page 26

Temperature Controlled High Pressure Liquid Cell - see Page 27

## PressFit Demountable Cell Mount

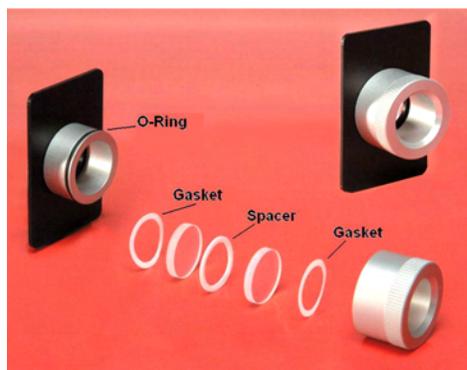
This cell mount is an alternate to the screw-type and bolt / thumb screw type cell mounts. The two-piece construction consists of an end cap barrel which slips on to an inner barrel. With the windows and sample contained in the inner barrel, the end cap barrel is simply pressed on to close and seal the cell. The compressed Viton o-ring holds the end cap in place. Many mull samples do not require a spacer for pathlength control; if necessary, **spacers** can be **ordered separately**.

Assembly includes two-piece barrels (with slide holder) and two Teflon gaskets.

**Order separately:** Two Polished Discs / Teflon Spacers (if required).

Cell accepts 25mm dia. x 4mm thick disc windows.  
25mm x 2mm windows can also be used.

If the window thicknesses below are not suitable for your application, please **see** complete window listing - **Pages 4-7**.



**Replacement Gaskets**

Cat. No.	Description	Clear Aperture	Price/each
64001	PressFit Cell Mount	22mm Dia.	\$83.00

Cat. No.	Description	Price / Pk/2
625-02	Front/Rear Teflon Gaskets	\$10.00
64001-1	Viton O-Rings	10.00

### Polished Discs

(25mm x 4mm)

(Prices are for single windows - not pairs)

Material Cat. No. Price / each (1-9) (10 and over)	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	CsI	KRS-5	ZnS*	ZnSe*
602A09	602B09	602C09	602D09	602E09	602F09	602J09	602K08	602L08	602L08
\$20.00	\$27.00	\$28.00	\$69.00	\$117.00	\$263.00	Request	\$173.00	\$178.00	\$178.00
19.00	26.00	27.00	-	-	-	-	-	-	-

\*Windows are 2mm thick.

Material Cat. No. Price / each (1-9)	CdTe*	AgCl	AgBr	SiO <sub>2</sub>	GeAsSe(Amtir)*	Al <sub>2</sub> O <sub>3</sub> *	Ge*	Si*
602M08	602N09	602P09	602I09	602R08	602S08	602T08	602U08	602U08
\$295.00	Request	Request	\$85.00	\$198.00	\$99.00	\$109.00	\$128.00	\$128.00

### Teflon Spacers

Size: 25mm dia.

Price: \$42.00 / Pk/12

Pathlength (mm) Cat. No.	0.015	0.025	0.050	0.10	0.20	0.50	1.0
	620T41	620T42	620T43	620T44	620T45	620T46	620T47

### Assorted Teflon Spacers

Size: 25mm dia.

(2 each of 0.015, 0.025, 0.050, 0.10, 0.20, 0.50 mm)

Cat. No. 620TA4 Price: \$42.00 / Pk/12

## Spring-Loaded Universal Sample Holder

The Universal Sample Holder contains a spring-loaded lever mechanism that is simply depressed and then released after insertion of the sample. Pressure from the spring holds the sample firmly in place. Solvent resistant treated anodized aluminum is used in the construction of the mount. A silicone rubber o-ring is included behind the stainless steel ring head.

**Order separately:** Polished Disc(s) / KBr disc holders/barrels  
Teflon Spacers (if pathlength control is required).

Sample Holder accepts 25mm dia. disc windows.



**Replacement O-Ring**

Cat. No.	Description	Clear Aperture	Price/each
64002	Universal Sample Holder	18mm Dia.	\$139.00

Cat. No.	Description	Price/each
64002-1	Silicone Rubber O-Ring	\$5.00

#### Applications

- Two windows are used for mull and liquid samples.
- One window is used for casting a film.
- Films are centered and held firmly.
- Mini KBr die barrels can be positioned in holder.
- KBr disc holders (25mm dia.) can be placed in holder.

### Polished Discs

For 25mm dia. x 2,4,5mm thick discs, see **Pages 4-7**.

### Teflon Spacers

For 25mm dia. Teflon spacers, see **Page 14**.

## Mini-Press Pellet Maker

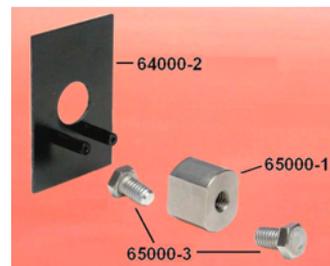
Conveniently designed for small diameter pellets, the Mini-Press is a low cost method of producing solid samples for spectroscopic analysis. Two threaded high-optically polished bolts are rotated against each other in a stainless steel barrel with the sample mixture in between. The small sample mixture / pellet diameter ratio allows hand pressure with wrenches to press a clear sample pellet, without the need for a hydraulic press. The bolts are then removed from the barrel, leaving the sample pellet intact. After the barrel is transferred and centered on the slide holder, the sample is ready for analysis.

Some sample mixtures may require evacuation to produce a clear sample pellet. A barrel is available with a hose connector for use with a vacuum pump if necessary.

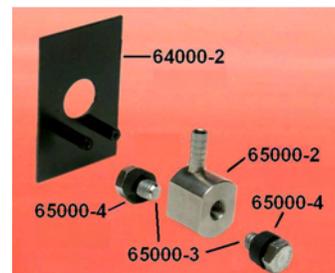
If you do not have access to wrenches, a wrench kit is available (see below).

Clear Aperture of barrels is 7mm Dia. See Page 33 for KBr and other pressing powders.

Cat. No.	Description	Price
65000	Mini-Press Pellet Maker Kit - Nonevacuable (includes two polished bolts, nonevacuable barrel and slide holder)	\$67.00 / each
65000-V	Mini-Press Pellet Maker Kit - Evacuatable (includes two polished bolts, evacuatable barrel, slide holder and two seal washers)	85.00 / each
65000-3	Polished Steel Bolts	33.00 / Pk/2
65000-5	Wrench Kit (includes bench-top wrench with mounting screws and 9/16" combination wrench)	38.00 / each
65000-1	Nonevacuable Barrel	25.00 / each
65000-2	Evacuatable Barrel	35.00 / each
64000-2	Slide Holder	25.00 / each
65000-4	Spare Seal Washers	14.00 / Pk/2



Mini-Press Kit - 65000



Mini-Press Kit - 65000-V



Wrench Kit - 65000-5

## Quick Hand Press

With a simple firm "handshake", clear sample pellets (7mm or 3mm dia.) can be quickly and easily produced with this hand press. Press is fabricated from special stainless steel and die sets are made from a hardened nickel alloy with optically clear anvil faces. The lower anvil, with mounting collar seated on, accepts the sample-powder mixture. The upper anvil is then placed into the collar on top of the sample mixture. The die assembly is inserted into the press chamber. After pressing is

The pellet extractor, available for the 7mm Die Set, is also used as a filling funnel to transfer the powder mixture to the die chamber.

Die Sets are ordered separately from the hand press.

Cat. No.	Description	Price/each
65001	Quick Hand Press	\$735.00

### Die Sets

Cat. No.	Description	Price/each
65001-1	7mm Die Set (includes upper and lower anvils and 25mm OD collar)	\$145.00
65001-2	3mm Die Set (includes upper and lower anvils, ejector, 13mm OD collar)	150.00

### Additional / Replacement Die Set Parts

#### 7mm Die Parts

Cat. No.	Description	Price/each
65001-1A	Lower Anvil	\$89.00
65001-1B	Upper Anvil	89.00
65001-1C	25mm OD Collar	79.00
65001-1D	Pellet Extractor	76.00

#### 3mm Die Parts

Cat. No.	Description	Price/each
65001-2A	Lower Anvil	\$76.00
65001-2B	Upper Anvil	110.00
65001-2D	13mm OD Collar	32.00
65001-2E	Rubber Ejector	8.00

completed, the die assembly is removed from the chamber, the anvils are removed from the collar and the pellet embedded in the collar is ready for analysis. The adjustable dial on top of the press is used to control the exerted force for the purpose of reproducibility of pellets. Die Sets are interchangeable with hand presses from other infrared suppliers and manufacturers.

See Page 33 for KBr and other pressing powders.



7mm Die Set



3mm Die Set

### Collar Holders

For properly positioning collars in the spectrometer beam for transmission analysis.

For 25mm OD  
**Cat. No.** Description Price/each  
 64000-A Collar Holder \$38.00

For 13mm OD  
**Cat. No.** Description Price/each  
 65100-1 Collar Holder \$52.00



Cat. No. 64000-A



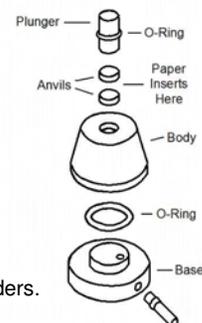
Cat. No. 65100-1

## Evacuatable 13mm Die

The original and classic method of producing sample pellets. Constructed from special hardened stainless steel and precision machined, the 13mm die is used with a 12-ton hydraulic press and a vacuum pump. Simultaneous application of high pressure and evacuation yields a 13mm dia. clear pellet that will allow for "maximum" energy throughput with any spectrometer beam. With the plunger (and o-ring) and upper highly-polished anvil removed from the die, the sample matrix is placed into the die chamber on top of lower highly-polished anvil. After tamping with plunger, the upper anvil and plunger are inserted back into the die. Pressure and vacuum are applied, the die is disassembled and the sample pellet is transferred to a holder ready for analysis.

Where sample quantity is limited, 13mm OD **paper inserts** are available and **ordered separately** for pressing micro pellets that are 3mm, 5mm or 11mm dia. and 1.5mm x 9mm.

Standard anvils are stainless steel; **tungsten carbide anvils** are available and **ordered separately** for abrasive type samples.



See **Page 33** for **KBr** and other pressing powders.

For **temperature studies** of pressed pellet samples, see **Page 26** for Temperature Controlled Cell

Cat. No.	Description	Price/each
65002	Evacuatable 13mm Die (includes plunger, o-rings, stainless steel anvils and pellet extractor ring)	\$425.00

### Paper Inserts and Tungsten Carbide Anvils

Cat. No.	Description	Price
65002-10	Paper Inserts - 3mm ID	\$42.00 / Pk/100
65002-11	Paper Inserts - 5mm ID	42.00 / Pk/100
65002-12	Paper Inserts - 11mm ID	42.00 / Pk/100
65002-13	Paper Inserts - 1.5mm x 9mm	42.00 / Pk/100
65002-3	Tungsten Carbide Anvils	Request

### Replacement Parts

Cat. No.	Description	Price
65002-1	Plunger	\$110.00 / each
65002-2	Stainless Steel Anvils	155.00 / Pk/2
65002-4	O-Rings (one for plunger and one for base)	29.00 / Pk/2
65002-5	Pellet Extractor Ring	35.00 / each

## Sample Pellet Holder and Sample Pellet Cards

The Sample Pellet Holder has a rubberized magnetic ring that centers the sample pellet, paper insert with micro pellet or a 13mm dia. thin transmission window disc correctly with the spectrometer beam. Also, this holder is ideal for mounting small polymer sample films.

Sample Pellet Cards have a pressure-sensitive adhesive outside the circular aperture that holds the sample pellet, paper insert (with pellet), small polymer film sample or transmission window. The card is then folded and inserted directly into the spectrometer beam; no additional slide holder is necessary. Sample Pellet Cards are most useful for **storage** and cataloging your sample pellets.



Clear Apertures are 9mm Dia.

Cat. No.	Description	Price
65100-1	Magnetic Sample Pellet Holder	\$52.00 / each
65101-1	Sample Pellet Cards	87.00 / Pk/100

## Evacuatable 13mm Uni-Die

Originally developed by Wilks Scientific, the Uni-Die offers an alternative to the classical die such as listed at the top of this page. Made from special hardened stainless steel, the anvils (with high optically-polished faces) fit precisely into the barrel from each end. With one anvil inserted into the barrel, the sample matrix is added and tamped by inserting the other anvil.

The assembly is then placed into a 12-ton hydraulic press and connected to a vacuum pump. After pressing is completed, the anvils are removed, leaving the sample pellet embedded in the barrel. The barrel (with pellet) is transferred to the slide holder for analysis. The barrel is then cleaned out and ready for the next sample.

See **Page 33** for **KBr** and other pressing powders.

Cat. No.	Description	Price
65003	Evacuatable 13mm Uni-Die (includes two polished anvils, slide holder, two Viton o-rings and evacuatable barrel)	\$395.00 / each
65003-2	Polished Anvil (excluding o-ring)	130.00 / each
65003-1	Evacuatable Barrel	140.00 / each
64000-2	Slide Holder	25.00 / each
65003-3	Viton O-Rings	23.00 / Pk/6



## Grinding Mills

### Wig-L-Bug

Still the most economical grinding mill, the Wig-L-Bug has all of the necessary features for preparing samples to press pellets, analyzing mulls and investigating diffuse reflectance. A vial, containing the sample and a ball-pestle, is rapidly shaken back and forth for a time period (usually 10 seconds). Pulverizing and mixing is very uniform; reproducibility is controlled by a timer which can be set up to 60 seconds. The motor operates at 115 Volt - 60 Hz.

A **Cat. No. 65500-3 Vial Adapter** only is included.

**Order separately:** Vials, Ball-Pestles and other Vial Adapters.



Cat. No.	Description	Price/each
65500	Wig-L-Bug Grinding Mill	\$640.00

### Heavy-Duty Wig-L-Bug

Used for the preparation of hard material samples where pulverizing and grinding require extended time periods. Grinding and pulverizing can be performed initially and then mixing of the mull, pellet or diffuse reflectance matrix can be completed. A mechanical timer can be set up to 30 minutes.

The motor is "fan-cooled" and operates at 115 Volt - 60 Hz.

A **Cat. No. 65500-3 Vial Adapter** only is included.

**Order separately:** Vials, Ball-Pestles and other Vial Adapters.



Cat. No.	Description	Price/each
65500-H	Heavy-Duty Wig-L-Bug Grinding Mill	\$705.00

## Accessories

**Polymer** - Used where trace metallic impurities cause spectral interferences; good for "mull" type sampling.

**Stainless Steel** - Most commonly used; good for hard material samples.

**Agate** - Used for hard material samples and where trace metallic impurities cause spectral interferences.

Note: **Accessories** are **compatible** with Wig-L-Bugs from other infrared suppliers and manufacturers.



#### Stainless Steel Accessories

Cat. No.	Description	Price/each
65500-1	Stainless Steel Vial (1" x 1/2" Dia.) with stainless steel ball-pestle (1/4" Dia.)	\$55.00
65500-2	Stainless Steel Ball-Pestle (1/4" Dia.)	9.00
65500-3	Vial Adapter (for 1" x 1/2" Dia. Vials)	35.00

#### Agate Accessories

Cat. No.	Description	Price/each
65500-8	Agate Vial (1 5/16" x 9/16" Dia.) with agate ball-pestle (1/4" Dia.)	\$267.00
65500-9	Agate Ball-Pestle (1/4" Dia.)	53.00
65500-10	Vial Adapter (for 1 5/16" x 9/16" Vials)	35.00

#### Replacement Parts

Cat. No.	Description	Price/each
65500-A	Arm with Cup	\$18.00
65500-B	Brace for Arm with Cup	18.00
65500-C	Bearing Strap	66.00

#### Capacity of Vials

1" x 1/2" Dia. - 1.0 ml  
 2" x 1/2" Dia. - 2.5 ml  
 1 5/16" x 9/16" Dia. - 2.0 ml

#### Polymer Accessories

Cat. No.	Description	Price
65500-11	Polystyrene Vial (1" x 1/2" Dia.) only with Polyethylene <b>slip-on</b> cap ( <b>Ball-Pestles</b> are ordered <b>separately</b> )	\$68.00 / Pk/100
65500-4	Polystyrene Vial (2" x 1/2" Dia.) only with Polyethylene <b>screw-on</b> cap ( <b>Ball-Pestles</b> are ordered <b>separately</b> )	56.00 / Pk/100
65500-5	Polycarbonate Ball-Pestles (3/8" Dia.)	34.00 / Pk/100
65500-6	Polycarbonate Ball-Pestles (1/8" Dia.)	34.00 / Pk/100
65500-3	Vial Adapter (for 1" x 1/2" Dia. Vials)	35.00 / each
65500-7	Vial Adapter (for 2" x 1/2" Dia. Vials)	35.00 / each

## Film Holders and Film Cards

The Film Holder has a rubberized magnetic ring that centers the polymer film sample correctly with the spectrometer beam. Also, the 65100-1 Holder is used for mounting 13mm dia. sample pellets (including paper inserts with micro pellets) and thin transmission window discs (for cast films).

Film Cards have a pressure-sensitive adhesive outside the circular aperture that holds the polymer film sample (or 13mm dia. sample pellet, paper insert with micro pellet, or transmission window for 65101-1 Cards). The card is then folded and inserted directly into the spectrometer beam; no additional slide holder is necessary. Film Cards are most useful for **storage** and **cataloging** your film samples.

Film samples smaller than the clear aperture can be mounted on a thin card (as an index card) with a cut-out opening to suit the size of the sample and spectrometer beam, and then installed into the holder or card.



Cat. No.	Description	Clear Aperture	Price
65100-1	Magnetic Film Holder	9mm Dia.	\$52.00 / each
65100-2	Magnetic Film Holder	18mm Dia.	50.00 / each
65100-2D	Magnetic Film Holder (Dispersive)	18mm x 9mm	50.00 / each
65101-1	Film Cards	9mm Dia.	87.00 / Pk/100
65101-2	Film Cards	18mm Dia.	87.00 / Pk/100

## IR Crystal Sample Cards

Sample cards contain an alkali halide transmission window disc coated with an infrared non-absorbing substrate. The substrate converts the window into a non-hygroscopic crystal, making it ideal for **aqueous** samples.

Used for qualitative analysis, the sample card is a quick and convenient method to examine "mull", cast film (from solution) and liquid type samples. Further application includes semi-solids, pastes, gums and gels. Should it be necessary to contain a mull sample, **square cover slip windows** are available for **19mm Dia.** sample cards. **See Page 24.**

Transmission is approximately 90% with no interference bands and peaks, as are experienced with PTFE and Polyethylene film type sample cards.

The sample card is placed directly into the spectrometer compartment; fits all spectrometers; **no** separate slide holder required.

Transmission ranges of alkali halide materials can be found on **Page 2.**

Cat. No.	Sample Card Type	Clear Aperture	Price / Pk/5	Price / Pk/25
64505A1	NaCl	9.5mm Dia.	\$35.00	\$105.00
64505B1	KCl	9.5mm Dia.	36.00	109.00
64505C1	KBr	9.5mm Dia.	37.00	132.00
64505A2	NaCl	15mm Dia.	39.00	117.00
64505B2	KCl	15mm Dia.	41.00	122.00
64505C2	KBr	15mm Dia.	43.00	141.00
64505A3	NaCl	19mm Dia.	44.00	131.00
64505B3	KCl	19mm Dia.	46.00	136.00
64505C3	KBr	19mm Dia.	48.00	155.00



## Agate Mortars and Pestles

The traditional grinding and mixing method, an agate mortar and pestle provides the hard and inert surface to properly prepare sample pellet and sample "mull" mixtures for infrared analysis.

Agate is non-absorbing in the infrared spectrum.



Cat. No.	Description	Price/each	Cat. No.	Description	Price/each
65502-1	Agate Mortar and Pestle - 35mm OD	\$73.00	65502-1P	Agate Pestle for 35mm OD	\$25.00
65502-2	Agate Mortar and Pestle - 50mm OD	88.00	65502-2P	Agate Pestle for 50mm OD	31.00
65502-3	Agate Mortar and Pestle - 65mm OD	103.00	65502-3P	Agate Pestle for 65mm OD	39.00

## Powders and Oils for Solid Sample Preparation

Nujol - Transmission Range is 1370  $\text{cm}^{-1}$  to far infrared.

Fluorolube - Transmission Range is 4000 - 1360  $\text{cm}^{-1}$ .

Cat. No.	Description	Price
65503-1	Nujol (High Purity Mineral Oil)	\$27.00 / 2 oz (60ml)
65503-2	Fluorolube (Fluorinated Hydrocarbon Oil)	33.00 / 1 oz (30ml)
65503-3	KBr Powder (Standard Infrared Grade)	45.00 / 100g
65503-4	KBr Powder (Ultra-Pure Infrared Grade)	91.00 / 100g
65503-5	CsI Powder (Standard Infrared Grade)	90.00 / 50g
65503-6	KCl Powder (Standard Infrared Grade)	63.00 / 100g



# Accessories for Transmission Gas Sampling Accessories

## Short-Path Gas Cells

### Mini Gas Cells

Used for the analysis of pure gases or gas mixtures where component concentrations are >1% and preferably 5% to 10% or greater. With the use of threaded end caps, leak-tight seals are formed allowing for experiments to be performed at increased and decreased pressures. The Mini Gas Cells are offered in two versions: one with plain tube ports (8mm OD/ 5.5mm ID) and one with plain tube ports containing all-glass stopcocks (stopcock endings are ~5.5mm OD/ 3.5mm ID).

For plain tube ports, gases can be introduced or extracted through the rubber septums using a gas-tight syringe or through flexible tubing directly connected to the plain tube ports with septums removed. Septums are made of Silicone Rubber. The gas cells include a Pyrex glass body, threaded end caps, two outer Teflon gaskets, two inner Viton o-rings and a slide holder.

Clear Aperture of cells is 18mm Dia.

**Order separately:** Two Polished Disc Windows.



Cells accept 25mm dia. x 4mm thick disc windows.

For other window materials, see **Pages 4-7**.

(2mm thick windows are not recommended for NaCl-KCl-KBr-CsI-CdTe-AgBr)

Cat. No.	Description	Cell Volume	Price / each
66001-10A	Mini Gas Cell - 10cm Pathlength (with plain tube ports and septums)	30ml	\$139.00
66001-5A	Mini Gas Cell - 5cm Pathlength (with plain tube ports and septums)	15ml	127.00
66001-10B	Mini Gas Cell - 10cm Pathlength (with stopcocks)	30ml	295.00
66001-5B	Mini Gas Cell - 5cm Pathlength (with stopcocks)	15ml	285.00

If inner Viton o-rings are attacked by the gas sample, Teflon o-rings are available and must be **ordered separately**.

Cat. No.	Description	Price / each
66001-1	Teflon O-Ring	\$6.00

### Replacement Parts

Cat. No.	Description	Price
66001-2	Viton O-Ring	\$7.00 / ea
66001-3	Teflon Gasket	6.00 / ea
66001-4	Rubber Septums	23.00 / Pk/6

### Polished Discs (25mm x 4mm) (Prices are for single windows - not pairs)

Material Cat. No.	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	AgCl	AgBr	SiO <sub>2</sub>	ZnS*	ZnSe*
<b>Price / each (1-9)</b>	602A09	602B09	602C09	602D09	602E09	602N09	602P09	602I09	602K08	602L08
<b>(10 and over)</b>	\$20.00	\$27.00	\$28.00	\$69.00	\$117.00	Request	Request	\$85.00	\$173.00	\$178.00
	19.00	26.00	27.00	-	-	-	-	-	-	-

\*Windows are 2mm thick.

### Small Volume Gas Cell

Used for the analysis of pure gases or gas mixtures where component concentrations are >1% and preferably 5% to 10% or greater. A black anodized aluminum mount sleeve serves to contain the Pyrex glass cell body and for safety protection. The threaded end cap and leak-tight seals provide for use with increased or decreased pressures and for easy dismantling and cleaning. The plain tube port endings (top of stopcocks) are 6.5mm OD and 3.5mm ID. Included with the cell assembly is a Pyrex cell body, mount with end cap, two outer Teflon gaskets, two inner Viton o-rings and a compensator ring for accommodating 2mm thick windows.



**Order separately:** Two Polished Disc Windows.

Clear Aperture of cell is 25mm Dia.

Cell accepts 32mm dia. x 3mm thick disc windows.

For other window materials, see **Pages 6-7**.

If inner Viton o-rings are attacked by the gas sample, Teflon o-rings are available and must be **ordered separately**.

Cat. No.	Description	Price / each
66002-1	Teflon O-Ring	\$7.50

### Replacement Parts

Cat. No.	Description	Price / each
66002-2	Viton O-Ring	\$7.50
66002-3	Teflon Gasket	6.00

### Polished Discs (32mm x 3mm) (Prices are for single windows - not pairs)

Material Cat. No.	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	AgCl	AgBr	SiO <sub>2</sub>	ZnS	ZnSe
<b>Price / each (1-9)</b>	602A11	602B11	602C11	602D11	602E11	602N11	602P11	602I11	602K11	602L11
<b>(10 and over)</b>	\$29.00	\$31.00	\$41.00	\$86.00	\$155.00	Request	Request	\$106.00	\$248.00	\$280.00
	28.00	30.00	39.00	-	-	-	-	-	-	-

# Short-Path Gas Cells

## Medium Volume Gas Cell

For the analysis of pure gases and gas mixtures where component concentrations are >1% and preferably 5% to 10% or greater. Constructed from Pyrex glass, the cell body has attached end threads which form leak-tight seals with the end caps. This enables the cell to operate at decreased or increased pressures and to be easily disassembled for cleaning. The plain tube port endings (top of stopcocks) are 8mm OD and 4.5mm ID. The gas cell assembly includes a Pyrex cell body with threads, threaded end caps, two outer and two inner Viton o-rings and a slide holder.

**Order Separately:** Two Polished Disc Windows.

Clear Aperture of cell is 32mm Dia.

Cells accept 38mm dia. x 6mm thick disc windows.  
For other window materials, see **Page 6**.



### Replacement Part

Cat. No.	Description	Price / Pk/2
66003-1	Viton O-Rings	\$13.00

Cat. No.	Description	Cell Volume	Price / each
66003-10	Medium Volume Gas Cell (10cm Pathlength)	90ml	\$480.00

### Polished Discs

(38mm x 6mm) (Prices are for single windows - not pairs)

Material Cat. No. Price / each	NaCl 602A12 \$41.00	KCl 602B12 \$52.00	KBr 602C12 \$61.00	CaF <sub>2</sub> 602D12 \$118.00	BaF <sub>2</sub> 602E12 \$216.00	AgCl 602N12 Request	AgBr 602P12 Request	SiO <sub>2</sub> 602I12 \$185.00	ZnS* 602K12 \$355.00	ZnSe* 602L12 \$330.00
*Windows are 3mm thick.										

## Medium Volume Gas Cell (Teflon)

Used for the analysis of pure gases or gas mixtures where component concentrations are >1% and preferably 5% to 10% or greater. This "All-Teflon" gas cell is an alternative to metal and glass cells which are attacked by certain gas samples. The Teflon surface quality is such that absorption and "memory effects" of previous samples are prevented.

The threaded end cap and o-rings provide leak-tight seals for increased or decreased pressure applications. The cell is easily dismantled for cleaning. The All-Teflon stopcocks are equipped with swagelok-equivalent fittings ending with 1/4" OD Teflon tubes which are used for the gas connections. Included with the cell assembly is a Teflon body with end caps, two outer Teflon gaskets, two inner Viton o-rings and a slide holder.

**Order Separately:** Two Polished Disc Windows.

Clear Aperture of cell is 25mm Dia.

Cells accept 38mm dia. x 6mm thick disc windows.  
For other window materials, see **Page 6**.



### Replacement Parts

Cat. No.	Description	Price / Pk/2
66006-2	Viton O-Rings	\$34.00
66006-3	Teflon Gaskets	34.00

Cat. No.	Description	Cell Volume	Price / each
66006-10	Medium Volume Gas Cell Teflon (10cm Pathlength)	50ml	\$1,190.00

Windows that are 3mm thick will require a **space compensator**; order separately.

Cat. No.	Description	Price / each
66006-1	Space Compensator	\$18.00

### Polished Discs

(38mm x 6mm) (Prices are for single windows - not pairs)

Material Cat. No. Price / each	NaCl 602A12 \$41.00	KCl 602B12 \$52.00	KBr 602C12 \$61.00	CaF <sub>2</sub> 602D12 \$118.00	BaF <sub>2</sub> 602E12 \$216.00	AgCl 602N12 Request	AgBr 602P12 Request	SiO <sub>2</sub> 602I12 \$185.00	ZnS* 602K12 \$355.00	ZnSe* 602L12 \$330.00
*Windows are 3mm thick.										

## Short-Path Gas Cells

### Medium Volume Gas Cell (Stainless Steel)

Used for the analysis of pure gases or gas mixtures where component concentrations are >1% and preferably 5% to 10% or greater. This **Stainless Steel** gas cell is an alternative to glass cells which are attacked by certain gas samples.

The threaded end cap and o-rings provide leak-tight seals for increased or decreased pressure applications. The cell is easily dismantled for cleaning. The Stainless Steel stopcocks are equipped with swagelok fittings ending with 1/4" OD Stainless Steel tubes which are used for the gas connections. Included with the cell assembly is a Stainless Steel body with end caps, two outer Teflon gaskets, two inner Viton o-rings and a slide holder.

**Order Separately:** Two Polished Disc Windows.

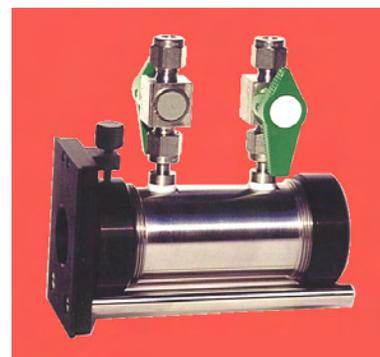
Clear Aperture of cell is 25mm Dia.

Cells accept 38mm dia. x 6mm thick disc windows.  
For other window materials, see **Page 6**.

Windows that are **3mm thick** will require a **space compensator**; order separately.

Cat. No.	Description	Price / each
66006-1	Space Compensator	\$18.00

Cat. No.	Description	Cell Volume	Price / each
66005-10	Medium Volume Gas Cell Stainless Steel (10cm Pathlength)	50ml	\$990.00



#### Replacement Parts

Cat. No.	Description	Price / Pk/2
66006-2	Viton O-Rings	\$34.00
66006-3	Teflon Gaskets	34.00

#### Polished Discs

(38mm x 6mm) (Prices are for single windows - not pairs)

Material Cat. No. Price / each	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	AgCl	AgBr	SiO <sub>2</sub>	ZnS*	ZnSe*
	602A12	602B12	602C12	602D12	602E12	602N12	602P12	602I12	602K12	602L12
	\$41.00	\$52.00	\$61.00	\$118.00	\$216.00	Request	Request	\$185.00	\$355.00	\$330.00

\*Windows are 3mm thick.

### Large Volume Gas Cell

Used for the analysis of pure gases or gas mixtures where component concentrations are >1% and preferably 5% to 10% or greater. A black anodized aluminum mount sleeve, surrounding the heavy-duty Pyrex glass cell body, is incorporated for safety protection as the cell is frequently used at higher pressure and lower vacuum than smaller volume gas cells are used at; a **feature missing** from larger gas cells found on the market. The threaded end cap and o-rings provide leak-tight seals for increased or decreased pressure applications. The cell is easily dismantled for cleaning. The tube port endings (top of stopcocks) are 18/9 semi-ball joints. Included with the cell assembly is a Pyrex glass body, mount with end cap, two outer Teflon gaskets, two inner Viton o-rings and a space compensator ring for accommodating 3mm thick windows.

**Order Separately:** Two Polished Disc Windows.

Clear Aperture of cell is 35mm Dia.

Cells accept 49mm dia. x 6mm thick disc windows.  
For other window materials, see **Page 6**.

If inner Viton o-rings are attacked by the gas sample, **Teflon** o-rings are available and must be **ordered separately**.

Cat. No.	Description	Price / Pk/2
66004-1	Teflon O-Rings	\$15.00

Cat. No.	Description	Cell Volume	Price / each
66004-10	Large Volume Gas Cell (10cm Pathlength)	150ml	\$495.00



#### Replacement Parts

Cat. No.	Description	Price / Pk/2
66004-2	Viton O-Rings	\$16.00
66004-3	Teflon Gaskets	14.00

#### Polished Discs

(49mm x 6mm) (Prices are for single windows - not pairs)

Material Cat. No. Price / each	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	AgCl	AgBr	SiO <sub>2</sub>	ZnS*	ZnSe*
	602A14	602B14	602C14	602D14	602E14	602N14	602P14	602I14	602K14	602L14
	\$59.00	\$83.00	\$109.00	\$143.00	\$335.00	Request	Request	\$245.00	\$450.00	\$485.00

\*Windows are 3mm thick.

# Short-Path Gas Cells

## Temperature Controlled Gas Cell

For analysis of pure gases and gas mixtures where component concentrations are >1% and preferably 5-10% or greater. The gas cell body is fabricated from stainless steel and is enveloped with a band heater, making the cell ideal for sample studies at ambient and above temperatures. The stainless steel valve and plug with 1/8" normal pipe thread connections allow the cell to be used in both the stationary (trapped gas samples) or the dynamic (flow) mode. The beam-conforming interior of the cell body (see diagram below) maintains the

standard pathlength while limiting the volume of gas. This gas cell can also be used to analyze gas chromatographic fractions and to operate at increased or decreased pressures. Since the gas cell assembly is floor-mounted in the sample compartment, construction of the cell base is dependent on the instrument model (see table below). Gas cell assembly includes a stainless steel body with band heater, threaded end caps, base (isolated thermally), embedded K-Type thermocouple, two inner Viton o-rings and two outer Teflon gaskets.



Clear Aperture of cell is 20mm Dia.

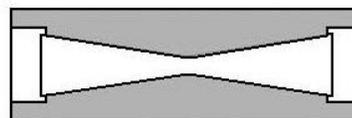
**Order Separately:** Two Polished Disc Windows.

Cells accept 25mm dia. x 4mm thick disc windows.

For other window materials, see **Pages 4-7**.

(2mm thick windows are not recommended for NaCl-KCl-KBr-CsI-CdTe-AgBr)

The **Temperature Controller** (Cat. No. 67001) found at the bottom of **Page 47** is recommended for use with this cell.



Cross Section Diagram of Cell Body.

**Kalrez** o-rings are highly recommended for the temperature range of **200 - 260°C** because of the softening and degradation of Viton and Teflon in this range.

**Order separately** (four Kalrez o-rings would be required to replace the Viton o-rings and Teflon gaskets).

Cat. No.	Description	Price / each
64401-B2	Kalrez O-Ring	\$56.00

### Replacement Parts

Cat. No.	Description	Cell Volume	Price / each
66401-	Temperature Controlled Gas Cell	17ml	\$2,490.00
66401-4, -5	(10cm Pathlength)		2,890.00
66401-23			2,980.00

Cat. No.	Description	Price / each
66001-2	Viton O-Ring	\$7.00
66001-3	Teflon Gasket	6.00

Cat. No.	Instrument Model(s)
66401-1	Perkin-Elmer 1600, 16PC, Paragon 500 and 1000 Series, Spectrum 1000, BX/RX Series
66401-2	Perkin-Elmer 1700 Series (1710, 1750, 1760, etc.)
66401-3	Perkin-Elmer System 2000, Spectrum 2000, GX Series
66401-4	Perkin-Elmer Spectrum One (with Intelligent)
66401-5	Perkin-Elmer Spectrum One Identichack (with Intelligent)
66401-6	Nicolet 500 Series (510, 520, etc.), 700 Series (730, 740, etc.), Magna, Impact, Protege
66401-7	Nicolet 205, 210
66401-8	Nicolet Avatar, Nexus, 380, 4700, 6700, 8700 (for Smart)
66401-9	Digilab FTS-7, -25, -40, -40A, -45A, -50, -60, -60A, Qualimatic
66401-10	Digilab FTS-155, -165, -175, -185, 6000
66401-11	Digilab FTS-375, -575, -675
66401-12	Digilab Excalibur, Scimitar, FTS-7000
-	Varian - see Digilab

Cat. No.	Instrument Model(s)
66401-13	Analect Diamond
66401-14	Bruker Vector 22 and 33, IFS-28, -48, -55, -66, -88, -112, -113, -114, -120HR, -125HR
66401-23	Bruker Vertex 70, Tensor, Vector (with QuickLock)
66401-15	Mattson Cygnus, Sirius, Polaris, Research Series
66401-16	Mattson Galaxy, Infinity
66401-17	Mattson Genesis, Satellite
66401-18	Bomem MB Series (MB-120, MB-155, MB-160, etc.)
66401-19	Bomem Arid Zone
66401-20	Midac M Series, Prospect IR
66401-21	Shimadzu 8100-8700
66401-22	Shimadzu Prestige 21 (for QuickStart)
66401-24	Jasco 300, 600 Series
66401-25	Jasco 400, 600V
66401-26	Jasco 4000 Series, 6000 Series

### Polished Discs

(25mm x 4mm)

(Prices are for single windows - not pairs)

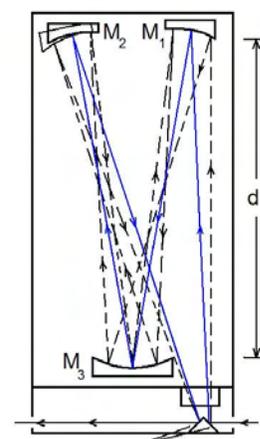
Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	AgCl	AgBr	SiO <sub>2</sub>	ZnS*	ZnSe*
Cat. No.	602A09	602B09	602C09	602D09	602E09	602N09	602P09	602I09	602K08	602L08
Price / each (1-9)	\$20.00	\$27.00	\$28.00	\$69.00	\$117.00	Request	Request	\$85.00	\$173.00	\$178.00
(10 and over)	19.00	26.00	27.00	-	-	-	-	-	-	-

\*Windows are 2mm thick.

# Long-Path Gas Cells

Long-Path Gas Cells are used for analytical experiments of gas mixtures where the component concentrations are present in <1% to ppm. Applications include air pollution studies, exhaust gas and stack gas analysis, toxic gas analysis, gas purity studies, and chemical reaction investigations including photochemical.

Pathlengths are determined by the number of beam reflections between the Field mirror (nearest to the Transfer Optics box) and the Objective mirrors (opposite end of cell body) as demonstrated in the diagram to the right. Positioning the Objective Mirror  $M_2$  determines the pathlength by controlling the number of passes the beam takes between the Objective mirrors and the Field mirror. At Mirror  $M_2$ , the beam either exits the cell or is reflected back to the Field Mirror  $M_3$  and then routed to  $M_1$  which returns the beam to  $M_2$  via  $M_3$ . The result is an additional four passes each time the beam does not exit the cell from Mirror  $M_2$ . Hence, the possible cell pathlengths will be in increments of 4X the distance ( $d$ ) between the Objective mirrors and the Field mirror. The Objective Mirror  $M_2$  is moved, while Objective Mirror  $M_1$  remains stationary, to change the pathlength by reposition (for fixed pathlength cells) or by calibrated dial adjustment (for variable pathlength cells) located outside the Objective mirror side of the cell body. A laser light is included with the variable pathlength cells to verify the pathlength and/or to align the cell following a pathlength change. The number of laser red spots on the mirrors indicate the cell pathlength.



Transfer Optics Mirrors  
Optical Diagram

are compatible with the standard spectrometer and can be positioned vertically or horizontally in the sample compartment. Included with the gas cells are the glass body with Field and Objective mirrors, transfer optics, two stainless steel valves, and laser light (variable pathlength cells only) for beam alignment.

**Window(s) must be ordered separately.**

Pathlengths (in  $4d$  increments) for Fixed Path cells other than those listed below are available. Please request.

These Long-Path Gas Cells contain a heavy-wall borosilicate glass cell body which permits the cell to be used at increased or decreased pressures and which makes the cell useable for photochemical reactions and analyses. The metal parts of the cells are fabricated with corrosion-resistant black anodized aluminum. Two stainless steel valves, located on the Objective mirrors end of the cell, allow for gas sampling in both the stationary (trapped gas samples) or the dynamic (flow) mode. Other features include transfer optics containing two plane mirrors with fine-pitch screw adjustments. The Field and Objective mirrors are gold-coated with a further protective inert coating making the cell easy to disassemble for cleaning (detergent and water), without the need to realign the mirrors. Being slide holder mounted, the Long-Path Gas Cells



**Cat. No. 66201-**  
Requires One 37mm x 4mm Disc Window



**Cat. No. 66202-**  
Requires Two 25mm x 4mm Disc Windows



**Cat. No. 66203-**  
Requires Two 25mm x 4mm Disc Windows

Cat. No.	Description	Pathlength	Distance (d)	Reflections	Cell Body Volume	Cell Body ID	Cell Body Height	Price/each
66201-12	Long-Path Gas Cell / Fixed Path	1.2 Meters	10cm	12	100ml	3.3cm	11.5cm	\$2,540.00
66201-24	Long-Path Gas Cell / Fixed Path	2.4 Meters	10cm	24	100ml	3.3cm	11.5cm	2,540.00
66201-32	Long-Path Gas Cell / Fixed Path	3.2 Meters	10cm	32	100ml	3.3cm	11.5cm	2,540.00
66202-60	Long-Path Gas Cell / Fixed Path	6.0 Meters	15cm	40	500ml	6.3cm	17.0cm	2,720.00
66203-1V	Long-Path Gas Cell / Variable Path	0.6-7.2 Meters	15cm	4-48	500ml	6.3cm	18.0cm	3,195.00

### Polished Discs

(Prices are for single windows - not pairs)

Material	NaCl	KCl	KBr	CaF <sub>2</sub>	BaF <sub>2</sub>	SiO <sub>2</sub>	ZnS*	ZnSe*
<b>Cat. No. - 25mm x 4mm</b>	602A09	602B09	602C09	602D09	602E09	602I09	602K08	602L08
<b>Price / each (1-9)</b>	\$20.00	\$27.00	\$28.00	\$69.00	\$117.00	\$85.00	\$173.00	\$178.00
<b>(10 and over)</b>	19.00	26.00	27.00	-	-	-	-	-
<b>Cat. No. - 37mm x 4mm</b>	602A17	602B17	602C17	602D17	602E17	602I17	602K17	602L17
<b>Price / each</b>	47.00	55.00	63.00	158.00	285.00	Request	410.00	420.00

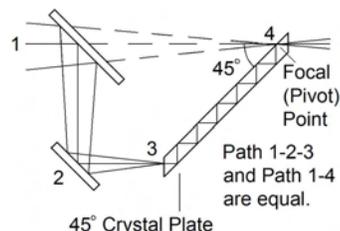
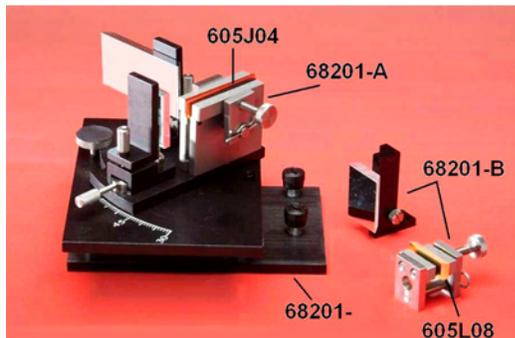
\*Windows are 2mm thick.

**Internal Reflectance Accessories**

**Vertical Internal Reflectance System (Variable-Angle)**

The multiple internal reflectance (MIR and also known as attenuated total reflectance-ATR) method incorporates a beam directed into a side surface of a high-refractive index crystal at an angle of incidence which will cause the critical angle to be exceeded. With a sample placed against one or both of the crystal faces, the beam alternately reflects

between the internal crystal faces while propagating forward, unless the sample absorbs. The exit resulting beam produces a spectrum similar to transmission. This method is used for samples which are transmission opaque, too thin for transmission, too difficult or impossible to prepare for transmission because of physical form, or for transmission samples where higher resolution and detail are not required.



Note: The air path of the beam is not effected with the optical system in the sample compartment.

Ideal for homogeneous solids such as films, coatings, gels, gums, pastes, ointments, adhesives, fibers and fabrics, polymers, and soft compressible powders. Made of stainless steel, the crystal mounts clamping mechanisms provide inert surfaces, while in contact with the sample, and pressure for maximum sample contact with the crystal plate. The clamping mechanism maintains the crystal plate position for varying sample thicknesses, making it convenient for changing

samples and/or crystal plates without disturbing the optical alignment of the mirror system. Removal and reinstallation of the entire crystal plate mount assembly requires no further mirror alignment. An option of double-sided crystal sampling enhances spectral bands, an added advantage not found with horizontal-type internal reflectance systems. The mirrors and crystal plate mount are located on a movable platform which is attached to the system base. Once the mirrors and crystal are aligned, the platform can be moved about a pivot point allowing the incidence angle to be varied from 30° to 60° without the need to realign the mirrors. At or near the extreme angles of 30° and 60°, the respective face angle crystal plates may be required. Please request.

**Order Separately:** Crystal Plate Mounts (sample clamps) and ATR Crystal Plates. See below.

The entire optical system can be removed from and reinstalled into the sample compartment with no further alignment adjustments. Since the mirror system assembly is floor-mounted in the sample compartment, construction of the base is dependent on the instrument model (see table below).

Cat. No.	Description	Price / each
68201-	Vertical Internal Reflectance System	\$1,090.00
68201-4,-5,-12	(without Crystal Mounts and ATR Plates)	1,290.00
68201-22		1,280.00
68201-23		1,440.00
68201-26		1,440.00

Cat. No.	Instrument Model(s)
68201-1	Perkin-Elmer 1600, 16PC, Paragon 500 and 1000 Series, Spectrum 1000, BX/RX Series
68201-2	Perkin-Elmer 1700 Series (1710, 1750, 1760, etc.)
68201-3	Perkin-Elmer System 2000, Spectrum 2000, GX Series
68201-4	Perkin-Elmer Spectrum One (with Intelligent)
68201-5	Perkin-Elmer Spectrum One Identichack (with Intelligent)
68201-6	Nicolet 500 Series (510, 520, etc.), 700 Series (730, 740, etc.), Magna, Impact, Protege
68201-7	Nicolet 205, 210
68201-8	Nicolet Avatar, Nexus, 380, 4700, 6700, 8700 (for Smart)
68201-9	Digilab FTS-7, -25, -40, -40A, -45A, -50, -60, -60A, Qualimatic
68201-10	Digilab FTS-155, -165, -175, -185, 6000
68201-11	Digilab FTS-375, -575, -675
68201-12	Digilab Excalibur, Scimitar, FTS-7000
-	Varian - see Digilab

Cat. No.	Instrument Model(s)
68201-13	Analect Diamond
68201-14	Bruker Vector 22 and 33, IFS-28, -48, -55, -66, -66V, -88, -112, -113, -114, -120HR, -125HR
68201-23	Bruker Vertex 70, Tensor, Vector (with QuickLock)
68201-15	Mattson Cygnus, Sirius, Polaris, Research Series
68201-16	Mattson Galaxy, Infinity
68201-17	Mattson Genesis, Satellite
68201-18	Bomem MB Series (MB-120, MB-155, MB-160, etc.)
68201-19	Bomem Arid Zone
68201-20	Midac M Series, Prospect IR
68201-21	Shimadzu 8100-8700
68201-22	Shimadzu Prestige 21 (with QuickStart)
68201-24	Jasco 300, 600 Series
68201-25	Jasco 400, 600V
68201-26	Jasco 4000 Series, 6000 Series (with IQ)

**Crystal Plate Mounts**

For use with 50mm x 10mm x 3mm Crystal Plates.

For use with 25mm x 10mm x 3mm Crystal Plates.

Includes a mirror to attach to Mirror M<sub>2</sub> for proper beam throughput.

Cat. No.	Description	Price/each
68201-A	Crystal Plate Mount-50mm (without ATR crystal plate)	\$395.00

Cat. No.	Description	Price/each
68201-B	Crystal Plate Mount-25mm (without ATR crystal plate)	\$395.00

**ATR Crystal Parallelogram Plates**

Material/Face Angle Length x Width x Thickness (mm)	KRS-5 / 45°		ZnSe / 45°		Ge / 45°	
	Cat.No.	Price/each	Cat.No.	Price/each	Cat.No.	Price/each
50 x 10 x 3	605J04	\$535.00	605L04	\$295.00	605T04	\$265.00
25 x 10 x 3	605J08	235.00	605L08	190.00	605T08	185.00

For other crystal plate materials and information, see **Page 10**.

# Internal Reflectance Accessories

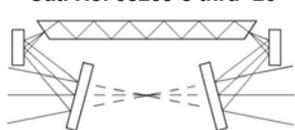
## Horizontal Internal Reflectance System

This system utilizes the multiple internal reflectance (MIR and also known as attenuated total reflectance-ATR) method in a horizontal orientation (horizontal ATR or HATR). In this method, a beam directed into a side surface of a high-refractive index crystal at an angle of incidence which will cause the critical angle to be exceeded. With a sample placed against the top crystal face, the beam alternately

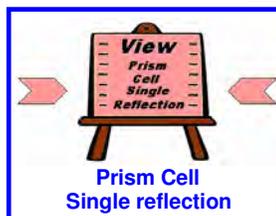
reflects between the internal crystal faces while propagating forward, unless the sample absorbs. The exit resulting beam produces a spectrum similar to transmission. This method is used for samples which are transmission opaque, too thin for transmission, too difficult or impossible to prepare for transmission because of physical form, or for transmission samples where higher resolution and detail are not required.



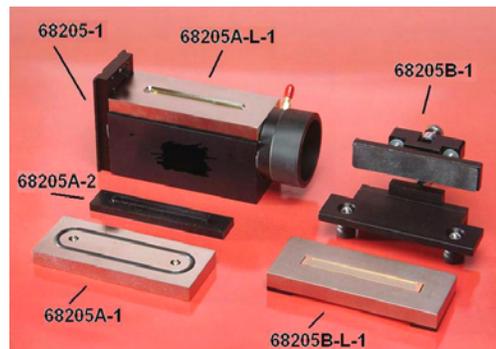
Cat. No. 68205-3 thru -26



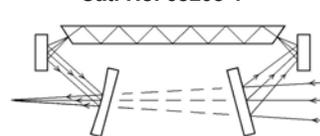
Optical Diagram of Cat. No. 68205-3 thru -26



Prism Cell Single reflection



Cat. No. 68205-1



Optical Diagram of Cat. No. 68205-1

Used for analysis (qualitative and quantitative) of liquids and homogeneous solids such as films, coatings, gels, pastes, gums, ointments, adhesives, fibers and fabrics, soft compressible powders, polymers and other various solids. These HATR systems provide excellent energy throughput for achieving high signal-to-noise ratio and optimum sensitivity. Re-direction of the beam by the four-mirror optical system into the ATR crystal plate will not increase the beam air path. The encased mirror optical unit includes a self-contained **purge** system allowing for operation with the instrument sample compartment open. All **systems** are **pre-aligned**. The **Trough Plate** Mount is available to accommodate samples in the form of liquids, gels, pastes, ointments and soft compressible powders. Liquids that evaporate easily can be contained by using a Volatile Liquids Cover, while soft compressible powder samples may require use of a Powder Press for maximum crystal plate contact. The **Flat Plate** Mount is available to accommodate samples in the form of films, coatings, gums, adhesives, fibers and fabrics, and other various rigid solids. The crystal plate is positioned slightly above the mount surface for maximum sample contact.

Samples that do not have inherently flat surfaces will require a Flat Plate Clamp for pressing to the crystal plate surface.

**Order Separately:** Crystal Plate Mount and Accessories (see opposite Page 41).

**Heated and Flow Crystal Plate** Mounts extend the applications capabilities of this HATR System (see opposite Page 41). To eliminate the possibility of solvent/sample leaching of adhesive-type sealants, an "indium" gasket is used for sealing the crystal plate to trough, flat and heated plate mounts. O-rings are used for crystal plate sealing to flow trough plate mounts. In addition to providing a large crystal surface sampling area (crystal plate is 80mm Long x 10mm Wide x 4mm Thick), all crystal plate mounts are interchangeable and can be removed from and reinstalled on to the mirror system without any need for optical realignment. The entire mirror system can also be removed from or reinstalled into the sample compartment without disturbing the mirror alignment. Except for Cat. No. 68205-1 (Perkin-Elmer) which is slide-mounted, all other mirror systems are floor-mounted in the sample compartment making construction of the base dependent on the instrument model (see table below).

Cat. No.	Description	Price / each
68205-	Horizontal Internal Reflectance System	\$1,060.00
68205-4, -5	(without Crystal Mounts	1,260.00
68205-12	and Accessories)	1,250.00
68205-22		1,250.00
68205-23		1,410.00
68205-26		1,410.00

Cat. No.	Instrument Model(s)
68205-1	Perkin-Elmer 1600, 16PC, Paragon 500 and 1000 Series, 1700 Series (1710, 1750, 1760, etc.) Spectrum 1000, BX/RX Series
68205-3	Perkin-Elmer System 2000, Spectrum 2000, GX Series
68205-4	Perkin-Elmer Spectrum One (with Intelligent)
68205-5	Perkin-Elmer Spectrum One Identichex (with Intelligent)
68205-6	Nicolet 500 Series (510, 520, etc.), 700 Series (730, 740, etc.), Magna, Impact, Protege
68205-7	Nicolet 205, 210
68205-8	Nicolet Avatar, Nexus, 380, 4700, 6700, 8700 (for Smart)
68205-9	Digilab FTS-7, -25, -40, -40A, -45A, -50, -60, -60A, Qualimatic
68205-10	Digilab FTS-155, -165, -175, -185, 6000
68205-11	Digilab FTS-375, -575, -675
68205-12	Digilab Excalibur, Scimitar, FTS-7000
-	Varian - see Digilab

Cat. No.	Instrument Model(s)
68205-13	Analect Diamond
68205-14	Bruker Vector 22 and 33, IFS-28, -48, -55, -66, -66V, -88, -112, -113, -114, -120HR, -125HR
68205-23	Bruker Vertex 70, Tensor, Vector (with QuickLock)
68205-15	Mattson Cygnus, Sirius, Polaris, Research Series
68205-16	Mattson Galaxy, Infinity
68205-17	Mattson Genesis, Satellite
68205-18	Bomem MB Series (MB-120, MB-155, MB-160, etc.)
68205-19	Bomem Arid Zone
68205-20	Midac M Series, Prospect IR
68205-21	Shimadzu 8100-8700
68205-22	Shimadzu Prestige 21 (with QuickStart)
68205-24	Jasco 300, 600 Series
68205-25	Jasco 400, 600V
68205-26	Jasco 4000 Series, 6000 Series (with IQ)

# Horizontal Internal Reflectance System Crystal Plate Mounts and Accessories

## Trough Plate Mounts



For the analysis of liquids, gels, pastes, ointments and soft compressible powders. Only a thin layer of sample is required to be spread over the entire crystal surface area.



Cat. No. 68205A-1



Cat. No. 68205A-2

Containing a Viton o-ring, the Volatile Liquids Cover is used to seal in liquids that evaporate easily. For maximum crystal plate contact, the Powder Press is used to compact "soft compressible" powders by hand-pressing.

Cat. No.	Description	Material/Face Angle	Price/each
68205A-L-1	Trough Plate Mount	ZnSe / 45°	\$860.00
68205A-T-1	Trough Plate Mount	Ge / 45°	960.00
68205A-J-1	Trough Plate Mount	KRS-5 / 45°	1,920.00
68205A-U-1	Trough Plate Mount	Si / 45°	1,090.00
68205A-R-1	Trough Plate Mount	Amtir / 45°	1,720.00

Please request other face angles (e.g. 30° and 60°).

Cat. No.	Description	Price/each
68205A-1	Volatile Liquids Cover	\$105.00
68205A-2	Powder Press	95.00

For Properties of Infrared Materials, see **Page 2**.

## Flat Plate Mounts



For the analysis of films, coatings, gums, adhesives, fibers and fabrics, polymers and various other homogeneous solids.



For maximum contact between interfacing surfaces of the solid sample and the flat crystal plate, the Flat Plate Clamp is attached easily to the mirror system to apply pressure.

An adjustment screw on the clamp can be used to control and reproduce pressure.

Cat. No.	Description	Material/Face Angle	Price/each
68205B-L-1	Flat Plate Mount	ZnSe / 45°	\$860.00
68205B-T-1	Flat Plate Mount	Ge / 45°	960.00
68205B-J-1	Flat Plate Mount	KRS-5 / 45°	1,920.00
68205B-U-1	Flat Plate Mount	Si / 45°	1,090.00
68205B-R-1	Flat Plate Mount	Amtir / 45°	1,720.00

Please request other face angles (e.g. 30° and 60°).

Cat. No.	Description	Price/each
68205B-1	Flat Plate Clamp	\$255.00

For Properties of Infrared Materials, see **Page 2**.

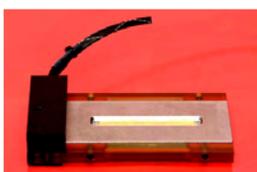
## Flow Trough Plate Mounts

Ideal for liquid flow-through analysis, the Flow-Through "Cell" is an adapted trough plate mount, incorporating an o-ring gasket for inertness to solvents and samples. Easy dismantling for cleaning. "Cell" volume is 0.5 ml.



Cat. No.	Description	Material/Face Angle	Price/each
68205C-L-1	Flow Trough Plate Mount	ZnSe / 45°	\$1,950.00
68205C-T-1	Flow Trough Plate Mount	Ge / 45°	2,050.00
68205C-J-1	Flow Trough Plate Mount	KRS-5 / 45°	2,780.00

## Heated Trough Plate Mounts



For above ambient temperature studies (up to 120°C), this trough plate mount contains an "indium" sealing gasket for solvent/sample chemical resistance and permits sample/crystal plate temperature differences of up to 60°C without crystal fracturing.

Cat. No.	Description	Material/Face Angle	Price/each
68205D-L-1	Heated Trough Plate Mount	ZnSe / 45°	\$1,725.00
68205D-T-1	Heated Trough Plate Mount	Ge / 45°	1,825.00
68205D-J-1	Heated Trough Plate Mount	KRS-5 / 45°	2,350.00

## Heated Flow Trough Plate Mounts



Provides all features of both the Flow (Cat. Nos. 68205C-X-1) and Heated (Cat. Nos. 68205D-X-1) Trough Plate Mounts. Easily dismantled for cleaning. O-ring is used for sealing.

For use up to 120°C. "Cell" volume is 0.5ml.

Cat. No.	Description	Material/Face Angle	Price/each
68205E-L-1	Heated Flow Trough Plate Mount	ZnSe / 45°	\$2,340.00
68205E-T-1	Heated Flow Trough Plate Mount	Ge / 45°	2,440.00
68205E-J-1	Heated Flow Trough Plate Mount	KRS-5 / 45°	2,990.00

## Temperature Controller

For use with the Heated (Cat. Nos. 68205D-X-1) and Heated Flow (Cat. Nos. 68205E-X-1) Trough Plate Mounts, the Temperature Controller has an analog dial, a pre-set temperature indicator and is accurate to +/- 2°C.

Cat. No.	Description	Price / each
67002	Temperature Controller (110 Volt)	\$1,180.00



## Crystal Plate Mount Reconditioning

The above Crystal Plate Mounts **already in your possession** can be returned to New Era for refurbishing. Prices below are for ATR crystal replacement; if crystal can be re-worked, the price will be less.

Cat. No.	Cat. No.	Material/Face Angle	Price/each
(Trough Plate)	(Flat Plate)		
628-61-L-1	628-62-L-1	ZnSe / 45°	\$660.00
628-61-T-1	628-62-T-1	Ge / 45°	765.00
628-61-J-1	628-62-J-1	KRS-5 / 45°	1,690.00
628-61-U-1	628-62-U-1	Si / 45°	825.00
628-61-R-1	628-62-R-1	Amtir / 45°	1,610.00

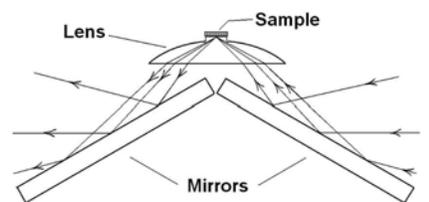
## Horizontal Microsampling Internal / Specular Reflectance System

Utilizing the internal reflectance method, the Microsampling HATR System, through the use of uniquely designed pressure clamps, produces high quality spectra for a wide variety of "small" samples.

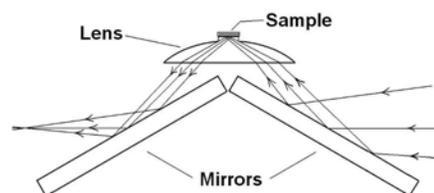


With the special focusing optical system and maximum sample/crystal contact via pressure clamps, only a one or three-reflection crystal plate and small sample area is required for high throughput.

Because of the optical system design, throughput is higher than usual compared with other systems found on the market. As always, reflectance methods are used for samples which are transmission opaque, too thin for transmission, too awkward or impossible to prepare for transmission because of physical form, or for transmission samples where higher resolution and detail are not needed.



Optical Diagram with Center Focus Beam.



Optical Diagram with Side Focus Beam.

Used for internal reflectance analysis (qualitative or quantitative) of micro-size samples in the form of liquids and homogeneous solids such as powders, films, coatings, gels, pastes, gums, ointments, foams, adhesives, fibers and fabrics, polymers (including rubber), paint (and chips), beads, granules, pellets, and, other tractable and intractable solids. Also, used for specular reflectance analysis (45°) of micro-size samples such as films and coatings (>1 $\mu$  thickness) on reflective surfaces, metal surfaces and, semiconductor and magnetic materials. Sturdy and precision constructed, the Microsampling System is pre-aligned and has a self-contained **purge system** if needed. To avoid any solvent/sample leaching of adhesive type sealants, an "indium" gasket is used for sealing the crystal plate to the plate mount. All crystal plate mounts and the specular plate mount are interchangeable and can be removed from and reinstalled on to

the optical system without the need for optical realignment. The entire optical system can be removed from or reinstalled into the sample compartment without disturbing the mirror alignment.

**Order separately:** Crystal Plate Mounts, Accessories for Trough Plate Mount, Specular Plate Mount, Pressure Clamps and Pressure Clamp Tips (see **Pages 43-44**).

Cat. No.	Description	Price / each
68206-	Microsampling Reflectance System	\$910.00
68206-4,-5,-12	(without Accessories)	1,110.00
68206-22		1,100.00
68206-23		1,260.00
68206-26		1,260.00

Cat. No.	Instrument Model(s)
68206-1	Perkin-Elmer 1600, 16PC, Paragon 500 and 1000 Series, Spectrum 1000, BX/RX Series
68206-2	Perkin-Elmer 1700 Series (1710, 1750, 1760, etc.)
68206-3	Perkin-Elmer System 2000, Spectrum 2000, GX Series
68206-4	Perkin-Elmer Spectrum One (with Intelligent)
68206-5	Perkin-Elmer Spectrum One Identichex (with Intelligent)
68206-6	Nicolet 500 Series (510, 520, etc.), 700 Series (730, 740, etc.), Magna, Impact, Protege
68206-7	Nicolet 205, 210
68206-8	Nicolet Avatar, Nexus, 380, 4700, 6700, 8700 (for Smart)
68206-9	Digilab FTS-7, -25, -40, -40A, -45A, -50, -60, -60A, Qualimatic
68206-10	Digilab FTS-155, -165, -175, -185, 6000
68206-11	Digilab FTS-375, -575, -675
68206-12	Digilab Excalibur, Scimitar, FTS-7000
-	Varian - see Digilab

Cat. No.	Instrument Model(s)
68206-13	Analect Diamond
68206-14	Bruker Vector 22 and 33, IFS-28, -48, -55, -66, -66V, -88, -112, -113, -114, -120HR, -125HR
68206-23	Bruker Vertex 70, Tensor, Vector (with QuickLock)
68206-15	Mattson Cygnus, Sirius, Polaris, Research Series
68206-16	Mattson Galaxy, Infinity
68206-17	Mattson Genesis, Satellite
68206-18	Bomem MB Series (MB-120, MB-155, MB-160, etc.)
68206-19	Bomem Arid Zone
68206-20	Midac M Series, Prospect IR
68206-21	Shimadzu 8100-8700
68206-22	Shimadzu Prestige 21 (with QuickStart)
68206-24	Jasco 300, 600 Series
68206-25	Jasco 400, 600V
68206-26	Jasco 4000 Series, 6000 Series (with IQ)

# Microsampling Horizontal Internal / Specular Reflectance System

## Crystal Plate Mounts and Accessories

Because of the wide range of samples that can be analyzed using this reflectance system, all **accessories (crystal plate and specular plate mounts, trough plate accessories, pressure clamps, pressure clamp tips)** are **ordered separately**.

For internal reflectance, selection of crystal plate mounts, trough insert accessories, pressure clamps and tips, depends on the particular types of samples to be analyzed.

For specular reflectance (45°), the specular plate mount should be all that is needed.

Material	Types of Samples
ZnSe, Ge, Amtir	Liquids, pastes, gums, gels, ointments, flexible solids
Ge	Highly absorbing samples such as rubber and high carbon content samples
Si, Diamond	Abrasive and hard samples
Diamond	Brittle samples, samples requiring high pressures

Transmission and properties of Infrared Optical Materials can be found on **Page 2**.

### Crystal Plate Mounts / 1-Reflection



For the analysis of liquids, semi-solids and solids, which are stronger absorbing type samples. A **2mm** diameter crystal surface is ideal for accommodating very small samples.

Liquids will require a Trough Insert with Mounting Ring (see below). Semi-solids (such as pastes, gels and foams) will hold better on the crystal by using a Trough Insert with Mounting Ring.

In order to produce the best quality spectra, most solids will require a pressure clamp (see **Page 44**) for maximum crystal/sample contact.

Cat. No.	Description	Price/each
68206A-L-1	Crystal Plate Mount / 1-Reflection / ZnSe	\$995.00
68206A-T-1	Crystal Plate Mount / 1-Reflection / Ge	1,340.00
68206A-U-1	Crystal Plate Mount / 1-Reflection / Si	1,910.00
68206A-UL-1	Crystal Plate Mount / 1-Reflection / Si-ZnSe*	2,110.00
68206A-R-1	Crystal Plate Mount / 1-Reflection / Amtir	1,480.00
68206A-XL-1	Crystal Plate Mount / 1-Reflection / Diamond-ZnSe*	3,850.00

\* Crystals are laminates; diamond is a 0.5mm thick layer on contact surface.

### Crystal Plate Mounts / 3-Reflection



For the analysis of liquids, semi-solids and solids. A **6mm** diameter crystal surface provides a larger crystal/sample surface area for weaker absorbing small samples.

Liquids will require a Trough Insert with Mounting Ring (see below). Semi-solids (such as pastes, gels and foams) will hold better on the crystal by using a Trough Insert with Mounting Ring.

In order to produce the best quality spectra, most solids will require a pressure clamp (see **Page 44**) for maximum crystal/sample contact.

Cat. No.	Description	Price/each
68206A-L-3	Crystal Plate Mount / 3-Reflection / ZnSe	\$1,690.00
68206A-XL-3	Crystal Plate Mount / 3-Reflection / Diamond-ZnSe*	4,600.00

\* Crystals are laminates; diamond is a 0.5mm thick layer on contact surface.

### Trough Inserts

For the analysis of liquids, semi-solids (such as gels, pastes, ointments, foams) and powders, a Trough Insert with Mounting Ring is installed directly on to a crystal plate mount.

For best quality spectra, powders will require pressure for maximum crystal/sample contact (see pressure clamps on **Page 44**).

The Volatile Liquids Cover (containing a Viton o-ring) is used to seal in liquids that evaporate easily.



Cat. No.	Description	Insert Hole Dia. at Crystal Surface	Price/each
68206B-1	Trough Insert with Mounting Ring, for 1-Reflection	3mm	\$40.00
68206B-1-1	Trough Insert only, for 1-Reflection	3mm	20.00
68206B-3	Trough Insert with Mounting Ring, for 3-Reflection	4.5mm	43.00
68206B-3-1	Trough Insert only, for 3-Reflection	4.5mm	23.00
68206B-R	Mounting Ring, for all Trough Inserts	-	28.00
68206B-VC	Volatile Liquids Cover, for all Trough Inserts	-	54.00



# Microsampling Horizontal Internal / Specular Reflectance System Accessories and Specular Plate Mount

## Crystal Plate Pressure Clamps

For achieving maximum contact between the surfaces of solid samples and the ATR crystal, the following high-pressure clamps can exert up to a force of 40 lbs at the point of compression. Slip-clutch prevents overtightening, so damage to the crystal can be avoided. Two adjustment screws are located in the rear, next to the control knob column. When the screws are aligned with two grooves in the column and tightened down, the pressure clamp tip (or viewing scope) is precisely centered over the crystal. When the screws are loosened, the clamp can be swung to the side for tip cleaning and access to the crystal.

The Viewing Scope, containing a lens on the end nearest to the eye, allows for a close-up image of the sample to aid in better positioning of small samples. A 3mm diameter sapphire window, on the end nearest to the sample, serves as the pressure tip. The image is most clear when the sapphire window is in contact with the sample. The Viewing Scope can be ordered separately and installed into the Standard or Rotatable Pressure Clamps, replacing the anvil and the pressure clamp tip. If the sapphire window needs to be cleaned routinely, the Rotatable Clamp should be used.

**Clamp Tips are not included and must be ordered separately.**



68206C-1



68206C-2



68206C-3



68206C-4



68206C-5

Cat. No.	Description	Application	Price/each
68206C-1	Standard Pressure Clamp	Routine sampling	\$855.00
68206C-2	Rotatable Pressure Clamp	Tip swings up for more easy cleaning	1,250.00
68206C-3	Controlled Pressure Clamp	For reproducibility of pressure (not usable with Viewing Scope)	1,450.00
68206C-4	Viewing Pressure Clamp, Standard	Standard Clamp with Viewing Scope replacing anvil and tip	1,425.00
68206C-5	Viewing Pressure Clamp, Rotatable	Rotatable Clamp with Viewing Scope replacing anvil and tip	1,725.00

## Clamp Tips



68206C-F



68206C-C



68206C-S



68206C-SP



68206C-V

Cat. No.	Description	Application / Sample Types	Price/each
68206C-F	Flat Tip	Rubber, elastic polymers, small beads, flexible solids, powders, for 1-Reflection Crystal Plate Mounts	\$28.00
68206C-C	Concave Tip	Granules, pellets, large beads, for 1-Reflection Crystal Plate Mounts	28.00
68206C-S	Swivel Tip	Films, semi-rigid polymers, irregular shapes, fibers, for 1-Reflection Crystal Plate Mounts	43.00
68206C-SP	Swivel Tip, Poly-Coated	for 3-Reflection Crystal Plate Mounts	54.00
68206C-V	Viewing Scope only	for 1-Reflection Crystal Plate Mounts	490.00

## Specular Plate Mount



For the analysis of films and coatings ( $>1\mu$  thickness) on reflective surfaces, surface studies of metals, and semiconductor / magnetic materials investigations, using  $45^\circ$  specular reflectance. A 5mm diameter opening provides for examination of small samples.

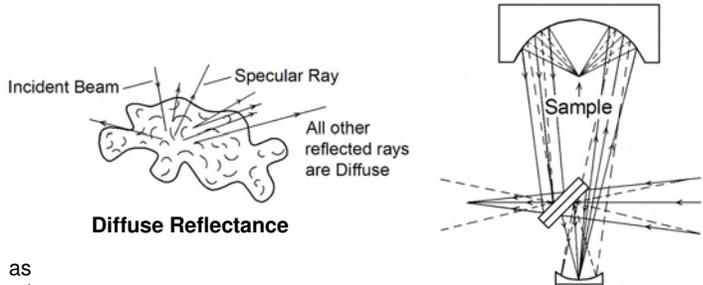
Cat. No.	Description	Price/each
68206D	Specular Plate Mount	\$725.00

# Diffuse Reflectance Accessories

## Diffuse Reflectance System



In the diffuse reflectance method, a large ellipsoid mirror directs the beam on to the sample surface. The irregular surface reflects the rays of the beam into various directions which, in turn, are collected by a large ellipsoid mirror and routed to the detector via another mirror. Rays, which reflect at an angle equal to the angle of incidence, are the specular rays and should be minimized to eliminate spectrum distortions (see diagram below). This method is used for samples where preparation is too difficult or impossible for transmission analysis, or where preparation is too awkward for internal reflectance analysis.



Diffuse Reflectance

Optical Diagram - Cat. No. 68301-

Used for studies of selected liquids and homogeneous solids such as powders, foams, fibers, paints, paper, intractable solids, coal, dried food samples, plastics, foliage and other various solids. Solid samples are usually mixed with a powder medium (primarily KBr) and liquid samples are deposited directly on the powder medium (primarily KBr). Only a small amount of sample is necessary for yielding a good quality spectrum. The Diffuse Reflectance System includes an alignment mirror, two macro sample cups, two micro sample cups, one sample preparation block, one macro/micro sample funnel, one mortar and pestle (35mm), two spatulas and 100g KBr powder (Standard IR Grade).

Additional KBr and other powders, and Mortars and Pestles can be found on **Page 33**.

**Order Separately:** Abrasion Accessories (see below).

The Diffuse Reflectance System is a four-mirror **pre-aligned** unit with a fixed position ellipsoid mirror and three variable position mirrors for any necessary fine adjustments. Maximum signal-to-noise ratio (nanogram sensitivity) is reached by locating the optimum sample height with the micrometer controlled sample holder. The precision sample holder platform can accommodate two sample cups allowing for background and sample spectra to be obtained rapidly. All sample cups are made of stainless steel. Removal and reinstallation of the sample holder platform from the mirror system as well as the entire mirror system from the instrument sample compartment will require no further optical alignment.

Since the mirror system is floor-mounted in the sample compartment, construction of the unit is dependent on the instrument model (see table below).

Intractable samples (such as paint or polymer coatings on metal or wood surfaces) can be studied by using abrasion accessories (see bottom of this page) which are **ordered separately**.

Cat. No.	Description	Price / each
68301-	Diffuse Reflectance System	\$1,975.00
68301-4,-5,-12		2,175.00
68301-22		2,165.00
68301-23		2,325.00
68301-26		2,325.00

Cat. No.	Instrument Model(s)
68301-1	Perkin-Elmer 1600, 16PC, Paragon 500 and 1000 Series, Spectrum 1000, BX/RX Series
68301-2	Perkin-Elmer 1700 Series (1710, 1750, 1760, etc.)
68301-3	Perkin-Elmer System 2000, Spectrum 2000, GX Series
68301-4	Perkin-Elmer Spectrum One (with Intelligent)
68301-5	Perkin-Elmer Spectrum One Identicheck (with Intelligent)
68301-6	Nicolet 500 Series (510, 520, etc.), 700 Series (730, 740, etc.), Magna, Impact, Protege
68301-7	Nicolet 205, 210
68301-8	Nicolet Avatar, Nexus, 380, 4700, 6700, 8700 (for Smart)
68301-9	Digilab FTS-7, -25, -40, -40A, -45A, -50, -60, -60A, Qualimatic
68301-10	Digilab FTS-155, -165, -175, -185, 6000
68301-11	Digilab FTS-375, -575, -675
68301-12	Digilab Excalibur, Scimitar, FTS-7000
-	Varian - see Digilab

Cat. No.	Instrument Model(s)
68301-13	Analect Diamond
68301-14	Bruker Vector 22 and 33, IFS-28, -48, -55, -66, -66V, -88, -112, -113, -114, -120HR, -125HR
68301-23	Bruker Vertex 70, Tensor, Vector (with QuickLock)
68301-15	Mattson Cygnus, Sirius, Polaris, Research Series
68301-16	Mattson Galaxy, Infinity
68301-17	Mattson Genesis, Satellite
68301-18	Bomem MB Series (MB-120, MB-155, MB-160, etc.)
68301-19	Bomem Arid Zone
68301-20	Midac M Series, Prospect IR
68301-21	Shimadzu 8100-8700
68301-22	Shimadzu Prestige 21 (with QuickStart)
68301-24	Jasco 300, 600 Series
68301-25	Jasco 400, 600V
68301-26	Jasco 4000 Series, 6000 Series (with IQ)

### Additional / Replacement Sample Cups

Made of stainless steel.

Sample Chamber  
9.5mm Dia.  
2.3mm Hgt.



Macro

Sample Chamber  
6.5mm Dia.  
1.4mm Hgt.



Micro

Cat. No.	Description	Price/each
68301-A	Macro Sample Cup	\$24.00
68301-B	Micro Sample Cup	24.00

### Abrasion Accessories

A paper disc is placed on to a stainless steel disc support. With the disc support installed into the tool, the sample surface is abraded by rubbing a SiC paper disc (or Diamond for very hard materials) against the sample. The disc support (with paper disc) is then inserted into the sample holder platform for analysis.

Cat. No.	Description	Price
68301-C	Abrasion Sample Kit (includes a sample disc tool, two disc supports, 75 SiC paper discs and 25 Diamond paper discs)	\$250.00 / ea
68301-C-3	Stainless Steel Disc Support	21.00 / ea
68301-C-1	SiC Paper Discs	65.00 / Pk/100
68301-C-2	Diamond Paper Discs	120.00 / Pk/50



# Specular Reflectance Accessories

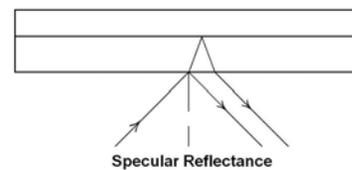
## 30° Specular Reflectance System

The specular reflectance method is used for samples which are opaque, but reflective, with no transmission in the infrared range or are too thin to yield a meaningful transmission spectrum. By directing the beam to the opaque sample surface (nonscattering) or transparent sample on a reflective (nonscattering) surface at a 30° incidence angle, the resulting reflection angle beam can be analyzed for absorption. A transparent sample on a reflective surface yields an effective double transmission spectrum (see diagram at right).

Analytical applications include films and coatings (>1μ) on reflective surfaces, film and coating thickness measurements via interference fringes and surface studies of metals. Also useful for semiconductor and magnetic material investigations.

Constructed of black anodized metal parts to prevent stray light effects, the two-mirror system contains a horizontal sample holding stage which can quickly be adjusted for focusing the beam on the sample. A mirror is included for horizontal stage alignment and for providing a reflective surface for transparent samples such as films and coatings along with three masks (aperture diameters 5mm, 6.5mm and 9.5mm) for examination of small samples and isolated areas of larger samples.

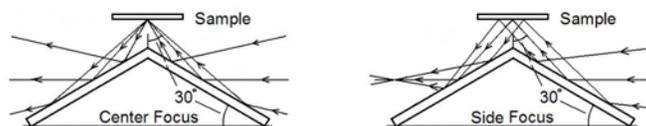
The 30° Specular Reflectance System is slide-mounted and will fit standard spectrometers.



Cat. No.	Description	Price/each
68100	30° Specular Reflectance System	\$740.00

### Replacement / Spare Parts

Cat. No.	Description	Price
68100-1	Alignment Mirror	\$95.00 / ea
68100-2	Masks	55.00 / Set/3

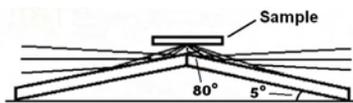
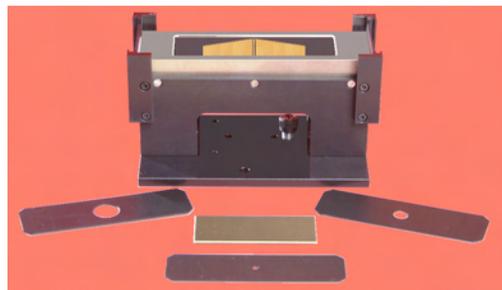


Optical Diagram - Cat. No. 68100

## 80° Specular Reflectance System (Grazing Angle)

Specular reflectance measurements at high angles of incidence (near grazing) are used for absorption analysis and thickness measurements of <1μ very thin films and coatings on reflecting (metallic) substrates, free-standing films, and molecular orientation investigations.

For absorption and thickness measurements of extremely thin films and coatings, addition of a Polarizer enhances the spectrum using p-polarized light (electric vector perpendicular to sample surface) and eliminating s-polarized light which would otherwise contribute to less sensitivity. See Page 47 for Polarizers compatible with this system.



Optical Diagram - Cat. No. 68101-

### Replacement / Spare Parts

Cat. No.	Description	Price
68101-A	Alignment Mirror	\$99.00 / ea
68101-B	Masks	145.00 / Set/3

Cat. No.	Description	Price / each
68101-	80° Specular Reflectance System	\$1,450.00
68101-4,-5	(Grazing Angle)	1,650.00
68101-22		1,640.00
68101-23		1,800.00
68101-26		1,800.00

Constructed of black anodized metal parts to eliminate stray light; the mirrors of the two-mirror system are gold-coated for maximum throughput. Slide holders (which are removable) are attached to each end of the system for accommodating a polarizer should it be necessary.

**Polarizers are ordered separately. See Page 47.**

The mirror systems are floor-mounted in the sample compartment making construction of the base dependent on the instrument model (table below). A gold-coated alignment mirror is included for background scans and for providing a reflective surface for transparent samples such as films and coatings, along with three masks (aperture diameters 9.5mm, 15mm, and 19 x 50mm oval) for examination of smaller samples and isolated areas of larger samples.

Cat. No.	Instrument Model(s)
68101-1	Perkin-Elmer 1600, 16PC, Paragon 500 and 1000 Series, Spectrum 1000, BX/RX Series
68101-3	Perkin-Elmer System 2000, Spectrum 2000, GX Series
68101-4	Perkin-Elmer Spectrum One (with Intelligent)
68101-5	Perkin-Elmer Spectrum One Identcheck (with Intelligent)
68101-6	Nicolet 500 Series (510, 520, etc.), 700 Series (730, 740, etc.), Magna, Impact, Protege
68101-8	Nicolet Avatar, Nexus, 380, 4700, 6700, 8700 (for Smart)
68101-9	Digilab FTS-7, -25, -40, -40A, -45A, -50, -60, -60A, Qualimatic
68101-10	Digilab FTS-155, -165, -175, -185, 6000
68101-11	Digilab FTS-375, -575, -675
68101-27	Digilab Excalibur, Scimitar, FTS-7000 (for recognition platform)
-	Varian - see Digilab
68101-13	Analect Diamond

Cat. No.	Instrument Model(s)
68101-14	Bruker Vector 22 and 33, IFS-28, -48, -55, -66, -66V, -88, -112, -113, -114, -120HR, -125HR
68101-23	Bruker Vertex 70, Tensor, Vector (with QuickLock)
68101-15	Mattson Cygnus, Sirius, Polaris, Research Series
68101-16	Mattson Galaxy, Infinity
68101-17	Mattson Genesis, Satellite
68101-18	Bomem MB Series (MB-120, MB-155, MB-160, etc.)
68101-19	Bomem Arid Zone
68101-20	Midac M Series, Prospect IR
68101-21	Shimadzu 8100-8700
68101-22	Shimadzu Prestige 21 (with QuickStart)
68101-24	Jasco 300, 600 Series
68101-25	Jasco 400, 600V
68101-26	Jasco 4000 Series, 6000 Series (with IQ)

## IR Reference Standards

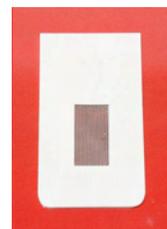
For checking the performance of infrared spectrometers. The two types of standards listed here are: one for quick checks (not NIST traceable) and one for certified checks (traceable in accordance to NIST Standard 1921).

The NIST traceable polystyrene test films are made from radially symmetric films (to eliminate orientation effects) cast on to KBr windows (to eliminate interference fringes). The cast film converts the KBr window into a non-hygroscopic crystal. Offered in a set with two different film thicknesses, the polystyrene standards are used for wavelength calibrations (according to NIST Standard 1921) and also for %T / Absorbance checks (not NIST traceable) by utilization of the differential between the checks with ordinate intensities created from the two film thicknesses.

All standards listed here are pre-mounted to fit into the instrument compartment slide holder of all infrared spectrometers. A spectrum is included with the non-NIST traceable standards and the certificate with data is included with the NIST traceable standards.



Cat. No. 67101-1



Cat. No. 67101-2



Cat. No. 67101-3

Cat. No.	Description	Test	Film Thickness	Clear Aperture	Price
67101-1	Polystyrene Test Film	Wavelength	0.05mm	35mm x 16mm	\$18.00 / each
67101-2	Neutral Density Filter - 0.5Abs (≈31.5%T)	Abs / %T	-	35mm x 16mm	22.00 / each
67101-3	Polystyrene Test Films - NIST	Wavelength	≈0.04mm	25mm Dia.	495.00 / Set/2

## IR Polarizers

IR Polarizers are used in infrared analysis where single plane rays of the beam are required. Some applications include molecular orientation, polymer films, multi-layer coatings, enhancement of specular reflectance analysis at grazing angles (80-85°), films and coatings on metallic surfaces, and single crystal molecular symmetry.

With 1200 / mm gold-deposited lines on the substrate (KRS-5, ZnSe, etc.), these polarizers have a grid spacing below the wavelengths of the standard infrared range.

Housed in a mount with a standard 3" x 2" slide plate, the polarizer is easily installed into the instrument compartment slide holder of any infrared spectrometer. A further slide holder is mounted to the polarizer for containing all accessories (such as transmission) that have a 3" x 2" slide plate (this slide holder can be removed when using an accessory which already is equipped with a slide holder, such as a grazing angle specular reflectance system).

With a graduated scale on the mount, the polarizer can be rotated through 360° for measurements to be made within ±2°.



The polarizer crystal element is 25mm diameter with a clear aperture of 20mm.

Cat. No.	Description	Transmission Range	Transmission Efficiency	Price/each
67003-1D	IR Polarizer / CaF <sub>2</sub>	66,666 - 1110 cm <sup>-1</sup>	≈85%	\$2,850.00
67003-1E	IR Polarizer / BaF <sub>2</sub>	50,000 - 770 cm <sup>-1</sup>	≈85%	3,250.00
67003-1J	IR Polarizer / KRS-5	15,385 - 250 cm <sup>-1</sup>	≈70%	3,150.00
67003-1L	IR Polarizer / ZnSe	10,000 - 500 cm <sup>-1</sup>	≈72%	2,225.00
67003-1T	IR Polarizer / Ge	5,000 - 600 cm <sup>-1</sup>	≈90%	3,500.00

## Temperature Controller

Manually programmed or computer controlled, this temperature control system automatically determines the proper settings for optimum heating. A thermocouple input and a heater output make the controller ideal for operating above and sub-ambient temperature type accessories in this catalog. Temperature control profiling is programmable and the parameters are optimized with an auto-tune mode, resulting in accurate and wide range temperature regulation.

Digital temperature readout in °C or °F.  
110 Volt, 60 Hz with K-Type thermocouple.  
Temperature range is -125 to 1370°C.  
Accuracy is +/- 0.5°C.  
Dimensions are 6" Width x 6" Depth x 4" Height.  
Accepts other thermocouple types.  
CE regulations compliant.  
RS232 port available on system.



Cat. No.	Description	Price/each
67001	Temperature Controller - 110 Volt	\$2,050.00

Note: Lower price temperature controllers offer accuracy only to +/- 4-5°C and usually excessively exceed the intended sample temperature while stabilizing - damage to cell heaters and samples can result.

# Catalog Number Index

Incomplete catalog numbers in the listing below end with a hyphen (-) e.g.  
 Cat. No. 67000-1, 67000-2, 67000-3, 67000-M, etc.

Cat. No.	Page No.	Cat.No.	Page No.	Cat.No.	Page No.
600A09 to 601C04	3	602A13 to 602K13	6	626A03D to 626L03F	15, 21
602A01 to 602F01	4	602L13	7	626A03FF to 626L03FF	27
602I01	5	602A14 to 602E14	6, 36	627A01 to 627E02	15
602J01, 602K01	4	602F14	6	628-05-L-1 to 628-10-T-1	17
602L01 to 602U01	5	602I14	7, 36	628-11-L-1 to 628-19-L-1	16
602A02 to 602K02	4	602J14	6	628-21-L-1 to 628-32-T-1	17
602L02 to 602P02	5	602K14	6, 36	628-61-J-1 to 628-62-U-1	41
602A03 to 602F03	4, 26	602L14 to 602P14	7, 36	64000, 64000-1	18, 28
602I03	5, 26	602A15 to 602F15	6	64000-A	30
602J03, 602K03	4, 26	602I15	7	64000-2	18, 24, 28, 30, 31
602L03 to 602U03	5, 26	602J15, 602K15	6	64001 & -1, 64002 & -1	19, 29
602A04 to 602F04	4	602L15 to 602S15	7	64100, 64100-	20
602I04	5	602K16, 602L16	25, 27	64101, 64101-, 64102	21
602J04, 602K04	4	602A17 to 602L17	38	64102-F	21, 27
602L04 to 602U04	5	603A01 to 603E01	8	64201A1 & F to 64201L7 & F	22
602A05 to 602F05	4	603I01	9	64401-1, 64401-2	26
602I05	5	603J01, 603K01	8	64401-A1	25, 26, 27
602J05, 602K05	4	603L01 to 60U01	9	64401-A2	26
602L05 to 602S05	5	603A02 & D to 603E02 & D	8	64401-B1	26, 27
602A06 to 602F06	4	603I02 & D	9	64401-B2	26, 37
602I06	5	603J02 & D, 603K02 & D	8	64401S12 to 64401S17	25, 26, 27
602J06, 602K06	4	603L02 & D to 603T02 & D	9	64401S42 to 64401S47	26
602L06 to 602U06	5	603A03 & DPE to 603F03 & DPE	8, 20	64402	25
602A07 to 602E07	4, 23	603I03 & DPE	9, 20	64403	27
602F07	4	603J03 & DPE, 603K03 & DPE	8, 20	64404L4 to 64404L7	25
602I07	5, 23	603L03 & DPE to 603U03 & DPE	9, 20	64404	25
602J07	4	603A03DW to 603F03DW	8	64405L4 to 64405L7	25
602K07	4, 23	603I03DW	9	64501-	22
602L07, 602N07	5, 23	603J03DW, 603K03DW	8	64502-, 64503-	23
602P07	5	603L03DW to 603U03DW	9	64504, 64504-	24
602A08 to 602F08	4, 26	603A04 & D to 603K04 & D	8	64504N1 to 64504P2	24
602I08	5, 26	603L04 & D, 603T04 & D	9	64505A1 to 64505C3	24, 33
602J08	4, 26	604J01 to 604U05	10	64505A3-1 to 64505C3-1	24
602K08	4, 18, 19, 26, 28, 29, 34, 37, 38	605J01 to 605U02	10	65000, 65000-	30
602L08	5, 18, 19, 26, 28, 29, 34, 37, 38	605J04	10, 39	65001, 65001-	30
602M08	5, 18, 19, 26, 28, 29	605K04	10	65002, 65002-	31
602N08, 602P08	5, 26	605L04, 605T04	10, 39	65003, 65003-	31
602R08 to 602U08	5, 18, 19, 26, 28, 29	605U04 to 605U07	10	65100-1	30, 31, 33
602A09 to 602E09	6, 18, 19, 28, 29, 34, 37, 38	605J08 to 605T08	10, 39	65100-2, 65100-2D	33
602F09	6, 18, 19, 28, 29	605U08 to 605U11	10	65101-1	31, 33
602I09	7, 18, 19, 28, 29, 34, 37, 38	606L01 to 607T02P	11	65101-2	33
602J09	6, 18, 19, 28, 29	608	12	65500, 65500-	32
602K09	6	609-	13	65502-, 65503-	33
602L09, 602M09	7	620C41 to 620L56	14	66001-1	34
602N09, 602P09	7, 18, 19, 28, 29, 34, 37	620T11	14, 26	66001-2, 66001-3	34, 37
602S09 to 602U09	7	620T12 to 620T17	14, 25, 26, 27	66001-4	34
602A10 to 602F10	6	620T21 to 620T37	14	66001-5A to -10C, 66002-	34
602I10	7	620T41 to 620T47	14, 18, 19, 26, 28, 29	66003-	35
602J10, 602K10	6	620T51 to 620T57	14, 21	66004-, 66005-10	36
602L10 to 602P10	7	620TA1	14, 26	66006-1, -2, -3	35, 36
602A11 to 602E11	6, 21, 34	620TA2, 620TA3	14	66006-10	35
602F11	6, 21	620TA4	14, 18, 19, 26, 28, 29	66201- to 66203-1V	38
602I11	7, 21, 34	620TA5	14, 21	66401-	37
602J11	6, 21	621C21 to 621T17	14	67000, 67000-	3
602K11	6, 21, 34	621T21 to 621T27	14, 20	67001	47
602L11	7, 21, 34	621T31 to 621T37	14	67002	41
602M11	7, 21, 34	621TA1	14	67003-, 67101-	47
602N11, 602P11	7, 21, 34	621TA2	14, 20	68100 to 68101-	46
602R11 to 602U11	7, 21	621TA3	14	68200, 68200-	40
602A11D to 602F11D	6, 21	625-01	14, 20, 21, 22, 26	68201-	39
602I11D	7, 21	625-02	14, 18, 19, 28, 29	68202A-L-1 to 68202B-T-1	16
602J11D, 602K11D	6, 21	625-03	14, 21	68205-1 to 68205-26	40
602L11D to 602U11D	7, 21	625-04, -05	14, 21, 27	68205A- to 68205E-	41
602A12 to 602E12	6, 35, 36	625-06, -07	14	68206-	42
602F12	6	625-08, -09	14, 20	68206A-, 68206B-	43
602I12	7, 35, 36	625-10, -11	14	68206C-, 68206D	44
602J12	6	626A01PE to 626L01PE	15, 20	68301-	45
602K12	6, 35, 36	626A01W to 626C02	15	NE-21-I-10	23
602L12 to 602P12	7, 35, 36	626A02, 626C02	15	NE-34-I-	23