

SPECAC... AUTHORIZED REPRESENTATIVE

Chemplex
INDUSTRIES, INC.

X-RAY Spectrochemical Sample Preparation Equipment & Accessories

**When Your XRF Analysis Depends on Sample Preparation,
You Can Always Depend on Chemplex...for over 36 Years!**

**RoHS
COMPLIANT XRF
SAMPLE CUPS
AND THIN-FILM
WINDOWS**

**XRF SAMPLE
CUPS
(Technical Data)**

**QUICK
REFERENCE
CHART FOR XRF
SAMPLE CUPS**

**HOW TO SELECT
A SAMPLE CUP**

**THIN-FILM
WINDOWS
(Technical Data)**

**HOW TO SELECT
A THIN-FILM
WINDOW**

**SAMPLE CUP
ACCESSORIES**

**MICROPOROUS
FILM**

PELLET CUPS

**GRINDING AND
BLENDING
EQUIPMENT AND
ACCESSORIES**

**GRINDING AND
BRIQUETTING
ADDITIVES**

**NON-AQUEOUS
STANDARDS**

FUSION FLUXES



As Chemplex Industries, Inc. enters its thirty-seventh year its original policy has remained unswerving in serving the x-ray spectrochemical analyst and the sample preparation scientific discipline: innovation, quality, and technical support, prompt and courteous service.

We, at Chemplex, are committed to the research, development and manufacture of the most comprehensive line of sample preparation products to internationally serve all x-ray spectrochemical laboratories engaged in all sample material investigations.

It is not by chance that the leading worldwide x-ray instrumentation manufacturers and analysts use and recommend Chemplex products. We are proud of our earned reputation and the originality and quality of our product line. It is by dedication, experience and knowledge in the x-ray spectrochemical sample preparation field that we continue into this new millennium challenged by exploring new applications, methodologies and maintaining pace with emerging technologies.

AUTHORIZED REPRESENTATIVE IN UNITED KINGDOM

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Chemplex XRF Sample Cups and Thin-Film Sample Support Windows Comply with RoHS



The awareness of environmental and hazardous issues has gained momentum and has substantially increased. With growing concern for the environment regarding disposal and recycling of plastic and polymer products containing specific substances, restrictions have been imposed for compliance.

This restriction, commonly referred to as ROHS, imposes a Restriction of Hazardous Substances. It specifies and directs compliance in accordance with not to exceed the following standards:

Lead (Pb)	0.1 % (1000 PPM)
Cadmium (Cd)	0.01% (100 PPM)
Mercury (Hg)	0.1% (1000 PPM)
Chromium (Cr); hexavalent chromium (VI)	0.1% (1000 PPM)
Polybrominated Biphenyl; PBB	0.1 % (1000 PPM)
Polybrominated Diphenyl Ether; PBDE	0.1 % (1000 PPM)

Note: PBB and PBDE are flame-retardants formulated in a number of plastics.

RoHS appears likely to be the beginning of a global trend as consumer and environmental interests become more intensified. Some of the world's other prime economic regions, including China and Taiwan, are in the process of enacting similar restrictions.

The Current 25 Member States of the European Union (EU)

Austria, Belgium, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom (Great Britain).

As consumer and environmental interests become more intensified, RoHS appears likely to be the beginning of a global trend. Some of the world's other prime economic regions, including China and Taiwan, are in the process of enacting similar directives or laws and the geographic market for non-compliant products is dwindling.

Chemplex Commits to Comply with the European Council Directive, RoHS

Chemplex Industries, Inc. is demonstrating a continuing commitment to environmental responsibility and is a major voluntary participant in complying with the European Council Directive 2002/95/EC, RoHS. The stylized symbol Chemplex Industries, Inc. has decided and adopted for demonstrating environmental responsibility and compliance to RoHS is illustrated as follows:



When purchasing XRF Sample Cups and Thin-Film Sample Support Windows for use within the USA or for export to the European Union (EU), in addition to other countries intending to adopt similar Directive enactments, look for and insist on this symbol to be assured of compliance and acceptance by the European Council and Directive. It's environmentally responsible.

SPECTROCERTIFIED® XRF SAMPLE CUPS



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Chemplex Industries, Inc. engineers, builds the necessary tooling and manufactures XRF Sample Cups “in house”. Chemplex XRF Sample Cups are so uniquely designed that most of them have been classified as intellectual property and issued patents by the United States Patent and Trade Office and under any other foreign entities.

The research and development of novel features and functions incorporated into XRF Sample Cups is a continuing program. The emphasis and goal is to ensure the highest product quality and to serve the most diversified and specialized applications for accommodating sample containment of a broad range of sample material substances in innumerable x-ray analytical instruments.

The most recent contribution to the growing family of Chemplex XRF Sample Cups is an integrated thin-film trimming feature, which is also applicable for trimming excess Microporous Film. This invention eliminates the traditional usage of conventional scissors to detach and trim away the extraneous thin-film that frequently is troublesome for accommodating sample cups in various sample cup holders generally supplied with the instrumentation. The Integrated Thin-Film Trimmer is available with all 32 mm diameter sample cups that use Snap-On Ring configurations to affix thin-films. Including “SE” in the catalog numbers denotes this new sample cup innovation from the traditional sample cups.

SpectroCertified® XRF Sample Cup Quality

Chemplex XRF Sample Cups are fabricated from a proprietary high-density polyethylene thermoplastic specially formulated for this application. The material is characterized with:

- Compliance with RoHS Directive
- Absence of “whitening” agents that may potentially influence x-ray data
- Lubricity to facilitate and ensure the smooth and firm attachment of thin-film sample support windows
- Physical characteristics for performance and resistance to thermal and irradiation exposure degradation
- Chemical resistance from contact with incalculable sample material substances
- Reportedly low and reproducible unavoidable trace impurity analytes

Typical Characteristics of Chemplex XRF Sample Cups

Trace Analyte Impurities, PPM	Melting Point, °C (°F)	Softening Point, °C (°F)
Ca, Mg, Ti, Al, P, Zn	130 (266)	123 (253)

The extraordinary attention given to a special formulation and maintaining consistency of its physical and chemical properties is costlier than conventionally available polyethylene plastics intended for general purposes. Chemplex XRF Sample Cups are unmatched in material composition.

USER-FRIENDLY GUIDE IN SELECTING THE MOST APPROPRIATE XRF SAMPLE CUP



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Selection of the most applicable XRF Sample Cup is based on satisfying the following conditions:

- Matching the dimensions of the sample cup to a sample cup holding device.
- Type of sample substances; e.g. solid, liquid or powder.
- Analyte-line consideration dictating the analysis in air, inert gas or vacuum.
- Maintaining equalization of pressure within the sample cup and sample chamber to avert distension or convolution of the sample plane.

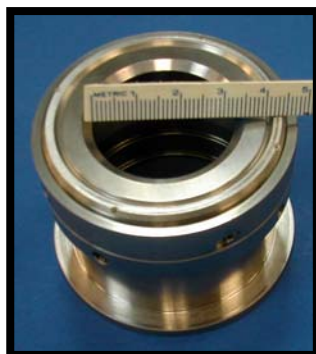


Dimensions

In consideration of the many types of x-ray analytical instrumentation available and sample cup holding devices incorporated or provided with the equipment, the method of sample cup selection has remained virtually unchanged. It is related to the **inside diameter** of the sample cup holding device together with the **inside diameter of the aperture**. There should also be adequate **height** clearance for safely accepting XRF Sample Cups without interference. Once these measurements are ascertained, sample cup selection is narrowed to a specific size and further selection is based on additional attributes that may be required such as sample substance type and the need for specific analyte-line investigations to be conducted in an air, inert gas or vacuum.



Measure Inside Diameter (A)



Measure Inside Aperture Diameter (C)



Measure Inside Height (B)

Aperture

The geometry of x-ray systems directs the energy from an excitation source to impinge upon the surface of a sample substance. The point of impingement is referred to as the focal spot. In most cases, the focal spot is ovate attributed to the angle of energy incidence. Some instruments incorporate a sample rotation provision that tends to average non-circularity differences. The principal concern is to limit and confine the focal spot to within the sample surface area to avoid irradiating the sample cup holding device and XRF Sample Cup and unknowingly introduce spectral lines affecting the analysis especially if they are similar to those of investigative interest. It is important to consider an XRF Sample Cup with an aperture larger in diameter to the aperture of the sample cup holding device.

Environmental Conditions and Pressure Equalization

The analyte lines of interest together with elemental concentration levels invariably dictate the environmental condition. The more energetic short wavelength spectral lines are acceptably investigated in air and do not necessarily require sample cups with venting provision and sample cup selection is considerably broad.

Spectral analyte-lines characterized by less energetic long wavelengths and particularly low elemental concentrations command analysis in an inert gas, such as helium, or evacuation of the sample chamber. Special attention in establishing and maintaining a taut flat thin-film surface that defines the sample plane is important. Any inaccuracies associated with variations in the distance between the sample plane and excitation source can potentially affect the analytical data. A sample plane that is outwardly distended, attributed to evacuation of the sample chamber and a consequential positive pressure build-up within a sealed sample cup, tends to shorten the x-ray travel distance and generates greater intensity values. This translates into higher elemental concentrations than actuality. Sample cup venting is therefore an important consideration.

A positive pressure build-up in the sample chamber by introducing an inert gas, results in concaved sample planes on un-vented sample cups. The x-ray path of travel is lengthened resulting in a decrease in intensity values that imply lower analyte concentrations. It is therefore important to establish an equalization of pressure within the sample cup and sample chamber in order to maintain a flat thin-film sample plane; again narrowing sample cup selection to venting provisions.

INNOVATIVE SAMPLE PREPARATION TECHNOLOGY

There are other features incorporated into Chemplex XRF Sample Cups that represent ease of assembly, Trimless Sample Cups that encapsulate the thin-film sample supports; "Snap-On Ring" Thin-Film Assemblies with and without Serrated Thin-Film Trimming; Microporous Pressure Equalization Film and Snap-On Caps; External and Internal Overflow Reservoirs for accommodating over pours and samples exhibiting tendencies to thermally expand; SpectroMicro™ Sample Cups incorporating new "funnel" technology and much more.

Chemplex is also a voluntary participant in complying with the European Council (EC) Directive, 2002/95/EC, of Restriction of Hazardous Substances, commonly referred to as RoHS.

This suffices to explore the innovative XRF Sample Cup selections from Chemplex Industries, Inc. You are invited to explore the most comprehensive XRF Sample Cup product line by Chemplex, the "Leader in XRF Sample Preparation Equipment and Supplies."



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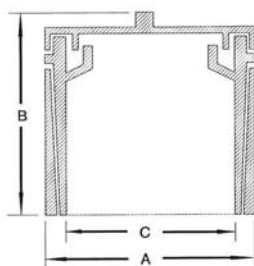
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Quick Reference Chart for XRF Sample Cups XRF Sample Cup Dimensions and Attributes



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XRF Sample Cups are available in a variety of dimensions and attributes. The following illustration and chart serve as a quick reference for matching the diameter, height and aperture dimensions of XRF Sample Cups to the sample cup holding device supplied with the instrumentation. Sample Cup reference to the various manufacturers is compiled from consumer based data and extrapolated sample cup similarities. The diversified assortment of XRF Sample Cups adequately serves adaptability to vintage as well as currently produced instrumentation. The omission of a manufacturer's name should not be construed as sample cup incompatibility and preclusion from consideration. Usability is more precisely determined by the method outlined in the XRF Sample Cup Selection Guide. For convenience, detailed XRF Sample Cup descriptions and specifications are also hyper-linked to the Series associated with the catalog numbers. Additionally, FREE samples of Chemplex XRF Sample Cups are available for testing and evaluation purposes. Contact Sales@specac.co.uk.



Series	Cat. No.	Dia., A	Height, B	Aperture, C	Equipment Compatibility	Attributes
1000	1060	1.23" (31.2mm)	0.93" (23.5mm)	0.97" (24.7mm)	Bruker, Jordan, Kevex, Metorex, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro, Thermo	Trimless Attachment of Thin-Film Sample Supports by Use of Provided Sleeves. Venting Provision and External Overflow Reservoir.
	1065	1.23" (31.2mm)	0.93" (23.5mm)	0.97" (24.7mm)		
	1070	1.54" (39.0mm)	0.92" (23.3mm)	1.20" (30.6mm)	ARL, Asoma, Bruker, Jordan, Kevex, Metorex, Panalytical, Philips, Rigaku, Siemens, Spectrace, Thermo	
	1075	1.50" (38.2mm)	0.89" (22.5mm)	1.20" (30.6mm)	ARL, Asoma, Bruker, Fisons, Jordan, Kevex, Metorex, Panalytical, Philips, Rigaku, Siemens, Spectrace, Thermo,	
	1080	1.68" (42.7mm)	0.80" (20.2mm)	1.44" (36.6mm)	Horiba (also see 1850 Series)	
	1083	1.69" (43.0mm)	0.73" (18.6mm)	1.44" (36.6mm)		
	1085	1.68" (42.7mm)	0.80" (20.2mm)	1.44" (36.6mm)		
	1095	1.71" (43.4mm)	1.57" (40.1mm)	1.50" (38.2mm)	Rigaku, Panalytical	
1300	1330	1.21" (30.7mm)	0.93" (23.5mm)	0.96" (24.4mm)	ARL, Asoma, Bruker, Fisons, Jordan, Kevex, Metorex, Oxford, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro, Thermo	Re-Closable Snap-On Cap, External Overflow Reservoir, Bead-to-Indent™ Geometry Snap-On ring. SE catalog numbers have integrated thin-film trimmer
	1330-SE (Integrated thin-film trimmer)					
	1340	1.53" (39.0mm)	0.91" (23.1mm)	1.27" (32.2mm)		

<u>1400</u>	1430	1.21" (30.7mm)	0.88" (22.3mm)	0.97" (24.5mm)	Asoma, Bruker, Jordan, Fisons, Jordan, KeveX, Metorex, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro, Thermo	Single Open-End. Double Venting Provision. Micro Sample Mounting and Powder Thin-Layered "Sandwiching" Provision. "Bead-to-indent" Snap-On Ring Geometry. SE catalog numbers have integrated thin-film trimmer.
	1430-SE (Integrated thin-film trimmer)					
	1440	1.55" (39.3mm)	0.94" (24.0mm)	1.27" (32.3mm)	ARL, Asoma, Bruker, Jordan, Fisons, KeveX, Metorex, Oxford, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro, Thermo	
	1440L	1.55" (39.3mm)	1.38" (35.1mm)	1.27" (32.3mm)	Jordan, Oxford, Rigaku	
<u>1500</u>	1530	1.22" (30.9mm)	0.94" (24.0mm)	0.95" (24.0mm)	Asoma, Bruker, Jordan, Fisons, Jordan, KeveX, Metorex, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro, Thermo	Double Open-Ended for Top Sample Loading and Affixing <u>Microporous Film or Snap-On Cap</u> ; "Bead-to-indent" Snap-On Ring Geometry. SE catalog numbers have integrated thin-film trimmer.
	1530-SE (Integrated thin-film trimmer)					
	1540	1.55" (39.3mm)	0.90" (22.9mm)	1.22" (30.9mm)	ARL, Asoma, Bruker, Jordan, Fisons, Jordan, KeveX, Metorex, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro, Thermo	
<u>1600</u>	1630	Vented Snap-On Caps with Interior Baffles for 1530 and 1530 SE XRF Sample Cups				
	1640	Vented Snap-On Caps with Interior Baffles for 1540 XRF Sample Cups				
<u>1700</u>	1730	1.21" (30.8mm)	0.91" (23.2mm)	0.97" (24.7mm)	Asoma, Bruker, Jordan, Fisons, Jordan, KeveX, Metorex, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro, Thermo	Single Open-Ended. Snap-Post Venting and External Overflow Reservoir. SE catalog numbers have integrated thin-film trimmer.
	1730-SE (Integrated thin-film trimmer)					
	1740	1.54" (39.0mm)	0.94" (23.7mm)	1.26" (32.0mm)	ARL, Asoma, Bruker, Jordan, KeveX, Metorex, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro, Thermo	
<u>1800</u>	1830	1.22" (30.9mm)	0.87" (22.1mm)	0.96" (24.5mm)	Asoma, Bruker, Jordan, Fisons, Jordan, KeveX, Metorex, Niton, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro, Thermo	Single Open-Ended. External Overflow Reservoir and Venting Provision. SE catalog numbers have integrated thin-film trimmer.
	1830-SE (Integrated thin-film trimmer)					
	1840	1.54" (39.2mm)	0.93" (23.6mm)	1.27" (32.2mm)	ARL, Asoma, Bruker, Jordan, KeveX, Metorex, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro, Thermo	
<u>1850</u>	1850	1.69" (42.9mm)	0.77" (19.5mm)	1.41" (35.9mm)	Horiba and X-Ray Optical Systems "Sindie" analyzers (also see <u>1000</u> Series)	Single Open-Ended Shallow Cell. Venting Provision. "Bead-to-indent" Snap-On Ring Geometry.

<u>1900</u>	1930	1.22" (31.0mm)	0.83" (21.1mm)	0.97" (24.7mm)	Asoma, Bruker, Jordan, Fisons, Jordan, Kevex, Metorex, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro, Thermo	Double Open-Ended for Top Sample Loading. "Bead-to-Indent" Snap-On Ring Geometry. SE catalog numbers have integrated thin-film trimmer.
	1930-SE (Integrated thin-film trimmer)					
	1940	1.54" (39.1mm)	0.84" (21.5mm)	1.26" (31.9mm)	ARL, Asoma, Bruker, Jordan, Kevex, Metorex, Oxford, Panalytical, Rigaku, Siemens, Spectro, Philips	
	1940L	1.54" (39.1mm)	1.40" (35.6mm)	1.26" (31.9mm)	Jordan, Oxford, Rigaku	
<u>1935OX</u>	1935-OX	1.23" (31.2mm)	1.51" (38.3mm)	1.15" (29.2mm)	Oxford	Includes Caps. Replacement for Oxford L240.
<u>2100</u>	2131	1.23" (31.2mm)	1.12" (28.4mm)	0.97" (24.7mm)	Asoma, Bruker, Fisons, Jordan, Kevex, Metorex, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro (XEPOS, iQ, iQ II and other Systems) and Thermo	Internal Overflow Reservoir; Snap-On Ring
	2132	1.23" (31.3mm)	1.14" (28.9mm)	1.05" (26.7mm)		Internal Overflow Reservoir; Trimless Thin-Film Sample Support Sleeves; Snap-On Vented Covers
	2135	1.35" (34.2mm)	1.16" (29.5mm)	1.10" (28.0mm)	Panalytical (MiniPal)	Internal Overflow Reservoir, Trimless Thin-Film Sample Support Sleeves and Snap-On Vented Covers.
	2140	1.57" (39.9mm)	1.17" (29.6mm)	1.41" (35.8mm)	ARL, Asoma, Bruker (Manual S2 and S4 Systems), Kevex, Metorex, Oxford, Panalytical, Philips, Rigaku, Siemens, Spectrace, Spectro, Thermo	
	2143	1.57" (39.9mm)	1.17" (29.6mm)	1.41" (35.8mm)	Bruker Automatic S-2 Systems with XFlash® Detectors	
	2145	1.77" (45.0mm)	1.17" (29.6mm)	1.55" (39.4mm)	Panalytical, Philips	
	2152	2.04" (51.8mm)	1.11" (28.1mm)	1.81" (46.0mm)		
<u>3100</u>	3106	1.20" (30.6mm)	0.99" (25.3mm)	0.24" (6mm)	Panalytical and other instruments and applications requiring confined volumes and apertures for accepting micro sample quantities	SpectroMicro™ Sample Cups; Vented Snap-On Caps; Directional Thin-Film Attachment Collars and Integrated Filling Funnels.
	3110	1.20" (30.6mm)	0.99" (25.3mm)	0.39" (10mm)		
	3115	1.20" (30.6mm)	0.99" (25.3mm)	0.59" (15mm)		
	3120	1.20" (30.6mm)	0.91" (23.0mm)	0.79" (20mm)		

IMPORTANT: All XRF Sample Cups present the possibility of leakage, especially in an evacuated environment, with potential damage to the analytical instrumentation. Experimentation with each sample cup prior to actual usage to ascertain its integrity is recommended. The judicious use and applications of sample cups resides solely with the user. Chemplex Industries, Inc. assumes no liability or guarantee that sample cups will perform in accordance with its suggested use and applications.

REMEMBER TO ORDER THIN-FILM SAMPLE SUPPORTS

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SERIES 1000:



TRIMLESS XRF SAMPLE CUPS

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- Eliminates trimming extraneous thin-film
- Simple two-part assembly; sample cell plus sleeve
- Extra wide sleeve facilitates handling.
- Unique patented design immediately captures thin-film sample support and maintains a taut surface with progressive sleeve attachment.
- Venting provision for vacuum and inert gas applications.
- External Overflow reservoir retains heat sensitive materials characterized with thermal expansion tendencies.



SPECIFICATIONS AND ORDERING INFORMATION

CAT. NO.	DESCRIPTION	OUTSIDE DIA.	HEIGHT	APERTURE	CAPACITY, cc	SETS/PKG
1060	Double open ends	1.23" (31.2mm)	0.93" (23.5mm)	0.97" (24.7mm)	9	100
1065	Single open end	1.23" (31.2mm)	0.93" (23.5mm)	0.97" (24.7mm)	9	100
1070	Double open ends	1.54" (39.0mm)	0.92" (23.3mm)	1.20" (30.6mm)	16	100
1075	Single open end	1.50" (38.2mm)	0.89" (22.5mm)	1.20" (30.6mm)	16	100
1080 ¹	Double open end	1.68" (42.7mm)	0.80" (20.2mm)	1.44" (36.6mm)	15	100
1083 ²	Single open end	1.69" (43.00mm)	0.73" (18.6mm)	1.44" (36.6mm)	15	100
1085 ¹	Single open end	1.68" (42.7mm)	0.80" (20.2mm)	1.44" (36.6mm)	15	100

Made under one or more of patents: 5,451,375; 5,630,989; 4,698,210; 238,210; 4,665,759 and pending applications

¹ Horiba analyzers.

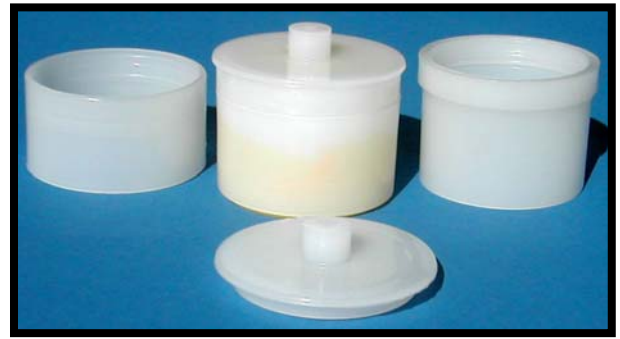
² Designed for Horiba SLFA-20 analyzers and other models newer than SLFA-920.

REMEMBER TO ORDER THIN-FILM SAMPLE SUPPORTS

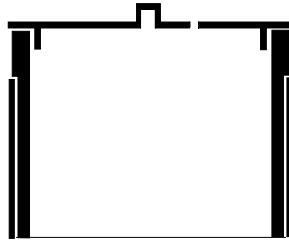
Note: For best results, use the larger diameters of [SpectroMembrane Thin-Film Sample Support Carrier Frames](#).

**EXTRA LARGE 45 mm DIAMETER AND CAPACITY
TRIMLESS XRF SAMPLE CUPS WITH SNAP-ON
VENTED CAP AND HANDLE**

- Generally applicable to Rigaku, Panalytical instruments and other instruments requiring an extra large sample cup
- Eliminates trimming extraneous thin-film.
- Three-part assembly: Cell, Sleeve and Cap.
- Friction-fitting sleeve immediately captures thin-film sample support and maintains a taut surface with progressive sleeve attachment.
- Venting through cap for air, vacuum and inert gas applications.



**SEE ALSO CAT. No. 2140
WITH INTERNAL OVERFLOW
RESERVOIR FOR MANUAL
BRUKER S2 AND S4
SYSTEMS AND CAT. NO.
2143 FOR AUTOMATIC S2
BRUKER SYSTEMS WITH
XFLASH® DETECTORS**



**Double Open Ended with
Friction Fitting Sleeve and
Vented Snap-On Cap**

Note: For best results, use the larger diameters of [SpectroMembrane Thin-Film Sample Support Carrier Frames](#).

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**SPECIFICATIONS AND ORDERING INFORMATION
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CAT. NO	DESCRIPTION	OUTSIDE DIAMETER	HEIGHT	APERTURE	CAPACITY, cc	SETS/PKG
1095	Double open ends with friction fitting cap	1.71" (43.4mm)	1.57" (40.1mm)	1.50" (38.2mm)	31	100
2140*	Double open ends with cap; features Internal Overflow Reservoir	1.57" (39.9 mm)	1.17" (29.6 mm)	1.41" (35.8 mm)	35	100
2143**	Double open ends with cap; features Internal Overflow Reservoir	1.57" (39.9 mm)	1.17" (29.6 mm)	1.41" (35.8 mm)	35	100

Made under one or more of patents: 5,451,375; 5,630,989; 4,698,210; 238,210; 4,665,759 and pending applications

* Applicable to manual Bruker S2 and S4 Systems

** Applicable to automatic Bruker S2 Systems with XFlash® Detectors

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SERIES 1300:

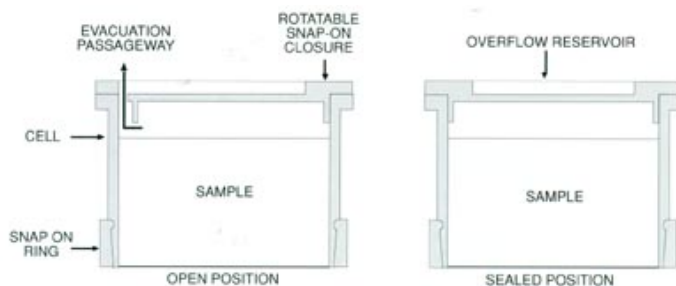


RE-SEALABLE XRF SAMPLE CUPS, VENTABLE CAPS WITH OVERFLOW RESERVOIR AND INTEGRATED THIN-FILM TRIMMER



- [HOME](#)
- [QUICK REFERENCE CHART FOR XRF SAMPLE CUPS](#)
- [THIN-FILM SAMPLE SUPPORTS](#)
- [SAMPLE CUP ACCESSORIES](#)
- [MICROPOROUS FILM](#)

- Re-sealable sample cups
- Three-part assembly: Cell, Snap-On Ring and cap.
- Snap-On Cap is ventable for vacuum and inert gas applications and incorporates an External Overflow Reservoir for retaining liquids sensitive to thermal expansion.
- Snap-On Ring firmly grasps thin-film with progressive attachment, maintains film tautness and secures it tightly to the cell at completion by means of a unique patented “bead-to-indent” geometry. Use the optionally available [Palm Held](#) or [Snap-On Ring](#) Fastener.
- Optionally available 32 mm sample cups with **Integrated Serrated Edged Snap-On Rings** enable extraneous thin-film trimming. Refer to catalog numbers followed by “SE”.



3
1330 –SE XRF Sample Cup illustrated with Integrated Serrated Edged Snap-On Ring for Thin-Film trimming

SPECIFICATIONS AND ORDERING INFORMATION

CAT. NO.	DESCRIPTION	OUTSIDE DIAMETER	HEIGHT	APERTURE	CAPACITY cc	SETS/PKG
1330	Double open ends					
1330-SE	Snap-On Rings have integrated thin-film trimmer	1.21" (30.7mm)	0.93" (23.5mm)	0.96" (24.4mm)	7	100
1340	Double open ends	1.53" (39.0mm)	0.91" (23.1mm)	1.27" (32.2mm)	12	100

• Made under one or more of patents: 5,451,375; 5,630,989; 4,698,210; 238,210; 4,665,759 and pending applications

REMINDER TO ORDER THIN-FILM SAMPLE SUPPORTS

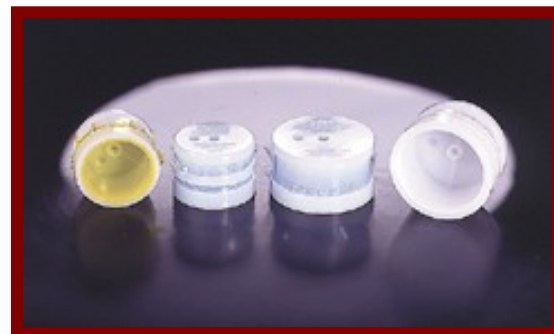


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Orpington, Kent BR5 4HE, UK

SERIES 1400:

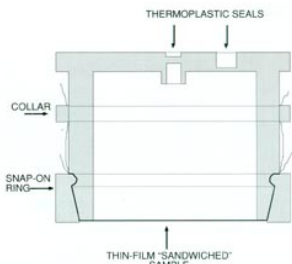


SINGLE OPEN ENDED XRF SAMPLE CUP WITH VENTING, SNAP-ON RING, COLLAR AND INTEGRATED THIN-FILM TRIMMER



- [HOME](#)
- [QUICK REFERENCE CHART FOR XRF SAMPLE CUPS](#)
- [THIN-FILM SAMPLE SUPPORTS](#)
- [SAMPLE CUP ACCESSORIES](#)
- [MICROPOROUS FILM](#)

- Internal micro-sample mounting provision
- Internal standard attachment provision on interior of Cell
- Three-part assembly: Cell, Snap-On Ring with or without Serrated Thin-Film Trimmer and Collar
- Snap-On Ring firmly grasps thin-film with progressive attachment, maintains tautness and secures it tightly to the cell at completion by means of a unique patented “bead-to-indent” geometry. Use the optionally available [Palm Held](#) or [Snap-On Ring](#) Fastener.
- Pressure equalization is established by puncturing one or two thin thermoplastic seals for controlling entrapped air evacuation rate with optionally available [Vent Hole Punch](#).
- Permits “thin-layered” powder sandwiching between two layers of thin-film sample support material with use of Collar.
- Optionally available 32 mm sample cups with **Integrated Serrated Edged Snap-On Rings** enable extraneous thin-film trimming. Refer to catalog numbers followed by “SE”.



Snap-On Ring Integrated with Serrated Thin-Film Trimmer

SPECIFICATIONS AND ORDERING INFORMATION

CAT. NO.	DESCRIPTION	OUTSIDE DIAMETER	HEIGHT	APERTURE	CAPACITY, cc	SETS/PKG
1430	Single open end	1.21" (30.7mm)	0.88" (22.3mm)	0.97" (24.5mm)	9	100
1430-SE	Snap-On Rings have integrated thin-film trimmer					
1440	Single open end	1.55" (39.3mm)	0.94" (24.0mm)	1.27" (32.3mm)	16	100
1440L*	Extra long; Single open end for Oxford Lab-X Instruments	1.55" (39.3mm)	1.38" (35.1mm)	1.27" (32.3mm)	26	100

* Made under one or more of patents: 5,451,375; 5,630,989; 4,698,210; 238,210; 4,665,759 and pending applications

IMPORTANT: The provided Collar must clear the serrated Snap-On Ring when using the 1430-SE Sample Cups
REMINDER TO ORDER THIN-FILM SAMPLE SUPPORTS



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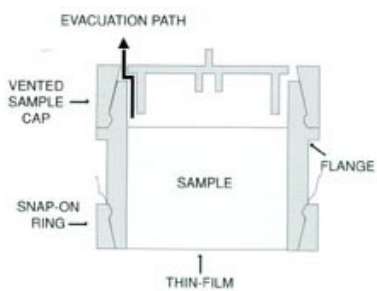
SERIES 1500:

DOUBLE OPEN-ENDED XRF SAMPLE CUPS WITH MICROPOROUS FILM, VENTED CAP PROVISIONS AND INTEGRATED THIN-FILM TRIMMER

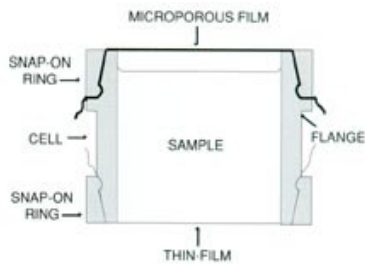


- [HOME](#)
- [QUICK REFERENCE CHART FOR XRF SAMPLE CUPS](#)
- [THIN-FILM SAMPLE SUPPORTS](#)
- [SAMPLE CUP ACCESSORIES](#)
- [MICROPOROUS FILM](#)

- Double open ends accept thin-film sample support and [Microporous Gas Permeable Film](#), Cat. No. 325 and 325C or [Vented Snap-On Caps](#), Cat. Nos. 1630 or 1640
- Three-part assembly: Cell and two Snap-On Rings; one for each open end
- Snap-On Rings firmly grasp thin-film with progressive attachment, maintains tautness and secures it tightly to the cell at completion by means of a unique patented “bead-to-indent” geometry and for affixing Microporous Gas Permeable Film to the flanged end of the cup.
- Use the optionally available [Palm Held](#) or [Snap-On Ring](#) Fastener.
- Optionally available 32 mm sample cups with **Integrated Serrated Edged Snap-On Rings** enable extraneous thin-film and Microporous Film trimming. Refer to catalog numbers followed by “SE”.



1540 XRF Sample Cup Illustrated with Snap-On Cap



1540 XRF Sample Cup Illustrated with Microporous Film



1530-SE Illustrated with Integrated Serrated Edged Snap-On Ring

SPECIFICATIONS AND ORDERING INFORMATION

CAT. NO.	DESCRIPTION	OUTSIDE DIAMETER	HEIGHT	APERTURE	CAPACITY, cc	SAMPLE CUP CAP CAT. NO.	SETS/PKG
1530	Double open ends	1.22" (30.9mm)	0.94" (24.0mm)	0.95" (24.0mm)	12	1630	100
1530-SE	Snap-On Rings have integrated thin-film and Microporous Film trimmer						
1540	Double open ends	1.55" (39.3mm)	0.90" (22.9mm)	1.22" (30.9mm)	18	1640	100

• Made under one or more of patents: 5,451,375; 5,630,989; 4,698,210; 238,210; 4,665,759 and pending applications

IMPORTANT: When using 1530SE, Microporous Film must be used on the open end with the integrated flange.

REMINDER TO ORDER THIN-FILM SAMPLE SUPPORTS



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**SERIES 1600:****VENTED SAMPLE CUP CAPS FOR
1500 SERIES XRF SAMPLE CUPS**[HOME](#)[QUICK
REFERENCE
CHART FOR
XRF SAMPLE
CUPS](#)[THIN-FILM
SAMPLE
SUPPORTS](#)[SAMPLE CUP
ACCESSORIES](#)[MICROPOROUS
FILM](#)

- Series of slits in cap serve as evacuation paths for pressure equalization in vacuum or inert gas environments.
- Snap-On feature firmly secures cap to XRF Sample Cups.
- Forms physical barrier in conjunction with [1500 Series XRF Sample Cups](#) to prevent powdered samples from escaping during evacuation process.
- Retains non-volatile fluids in sample cup.

SPECIFICATIONS AND ORDERING INFORMATION

CAT. NO.	DESCRIPTION	NOMINAL OUTSIDE DIAMETER mm	USE WITH CATALOG NUMBER OF SAMPLE CUP	CAPS/PKG
1630	Sample cup cap	32	1530	100
1640	Sample cup cap	40	1540	100

REMINDER TO ORDER THIN-FILM SAMPLE SUPPORTS

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Orpington, Kent BR5 4HE, UK

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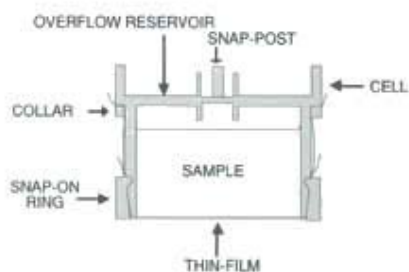
SERIES 1700:

SNAP-POST VENTING, OVERFLOW RESERVOIR XRF SAMPLE CUPS AND INTEGRATED THIN-FILM TRIMMER



HOME
QUICK REFERENCE CHART FOR XRF SAMPLE CUPS
THIN-FILM SAMPLE SUPPORTS
SAMPLE CUP ACCESSORIES
MICROPOROUS FILM

- Optional patented venting performed by moving integrated post sideways to rupture thermoplastic seal.
- Three-part assembly: Cell, Snap-On Ring and Collar.
- External Overflow Reservoir collects thermally sensitive materials with tendencies to expand
- Collar serves to temporarily secure thin-film in position
- Snap-On Ring firmly grasps thin-film with progressive attachment, maintains tautness and secures it tightly to the cell at completion by means of a unique patented “bead-to-indent” geometry. Use the optionally available [Palm Held](#) or [Snap-On Ring](#) Fastener.
- Optionally available 32 mm sample cups with **Integrated Serrated Edged Snap-On Rings** enable extraneous thin-film trimming. Refer to catalog numbers followed by “SE”.



Rupturing Thermoplastic Seal Establishes Equalization of Pressure within Sample Cup and Sample Chamber



Integrated Serrated Edge with Snap-On Ring Conveniently Trims Thin- Film closely to Cell

SPECIFICATIONS AND ORDERING INFORMATION

CAT. NO.	DESCRIPTION	OUTSIDE DIAMETER	HEIGHT	APERTURE	CAPACITY, cc	SETS/PKG
1730	Snap-Post Venting	1.21" (30.8mm)	0.91" (23.2mm)	0.97" (24.7mm)	7	100
1730-SE	Snap-On Rings have integrated thin-film trimmer	1.21" (30.8mm)	0.91" (23.2mm)	0.97" (24.7mm)	7	100
1740	Snap-Post Venting	1.54" (39.0mm)	0.94" (23.7mm)	1.26" (32.0mm)	13	100

Made under one or more of patents: 5,451,375; 5,630,989; 4,698,210; 238,210; 4,665,759 and pending applications

IMPORTANT: The provided Collar must clear the serrated Snap-On Ring when using the 1730-SE Sample Cups

REMINDER TO ORDER THIN-FILM SAMPLE SUPPORTS



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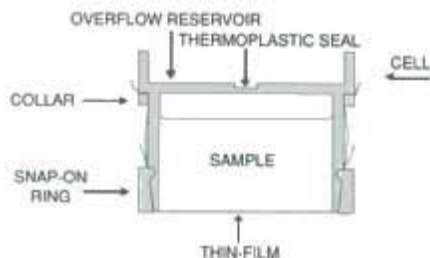
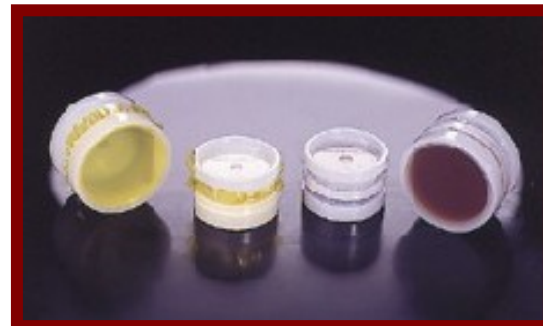
SERIES 1800:

SINGLE OPEN-ENDED XRF SAMPLE CUPS WITH EXTERNAL OVERFLOW RESERVOIR, VENTING PROVISION AND INTEGRATED THIN-FILM TRIMMER



- [HOME](#)
- [QUICK REFERENCE CHART FOR XRF SAMPLE CUPS](#)
- [THIN-FILM SAMPLE SUPPORTS](#)
- [SAMPLE CUP ACCESSORIES](#)
- [MICROPOROUS FILM](#)

- Venting provision by puncturing thermoplastic seal with an optionally available [Vent Hole Punch](#), Cat. No. 1350.
- External Overflow Reservoir collects thermally sensitive materials tending to expand.
- Three-part assembly: Cell, Snap-On Ring and Collar.
- Collar serves to temporarily secure thin-film in position prior to attaching Snap-On Ring.
- Snap-On Ring firmly grasps thin-film with progressive attachment, maintains tautness and secures it tightly to the cell at completion by means of a unique patented “bead-to-indent” geometry. Use the optionally available [Palm Held](#) or [Snap-On Ring Fastener](#).
- Optionally available Snap-On Rings with Integrated Serrated Edge allow extraneous thin-film trimming. Refer to catalog numbers followed by “SE”.



1. Position Snap-On Ring on Thin-Film
2. Push Snap-On Ring Down to Affix Thin-Film
3. Detach Thin-Film Against Integrated Snap-On Ring Serrated Edge

SPECIFICATIONS AND ORDERING INFORMATION

CAT. NO.	DESCRIPTION	OUTSIDE DIAMETER	HEIGHT	APERTURE	CAPACITY, cc	SETS/PKG
1830	Thermoplastic seal venting	1.22" (30.9mm)	0.87" (22.1mm)	0.96" (24.5mm)	7	100
1830-SE	Snap-On Rings have integrated thin-film trimmer					
1840	Thermoplastic seal venting	1.54" (39.2mm)	0.93" (23.6mm)	1.27" (32.2mm)	12	100

- Made under one or more of patents: 5,451,375; 5,630,989; 4,698,210; 238,210; 4,665,759 and pending applications

IMPORTANT: The provided Collar must clear the serrated Snap-On Ring when using the 1830-SE Sample Cups

REMINDER TO ORDER THIN-FILM SAMPLE SUPPORTS



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SERIES 1850:

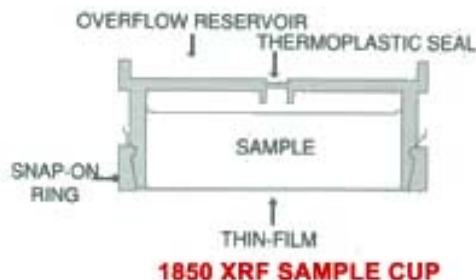
EXTRA WIDE AND SHALLOW SINGLE OPEN-ENDED XRF SAMPLE CUPS WITH OVERFLOW RESERVOIR AND VENTING PROVISION FOR HORIBA AND XOS ANALYZERS



- [HOME](#)
- [QUICK REFERENCE CHART FOR XRF SAMPLE CUPS](#)
- [THIN-FILM SAMPLE SUPPORTS](#)
- [SAMPLE CUP ACCESSORIES](#)
- [MICROPOROUS FILM](#)

- Venting provision by puncturing thermoplastic seal with an optionally available [Vent Hole Punch, Cat. No. 1350](#).
- External Overflow reservoir collects thermally sensitive materials tending to expand.
- Two-part assembly: Cell and Snap-On Ring.
- Snap-On Ring firmly grasps thin-film with progressive attachment with optionally available or [Palm Held](#) or [Snap-On Ring Fastener](#) , maintains tautness and secures it tightly to the cell at completion by means of a unique patented “bead-to-indent” geometry.

Note: For best results, use the larger diameters of [SpectroMembrane Thin-Film Sample Support Carrier Frames](#).



SPECIFICATIONS AND ORDERING INFORMATION

CAT. NO.	DESCRIPTION	OUTSIDE DIAMETER	HEIGHT	APERTURE	CAPACITY, cc	SETS/PKG
1850	Thermoplastic seal venting	1.69" (42.9mm)	0.77" (19.5mm)	1.41" (35.9mm)	15	100

Designed for Horiba and XOS instrumentation

REMINDER TO ORDER THIN-FILM SAMPLE SUPPORTS



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 Orpington, Kent BR5 4HE, UK

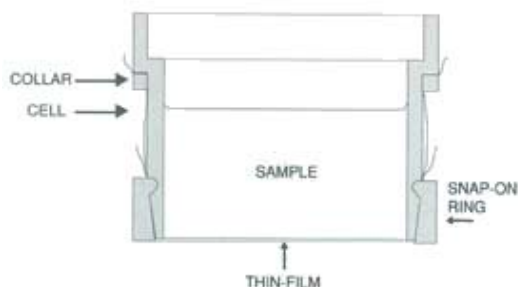


SERIES 1900:

DOUBLE OPEN-ENDED XRF SAMPLE CUPS FOR EASY AND RAPID TOP LOADING AND INTEGRATED THIN-FILM TRIMMER

- [HOME](#)
- [QUICK REFERENCE CHART FOR XRF SAMPLE CUPS](#)
- [THIN-FILM SAMPLE SUPPORTS](#)
- [SAMPLE CUP ACCESSORIES](#)
- [MICROPOROUS FILM](#)

- Ideal for non-volatile and loose powdered sample containment in air or inert gas.
- For high sample volume throughput
- Three-part assembly: Cell, Snap-On Ring and Collar.
- Collar serves to temporarily secure thin-film in position prior to attaching Snap-On Ring.
- Snap-On Ring firmly grasps thin-film with progressive attachment, maintains tautness and secures it tightly to the cell at completion by means of a unique patented “bead-to-Indent” geometry. Use the optionally available [Palm Held](#) or [Snap-On Ring](#) Fastener.
- Optionally available 32 mm sample cups with **Integrated Serrated Edged Snap-On Rings** enable extraneous thin-film trimming on the assembled sample cup. Refer to catalog numbers followed by “SE”.



Easy Accessible Top Sample Loading



Integrated Serrated Edge with Snap-On Ring Conveniently Trims Thin- Film closely to Cell

SPECIFICATIONS AND ORDERING INFORMATION

CAT. NO.	DESCRIPTION	OUTSIDE DIAMETER	HEIGHT	APERTURE	CAPACITY cc	SETS/PKG
1930	Double open ended	1.22"	0.83"	0.97"	9	100
1930-SE	Snap-On Rings have integrated thin-film trimmer	(31.0mm)	(21.1mm)	(24.7mm)		
1940	Double open ended	1.54"	0.84"	1.26"	16	100
		(39.1mm)	(21.5mm)	(31.9mm)		
1940L**	Double open ended	1.54"	1.40"	1.26"	26	100
		(39.1mm)	(35.6mm)	(31.9mm)		

* Made under one or more of patents: 5,451,375; 5,630,989; 4,698,210; 238,210; 4,665,759 and pending applications

** Accepted by Oxford Lab-X instruments

IMPORTANT: The provided Collar must clear the serrated Snap-On Ring when using the 1930-SE Sample Cups

REMINDER TO ORDER THIN-FILM SAMPLE SUPPORTS

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SERIES 1935-OX:**DOUBLE OPEN-ENDED XRF SAMPLE CUPS AND CAPS FOR OXFORD ANALYZERS**[HOME](#)[QUICK REFERENCE CHART FOR XRF SAMPLE CUPS](#)[THIN-FILM SAMPLE SUPPORTS](#)[SAMPLE CUP ACCESSORIES](#)[MICROPOROUS FILM](#)

- Designed for accommodation by Oxford analyzers utilizing L240 aluminum sample holders with interior "O" rings.
- Two-part assembly: double open-ended cell and friction fitting-cap.
- Easy insertion and easy removal from aluminum holders.
- Close tolerance design ensures leak resistant assembly to aluminum holders.
- Built-in upper flange mechanically prevents cup from extending through the aluminum holder and maintains reproducible target-to-sample plane distance.
- Friction-fitting cap is vented for entrapped air evacuation.



Note: For best results, use the larger diameters of [SpectroMembrane Thin-Film Sample Support Carrier Frames](#).

**SPECIFICATIONS AND ORDERING INFORMATION**

CAT. NO.	DESCRIPTION	OUTSIDE DIAMETER	HEIGHT	APERTURE	CAPACITY cc	CAPS INCLUDED	SETS/PKG
1935-OX	Replacement Cells for Oxford LX1010/100 liners	1.23" (31.2mm)	1.51" (38.3mm)	1.15" (29.2mm)	24	100	100

REMINDER TO ORDER THIN-FILM SAMPLE SUPPORTS

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Orpington, Kent BR5 4HE, UK

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Series 2100:

Double Open-Ended XRF Sample Cups Feature **Internal** Overflow Reservoirs, Vented Snap-On Covers and Easy-to-Use Sleeves for Thin-Film Sample Support Attachment



- [HOME](#)
- [QUICK REFERENCE CHART FOR XRF SAMPLE CUPS](#)
- [THIN-FILM SAMPLE SUPPORTS](#)
- [SAMPLE CUP ACCESSORIES](#)
- [MICROPOROUS FILM](#)

- Unique Internal Overflow Reservoir is located on the *inside* of the Cell reducing the likelihood of inadvertent spillage into the sample chamber.
- Extraneous and thermally sensitive sample substances are confined within the sample cup.
- A vented Snap-On Cover establishes a series of physical barriers and increased resistance to withdrawal of sample particles in evacuated conditions.
- Three-assembly: Cell with Internal Overflow Reservoir, Sleeve and Snap-On Cap.
- Easy-to-use Sleeve is adaptable to any type and gauge of thin-film sample supports
- The full sleeve tends to envelop extraneous thin-film for improved sealing and taut sample planes and virtually eliminates thin-film trimming.



Note: For best results, use [SpectroMembrane Thin-Film Sample Support Carrier Frames](#).



ASSEMBLED CUP WITH RESERVOIR



RESERVOIR FORMS FILL LIMIT



VENTED CAP EQUALIZES PRESSURE

SPECIFICATIONS AND ORDERING INFORMATION

2132 illustrated in Spectro Sample Holder

Catalog Number	Outside Diameter	Height	Aperture
2131	1.23"(31.2mm)	1.12" (28.4mm)	0.97" (24.7mm)
2132*	1.24" (31.4mm)	1.15" (29.2mm)	1.04" (26.5mm)
2135**	1.35" (34.2mm)	1.16" (29.5mm)	1.10" (28.0mm)
2140***	1.57" (39.9mm)	1.17" (29.6mm)	1.41" (35.8mm)
2143****	1.57" (39.9mm)	1.17" (29.6mm)	1.41" (35.8mm)
2145	1.77" (45.0mm)	1.17" (29.6mm)	1.55" (39.4mm)
2152	2.04" (51.8mm)	1.11" (28.1mm)	1.81" (46mm)



Made under one or more of patents: 5,451,375; 5,630,989; 4,698,210; 238,210; 4,665,759 and pending applications

Note: Cat. No. 2131 is provided with a Snap-On Ring with the unique Chemplex "bead-to-indent" geometry for affixing thin-film sample supports.

* Cat. No. 2132 is applicable to Spectro XEPOS, iQ, iQ II and other Systems

** Cat. No. 2135 is applicable to PANalytical MiniPal Systems

*** Cat. No. 2140 is applicable to manual Bruker S2 and S4 Systems

**** Cat. No. 2143 is applicable to automatic Bruker S2 Systems with XFlash® Detectors

SERIES 3100:



- [HOME](#)
- [QUICK REFERENCE CHART FOR XRF SAMPLE CUPS](#)
- [THIN-FILM SAMPLE SUPPORTS](#)
- [SAMPLE CUP ACCESSORIES](#)
- [MICROPOROUS FILM](#)

SPECTROMICRO™ SAMPLE CUPS FOR MICRO SAMPLES WITHOUT COMPROMISING

SpectroMicro Sample Cups were developed in response to meeting an increasing need to handle a range of small or rare sample quantities with ease, analytical accuracy and precisions of measurement.

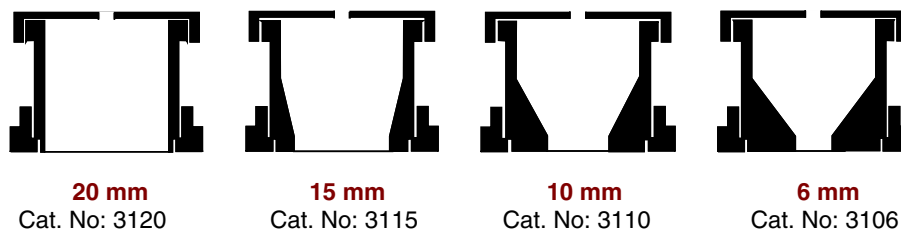


The SpectroMicro Sample Cup accomplishes this by integrating a funnel shaped structure within the sample cup Cell. The larger conically shaped upper portion of the funnel allows and facilitates introduction of the sample substance and the lower cylindrically shaped spout portion of the funnel functions as the vertical walls of the sample collection chamber. The height of the sample chamber is defined as the conical and spout junction of the funnel. The bottom open end of the spout or sample chamber, referred to as the aperture of the sample cup, is transformed into the sample plane formed by the attachment of a suitable thin-film window with a provided Collar.

By confining the sample substance to within the sample chamber boundary the volumetric capacity of the sample cup and sample quantity is established. Simply matching the sample quantity available for analysis to the aperture diameter of the sample cup enables selection of the most appropriate SpectroMicro Sample Cup. An assortment of sample cups is available with various aperture diameters to accommodate micro sample quantity containment ranging from 0.20 cc to 5.5 cc. Vented Snap-On Caps maintain pressure equalization to minimize potential convoluted sample planes.

FEATURES

- Integrated “funnel” forms micro sample chamber and guides sample on thin-film window
- Flush-fitting Cell-to-Collar geometry ensures reproducible sample-to-target and detector distances
- “User-mass-handling-friendly” Cell, Snap-On Cap and Thin-Film Window Collar components
- Directional Collar forms taut, leak resistant thin-film windows for flat sample planes
- Automatic vented cap establishes pressure differential equalization in air, vacuum or inert gas
- Usable with all x-ray instruments with 32 mm diameter sample holders



SPECIFICATIONS AND ORDERING INFORMATION

Catalog Number	Surface Area Exposure Diameter	Sample Chamber Volumetric Capacity	Outside Diameter	Height (With Cap)	Integrated Interior Funnel	Number of Sample Cup Sets/Package*
3106	6 mm (0.24")	0.20 cc	30.6 mm (1.20")	25.3 mm (0.99")	Yes	100
3110	10 mm (0.39")	0.50 cc	30.6 mm (1.20")	25.3 mm (0.99")	Yes	100
3115	15 mm (0.59")	1.00 cc	30.6 mm (1.20")	25.3 mm (0.99")	Yes	100
3120	20 mm (0.79")	5.50 cc	30.6 mm (1.20")	23.0 mm (0.91")	N/A	100

Made under one or more of patents: 5,451,375; 5,630,989; 4,698,210; 238,210; 4,665,759 and pending applications.

™ SpectroMicro is a trademark of Chemplex Industries, Inc. * A set consists of a cell, vented cap and collar

SPECTROCERTIFIED® THIN-FILM SAMPLE SUPPORT MATERIALS



- [HOME](#)
- [BACK TO REFERENCE CHART FOR XRF SAMPLE CUPS](#)
- [HOW TO SELECT THIN-FILMS](#)
- [THIN-FILM DEGRADATION RESISTANCE CHART](#)
- [SPECTROMEMBRANE THIN-FILMS](#)
- [CONTINUOUS ROLLS AND PRECUT CIRCLES](#)



A thin-film sample support window is a substance used for retaining liquid, powdered, slurry or solid specimens in XRF Sample Cups. Of the many different types of materials



available, few possess the necessary combination of consistency and chemical and physical properties to serve x-ray spectrochemical needs.

Typical Thickness Variations

Variations	Uniformity of Thickness	Orientation
Between packages	≤ 1 – 2 %	Multiaxially orientated; minimizes effects of preferred orientation
Between lots	≤ ± 5%	

Physical Characteristics

Thin-Film Sample Support Substance	Melting Point, °C (°F)	Density, gm/cc	Structural Formula
Etnom™	270 (518)	1.36	C ₁₄ H ₁₀ O ₄
Prolene®	165 (329)	0.91	C ₃ H ₆
Mylar®, Hostaphan®	260 (500)	1.38	C ₁₀ H ₃ O ₄
Polypropylene	160 (320)	0.91	C ₃ H ₆
Polyester	210 (410)	0.93	C ₁₀ H ₃ O ₄
Polyimide (Kapton®)	None reported	1.42	C ₂₀ H ₁₀ O ₅ N ₂
Polycarbonate	267 (513)	1.37	C ₂ H ₃ F

Purity

(Refer to [“Degradation Resistance Chart”](#) for Additional Information)

Thin-Film Window Substance	Trace Impurities, PPM
Mylar®, Polyester, Hostaphan®	Ca, P, Sb, Fe, Zn
Prolene®, Polypropylene	Ca, P, Fe, Cu, Zr, Ti, Al
Etnom™	Si, Ca, P, Zn, Sb
Polyimide (Kapton®)	None reported of significant value
Polycarbonate	Unknown

REMINDER TO ORDER XRF SAMPLE CUPS



Specac Limited
 River House, 97 Cray Avenue
 Orpington, Kent BR5 4HE, UK

HOW TO SELECT A THIN-FILM SAMPLE SUPPORT MATERIAL



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[BACK TO QUICK REFERENCE CHART FOR XRF SAMPLE CUPS](#)

[CONTINUOUS ROLLS AND PRECUT CIRCLES](#)

As a guide, the adjacent chart relates % Transmittance through a thin-film substance vs. Analyte energy, KeV, and Wavelength.

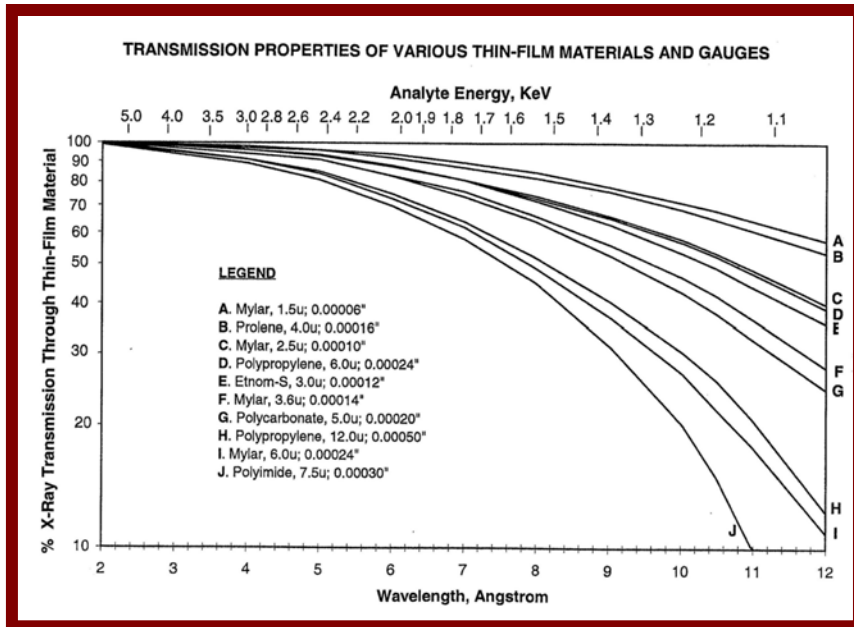
1. Select the analyte-line of interest in either KeV or Angstrom units.

2. At the point of extrapolated intersection of each curve, read the % Transmittance.

The greater the % Transmittance value the lower the absorption will be. This may be translated into other factors such as lower elemental detection limits and shorter integration times.

3. Select the thin-film substance with the highest % Transmittance value.

4. Consider the Degradation Resistance assignments to the thin film sample support substance for the sample types to be analyzed.



DEGRADATION RESISTANCE OF THIN-FILM SUBSTANCES

CHEMICAL	MYLAR or HOSTAPHAN	POLYCARBONATE	Etnom-S	POLYPROPYLENE	POLYIMIDE (KAPTON)	PROLENE	ULTRA-POLYESTER
Acid, dilute or weak	G	G	G	E	N	G	G
Acids, conc.	G	G	G	E	N	E	G
Alcohols, aliphatic	N	G	G	E	G	E	N
Aldehydes	U	F	F	E	E	E	U
Alkalies, conc.	N	N	G	E	E	E	N
Esters	N	N	F	G	G	G	N
Ethers	F	N	F	N	U	N	F
Hydrocarbon, aliphatic	G	N	E	G	E	G	G
Hydrocarbon, aromatic	N	N	E	N	E	N	N
Hydrocarbon, halogenated	F	N	F	N	F	N	F
Ketones	N	N	G	G	G	G	N
Oxidizing agents	F	N	F	F	N	F	F

E=Excellent, G=Good, F=Fair, N=Not recommended, U=Unknown

Shaded columns represent thin-film window materials determined "Unsuitable for analyzing sulfur in diesel fuel, gasoline and other petroleum products containing aromatic hydrocarbons," ASTM D-4294-03 and ASTM D-6445-99 (2004), in addition to other independent testing.

IMPORTANT: The degradation resistance of thin-films contained in the above illustration is provided as a matter of information purposes only and is not intended to preclude actual testing and suitability of use and applications. The responsibility of acceptance and safety resides totally with the user.

SPECTROMEMBRANE® THIN-FILM SAMPLE SUPPORT CARRIER FRAMES

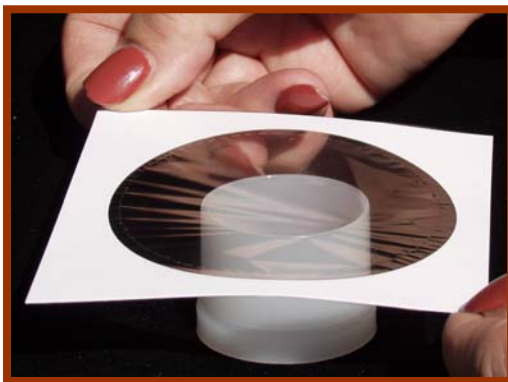


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- [HOW TO SELECT THIN-FILMS](#)
- [THIN-FILM DEGRADATION RESISTANCE CHART](#)
- [CONTINUOUS ROLLS AND PRECUT CIRCLES](#)

SpectroMembrane® Thin-Film Sample Support Carrier Frames consist of a thin-film sample support substance attached to a frame that serves as a carrier. In affixing a thin-film substance to an XRF Sample Cup, the thin-film material is not directly handled; contamination possibility is completely eliminated. Nearing or at the completion of attachment, the thin-film automatically detaches from the carrier frame leaving a taut wrinkle-free sample support.



- **NO WASTE**
- **NO CONTAMINATION**
- **NO STATIC ELECTRICITY**
- **NO EXPERIENCE NECESSARY**



Step 1.
Place SpectroMembrane® Over XRF Sample Cup

Step 2.
Press Snap-On Ring of Sleeve over SpectroMembrane® and tear away Carrier Frame



SPECIFICATIONS AND ORDERING INFORMATION

AVAILABLE IN 2.5" (63.5 mm) DIAMETER CIRCLES, FOR 32 mm DIAMETER XRF SAMPLE CUPS, AND 3.0" (76.2 mm) DIAMETER CIRCLES, FOR OVER 32 mm DIAMETER XRF SAMPLE CUPS. PACKAGED 100 SPECTROMEMBRANES/PKG.

CAT. NO.	THIN-FILM SUBSTANCE	CIRCLE DIAMETER	GAUGE	SUGGESTED SAMPLE CUP USE
3011*	Mylar®; Hostaphan®	2.5" (63.5mm)	2.5 µ; 0.00010"; 0.10 mil; 0.00254 mm	1060, 1065, 1330, 1430, 1530, 1730, 1830, 1930, 2131, 2132
3012*	Mylar®; Hostaphan®	3.0" (76.2mm)	2.5 µ; 0.00010"; 0.10 mil; 0.00254 mm	1070, 1075, 1080, 1085, 1095, 1340, 1440, 1440L, 1540, 1740, 1840, 1850, 1940, 2135, 2140, 2143, 2145, 2152
3013*	Mylar®; Hostaphan®	2.5" (63.5mm)	3.6 µ; 0.00014"; 0.14 mil; 0.00356 mm	1060, 1065, 1330, 1430, 1530, 1730, 1830, 1930, 2131, 2132
3014*	Mylar®; Hostaphan®	3.0" (76.2mm)	3.6 µ; 0.00014"; 0.14 mil; 0.00356 mm	1070, 1075, 1080, 1085, 1095, 1340, 1440, 1440L, 1540, 1740, 1840, 1850, 1940, 2135, 2140, 2143, 2145, 2152

3015*	Mylar®; Hostaphan®	2.5" (63.5mm)	6.0 µ; 0.00024"; 0.24 mil; 0.00610 mm	1060, 1065, 1330,1430, 1530, 1730, 1830, 1930, 2131, 2132
3016*	Mylar®; Hostaphan®	3.0" (76.2mm)	6.0 µ; 0.00024"; 0.24 mil; 0.00610 mm	1070,1075,1080,1085,1095,1340,1440, 1440L, 1540,1740, 1840, 1850, 1940, 2135, 2140, 2143, 2145, 2152
3017*	Prolene®	2.5" (63.5mm)	4.0 µ; 0.00016"; 0.16 mil; 0.00406 mm	1060, 1065, 1330,1430, 1530, 1730, 1830, 1930, 2131, 2132
3018*	Prolene®	3.0" (76.2mm)	4.0 µ; 0.00016"; 0.16 mil; 0.00406 mm	1070,1075,1080,1085,1095,1340,1440, 1440L, 1540,1740, 1840, 1850, 1940, 2135, 2140, 2143, 2145, 2152
3019*	Polypropylene	2.5" (63.5mm)	6.0 µ; 0.00024"; 0.24 mil; 0.00610 mm	1060, 1065, 1330,1430, 1530, 1730, 1830, 1930, 2131, 2132
3020*	Polypropylene	3.0" (76.2mm)	6.0 µ; 0.00024"; 0.24 mil; 0.00610 mm	1070,1075,1080,1085,1095,1340,1440, 1440L, 1540,1740, 1840, 1850, 1940, 2135, 2140, 2143, 2145, 2152
3021	Polyimide (Kapton®)	2.5" (63.5mm)	7.5 µ; 0.00030"; 0.30 mil; 0.00762 mm	1060, 1065, 1330,1430, 1530, 1730, 1830, 1930, 2131, 2132
3022	Polyimide (Kapton®)	3.0" (76.2mm)	7.5 µ; 0.00030"; 0.30 mil; 0.00762 mm	1070,1075,1080,1085,1095,1340,1440, 1440L, 1540,1740, 1840, 1850, 1940, 2135, 2140, 2143, 2145, 2152
3023*	Polypropylene	2.5" (63.5mm)	12.0 µ; 0.00050"; 0.50 mil; 0.0127 mm	1060, 1065, 1330,1430, 1530, 1730, 1830, 1930, 2131, 2132
3024*	Polypropylene	3.0" (76.2mm)	12.0 µ; 0.00050"; 0.50 mil; 0.0127 mm	1070,1075,1080,1085,1095,1340,1440, 1440L, 1540,1740, 1840, 1850, 1940, 2135, 2140, 2143, 2145, 2152
3025	Etnom-S™ (Resistant to Aromatics)	2.5" (63.5mm)	3.0 µ; 0.00012"; 0.12mil; 0.00305 mm	1060, 1065, 1330,1430, 1530, 1730, 1830, 1930, 2131, 2132
3026	Etnom-S™ (Resistant to Aromatics)	3.0" (76.2mm)	3.0 µ; 0.00012"; 0.12mil; 0.00305 mm	1070,1075,1080,1085,1095,1340,1440, 1440L, 1540,1740, 1840, 1850, 1940, 2135, 2140, 2143, 2145, 2152

Reg. US Patent No: 6,009,766 and other patents in applications

* Represent thin-film window materials determined "Unsuitable for analyzing sulfur in diesel fuel, gasoline and other petroleum products containing aromatic hydrocarbons," ASTM D-4294-03 and ASTM D-6445-99 (2004), in addition to other independent testing.

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®Kapton and Mylar are trademarks of E.I. DuPont de Nemours, Inc.

®Hostaphan is a trademark of Mitsubishi



REMINDER TO ORDER XRF SAMPLE CUPS

Request **FREE** samples of SpectroMembrane® Thin-Film Sample Supports. Contact Sales@specac.co.uk



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River House, 97 Cray Avenue
Orpington, Kent BR5 4HE, UK

Tel: +44(0) 1689 873134; Fax: +44(0) 1689 878527; Sales@specac.co.uk; www.specac.com

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THIN-FILM SAMPLE SUPPORTS IN CONTINUOUS ROLLS AND PRECUT CIRCLES



Thin-Film Sample Supports are available in Continuous Rolls and Pre-Cut Circles. Fabrication of all thin-films is performed under environmentally controlled conditions to avoid the potential possibility of inadvertently introducing trace levels of contaminants and individually shrink-wrapped to preserve the original integrity.



SPECIFICATIONS AND ORDERING INFORMATION

Continuous Rolls:

(3" wide x 300' long; 7.6cm x 91.4 m)

CATALOG NUMBER	THIN-FILM SUBSTANCE	GAUGE
090	Ultra-Polyester	1.5 µ; 0.00006"; 0.06mil; 0.00152mm
100	Mylar®; Hostaphan®	2.5 µ; 0.00010"; 0.10 mil; 0.00254mm
150	Mylar®; Hostaphan®	3.6 µ; 0.00014"; 0.14 mil; 0.00356mm
250	Mylar®; Hostaphan®	6.0 µ; 0.00024"; 0.24 mil; 0.00610mm
416	Prolene®	4.0 µ; 0.00016"; 0.16 mil; 0.00406mm
425	Polypropylene	6.0 µ; 0.00024"; 0.24 mil; 0.00610mm
440	Polyimide (Kapton®)	7.5 µ; 0.00030"; 0.30 mil; 0.00762mm
442*	Polyimide (Kapton®)	7.5 µ; 0.00030"; 0.30 mil; 0.00762mm
475	Polypropylene	12.0 µ; 0.00050"; 0.50 mil; 0.0127mm

Supplied in 50' (15.2m) lengths

Precut Circles: (500 pieces/box)

(2.5" Diameter; 63.5mm)

CATALOG NUMBER	THIN-FILM SUBSTANCE	GAUGE
106	Mylar®; Hostaphan®	2.5 µ; 0.00010"; 0.10 mil; 0.00254mm
156	Mylar®; Hostaphan®	3.6 µ; 0.00014"; 0.14 mil; 0.00356mm
256	Mylar®; Hostaphan®	6.0 µ; 0.00024"; 0.24 mil; 0.00610mm
426	Prolene®	4.0 µ; 0.00016"; 0.16 mil; 0.00406mm
436	Polypropylene	6.0 µ; 0.00024"; 0.24 mil; 0.00610mm
446	Polyimide (Kapton®)	7.5 µ; 0.00030"; 0.30 mil; 0.00762mm
476	Polypropylene	12.0 µ; 0.00050"; 0.50 mil; 0.0127mm

Precut Circles: (1000 pieces/box)

(2.5" Diameter; 63.5mm)

CATALOG NUMBER	THIN-FILM SUBSTANCE	GAUGE
107	Mylar®; Hostaphan®	2.5 µ; 0.00010"; 0.10 mil; 0.00254mm
157	Mylar®; Hostaphan®	3.6 µ; 0.00014"; 0.14 mil; 0.00356mm
257	Mylar®; Hostaphan®	6.0 µ; 0.00024"; 0.24 mil; 0.00610mm
427	Prolene®	4.0 µ; 0.00016"; 0.16 mil; 0.00406mm
437	Polypropylene	6.0 µ; 0.00024"; 0.24 mil; 0.00610mm
447	Polyimide (Kapton®)	7.5 µ; 0.00030"; 0.30 mil; 0.00762mm
477	Polypropylene	12.0 µ; 0.00050"; 0.50 mil; 0.0127mm

NOTE:

Ultra polyester, Mylar, polypropylene, Prolene and polycarbonate are “unsuitable for analyzing sulfur in diesel fuel, gasoline and other petroleum products containing aromatics”; ASTM D-4294-03 and ASTM D-6445-99 (2004) and other independent testing. Refer to [Etnom SpectroMembrane](#) Thin-Film Carrier Frames for information regarding exceptional chemical resistance and higher % Transmission Values.

IMPORTANT:

The possibility of pinholes, pores and variations existing in any thin-film sample support substance regardless of form and packaging may present leakage of a sample with subsequent contamination and damage to the analytical instrumentation and its components. It is strongly recommended that each item used be subject to judicious testing, use and applications and evaluation prior to actual use. The responsibility of acceptance and safety resides totally with the user. Chemplex Industries, Inc. assumes no liability or guarantee that thin-film sample supports will perform in accordance with its suggested use.

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®Hostaphan is a trademark of Mitsubishi

REMINDER TO ORDER XRF SAMPLE CUPS

FREE samples of Chemplex Thin-Film Sample Supports are available for testing and evaluation purposes.
Contact Sales@specac.co.uk



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River House, 97 Cray Avenue
Orpington, Kent BR5 4HE, UK

Tel: +44(0) 1689 873134; Fax: +44(0) 1689 878527; Sales@specac.co.uk; www.specac.com

MICROPOROUS POLYPROPYLENE FILM

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- [BACK TO QUICK REFERENCE CHART FOR XRF SAMPLE CUPS](#)
- [1500 SERIES XRF SAMPLE CUPS](#)
- [1600 SERIES SAMPLE CUP CAPS](#)
- [SAMPLE CUP ACCESSORIES](#)

Microporous Film is a gas permeable thin membrane used in conjunction with [Series 1500 XRF Sample Cups](#) to establish pressure equalization in inert gas and vacuum environmental analytical conditions.

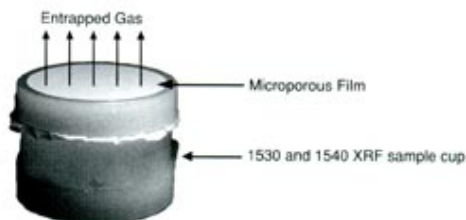
When Microporous Film is attached to the flanged open end of a Series 1500 XRF Sample Cup, the tortuous pore channels permit gaseous elements to penetrate. The pore size prohibits crystalline particles to pass.

Any entrapped gas or air within the sealed sample cup is evacuated leaving the thin-film sample support substance on the opposite end flat and free of convolutions or distension attributed to pressure differentials. Use the optionally available [Palm Held](#) or [Snap-On Ring](#) Fastener.



- MICROPOROUS FILM IN PRE-CUT CIRCLES
- 100 CIRCLES/PACKAGE CORRESPONDS TO 100 SAMPLE CUPS/PACKAGE

**FAST • EASY-TO-USE • NO TRIMMING
NO WASTE • NO CONTAMINATION**



Microporous film maintains pressure equalization in inert gas and vacuum environments



Properties	Typical Values
Porosity, %	55
Pore Size, $\mu \times \mu$	0.21 x 0.05
Thickness, μ (inches; mm)	25 (0.001"; 0.0254mm)
Softening Temperature, °C	Approx. 155
Melting Temperature, °C	165

SPECIFICATIONS AND ORDERING INFORMATION

Microporous Film in Continuous Rolls and Easy-to-Use Pre-Cut Circles

CATALOG NUMBER	DESCRIPTION	Packaging
325*	Microporous Film, Continuous Roll	2.5" wide x 200" long (6.4cm x 5.1m)
325C	Microporous Film, Pre-Cut Circles	2.5" (76mm) diameter; 100 circles/Pkg

- Supplied in unserrated edge boxes.

[REMINDER TO ORDER THIN-FILM SAMPLE SUPPORTS](#)

[REMINDER TO ORDER CHEMPLEX 1500 SERIES XRF SAMPLE CUPS](#)

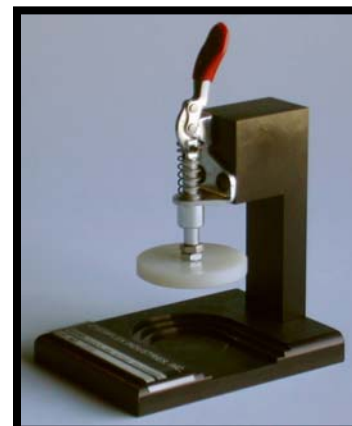
SNAP-ON RING FASTENER FOR SNAP-ON RING ASSEMBLY XRF SAMPLE CUPS

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[PALM HELD FASTENER](#)

[VENT HOLE PUNCH](#)

Uniquely designed device attaches Thin-Film Sample Supports to XRF Sample Cups with “Snap-On Ring” assemblies. Uniformly applies pressure and avoids misalignment Applies uniform pressure to “Snap-On Ring” and maintains taut thin-film integrity.



SIMPLE, FAST AND CONVENIENT TO USE



1. Insert sample cup on platform.
2. Place thin-film sample support over sample cup.
3. Insert “Snap-On Ring” over thin-film sample support.
4. Press lever downward.



USABLE WITH THE FOLLOWING XRF SAMPLE CUPS

CATALOG NO.	CATALOG NO.
1330 and 1330 SE	1740
1340	1830 and 1830 SE
1430 and 1430 SE	1840
1440	1930 and 1930 SE
1530 and 1530 SE	1940
1540	1850
1730 and 1730 SE	

SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NUMBER	DESCRIPTION
1300	Snap-On Ring Fastener



Specac Limited
 River House, 97 Cray Avenue
 Orpington, Kent BR5 4HE, UK

Tel: +44(0) 1689 873134; Fax: +44(0) 1689 878527; Sales@specac.co.uk; www.specac.com

PALM-HELD SNAP-ON RING and SLEEVE FASTENER FOR XRF SAMPLE CUPS

- [HOME](#)
- [BACK TO SNAP-ON RING FASTENER](#)
- [VENT HOLE PUNCH](#)

A handy palm-held device helps attach “Snap-On Rings” and “Sleeves” to XRF Sample Cups. Accommodates most XRF Sample Cups with “Snap-On Rings” and “Sleeves” for affixing thin-film sample support materials.



Simple, Convenient and Effective To Use



1. Place “Snap-On Ring” or “Sleeve” in position on XRF Sample Cup.
2. Insert Palm-Held Fastener over assembled cup holding “Snap-On Ring” or “Sleeve” in position with one finger extended through the center access hole.
3. Press downward.



New Black Anodized Finish

Counter bores enable acceptance of all nominal 32 to 47 mm XRF Sample Cups



SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NUMBER	DESCRIPTION
1325	Palm-Held Snap-On Ring and Sleeve Fastener



Specac Limited
River House, 97 Cray Avenue
Orpington, Kent BR5 4HE, UK

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VENT HOLE PUNCH FOR XRF SAMPLE CUPS

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[BACK TO SNAP ON RING FASTENER](#)

[BACK TO PALM HELD FASTENER](#)

Handy palm held device for puncturing thermoplastic seals in XRF Sample Cups. Automatically self-centers for perfect alignment to XRF Sample Cups with vent hole provisions.

Accommodates 32mm, 40mm and 47mm diameter sample cups utilizing "Snap-On Rings."



Simple, Convenient and Effective To Use

1. Place over assembled sample cup.
2. Depress downward.
3. Thermoplastic seal



SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NUMBER	DESCRIPTION
1350	Vent Hole Punch



Specac Limited
 River House, 97 Cray Avenue
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[SPECTROMILL
BALL PESTLE
IMPACT GRINDERS](#)

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AND PESTLE](#)

GYRALGRINDER® SAMPLE COMMINUTION GRINDER

GyralGrinder® powdered sample grinder reduces innumerable types of samples to a uniform particle size, shape and distribution for XRF analysis in just minutes. The grinding process is extremely energetic, fast and thorough.

Uniquely engineered gyral-mechanics impart a controlled imbalanced condition to the grinding dish containing a sample substance. The components of the grinding dish, a puck and ring, energetically strike and crush the sample while continuously encouraging the particles to intermix with each other. Ergonomically designed for easy access to working chamber and controls.



USER-FRIENDLY GRINDING DISH CLAMP

The comminution dish firmly clamps in position using a single one-hand operated lever that also swings away for full accessibility to the sample chamber. A self-locking mechanism is designed into the lever that prevents the dish from dislodging during operation. Simply pull out on the knob and lift up to disengage locking mechanism allowing the lever to swing out of the way.

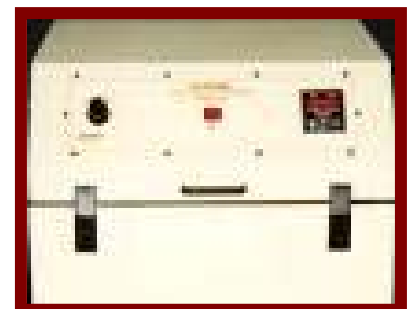


INTENSITY OF IMPACT CONTROL

Variable intensity of impact control provides a means to minimize the introduction of transition element contamination to the sample and wear to the grinding dish. It also allows for the comminution of a wide range of samples extending from soft to very hard.

EASY ACCESS TO CONTROLS

All controls located in swing-up lid permitting close and easy access to sample chamber. Ergonomically designed for operator comfort. Programmable solid-state electronic timer has a large LED display for elapsed time. LED and audible alarm alert completion of the comminution cycle. Includes: acoustical lining, locking latches, leveling legs, gas springs, safety features and heavy gauge steel construction. CE certified.



STANDARD ATTRIBUTES

- CE certified
- Variable Intensity of Impact Control extends range of processing different types of samples
- Reduces grinding dish wear and transition element contamination to sample
- Digital programmable timer with LCD display ensures highly accurate and reproducible cycles
- Cycle completion alarm and LED light
- Single lever grinding dish-locking mechanism facilitates sample introduction and removal
- Sound abatement throughout reduces noise level
- 3/4 horse power DC motor resists wear and generates virtually no heat
- Solid-state motor control and integrated AC to DC converter
- Heavy gauge steel cabinet and gas springs support lid for unobstructed working chamber access
- Single moving part engineering for virtually service-free operation
- Ergonomically designed for operator comfort
- Safety features disconnect operation when lid or service panel is opened

TYPICAL APPLICATIONS

Catalysts ■ Cement ■ Chemicals ■ Clinkers ■ Coal ■ Coke ■ Concrete ■ Ferro-alloys ■ Fertilizer ■ Fluxes ■ Glass ■ Iron ores ■ Limestone ■ Minerals ■ Pesticides ■ Ores ■ Raw Mix ■ Refractories ■ Rocks ■ Sand ■ Sinters ■ Slags ■ Soil ■ And many other substances requiring uniform particle size reduction, configuration and distribution for homogeneous XRF samples in reduced time and effort.

TYPICAL GRINDING TEST RESULTS WITH CHEMPLEX GYRALGRINDER®

Substance	Initial Size	Intensity of Impact	Wt. % Passing through 44 micron screen	Grinding Time, minutes
Asbestos	Fibers	High	100	9
Cement, Portland	> 60 mesh	Moderate	100	1
Ferro-chromium	> 100 mesh	High	100	3
Ferro-manganese	> 200 mesh	High	100	2
Ferro-molybdenum	< 80 mesh	High	100	3
Ferro-niobium	< 80 mesh	High	100	2
Ferro-silicon	< 80 mesh	Moderate	100	3
Ferro-titanium	< 80 mesh	Moderate	100	4
Fiberglass	Fibers	Moderate	100	1
Fluorspar	> 100 mesh	Moderate	100	2
Glass, soda lime	Chunks	Low	100	3
Graphite	Fiber	Low	100	1
Oil Shale	5 mm	Low	100	2
Phosphate	> 60 mesh	Low	100	1
Silicon dioxide	< 10 mesh	Moderate	100	1
Slag, blast furnace	Chunks	High	100	4

Note: Materials processed with GyralsGrinder, Cat. No: 5000, and Hardened Steel Grinding Vessel, Cat. No: 5050.

COMMINUTION VESSELS FOR GYRALGRINDERS

**SELECT FROM HARDENED STEEL, TUNGSTEN CARBIDE, ZIRCONIA CERAMIC
AND SILICON NITRIDE COMMINUTION DISHES**



SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NO.	DESCRIPTION
5000	GyralGrinder® with Intensity of Impact Control
5050	Hardened Steel Comminution Dish
5060	Tungsten Carbide* Comminution Dish
5070	Zirconia Ceramic Comminution Dish
5090	Silicon Nitride* Comminution Dish

Specify electrical requirements. 115VAC/60HZ or 230 VAC/50, 60 HZ.

*This material is prone to fracture and is supplied without any warranty expressed or implied.



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SPECTROMILL® BALL PESTLE IMPACT SAMPLE GRINDERS AND BLENDERS

HOME
BACK TO GYRALGRINDER
SPECTROVIAL COMMINUTING VIALS
SPECTROVIAL ADAPTER
GRINDING ADDITIVES
IMPACT MORTAR AND PESTLE

SpectroMill® Ball Pestle Impact Grinders operate on the principle of propelling ball pestles with a sample substance from one end of a SpectroVial® to the opposite end in a “figure-8” path of travel configuration. The motion is energetic and rapid.

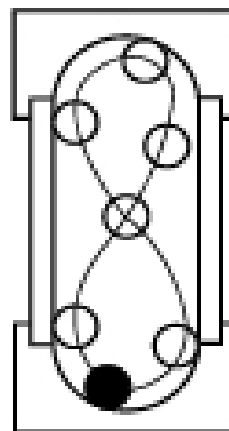


SpectroMill- I



SpectroMill- II

The sample is crushed by the ball pestle and “milled” as the ball pestle is guided across the concaved interior ends of the vial to repeat the cycle on the opposite end. The comminution and blending process are controlled by type of sample substance, quantity, time, hardness of the vial and number of ball pestles.



Well-balanced engineering permit stability for counter top operation. A programmable digital electronic timer controls processing time with a LED and audible alarm indicating cycle completion.

Two SpectroMill® versions are available. SpectroMill-I has a single variable vial clamping mechanism that can accommodate one sample or several with a SpectroVial® Single and Multi-Vial Adapter. SpectroMill-II has two variable vial clamping mechanisms for handling similar or dissimilar types of samples. Use of a SpectroVial® Adaptor extends the number of samples.



SpectroMill-I

Comminutes One Sample or More Simultaneously with Adapter



SpectroMill-II

Comminutes Two Samples or More Simultaneously

SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NUMBER	DESCRIPTION
1100	SpectroMill® – I Ball Pestle Impact Grinder with One Vial Clamping Mechanism
1111	SpectroMill® – II Ball Pestle Impact Grinder with Two Vial Clamping Mechanisms

Specify electrical requirements. 115VAC/60HZ or 230 VAC/50, 60 HZ.



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 River House, 97 Cray Avenue
 Orpington, Kent BR5 4HE, UK

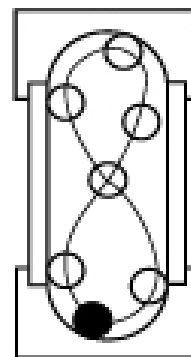
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SPECTROVIAL® COMMINATION AND BLENDING VIALS FOR BALL PESTLE IMPACT SAMPLE GRINDERS



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SpectroVial® comminution and Blending vials are uniquely designed with concaved interior ends in both the body and cap. The concaved ends eliminate pockets for sample particles to accumulate and elude the blending and grinding processes. Particle size reduction and distribution is more efficient and effective to produce more homogeneous sample mixtures. Supplied in an assortment of materials, sizes and varieties. Accommodated by all SpectroMill® Ball Pestle Impact Grinders.



Polystyrene SpectroVials®



Clear, hard and rigid plastic vials have thick walls to withstand repeated ball pestle impacts. Exterior ends have ribbed structures for greater impact resistance. Use for blending powders and comminuting relatively soft sample substances. Tabs on friction-fitting lids are easy to disassemble. [Methyl methacrylate ball pestles](#) are suggested.

SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NO	RECOMMENDED SAMPLE QTY	LENGTH	DIAMETER	RECOMMENDED BALL PESTLES	QTY/PKG
1121	1-2 cm ³	48mm	15mm	1205	100 sets
1122	2-5 cm ³	48mm	22mm	1207	100 set
1133	5-10 cm ³	75mm	26mm	1208	100 sets
1134	10-20 cm ³	75mm	33mm	1211	100 sets

Stainless Steel SpectroVials®

General purpose comminuting and blending vials. Use for grinding moderately hard sample materials. Threaded caps have concaved interior ends. [Stainless steel ball pestles](#) suggested.



SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NO	RECOMMENDED SAMPLE QTY	LENGTH	DIAMETER	RECOMMENDED BALL PESTLES	QTY/PKG
1161	1-2 cm ³	51mm	16mm	1245	1 unit
1162	2-5 cm ³	51mm	22mm	1247	1 unit
1173	5-10 cm ³	76mm	26mm	1248	1 unit
1174	10-20 cm ³	76mm	27mm	1251 & 1252	1 unit
1175	10-30 cm ³	66mm*	54mm	1247 & 1252	1 unit

* Supplied as a single open-ended

Rust-Resistant Stainless Steel SlipFit™ SpectroVials®

Fabricated from a highly rust resistant grade of stainless steel. General purpose comminuting and blending vials. Use for grinding moderately hard sample materials. Interior ends are concaved and both halves are designed to easily slip on and off for easy and fast clean-ups. [Stainless steel ball pestles](#) suggested.



SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NO	RECOMMENDED SAMPLE QUANTITY	LENGTH	DIAMETER	RECOMMENDED BALL PESTLES	QTY/PKG
1143	1-8 cm ³	55mm	22mm	1247	1 unit
1146	5-15 cm ³	84mm	38mm	1252	1 unit
1149	12-30 cm ³	94mm	56mm	1252	1 unit

Titanium Carbide SpectroVials®

An exceptionally hard material with a Rockwell “C” hardness similar to tungsten carbide makes these vials exceptionally suited for grinding very hard sample substances. This material is prone to fracture and is supplied without any warranty expressed or implied. Threaded ends are concaved. [Tungsten carbide ball pestles](#) suggested.



SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NO	RECOMMENDED SAMPLE QTY	LENGTH	DIAMETER	RECOMMENDED BALL PESTLES	QTY/PKG
1151	1-2 cm ³	51mm	16mm	1235	1 unit
1152	2-5 cm ³	51mm	22mm	1236	1 unit
1153	5-10 cm ³	76mm	26mm	1237	1 unit
1154	10-20 cm ³	76mm	27mm	1238 & 1239	1 unit

Agate SpectroVials®

A naturally occurring fine-grained mineral, Agate is suited for comminuting very hard materials with reduced transition elemental contamination to the sample. Typically consists less than 0.02% of: Na, Mg, Al, K, Ca and Fe. Because of its natural occurrence, elements and concentrations will vary. This material is prone to fracture and is supplied without any warranty expressed or implied. Interior ends are concaved. Encased in an anodized aluminum container for added protection. [Agate ball pestles](#) suggested.



SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NO	RECOMMENDED SAMPLE QTY	LENGTH	DIAMETER	RECOMMENDED BALL PESTLES	QTY/PKG
1180	30-50 cm ³	90mm	60mm	1280	1 unit

BALL PESTLES FOR SPECTROVIAL® COMMINATION AND BLENDING VIALS

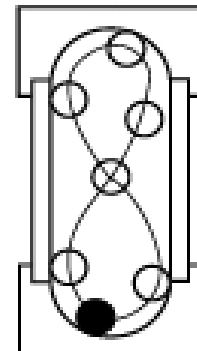
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BALL PESTLE
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Ball pestles serve as the grinding media in conjunction with the use of SpectroVials for comminuting powdered material substances in SpectroMill Ball Pestle Impact Grinders. The selection of a ball pestle material is a function of the type of SpectroVial in use.

Plastic methylmethacrylate ball pestles are intended to be used with plastic polystyrene SpectroVials. By comparison to metallic SpectroVials and their corresponding ball pestles, plastic is relatively soft and not very effective in the comminution process. Its principal application is for blending sample material substances or for comminuting soft samples.

Stainless steel metallic ball pestles are primarily used for comminuting relatively hard sample substances. Tungsten carbide ball pestles in combination with titanium carbide SpectroVials are much more effective grinding media for extremely hard samples.

The effectiveness of the comminution process to achieve an analytically acceptable particle size is a function of the initial sample charge, type of comminution vial and ball pestle materials, number of ball pestles and processing time. Empirical testing and evaluation is recommended to ascertain the best statistically reproducible x-ray analytical data.



SPECIFICATIONS AND ORDERING INFORMATION

Plastic methyl Methacrylate

CATALOG NO	DIAMETER, mm	QTY/PKG
1205	5	100
1207	7	100
1208	8	100
1211	11	100

Stainless Steel

CATALOG NO	DIAMETER, mm	QTY/PKG
1245	5	6
1247	7	6
1248	8	6
1251	11	6
1252	12.7	6

Tungsten Carbide

CATALOG NO	DIAMETER, mm	QTY/PKG
1235	5	6
1236	7	6
1237	8	6
1238	11	6
1239	12.7	6

Agate

CATALOG NO	DIAMETER, mm	QTY/PKG
1280	12.7	2

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SPECTROVIAL® SINGLE AND MULTI-VIAL ADAPTORS FOR SPECTROMILL BALL PESTLE IMPACT GRINDERS

Extends the number of samples accommodated by SpectroMill Ball Pestle Impact Grinders. Simply insert SpectroVials® into cavities and place entire assembly in the SpectroMill for processing. Useful for preparing similar or completely different samples at one time.



SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NO.	NUMBER OF CAVITIES	ACCOMMODATES SPECTROVIAL CATALOG NO.
1181	1	1122, 1133, 1143, 1151, 1152, 1162
1183	3	1122, 1133, 1143, 1152, 1162
1185	5	1121, 1152, 1161


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IMPACT MORTAR AND PESTLE

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Rocks and other similar types of sample materials are seldom of suitable size for direct comminution in SpectroMills or GyralGrinders. Quite often it is necessary to first crush a sample into smaller sizes. The Impact Mortar and Pestle is ideally suited for this application in the laboratory or field collections.

Simply place the sample in the mortar chamber. Insert the pestle. Repeatedly raise and lower the pestle with controlled force. The contained sample is mechanically crushed with each downward stroke.

SPECIFICATIONS AND ORDERING INFORMATION

(Stainless and Hardened Chrome Steel)

CATALOG NO	DESCRIPTION	SAMPLE CAPACITY
850	Impact Mortar and Pestle	5 In. ³ (70 cm ³)

Note: The Impact Mortar and Pestle is not guaranteed against chipping. Safety goggles and personal protective wear are recommended.



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PELLETAID™ SAMPLE PELLET RELEASE AGENT AND STAINLESS STEEL DIE CONDITIONER

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A simple “dusting” application to the metal pellet included with a die set prevents the sample from sticking. Consisting of a lubricious organic substance, PelletAid does not introduce unwanted analyte-lines of significant detection.

When sparingly applied to the inside walls of a die set, movement of the pellets and plunger is greatly facilitated. PelletAid has an unusual affinity to adhere to metal components and serves as a dry focused lubricant.



CHEMICAL CONSTITUENTS

C	H	O	Na
70.6%	11.5%	10.4%	7.5%

SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NO.	DESCRIPTION
875	PelletAid Sample Release/Die Conditioner Agent



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SPECTROCERTIFIED® COMPRESSIBLE SAMPLE PELLET CUPS® BRIQUETTING CUPS

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Transform powdered samples into firm durable solid briquettes protected on all sides excepting for the surface to be analyzed. Minimizes potential hazards of breakage, easy to handle and introduce into briquetting dies. Simply fill a PelletCup with the powdered sample substance, place into die and briquette in usual manner.

Select from the "ORIGINAL" tapered-walled in aluminum and plastic or straight-walled



Tapered-Walled, Aluminum. The "ORIGINAL" and most popular and versatile for briquetting a wide range of powdered samples under diversified pelletizing conditions. Taper tends to reduce cracking and fissure development. Very close outside diameter tolerance minimizes sample particles spilling over and becoming entrapped in between the inside walls of the die and pellet cup. Filled PelletCups gently float down into the die cavity on a cushion of entrapped air further reducing likelihood of spillage.

Tapered-Walled, Plastic. Similar to their "ORIGINAL" aluminum counterpart excepting shallower and accommodating less sample volume. Lubricious plastic quality helps extend die life by resistant-free pellet ejection.

Straight-Walled, Aluminum. Walls are perpendicular with respect to the flat bottoms and diameters are much smaller. Acceptable where potential cracks and fissure development from stress and strain and inadvertent spillage are not important issues.

SPECIFICATIONS AND ORDERING INFORMATION

Compressible Straight-Walled Aluminum PelletCups®

CAT. NO.	OUTSIDE DIAMETER	HEIGHT	PELLET CUPS/PKG
500	1.19" (30.3 mm)	0.33" (8.6 mm)	1000
530	1.33" (33.8 mm)	0.29" (7.3 mm)	600
540	1.53" (38.9 mm)	0.37" (9.5 mm)	600

The "Original" Compressible Tapered-Walled Aluminum PelletCups®

CAT. NO.	OUTSIDE DIAMETER	HEIGHT	PELLET CUPS/PKG
505	1.22" (31 mm)	0.31" (7.9 mm)	1000
535	1.36" (34.6 mm)	0.37" (9.3 mm)	600
545	1.57" (39.8 mm)	0.36" (9.1 mm)	600
547	1.76" (44.7 mm)	0.36" (9.11 mm)	600

The "Original" Compressible Tapered-Walled PlastiCups®

CAT. NO.	OUTSIDE DIAMETER	HEIGHT	PELLET CUPS/PKG
552	1.22" (31.0 mm)	0.25" (6.4 mm)	500
553	1.35" (34.3 mm)	0.25" (6.4 mm)	500
554	1.56" (39.7mm)	0.25" (6.4 mm)	500

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SPECTROCERTIFIED® GRINDING and BRIQUETTING ADDITIVES

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[AQUEOUS GRINDING AND BRIQUETTING ADDITIVE](#)

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Most powdered sample substances are considered multi-phased or compositionally complex. They are comprised of individual particles or crystal phases frequently dissimilar in composition, density, hardness, configuration, size and distribution. Each particle tends to behave as a separate entity from its surrounding constituents. Chemplex grinding and briquetting additives are formulated to aid in the grinding and briquetting process by reducing particles to a uniform size and distribution forming a homogeneous sample blend for XRF analysis. Under briquetting



pressure, the powdered samples are transformed into “plasticized” pellets with smooth unblemished surfaces resistant to inadvertent chipping or flaking apart. Samples may be saved for future referral.

GRINDING/BRIQUETTING ADDITIVE PROFILES

ADDITIVE	CHEMICAL COMPOSITION
X-Ray Mix™	48.7% C, 42.6% O, 8.1% H, 0.6% B
SpectroBlend®	77.1% C, 5.4% O, 12.8% H, 4.7% N
SpectroMix®	55.1% C, 28.4% O, 8.0% H, 8.5% Na
Boric Acid	77.6% O, 4.9% H, 17.5% B

Typical Applications

Cement • Raw • Sinters • Slags • Catalysts • Ores • Refractories • Fertilizers • soil • Phosphate Rock • Oxides • Alumina • Bauxite • Carbonates • Silicates • Organics • Inorganics • And many other types of sample substances exhibiting difficulty in particle size reduction and distribution for XRF analysis.

ADDITIVE	PROMINENT CHARACTERISTICS
X-Ray Mix™	General purpose grinding agent. Balanced for abrasiveness and lubricity to aid in grinding dissimilar particles of moderate hardness for relatively short times. Highly “plasticizes” and firmly bonds samples together under briquetting pressure. Available in preweighed tablets for ease of dispensing.
SpectroBlend®	A 44µ powder well suited for blending and as a diluent for high concentrations. Well balanced with abrasive and lubricious constituents for grinding most sample materials emphasizing difficult-to-process samples requiring long grinding cycles in metallic comminution vials or dishes. Resistant to degradation by thermal and irradiation exposure. Samples have “plasticized” surfaces. Available in bulk powder and ½ gm preweighed tablets for ease of dispensing.
SpectroMix®	A combination of properties between X-Ray Mix and SpectroBlend. Moderately “plasticized” sample surfaces. Resists “caking” formation in grinding and generally cleans up with a dry paper towel
Boric Acid	Abrasive substance for processing samples with strong rewelding tendencies. Sample pellets are fair to moderately bonded together. Frequently used in conjunction with other additives to impart increased abrasiveness to the grinding process.

SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NO.	DESCRIPTION
600	X-Ray Mix Powder; 1 lb/btl (454 gm)
625	X-Ray Mix ¼ gm Tablets; 250 tablets/btl
650	X-Ray Mix ½ gm Tablets; 500 tablets/btl
660	SpectroBlend 44µ Powder; 1 lb/btl (454 gm)
675	SpectroBlend ¼ gm Tablets; 500 tablets/btl
690	SpectroBlend ½ gm Tablets; 500 tablets/btl
725	Boric Acid ¼ gm Tablets; 1000 tablets/btl
750	Boric Acid ½ gm Tablets; 1000 tablets/btl
9000	SpectroMix Powder; 1 lb/btl (454 gm)

LIQUID-BINDER™ AQUEOUS GRINDING AND BRIQUETTING ADDITIVE

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For powdered samples deficient in briquette forming constituents and dilution with an additive presents a problem, Liquid-Binder offers an alternative. Blend a small amount Liquid-Binder with the sample until a homogeneous slurry. Evaporate the carrier and deagglomerate the sample by grinding. Liquid-Binder coats each sample particle with a completely organic polymeric binding ingredient that tenaciously holds it together. Form into a briquette in the usual manner. Sample pellet is firm, extremely hard and resistant to breakage. 1 cc Liquid-Binder contains 100 mg polymeric ingredient, $(C_6H_9ON)_n$, in methylene chloride solvent.



SPECIFICATIONS AND ORDERING INFORMATION

CATALOG NO.	DESCRIPTION
800	Liquid-Binder; 1 pt (480 cc)

Notice: Liquid-Binder contains methylene chloride. Use in a well-ventilated area, avoid inhalation and contact. Send for MSDS prior to purchase.


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SPECTROCERTIFIED® NON-AQUEOUS SPECTROSTANDARD® REFERENCE MATERIALS

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SINGLE-ELEMENT SPECTROSTANDARD® FORMULATIONS

Formulated in a light-weight (20 cSt viscosity) white mineral oil to contain 5000 µgm/gm (PPM) concentration of the element. Ready for use or may be blended with sulfur-free SpectroStandard® Base Oil, Cat. No. 5900, for preparing lower diluted concentrations.



SPECIFICATIONS AND ORDERING INFORMATION

CAT NO.	ELEMENT	SYMBOL	CAT NO.	ELEMENT	SYMBOL
5103	Lithium	Li	5128	Nickel	Ni
5104	Beryllium	Be	5129	Copper	Cu
5105	Boron	B	5130	Zinc	Zn
5111	Sodium	Na	5133	Arsenic	As
5112	Magnesium	Mg	5134	Selenium	Se
5114	Silicon	Si	5138	Strontium	Sr
5115	Phosphorus	P	5140	Zirconium	Zr
5116	Sulfur	S	5147	Silver	Ag
5117	Chlorine	Cl	5148	Cadmium	Cd
5119	Potassium	K	5150	Tin	Sn
5120	Calcium	Ca	5156	Barium	Ba
5122	Titanium	Ti	5157	Lanthanum	La
5124	Chromium	Cr	5158	Cerium	Ce
5125	Manganese	Mn	5180	Mercury	Hg
5126	Iron	Fe	5182	Lead	Pb
5127	Cobalt	Co	5183	Bismuth	Bi



SULFUR SPECTROSTANDARD® FORMULATIONS IN LIGHT-WEIGHT MINERAL OIL

A unique assemblage of sulfur SpectroStandard formulations at various concentration levels provide a broad range of calibration points. Formulated in a light-weight (20 cSt viscosity) mineral oil in accordance with ASTM D-2622 and D-4294 methods. Supplied in 4 oz (118 cc) bottles.

SPECIFICATIONS AND ORDERING INFORMATION

CAT NO.	µgm/gm (PPM)	Wt. %
SSLM-000	0	0.00
SSLM-100	100	0.01
SSLM-200	200	0.02
SSLM-300	300	0.03
SSLM-400	400	0.04
SSLM-500	500	0.05
SSLM-1000	1,000	0.10
SSLM-2000	2,000	0.20
SSLM-3000	3,000	0.30
SSLM-4000	4,000	0.40
SSLM-5000	5,000	0.50
SSLM-10000	10,000	1.00
SSLM-20000	20,000	2.00
SSLM-30000	30,000	3.00
SSLM-40000	40,000	4.00
SSLM-50000	50,000	5.00



BASE OIL

Mineral Oil Diluent, 20 cSt Viscosity

SPECTROCERTIFIED[®] PRE-FUSED FUSION FLUXES

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The flux fusion process is an effective and simple method for preparing powdered sample substances for XRF, ICP and AA analysis. The method is based on the dissolution of a sample in conjunction with an appropriate fluxing ingredient at an appropriate temperature. For direct XRF analysis, the molten mixture is cast into glass-like beads or further processed for ICP or AA solution analysis. The most effective fluxing agents are lithium borates as represented by Chemplex SpectroCertified[®] Fusion Fluxes.



ATTRIBUTES OF CHEMPLEX SPECTROCERTIFIED[®] PRE-FUSED FUSION FLUXES

- **High Density:** reduces exceeding the volumetric capacity of crucibles to maintain sample-to-fusion flux ratio recipes and avert the potential possibility of spill over.
- **High Purity:** reduces the introduction of potentially influential foreign element contamination by selective control of starting material purity and the pre-fusion process.
- **Low Melting Point:** assures the dissolution process at effective temperatures but safely below temperatures of constituent elements considered sensitive to volatility loss.
- **Low LOI:** eliminates time consuming accounting for loss on ignition; typically less than 0.03% loss on ignition.
- **Anhydrous:** reduces water content and eliminates the conventional procedure of drying prior to use.
- **Homogeneity:** ensures compositionally similar constituent particles for homogeneous melts.
- **Granulation:** promotes uniform particle size, configuration and distribution by minimizing the introduction of "dust" particles to insignificant levels of concern; typically contain less than 0.05% particles less than 100 microns.
- **Diversified Mixtures:** offers the flexibility of selecting from assorted mixtures of different melting points to reduce eutectic melting temperatures of samples and controlling volatile element evolution.
- **Free-Flowing:** facilitates handling manually or with automatic dispensing devices.

TECHNICAL SPECIFICATIONS

CAT. NO.	MIXTURE	M. P., °C/°F	DENSITY, gm/cc	LOI, %	% PARTICLES <100 μ
30-1000	100% Lithium Tetraborate	920/1688	1.25	<0.03	<0.05
30-2000	100% Lithium Metaborate	845/1553	1.25	<0.03	<0.05
30-3000	80% Lithium Tetraborate 20% Lithium Metaborate	880/1616	1.25	<0.03	<0.05
30-4000	66% Lithium Tetraborate 34% Lithium Metaborate	875/1607	1.25	<0.03	<0.05
30-5000	50% Lithium Tetraborate 50% Lithium Metaborate	870/1598	1.2	<0.03	<0.05
30-6000	35.3% Lithium Tetraborate 64.7% Lithium Metaborate	825/1517	1.15-1.2	<0.03	<0.05

TYPICAL TRACE IMPURITIES, PPM

CONCENTRATION, PPM	IMPURITIES, PPM
1	Na, K, Fe, As, Mn, Al, Se, Cd, Pb, Zn, Cu, Ni, Co, Ag, Sn
2	Ca, Mg, Si, S



SPECIFICATIONS AND ORDERING INFORMATION

Supplied in 1 lb (454gm) bottles with Complete Technical Specifications on Labels

CAT. NO.	DESCRIPTION
30-1000	SpectroCertified Pre-Fused Lithium Tetraborate; $\text{Li}_2\text{B}_4\text{O}_7$
30-2000	SpectroCertified Pre-Fused Lithium Metaborate; LiBO_2
30-3000	SpectroCertified Pre-Fused 80% Lithium Tetraborate + 20% Lithium Metaborate
30-4000	SpectroCertified Pre-Fused 66% Lithium Tetraborate + 44% Lithium Metaborate
30-5000	SpectroCertified Pre-Fused 50% Lithium Tetraborate + 50% Lithium Metaborate
30-6000	SpectroCertified Pre-Fused 35.3% Lithium Tetraborate + 64.7% Lithium Metaborate



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