



SPECAC[®]

XRF Sample Preparation Catalogue



SPECIALIST MANUFACTURERS OF ENVIRONMENTAL
ANALYSIS AND MONITORING EQUIPMENT



SPECAC XRF SAMPLE PREPARATION

Specac offer the only high throughput benchtop press with a truly automated pressing cycle, designed with industries such as mining, cement, metals, and all other customers who regularly use XRF analysis.

Our expertise has been gained over decades of experience in the field of analytical chemistry. Specac presses have been sold the world over, winning the seal of approval from customers everywhere.

PART 1. ATLAS® PRESSES AND DIES

Autotouch™ Hydraulic Press

Plus Apex™ Quick Release Die

Manual Press

Dies and Pelletizing Accessories

Planetary Ball Mill

Ordering Information

PART 2. CONSUMABLES AND SUPPLIES

Liquid and Solid Sample Cups

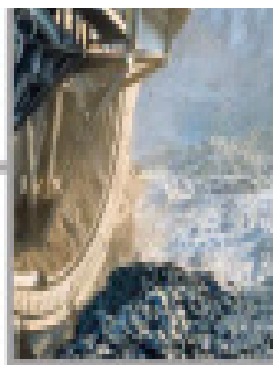
Thin Film Windows

Grinding Additives

Fusion Fluxes

Ordering Information

XRF APPLICATIONS





ALL ABOUT

SPECAC®

Introduction to Specac

Specac has been in business for approaching 50 years. Our sample preparation offering has evolved from the humble Atlas™ manual press, known to chemistry labs the world over, to the latest in high throughput benchtop pressing solutions for XRF. We now serve customers across the globe through our network of international dealers and won the Queen's Award for Enterprise in 2018. Heading into the new decade, we look forward to continuing to offer cutting edge solutions to our customers, wherever they are and whatever industry they are in.

What does Specac bring to the market?

We recognise the value fast and reliable sample preparation has in X-Ray fluorescence spectrometry, which is normally used in demanding applications and industries. We focus on creating innovative ways to make it easier and more accessible for users to be able to quickly analyse their samples. We offer the only high throughput semi-automated benchtop press, eliminating user intervention during the pressing stage, all in a small footprint format. We are continuously developing new products to keep up with the needs of sample preparation in XRF.

What support can I expect for technical and product enquiries?

The technical support team are always available to help you find a solution to your spectroscopic sampling application needs, via email or via our website. We are there too, to help in support after purchase. If you are having any difficulties with your sampling requirements, Specac can be contacted to provide you with the right, experienced advice to resolve the problem. With our state of the art demo lab we can provide hands on training, or conduct proof of concept experiments for you.

techsupport@specac.co.uk

Specac



PART 1

ATLAS SERIES & DIES

Specac's hydraulic presses have been specially designed to meet demanding XRF applications. We offer the fastest benchtop electronic press in the market.

Our presses are robust and easy to use. The benchtop format allows analysts to save in space without compromising on performance or reliability



AUTOTOUCH™ PRESSES

Powered, programmable hydraulic presses for highthroughput sample prep



MANUAL PRESS

Manually pumped laboratory press for occasional sample prep



DIES & ACCESSORIES

A range of dies to suit all applications



MILLING & GRINDING

Accessories for processing samples prior to pressing



ATLAS™ AUTOTOUCH PRESS & APEX™

Pellet pressing is fast and easy with the Atlas™ Autotouch press when paired with the Apex™ Quick Release die: pressing cycles are sped up, operation and cleaning is much easier.

With a compact footprint and weighing in at just 95 kg (130 kg for 40 Ton model), the Atlas™ Autotouch press still maintains a large, easily accessible working area and retractable safety guards that prevents application of a load unless closed in the safe position.

Fully programmable load cycles ensure maximum consistency and repeatability of sample preparation for sensitive XRF measurements. Utilizing ordinary single-phase power supplies, the Atlas™ Autotouch press can be installed in any laboratory and is ready for use without any additional set-up.



KEY FEATURES

- Up to 40 tonnes load
- Fastest benchtop press in the market
- Programmable load cycle, controlling ramp, dwell, and release rates for maximum reproducibility
- Pressing cycle can complete in under 3 minutes when partnered with the Apex™ Die
- Store up to 6 programs internally
- LED Touchscreen operation

LOAD OPTIONS

- 8 TONNE
- 15 TONNE
- 25 TONNE
- 40 TONNE



The first of its kind on the market, the new Apex™ Quick Release XRF die makes routine pellet preparation simpler and faster than ever before. The unique, patented sleeve design completely eliminates the effort-intensive pellet extraction step.

Unlike traditional dies, which require the die set to be removed from the press, partly disassembled, and then returned to the press, the Apex™ Quick Release® Die requires only application of a light secondary load to eject the pellet from the die. The entire cycle can take as little as 2-3 minutes from loading the sample to retrieving the finished pellet.

Once the pellet is removed, the release mechanism is reset with the press of a button, and the die is ready immediately for the next sample.

KEY FEATURES

- Quick Release Die reduces operator involvement and frees the user to perform vital tasks
- Tedious removal, inversion and replacement of the die set for pellet extraction is completely eliminated
- No die assembly/disassembly required

Diameter Options (mm)





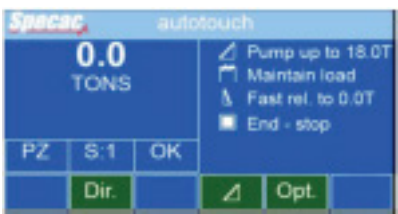
ATLAS™ AUTOTOUCH SPECIFICATIONS

SPECIFICATION	AUTOTOUCH 8T, 15T, 25T	AUTOTOUCH 40T
Displayed Load Range	8T: 1-8 Tons in 0.2 ton increments 15T: 2-15 Tons in 0.2 ton increments 25T: 3-25 Tons in 0.5 ton increments	40T: 4-40 Tons in 0.5 ton increments
Footprint (W X D)	425 x 405mm	430 x 405mm
Height	max. 640mm	660mm
Working Area Dimensions (DIA X H)	220 X 115mm	240 x 115mm
Weight	95kg	130kg
Max Stored Programs	6	6
Max Program Segments	10	10

APEX™ PLUS AUTOTOUCH™

The introduction of the Apex™ Quick Release die can dramatically cut down on operator involvement and speed up the pellet making process by mechanically automating certain steps.

In combination with the powered and programmable Autotouch™ press, high volume, high throughput sample production for intensive industries such as mining and production is now possible.



Press ready for operation

BENEFITS OF APEX™

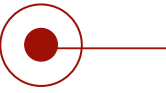
Pressing a pellet is a two-stage process involving sample compaction followed by pellet extraction. With a traditional die set, manual upturning and resetting of the die is required after pressing to enable the pellet to be extracted; with Apex™, a patented ejector sleeve design automatically reconfigures the die without the need to remove it. This means the press can be programmed to continue with pellet extraction shortly after the compression step is complete.



Press under load



PROGRAMMING FOR THE APEX™



Special		autotouch	
Backlight		Def. Prog	0
Language	English	Die Type	Apex
Units	TONS	Pump Temp.	25.40
End Beep	Off	Pressure Cal.	1.000

Programming the press is easy and intuitive, an empty program slot is selected, and individual segments are added, edited, or deleted until the desired pressing cycle has been built.

Provided Apex has been selected as the Die Type in the options menu, a special Apex release segment step (recognised by the \wedge symbol) becomes available to add to the programming screen.

The Apex program segment runs a predetermined wait (to ensure the die has had time to reconfigure) then applies a gentle load to push the pellet out of the die.

Safety Features

The Atlas™ Autotouch press has several safety features. No load can be applied if the polycarbonate safety guard is open, and a message to close the guard will be displayed until it is closed. The progress of any program may be interrupted by pressing the stop key, which is a physical button on the front panel of the press. Pressing the stop button will automatically advance the program to the load release step.

Program Segment	Description
Pump	Pumps up to the target load
Hold	Inserts a hold step with a predefined duration from 0.1 to 99.9 minutes, or until commanded by the user
Maintain	The applied load is maintained by the Auto Top-up feature that periodically tops up the pressure in the system for a predefined duration from 0.1 to 99.9 minutes, or until commanded by the user.
Release	Releases the applied at one of three predetermined rates; fast, medium or slow.
Stop	Ends the program
Apex	Apex made replaces stop button and release of the pellet is done automatically.

0.0	0.3	7.0	20.0	2.0	0.0				
	m	T	T	m	T				
:4 S:1 OK									
S-	S+	Edit	Add	Del	Ex				



PROGRAMMING FOR THE APEX™

Specification	
Displayed Load Range	15T: 0-15 Tons 25T: 0-25 Tons
Footprint (W & D)	310mm X 190mm
Height	Max 610mm
Working area dimensions (W X H)	134mm X 141mm
Weight	50kg

The Atlas™ Manual Hydraulic press is ideal for low-volume laboratory sample preparation for XRF, where high levels of repeatability and accuracy are not critical.

Load is applied by manually pumping the pressure system with a hand lever. The press's simple and robust frame ensures reliable operation over many years and is readily convertible to other uses.

KEY FEATURES



- Robust and reliable hydraulic press for low-volume sample preparation
- Manual load application using hand pump
- Quick pressure release
- Analog pressure gauge
- Loads up to 25 Tons
- Polycarbonate safety shields

Load Options

15 Tonne

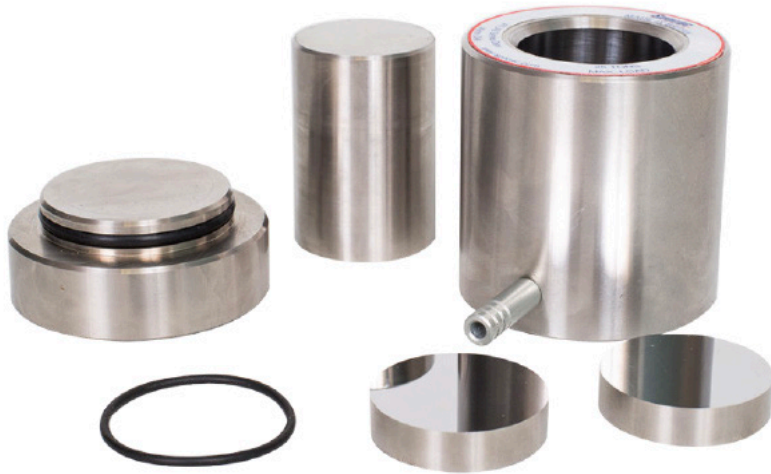
25 Tonne





PELLET DIES

STANDARD XRF DIES



KEY FEATURES

- Polished, precision-engineered pellet dies
- Compatible with all Specac presses and many others too
- (Optional) Tungsten carbide internal pellets to avoid Fe contamination
- (Optional) evacuation port

Diameter	Dimensions	Weight
40mm	Ø65mm x H110mm	2.50kg
32mm	Ø65mm x H110mm	2.45kg

APEX™ QUICK RELEASE DIES

KEY FEATURES

- Quick Release Die reduces operator involvement and frees the user to perform vital tasks
- Tedious removal, inversion and replacement of the die set for pellet extraction is completely eliminated
- No die assembly/disassembly required
- Comes with press adaptor kit



Diameter	Dimensions	Weight
40mm	Ø96mm x H118mm	2.7kg
32mm	Ø96mm x H118mm	2.7kg



PELLET ACCESSORIES

SAMPLE PRESSING CUPS



KEY FEATURES

- Compressible support cups that wrap under and around the sample under load
- Provide support to poorly binding samples that cannot form free-standing pellets
- Available in aluminium or plastic
- Suitable for 32mm and 40mm die sets

PROTECTIVE PELLET FILMS

KEY FEATURES

- Protect pressing surfaces from cross-sample contamination
- Applied to the surface in direct contact with the sample
- 32, 35 and 40mm diameters





PLANETARY BALL MILL

The P6 Planetary Ball Mill is a high-performance benchtop grinding mill for XRF applications. Fitted with up to two grinding bowls, sample quantities up to 450ml may be quickly and efficiently reduced to tens of microns in size. Its user-friendly design makes the P6 is easy to operate both in the field and in the lab.

Grinding Media

As grinding media we recommend either zirconia or for harder materials tungsten carbide if you are not sure, this will suit the majority of applications. The max feed size is 10mm in diameter.

Material (Bowl + Balls)	Main Components of the material	Density (g/cm ³)	Abrasion resistance	Sample Type
Agate	(999% SiO)	2.65	Good	Soft Samples
Zirconium Oxide	(962% ZrO ₂)	5.7	Very good	Fibrous, abrasive samples
Tungsten Carbide	(93% WC+6% Co)	14.9	Very good	Hard, abrasive samples
Silicon Nitride	(90% Si ₃ N ₄)	3.25	Extremely good	Metal-free grinding
Hardened Steel	Bowl: (II- 12% Cr) Balls (I.O- 1.65% Cr)	7.9	Good	Hard, brittle samples



KEY FEATURES

- High speed planetary ball mill (up to 650rpm)
- Produces fine powders 40-200µm in size
- Grinding balls and bowls in a range of materials and capacities
- Maximum useful sample capacity of 450ml
- User friendly safe-lock-system to prevent accidents
- Benchtop design makes it portable for in

MILLING SAMPLES FOR XRF ANALYSIS

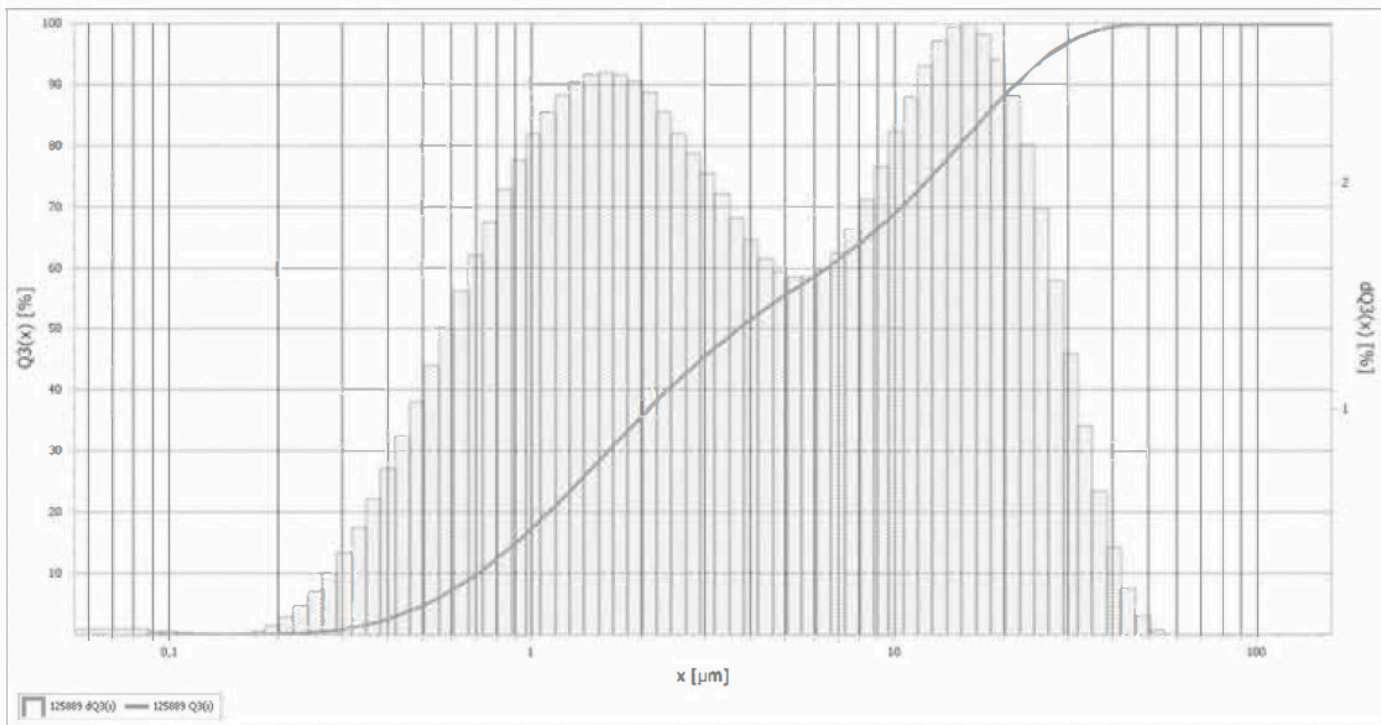
A typical mill to reduce the size of the solid and to produce a homogenous powder, which can be used in the pellet press, is a Planetary ball mill. The PB is able to work with one 250ml bowl for 100ml of sample or with two 80ml bowls with 30ml of sample.

Number of grinding balls per bowl

Ball Diameter (mm)	Number of Balls (80ml bowl)	Number of balls (250ml bowl)
5	250 - 300	1200 - 1300
10	25 - 30	50 - 150
15	10	45 - 50
20	5	15 - 20
30	-	5 - 6

Results

The specification for the particle size is typically $< 45 \mu\text{m}$. After 10 minutes of grinding cement clinker in a 250ml bowl the following particle size distribution is obtained:



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ANALYSIS OF PORTLAND CEMENT PELLETS

Particle size, mineral composition, or density can all affect the intensity of the characteristic emission peaks and increase background scattering. These effects rule out reliable quantification of sample composition (1).

Grinding sample powders to a fine particle size and pressing them into a smooth, flat pellet should reduce scattering and improve the detection of light elements.

Experimental

Samples of Type 1 Ordinary Portland Cement (Dragon Alfa, UK) were used as-purchased.

Loose powder preparation

10 g of sample was placed into an open-ended sample cup and covered with a 6 μm Mylar[®] film window.

Pressed pellet preparation

The sample was milled and homogenized with 20wt% of cellulose binder (SpectroBlend[®]) using a planetary ball mill. Pellets were pressed in aluminium sample cups at 20 tonnes using a 25 T Atlas[®] Autotouch Press and a 40 mm APEXTM Quick Release Die.

Spectral acquisition

Spectra were recorded on a high-throughput wavelength dispersive XRF instrument with vacuum capability.

Heavy and light elements

XRF spectra for the loose powders and pressed pellets show clear differences (Figure 1). The lightest element Na is undetectable in the powders, while the signals from Mg, Al, and Si are much reduced. As expected, the signal from the heavier elements such as Fe is not affected.

The samples prepared as pellets show higher signal-to-noise and allow the lightest elements to be detected easily above the background. The detection of light elements is further improved by avoiding the use of thin film coverings, which allows measurement under a vacuum.

Quantification of composition

The ability to clearly detect all the elements in the sample becomes critical for accurate quantification, as can be seen in Table I. In the powder samples, underestimation of the lighter Al, Mg, and Na elements leads to overestimation of Fe and Ca in the cement. The pellet samples result in a quantification which is within the range established by averaged laboratory experiments.

Conclusions

Loose powder sample preparation is a low-intensity method for the detection of heavy elements, however, quantification is unreliable due to the inability to detect lighter elements.

Therefore, pellet preparation is essential for accurate quantification of sample composition. It allows detection of the lightest elements and prevents underestimation of the other light elements.



ORDERING INFORMATION



Presses & Dies:

Part Number	Description	Product Family
GS2583X GS2582X GS2581X GS2580X	Atlas AutoTouch 40T Hydraulic Press Atlas AutoTouch 25T Hydraulic Press Atlas AutoTouch 15T Hydraulic Press Atlas AutoTouch 8T Hydraulic Press	Atlas™ Autotouch (Page 3)
GS25011 GS15011	Atlas Manual 25T Hydraulic Press Atlas Manual 15T Hydraulic Press	Atlas™ Manual (Page 8)
GS26301 GS26302 GS26303 GS26304	40mm Apex™ Quick Release Die for 8, 15 and 25T Atlas™ Presses 32mm Apex™ Quick Release Die for 8, 15 and 25T Atlas™ Presses 40mm Apex™ Quick Release Die for 40T Autotouch 32mm Apex™ Quick Release Die for 40T Autotouch	Apex™ Quick Release Die (Page 4/9)
GS26104 GS26103 GS26102 GS26101	40mm Atlas Standard Die Set (no evacuation port) 32mm Atlas Standard Die Set (no evacuation port) 40mm Atlas Standard Die Set (with evacuation port) 32mm Atlas Standard Die Set (with evacuation port)	Standard XRF Dies (Page 9)

X is a power supply code. Please quote the following region codes.

- 0 - 230v 50Hz (UK/EU)
- 1 - 110v 60Hz (USA)
- 2 - 100v 50/60Hz (JAPAN)
- 3 - 220v 50Hz (CHINA)
- 4 - 220v 60Hz (KOREA/SAUDI)

Selected spares & accessories

Part Number	Description	Product Family
GS15100 GS15101	Replacement seals and gaskets kit Hydraulic oil (1 litre)	Atlas™ Manual (Page 9)
GS26310 GS26311 GS26330	Apex Die Pressing Anvil for 40T Autotouch Press Apex Die Pressing Anvil for all other Atlas™ Presses Base Locator Place for Apex Dies	Apex™ Quick Release Die (Page 5/10)
GS26134 GS26133 GS26161	40mm Tungsten Carbide internal pellets 32mm Tungsten Carbide internal pellets Extractor cap for 32mm and 40mm Standard dies	Standard XRF Dies (Page 10)

**Pelletising Aids:**

Part Number	Description	Product Family
GS26005 GS26006 GS26007 GS26008	32mm Aluminium Cups Tapered Wall 1,000/pk 40mm Aluminium Cups Tapered Wall 600/pk 32mm Aluminium Cups Straight Wall 1,000/pk 40mm Aluminium Cups Straight Wall 1,000/pk	Aluminium Pressing Cups (Page 10)
CX0552E CX0553E CX0554E	Plastic Briquetting Cup, 31.0mm Dia. x 6.4mm Tall 500/pk Plastic Briquetting Cup, 34.3mm Dia. x 6.4mm Tall 500/pk Plastic Briquetting Cup, 39.7mm Dia. x 6.4mm Tall 500/pk	Plastic Pressing Cups (Page 10)
CX7032E CX7035E CX7040E	SpectroPellet® Protective Die Pellet Film for 32mm dies; 500 per pkg SpectroPellet® Protective Die Pellet Film for 35mm dies; 500 per pkg SpectroPellet® Protective Die Pellet Film for 40mm dies; 500 per pkg	Protective Pellet Films (Page 10)

Planetary Ball Mill:

Part Number	Description	Product Family
FRO6200000	Planetary Mono Mil Classic Line 100-120/200-240V, 50-60Hz, 1000 Watt	P6 Planetary Ball Mill (Page 11)

Grinding bowls for Planetary Ball Mill:

	250 ml	80 ml
Agate	FR50205500	FR50405500
Sintered corundum	FR50206000	FR50406000
Hardmetal tungsten carbide	FR50208000	FR50408000
Hardened stainless steel	FR50209000	FR50409000
Zirconium oxide	FR50211000	FR50411000
Silicon nitride	FR50231000	FR50431000

Grinding balls for Planetary Ball Mill

	ø5 mm	ø10 mm	ø15 mm	ø20 mm	ø30 mm
Agate	FR55005005	FR55010005	FR55015005	FR55020005	FR55030005
Sintered corundum	-	FR55010006	FR55015006	FR55020006	FR55030006
Tungsten carbide	FR55005008	FR55010008	FR55015008	FR55020008	FR55030008
Stainless steel	FR55005009	FR55010009	FR55015009	FR55020009	FR55030009
Zirconium oxide	FR55005027	FR55010027	FR55015027	FR55020027	FR55030027
Silicon nitride	-	FR55010031	FR55015031	FR55020031	FR55030031

CONSUMABLES FOR LIQUID AND SOLID SAMPLING

Specac offer a range of consumables for sampling of liquids and loose, uncompressed powders including sample cups and thin-film sample support windows.

A range of grinding and pelletizing additives may be purchased to aid pressing of certain samples.

Borate fluxes for use with fusion ovens in preparation of fused sample beads are also available.



SOLID & LIQUID SAMPLE CUPS

Single and double ended sample cups for various spectrometers



THIN FILM WINDOWS

A range of film windows in different materials, thicknesses and formats



BINDING AND FLUXING

Lithium borate fusion fluxes and grinding additives



XRF SAMPLE CUP AND THIN FILM WINDOW GUIDE

Sample cups are disposable plastic containers used for sampling of liquids and powders, sealed with a thin film window that is transparent to the measuring X-Rays. There is a large variety of sample cups and film windows on offer, and the following serves as a rough guide to choosing the correct type.

Choosing the right size

Different spectrometers require different cup sizes. Consult the documentation for your spectrometer to determine the correct diameter and height of sample cup to fit the holder on the spectrometer. The following table may be consulted as a guide.

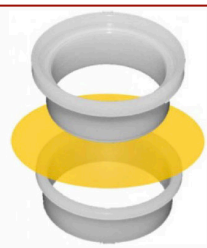
Manufacturer	Spectrometer	Sample Cup
Bruker	S2 Puma	2140, 2143, 2144
Bruker	S2 Ranger	2143
Bruker	S4	2140
Bruker	S8 Tiger	2143, 2144, 2195, 1095
Horiba	SLFA, Mesa 7220	1083
Malvern Panalytical	Epsilon 3	2135
Malvern Panalytical	Epsilon 5	2145, 2146
Malvern Panalytical	Venus 200	2195, 1095
Oxford Instruments	Lab-X	1940L
Rigaku	Mini-Z	2140
Rigaku	Primus, Rix, ZSX-100	2195, 1095
Spectro	Xepos, X-Lab, Titan	2131, 2135
Spectro	Phoenix, Phoenix II	2131, 2135
Spectro	IQ	2132
Thermo	Advant'x	2146
Xenometrix	X-Calibur, X-Cite	2131, 2132
XOS	Sindie	1083

Single or double open-ended?

A double open-ended cup is prepared by placing a film window over one end and then filling the cup from the opposite end so that the sample is supported directly by the film window. If the film window is very thin, or is prone to chemical attack by the sample, then it may not be desirable for the window to support the sample in this way for long periods. In these instances a single open-ended cup may be used that allows the sample to be supported by the cup itself during filling and storage, and only be supported by the window once inverted for measurement.



XRF SAMPLE CUP & THIN FILM WINDOW



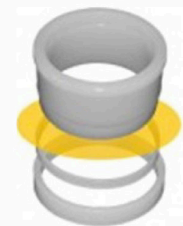
2100: SpectroCup® Double Open-Ended

- Trim Less® sleeve
- Top sample loading
- Internal overflow reservoir
- Vented friction fitting cap



1000: Trim Less® Sleeved Single & Double Open-Ends

- Eliminates thin-film trimming
- ThermoPlastic® seal venting



1900: "Snap-On Ring" Double Open-Ended

- Top sample loading
- "Snap-On Ring" thin-film attachment

Supporting thin film materials

The supporting window must be transparent to all the signals produced by the analytes of interest, as well as chemically compatible with the sample. There is currently a large range of window materials available in various thicknesses to contain the sample, such as polypropylene, Kapton and Mylar®. Thicker films will be more durable, but will also attenuate the X-Ray signals more strongly.

N.B. - ASTM methods for analyzing sulfur in diesel stipulate the use of Kapton or Etnom windows only.

Check out #SpectroscopyGuides for more analysis tips and advice.

Chemical	Mylar®	Poly-Carbonate	ETNOM®	Polypropylene®	Kapton®	Prolene®	Ultra Polyester®	Zthene™
Acids, Dilut.	Yes	Yes	Yes	Best	No	Yes	Yes	Yes
Acids, conc.	Yes	Yes	Yes	Best	No	Best	Yes	Yes
Alcohols	No	Yes	Yes	Best	Yes	Best	No	Yes
Aldehydes		Maybe	Maybe	Best	Best	Best		Maybe
Alkalis, conc.	No	No	Yes	Best	Best	Best	No	Yes
Esters	No	No	Maybe	Yes	Yes	Yes	No	Maybe
Ethers	Maybe	No	Maybe	No		No	Maybe	Maybe
Aliphatic HC	Yes	No	Best	Yes	Best	Yes	Yes	Best
Aromatic HC	No	No	Best	No	Best	No	No	Best
Halogenated HC	Maybe	No	Maybe	No	Maybe	No	Maybe	Maybe
Ketones	No	No	Yes	Yes	Yes	Yes	No	Yes
Oxidizing Agents	Maybe	No	Maybe	Maybe	No	Maybe	Maybe	Maybe

XRF THIN FILM WINDOWS

Fabricated and stored under environmentally controlled conditions to avoid introducing trace levels of contaminant, they are available in a variety of formats including rolls (continuous and perforated), pre-cut sheets, or supported in a card frame for ease of application.

Thin-Film Sample Support



Available formats:

- ✔ 76.2 mm wide roll (continuous or pre-perforated), 91.4 metres in length
- ✔ Pre-cut circles of 35 mm, 45 mm, 63.5 mm, or 76.2 mm diameter (500 or 1000 per pack)
- ✔ SpectroMembrane® (See below)

Available materials:

Polypropylene, Mylar®, Zythene®, Etnom®, Polycarbonate®, Kapton®, Prolene®, Ultra-polyester®

The above are available in thicknesses from 1.5 µm to 12.0 µm (material and format dependent)

Key Features

- ✔ Thin film sample support in a frame for easy handling and to avoid contamination
- ✔ Automatically detaches from the carrier frame leaving a taut wrinkle-free sample support window.
- ✔ Packaged in 100 units to match 100 Sample Cup Sets
- ✔ Available in Etnom®, Kapton®, Mylar®, Polypropylene, Prolene®, Ultra-Polyester®, and Zythene®
- ✔ Available in pre-set thicknesses, from 2µm to 12 µm

SpectroMembrane®





Grinding and pelletizing additives

- X-Ray Mix® pre-weighted tablets (1/4g) composition C: 48.7%; O: 42.6%; H: 8.1%; B: 0.6%
- SpectroBlend® pre-weighted tablets (1/2g) composition C: 81.0%; O: 2.9%; H: 13.5%; N: 2.6%
- Boric Acid pre-weighted tablets (1/2g) composition O: 77.6%; H: 4.9%; B: 17.5%
- Liquid Binder® for difficult-to-bond samples Polymer ingredient (C₆H₉ON) in methylene chloride solvent.



FusionFlux® borax fluxing agent

- Lithium Tetraborate Li₂B₄O₇ based fluxes
- Blended with lithium bromide (LiBr) or lithium iodide LiI in blends from 0.5% to 1.5%
- Additional blends with 33% to 100% Lithium Metaborate LiBO₂
- Formulations with non-wetting agents

See ordering information for blends

Other accessories

- Sample powder compactors to flatten and level surface before pelletization
- Sample storage pods with 5 or 10 pods: catalog, store and protect briquetted powder samples, etallographic specimens, gems, optical glasses and many other delicate items.





ORDERING INFORMATION

Sample Cups

Double Open-Ended SpectroCup® Sample Cups				
Part Number	Series	Dia.	H.	Vol.
CX2131E	2100	30.9mm	29.2mm	12
CX2132E	2100	31.5mm	29.2mm	9
CX2135E	2100	34.3mm	29.7mm	9
CX2140E	2100	40.1mm	29.7mm	9
CX2143E	2100	40.1mm	29.7mm	19
CX2144E	2100	40.1mm	33.8mm	19
CX2145E	2100	44.7mm	29.5mm	25
CX2146E	2100	44.7mm	33.5mm	22
CX2147E	2100	44.7mm	29.5mm	11
CX2148E	2100	44.7mm	33.5mm	12
CX2149E	2100	44.7mm	39.2mm	22
CX2195E	2100	43.4mm	40.7mm	12

TrimLess® Sleeved Sample Cups				
Part Number	Series	Dia.	H.	Vol.
CX1083E	1000	42.9mm	18.5mm	9
CX1095E	1000	43.4mm	39.9mm	7

Double Open-Ended Sample Cups				
Part Number	Series	Dia.	H.	Vol.
CX2131E	1900	39.4mm	35.3mm	15

Thin Film Windows

Materials	Thickness	Roll	Pre-cut Circles	SpectroMembrane®			
				ø35mm	ø45mm	ø63.5mm	ø76.2mm
Polypropylene	6.0 µm	Y	Y	-	Y	Y	Y
	12.0 µm	Y	Y	-	Y	Y	Y
Ultra-polyester®	1.5 µm	-	-	-	-	-	Y
Kapton®	1.5 µm	-	Y	-	-	Y	Y
Mylar®	2.5 µm	Y	Y	-	-	Y	Y
	3.6 µm	Y	Y	Y	-	Y	Y
	6.0 µm	Y	Y	-	-	Y	Y
Prolene®	3.0 µm	-	-	Y	-	Y	Y
	4.0 µm	Y	Y	Y	-	Y	Y
Etnom®	2.0 µm	Y	-	-	-	Y	Y
	2.5 µm	Y	-	Y	-	Y	Y
	3.0 µm	Y	-	-	-	Y	Y
Zythene®	6.0 µm	-	-	-	-	Y	Y

ORDERING INFORMATION



Grinding and Pelletizing Additives

CX600E	X-Ray Mix [®] , Powder; 1lb per bottle
CX625E	X-Ray Mix [®] , 1/4gm Tablets; 500 tablets per bottle
CX650E	X-Ray Mix [®] , 1/2gm Tablets; 500 tablets per bottle
CX660E	SpectroBlend [®] , 44µm Powder; 1lb per bottle
CX690E	SpectroBlend [®] , 1/2gm Tablets; 500 tablets per bottle
CX750E	Boric Acid, 1/2gm Tablets; 1000 tablets per bottle
CX800E	Liquid Binder [®] Additive; 1 Pint
CX2532E	PelletCups [®] Powdered Sample Compactors; 32mm Dia.
CX2535E	PelletCups [®] Powdered Sample Compactors; 35mm Dia.
CX2540E	PelletCups [®] Powdered Sample Compactors; 40mm Dia.
CX2545E	PelletCups [®] Powdered Sample Compactors; 45mm Dia.
CX2030-10E	Sample Storage Kit with 10 Sample Pods
CX2030-1E	Sample Pod Replacement (single pod)
CX2030-5E	Sample Storage Kit with 5 Sample Pods

Fluxing Agents

Part Number	Description
CX30-1000E	FusionFlux [®] 100% Li ₂ B ₄ O ₇ ; 1 lb
CX30-1100E	FusionFlux [®] with Non-wetting agent 99.5% Li ₂ B ₄ O ₇ / 0.5% LiBr; 1 lb
CX30-1200E	FusionFlux [®] with Non-wetting agent 99.5% Li ₂ B ₄ O ₇ / 0.5% LiI; 1 lb
CX30-2000E	FusionFlux [®] 100%LiBO ₂ ; 1lb
CX30-2100E	FusionFlux [®] with Non-wetting agent, 99.5% LiBO ₂ / 0.5% LiB; 1 lb
CX30-21500E	FusionFlux [®] with Non-wetting agent, 98.5% LiBO ₂ / 1.5% LiB; 1 lb
CX30-3000E	FusionFlux [®] 80% Li ₂ B ₄ O ₇ / 20% LiBO ₂ , 1 lb
CX30-4000E	FusionFlux [®] 67% Li ₂ B ₄ O ₇ / 33% LiBO ₂ , 1 lb
CX30-4100E	FusionFlux [®] with Non-wetting agent, 66.67% Li ₂ B ₄ O ₇ / 32.83% LiBO ₂ / 0.5% LiB, 1 lb
CX30-4200E	FusionFlux [®] with Non-wetting agent, 66.67% Li ₂ B ₄ O ₇ / 32.83% LiBO ₂ / 0.5% LiI, 1 lb
CX30-5000E	FusionFlux [®] 50% Li ₂ B ₄ O ₇ / 50% LiBO ₂ , 1 lb
CX30-5100E	FusionFlux [®] with Non-wetting agent, 49.75% Li ₂ B ₄ O ₇ / 49.75% LiBO ₂ / 0.5% LiB 1 lb
CX30-5200E	FusionFlux [®] with Non-wetting agent, 49.75% Li ₂ B ₄ O ₇ / 49.75% LiBO ₂ / 0.5% LiI 1 lb
CX30-6000E	FusionFlux [®] 35% Li ₂ B ₄ O ₇ / 65% LiBO ₂ ; 1 lb
CX30-6600E	FusionFlux [®] 66% Li ₂ B ₄ O ₇ / 34% LiBO ₂ ; 1 lb
CX30-6650E	FusionFlux [®] with Non-wetting agent, 34.83% Li ₂ B ₄ O ₇ / 64.67% LiBO ₂ / 0.5% LiB 1 lb

ATLAS™ AUTOTOUCH PRESS

DATA SHEET

The Atlas™ Autotouch Presses 8T, 15T, 25T & 40T are programmable, microprocessor controlled, power assisted hydraulic presses, operating to apply a maximum of 8, 15, 25 & 40 Ton loads respectively.

They have been designed to handle a wide variety of pressing applications, including XRF and IR sample preparation. All presses are fully compatible with Specac dies and other sample preparation accessories. They enable the controlled application and release of an applied load, accommodating samples up to 200mm in diameter. The applied load can be maintained indefinitely, or to a specific time via user programmable functionality.

The colour touch screen display shows the press programme status and load conditions providing a digital display of load applied, together with an end of cycle alarm / indicator.

The power unit is extremely quiet and operates below 62dB. Fitted with PETG safety guards as standard, the Atlas™ Autotouch Presses are fully CE marked to comply with strict European regulations.

The Atlas™ Auto Presses have a generous working distance of up to 155mm between the pressing faces and are suitable for the preparation of KBr discs for infrared analysis using Specac evacuable dies. They can also be used with the Atlas™ Heated Platens for applications including the preparation of thin polymer film substrates*.

The Atlas™ Autotouch Presses are simple to use and program via the use of the touch screen symbols and prompts. Options include user selectable languages and load limits. The Presses durability are ideal for applications such as x-ray fluorescence sample preparation using Atlas™ Series Lightweight Dies.

* Note: The 40 ton version is not compatible with the Atlas Heated Platens



Key Features

- Colour touch screen control with LED backlight control
- Programmable Microprocessor controlled pressure application and release
- Simple user operation procedures via symbols and prompts
- Maintain load applied from an automatic "top up"
- Fully CE Marked
- End of cycle alarm or indication
- Multi-lingual display option (English, French, German Spanish & Italian)
- Integral high clarity PETG safety guards
- Fully compatible with all Specac sample preparation accessories*

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For the latest details please contact your local Specac office or representative.

ATLAS™ AUTOTOUCH PRESS

DATA SHEET



Specifications

	8T	15T	25T	40T
Max Piston Load	8 Tons	15 Tons	25 Tons	40 Tons
Digital Display	1-8 Tons	2-15 Tons	3-25 Tons	4-40 Tons
Min Load Step	0.2 Tons	0.2 Tons	0.5 Tons	0.5 Tons
Top Bolster Diameter			32mm	
Top Lead Screw Vertical Travel			90mm	
			*80mm	
Ram (Piston) Bolster Diameter			82mm	
Ram (Piston) Stroke			24mm	
			*38mm	
Max/Min Pressing Face Dist.		155 - 40mm		
		*155 - 60mm		
Sample Area (Dia x H)		220 x 155mm		
		*240 x 155mm		
Base Footprint (W x D)		425 x 405mm		
		*430 x 405mm		
Height (without lead screw)		500mm		
		*550mm		
Height		545 - 640mm		
		*580 - 660mm		
Oil Type			Tellus 37	
Oil Reservoir Capacity			1.0 litre	
Weight			95Kg	
			*130Kg	
Communications Type			USB	
Display Units		Tons, Tonnes, US Tons,		
		Kgf, KNewtons		
Hold Times		0.1 - 99 mins & infinity		
Optimised Release Rates		Fast, Medium, Slow		
Stored Programs			6	
Maximum Program Segments			10	

*40T Version Specification

Ordering Information

8T

GS25800	Atlas Autotouch 8T Press (UK/Europe 230v 50Hz)
GS25801	Atlas Autotouch 8T Press (USA 110v 60Hz)
GS25802	Atlas Autotouch 8T Press (Japan 100v 50/60Hz)
GS25803	Atlas Autotouch 8T Press (China 230v 50Hz)
GS25804	Atlas Autotouch 8T Press (Korea 230v 60Hz)

15T

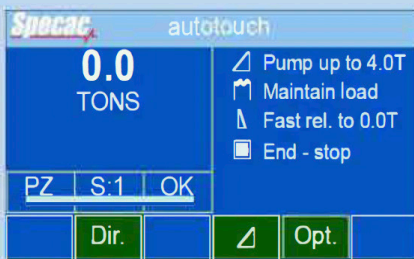
GS25810	Atlas Autotouch 15T Press (UK/Europe 230v 50Hz)
GS25811	Atlas Autotouch 15T Press (USA 110v 60Hz)
GS25812	Atlas Autotouch 15T Press (Japan 100v 50/60Hz)
GS25813	Atlas Autotouch 15T Press (China 230v 50Hz)
GS25814	Atlas Autotouch 15T Press (Korea 230v 60Hz)

25T

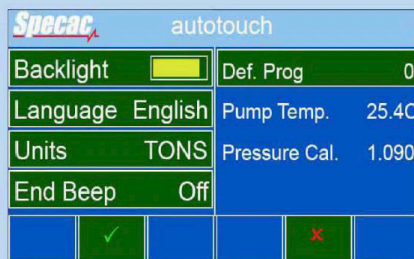
GS25820	Atlas Autotouch 25T Press (UK/Europe 230v 50Hz)
GS25821	Atlas Autotouch 25T Press (USA 110v 60Hz)
GS25822	Atlas Autotouch 25T Press (Japan 100v 50/60Hz)
GS25823	Atlas Autotouch 25T Press (China 230v 50Hz)
GS25824	Atlas Autotouch 25T Press (Korea 230v 60Hz)

40T

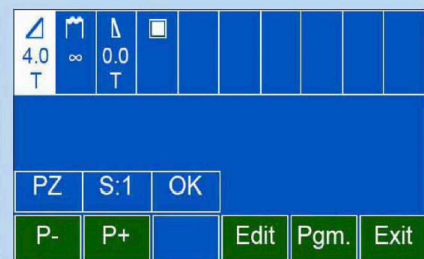
GS25830	Atlas Autotouch 40T Press (UK/Europe 230v 50Hz)
GS25831	Atlas Autotouch 40T Press (USA 110v 60Hz)
GS25832	Atlas Autotouch 40T Press (Japan 100v 50/60Hz)
GS25833	Atlas Autotouch 40T Press (China 230v 50Hz)
GS25834	Atlas Autotouch 40T Press (Korea 230v 60Hz)



Main Operating Screen



Options Screen



Programming Screen

ATLAS™ MANUAL HYDRAULIC PRESS

DATA SHEET

Ideal for applications such as: Cement, Metals, Mining & Food Stuffs

The Atlas 15 ton and 25 ton Manual Hydraulic Presses have been designed to handle a wide variety of pressing applications. They are specifically suited to the preparation of KBr discs using Specac Evacuatable Pellet Dies.

The Atlas Presses can also be used with Specac Heated Platens for applications such as the preparation of thin polymer films.



Product Features

- Polycarbonate safety guards
- Adjustable upper bolster
- Pressure release valve
- Adjustable pressure control valve
- Vacuum ports
- Gauges for low pressure applications (0-1, 0-2, & 0-5 ton options)



Ordering Information:

GS15011 *Atlas 15T Manual Hydraulic Press*

GS25011 *Atlas 25T Manual Hydraulic Press*

Spares and Consumables

GS15100 *Replacement Seals and Gaskets kit for Manual Hydraulic Presses*

GS15101 *Hydraulic Oil (1litre)*

Low Tonnage Gauge Kits

GS15051 *0-1 Ton Gauge Conversion Kit*

GS15052 *0-2 Ton Gauge Conversion Kit*

GS15055 *0-5 Ton Gauge Conversion Kit*

Specifications

Max height (at handle)	610mm
Width	310mm
Depth	190mm
Weight	50kg
Lower piston stroke	25.4mm
Upper bolster screw travel	89mm
Distance between pressing faces (max)	152mm
Distance between pressing faces (min)	38mm
Lower pressing face diameter	86mm
Upper pressing face diameter	32mm
Max width of sampling area (side to side)	143mm
Max depth of sampling area (front to back)	141mm

ATLAS™ EVACUABLE PELLET DIES

DATA SHEET

For the production of high quality sample pellets from 5mm to 40mm diameter

Specac offers wide range of high-quality Evacuatable Pellet Dies suitable for producing discs and briquettes from powdered samples. These are well suited for the preparation of KBr pellets used in FT-IR spectroscopic analysis and XRF pellets for X-Ray Fluorescence atomic spectroscopic analysis, but can also be used for a broad range of other applications. These Pellet Dies are compatible with all the Specac Atlas™ Presses.

As standard the Specac Pellet Die's produce circular pellets in sizes from 5mm to 40mm diameter, but other shapes and sizes are available upon request. All the parts of the die are manufactured from hardened stainless steel, for optimum quality and durability, and highly polished surfaces for contact with the sample.

The Evacuatable Pellet Die is made up of an evacuatable base, body, plunger, pair of internal pellet pressing surfaces, extractor ring and O ring kit. Removal of any moisture, if required, is done using the evacuation port.

Key Features

- Hardened Stainless Steel
- Highly polished pellets
- Evacuatable for sample pellet clarity and quality
- Vacuum pump kit for moisture free pressing (Optional)



Ordering Information

GS03060	5mm Evacuatable Pellet Die	(Max Load 2 Tons)
GS03100	10mm Evacuatable Pellet Die	(Max Load 5 Tons)
GS03000	13mm Evacuatable Pellet Die	(Max Load 10 Tons)
GS03165	20mm Evacuatable Pellet Die	(Max Load 25 Tons)
GS03300	32mm Evacuatable Pellet Die	(Max Load 50 Tons)
GS03290	40mm Evacuatable Pellet Die	(Max Load 80 Tons)

These dies are made from 440C hardened stainless steel and all of the dies are equipped with nitrile o-ring seals and an evacuation port for removal of moisture if desired during the pressing process.

Die Spares

Diameter	Set of Pellets	Plunger	Body	Base	Extractor Ring	O Ring Kit
5mm	GS03061	GS03063	GS03064	GS03050	GS03069	GS03062
10mm	GS03101	GS03103	GS03104	GS03050	GS03025	GS03102
13mm	GS03010	GS03030	GS03040	GS03050	GS03025	GS03020
20mm	GS03166	GS03168	GS03169	GS03191	GS03521	GS03167
32mm	GS03310	GS03330	GS03340	GS03230	GS03521	GS03320
40mm	GS03291	GS03293	GS03294	GS03295	GS03297	GS03292



ATLAS™ EVACUABLE PELLET DIES

DATA SHEET

Evacuatable Pellet Dies Options

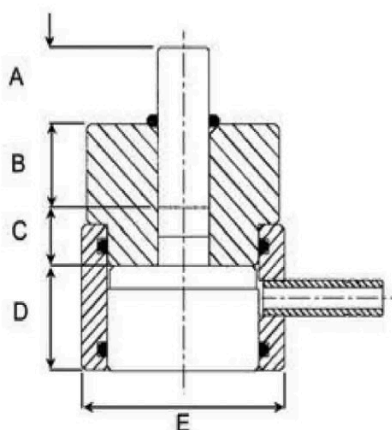
Size (dia)	Die	Pellet Holder
5mm	GS03060	GS03400
10mm	GS03100	GS03404
13mm	GS03000	GS03410
20mm	GS03165	GS03193*
32mm	GS03300	GS03520*
40mm	GS03290	GS03298*

* These pellet holders are sample retaining rings only and do not have a rectangular mounting plate.

Spares and Consumables

GS03600	Agate Pestle and Mortar (Mortar Bowl dia. 4cm)
GS03610	KBr Powder (50g)
GS03460	Paper rings for 13mm die (100) (11mm diameter aperture)
GS03470	Micro frames for 13mm die (100) (11mm x 2mm aperture)
GS03475	Ultra Micro frames for 13mm die (100) (4 x 1mm aperture)
GS03640	Vacuum Pump Kit

Specifications



A+B = Plunger Height
 C = Stainless Steel Pellet Height
 D = Base Height
 E = Diameter
 A+B+C+D = Total Height of Die

Die Size	5mm	10mm	13mm	20mm	32mm	40mm
P/N	GS03060	GS03100	GS03000	GS03165	GS03300	GS03290
A	13.7	16.0	16.0	21.4	21.4	21.4
B	38.8	19.1	19.1	35.8	35.8	35.8
C	12.7	12.7	12.7	19.1	19.1	19.1
D	22.2	22.7	22.2	27.8	27.8	27.8
E	50.8	50.8	50.8	68.3	68.3	68.3

ATLAS™ LIGHTWEIGHT DIES

DATA SHEET

Specifically designed to work with the range of Atlas™ presses up to max 25 tons

The Atlas™ Lightweight Evacuatable Pellet Dies have been specifically designed to work with the range of Atlas™ automatic presses up to a maximum load rating of 25 tons. The dies are also compatible for use with Specac's 15 and 25 ton manual hydraulic presses.

The dies are made out of 440C stainless steel and offered to prepare pellet discs of 32mm (GS25410) or 40mm (GS25411) diameter size.

They are well suited for the preparation of solid pellets for study by X-Ray Fluorescence spectroscopy.

When many samples are to be prepared for study, the physical effort required to load and remove an Atlas™ Lightweight Evacuatable Pellet Die into a press is greatly reduced, as the dies themselves are physically smaller and lighter in weight by comparison to conventional 32mm and 40mm diameter pellet dies. The 32mm die (GS25410) is approximately 1.8Kg and the 40mm die (GS25411) is approximately 1.9Kg in weight. By comparison the 40mm pellet die (GS03290) is close to 5.0Kg in weight.

To aid the weight reduction there are no individual internal pressing pellets as with conventional dies and so a sample is compressed between the plunger and the base piece of the die assembly. For this reason the plunger itself has a highly polished surface that makes contact with the sample. The highly polished face helps in producing an even surface to the sample pellet and in release of the sample from the die components.

The Atlas™ Lightweight Evacuatable Pellet Dies have an evacuation port and can be operated using a partial vacuum for the compression of samples into pellets that may be moisture sensitive.

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Ordering Information

GS25410	Atlas™ 32mm Lightweight Evacuatable Pellet Die
GS25411	Atlas™ 40mm Lightweight Evacuatable Pellet Die
GS25412	32mm Lightweight Die Body
GS25413	32mm Lightweight Die Plunger
GS25414	32mm Lightweight Die Base
GS25415	32mm Lightweight Die O-Ring Kit
GS25416	40mm Lightweight Die Body
GS25417	40mm Lightweight Die Plunger
GS25418	40mm Lightweight Die Base
GS25419	40mm Lightweight Die O-Ring Kit



ASSOCIATED SPECIALITIES



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- ⦿ Network of local Wagtech-Trace2o offices and agents for after-sales support

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