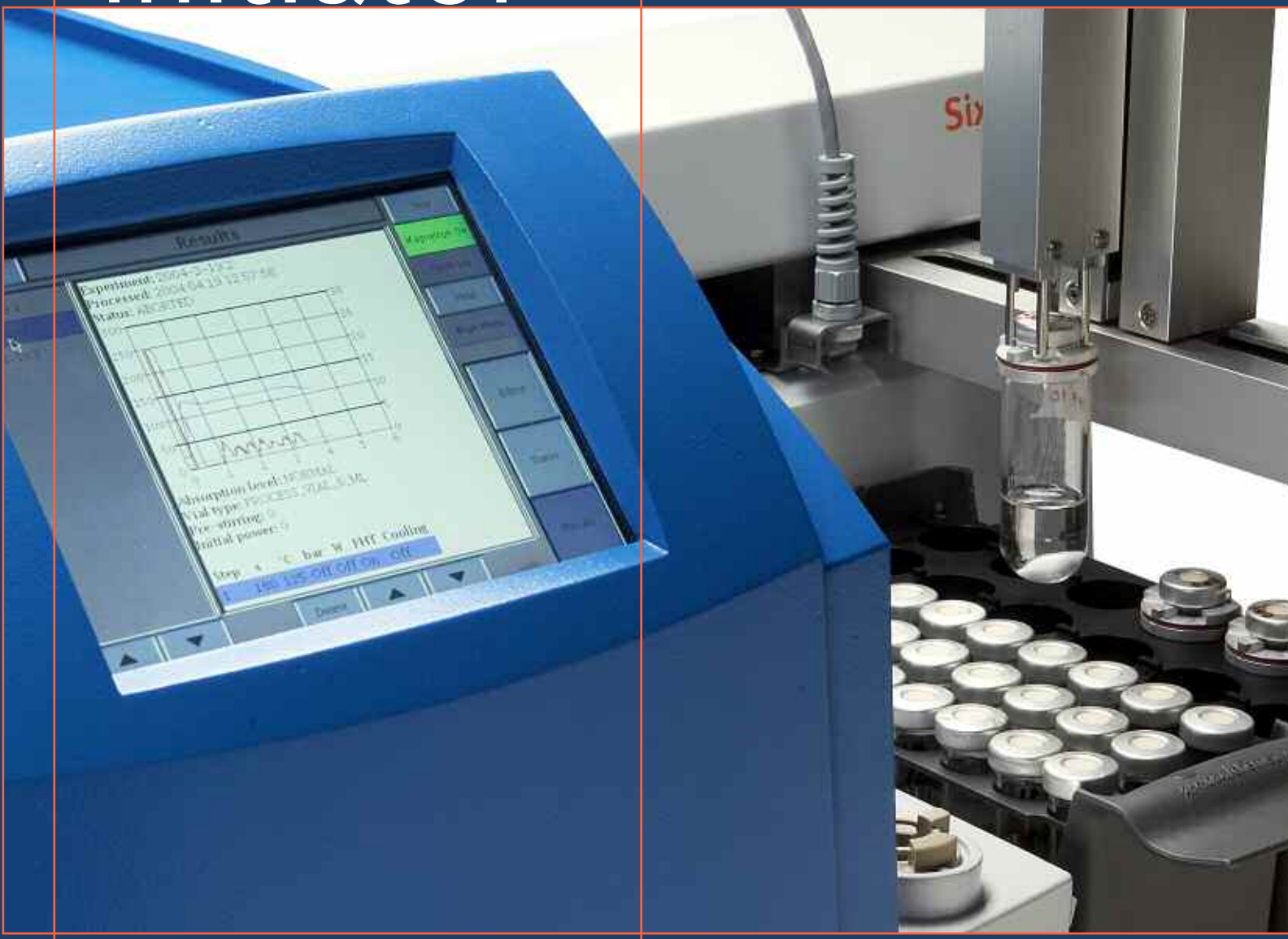
Initiator™



Fast, Safe and Scalable
Microwave Synthesis

Biotage

Broader exploration and faster results

...a common theme in all medicinal chemistry labs

Microwave synthesis is ideally suited for this challenging fast-paced environment. As discovery chemistry demands increase, the rapid investigation of reaction conditions and pathways has never been more important. Microwave synthesis systems rise to this challenge by promoting faster reactions, delivering precise reaction conditions and improving yields and purities. Microwave heating is by far the superior choice for synthesizing novel compounds and can offer advantages other than just speed. Using temperatures and pressures not easily attainable through traditional heating, it allows chemists to perform reactions formerly not possible, and therefore, is the fastest-growing technology in the pharmaceutical medchem lab.

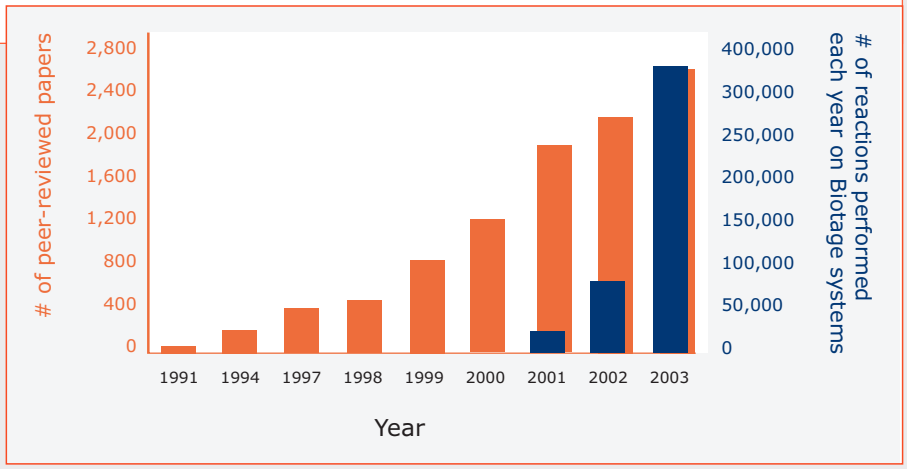


Figure 1. The exponential increase in the number of peer-reviewed microwave synthesis publications, and the actual number of microwave reactions run on the Biotage microwave systems.

Discover the advantages of microwave synthesis

• Dramatically reduce reaction times

Why wait hours, or sometimes days, for results?

Simply by increasing temperature, microwave synthesis can complete reactions from 10 to 1000 times faster than traditional reflux conditions.

• Easily explore and optimize new reactions

Why limit the range of experiments?

Quickly test your creative synthetic ideas or rapidly synthesize compounds of interest to fill the gaps in your structure activity relationship (SAR). Reduce the iterative SAR cycle time to increase productivity for the entire team and project. There is evidence that microwave synthesis can promote reactions that may otherwise be impossible or difficult if heated by traditional means.

• Reliably automate the process

Why waste time supervising the synthesis process?

Biotage microwave systems are predictable, reliable and safe. Each instrument has precise control of time, temperature and pressure to ensure that methods are reproducible and easily transferred or scaled up. Systems are also available with reliable automation and will run an entire sequence without manual intervention.

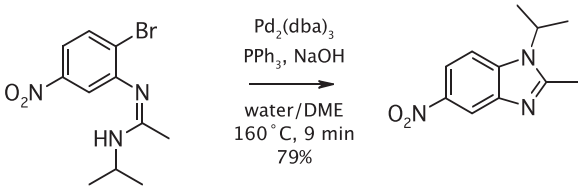
• Readily adopt the new industry standard

Will the microwave fit into your process, hood space and budget?

Chemical synthesis has never been easier. Simply put the reaction mixture into the vial, cap it, insert the vial into the microwave, key in the reaction parameters (typically four steps), and run. The newest generation of microwave synthesis systems are compact, easy to use and very affordable.

Palladium-catalyzed intramolecular aryl amination

The intramolecular aryl amination has been applied in microwave synthesis. The optimized procedure requires less palladium, uses an aqueous solvent system and has an overall higher efficiency as compared to its conventional counterpart. The reaction is furthermore complete in 9 minutes as compared to 18 hours at ambient for the conventional reaction. Interestingly an aqueous system of water/DME 50:50 was found to be the optimal solvent system for this reaction type. Electron poor, neutral and rich as well as sterically hindered amidines can be used with this method. A simple non-chromatographic purification was also developed using a catch and release strategy, whereby the benzimidazoles were captured onto an Amberlyst-15 and, after washing, released using a Et3N/DCM 1:1 mixture.



Christopher Brain and James Steer
An improved procedure for the synthesis of benzimidazoles, using palladium catalysed aryl amination chemistry
J. Org. Chem. 2003, **68**, 6814-6816.


Initiator
Biotage

Initiator™

The new, compact design of the Initiator microwave synthesizer is 45% smaller than its predecessors, Personal Chemistry's Emrys™ Creator and Emrys™ Optimizer. Chemists can load and run samples in just a few simple steps using the new embedded touch-screen control and graphical-user-interface. The system has an expanded volume range of 0.2-20 mL with the EXP upgrade. For automated operation, an 8 or 60-position robotic assembly can be added at any time, further expanding the system's functionality. All Biotage microwave synthesizers are designed to operate at elevated temperatures and pressures with best-in-class safety features.

Compact footprint

The Initiator is 45% smaller than its predecessors, making it the smallest on the market, fitting easily into any standard fume hood space.

Touch screen control

Load and run your samples using a touch screen monitor for simple and intuitive navigation without the need for an external computer, keyboard or mouse.

0.2 to 20 mL without system modifications

With the EXP function, use four different vial sizes in any order or combination at any time without system modifications for greater flexibility and direct scale-up of milligrams to grams.

Enhanced heating performance

The new single-mode applicator with the proven Dynamic Field Tuning™ feature offers faster heating of a broader range of solvents.

Swedish-engineered safety

The Initiator triple-tier safety lock feature is designed for safe operation at elevated temperatures and pressures, ensuring maximum operator safety at all times.

1-Point Support™

Biotage's world-class field service organization supports customers on-site to provide the highest quality personalized service.

Modular design

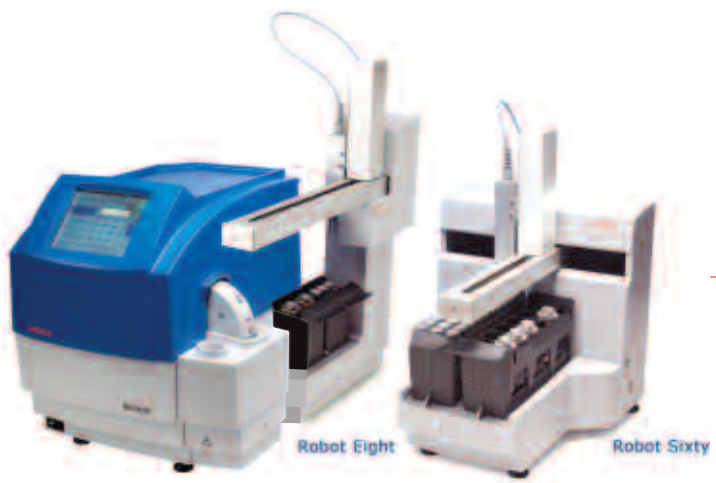
Easily upgrade from a single-sample manual format to an automated 8 or 60-position system.

Robot Eight

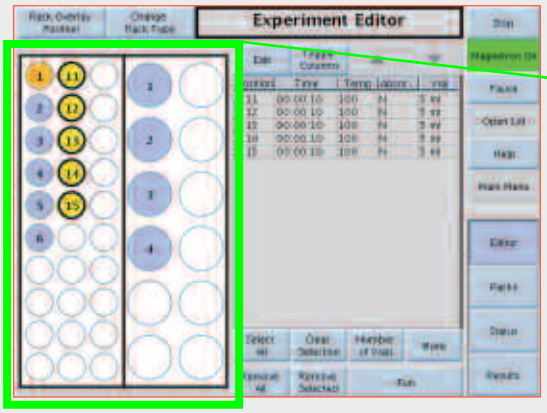
The 8-position sample bed provides automation to medicinal chemists for rapid optimization of reaction conditions and analog synthesis.

Robot Sixty

The 60-position sample bed supports the production of focused libraries, multi-user environments and scale-out.



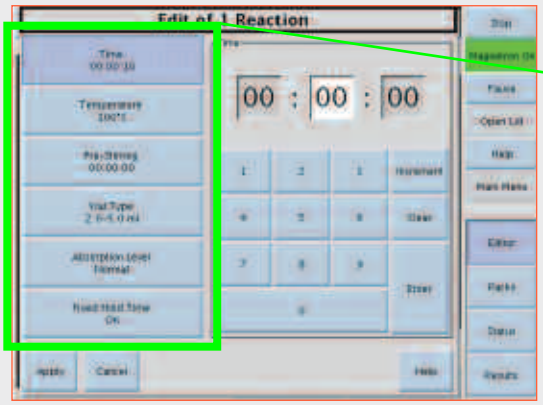
Intuitive Touch-Logic Control™ – as Simple as 1-2-3



Step 1

Experiment Editor

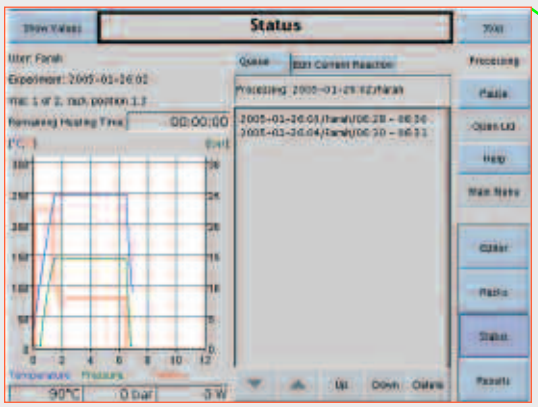
Select the appropriate rack type using the "Change Rack Type" key. Select the vial positions to load. With the vial(s) highlighted proceed to the "Edit" tab.



Step 2

Edit your Method

Specify the reaction time, temperature and pre-stirring[1] time. Next, select vial size, absorption[2] level and fixed hold time[3]. Touch "Apply", this returns you to the "Editor" screen. View each vial's parameters and proceed to "Run".



Step 3

Status

Check run status and remaining processing time. View the temperature, pressure and power. Edit the run on-the-fly, reducing time or temperature as needed.

1 for heterogenous, biphasic and exothermic mixtures

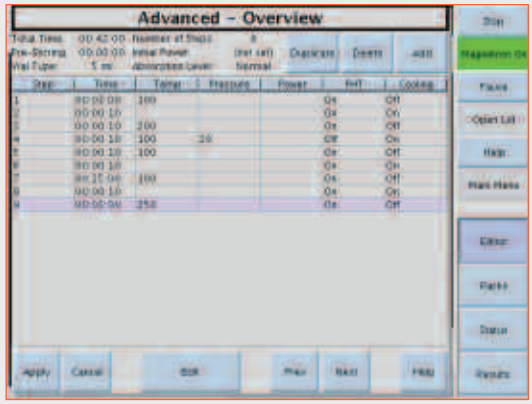
2 Normal=Organic solvents/substrates; High/V.High=ionic content

3 ON=time counts down after set temperature is achieved

Advanced Features

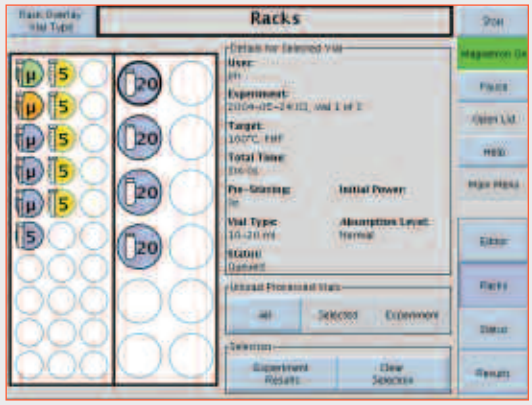
Advanced Edit

Use pressure or power control. Set personal pressure guards and power guards. Build pulse sequences of up to 99 steps using all available control parameters; time, temperature, pressure, power, fixed hold time and cooling.



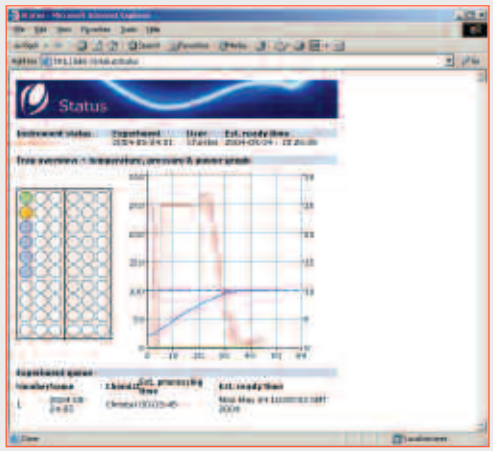
Racks with Tray Overlay—Vial Type

Check the specific parameters used and find the result for any given reaction on the tray. Display the parameter of choice for all reactions and remove performed experiments.



Remote Viewer

Control the status of the instrument and the progress of your reaction from a remote location (your office). View, save and print results.



Maximize the benefits of microwave synthesis with Biotage PathFinder™ Web

Biotage PathFinder is the largest database of established methods for microwave synthesis. The new web-based format offers chemists worldwide access to **more than 3,600 diverse microwave methods**. More than 600 of the reactions are new. Using a simple keyword and substructure search, it is fast and easy to find methods for microwave synthesis along with full documentation on each reaction including quantities of solvent and additives, experimental condition details, work-up procedures and analytical files of the product where available.

In addition to the database, Biotage PathFinder includes an "Ask-a-Chemist" feature, which allows chemists to have a dialog about microwave synthesis methods directly with a Biotage chemist experienced in microwave synthesis. Additional features include a gas-pressure calculator and the Biotage PathFinder Cookbook.

The data content is continually updated with new chemistries and currently contains reactions from Biotage's highly skilled internal application chemists and select contributions from our renowned Scientific Partnership Program (SPP).

To experience the benefits first hand, visit **www.biotagepathfinder.com**.

Figure 1. Enter a simple substructure search.

Figure 2. Search results are displayed in an easy-to-browse format.

Figure 3. Reaction details needed to perform repeated reactions are listed in an easy-to-read format.

Ordering Information

Part Number	System	Country
355230	Initiator	EU
355286	Initiator	US
355287	Initiator	JPN
355301	Initiator EXP	EU
355302	Initiator EXP	US
355303	Initiator EXP	JPN
355522	Initiator Eight	EU
355524	Initiator Eight	US
355526	Initiator Eight	JPN
355521	Initiator Eight EXP	EU
355523	Initiator Eight EXP	US
355525	Initiator Eight EXP	JPN
355435	Initiator Sixty	EU
355437	Initiator Sixty	US
355439	Initiator Sixty	JPN
355434	Initiator Sixty EXP	EU
355436	Initiator Sixty EXP	US
355438	Initiator Sixty EXP	JPN

Part Number	Upgrade Modules
355380	Initiator Robot Eight
355381	Initiator Robot Sixty
355420	Initiator EXP Upgrade
355239	PathFinder Web Subscription

Part Number	Accessories	Description
355366	Initiator Waste Tray Inserts	
355458	Biotage Microwave Vials	0.2-0.5 mL, Qty 100
352016	Biotage Microwave Vials	0.5-2 mL, Qty 100
354625	Biotage Microwave Vials	0.5-2 mL, Qty 3x100
351521	Biotage Microwave Vials	2-5 mL, Qty 100
354624	Biotage Microwave Vials	2-5 mL, Qty 3x100
354833	Biotage Microwave Vials	10-20 mL, Qty 50
352298	Microwave Vial Caps	Qty 107
353671	Crimper	
353913	Decapper	
355459	Vial Adapters	0.2-0.5 mL, Qty 10
355367	Vial Adapters	10-20 mL, Qty 12
354838	O-rings for Vial Adapters	10-20 mL, Qty 10
354974	Initiator Cavity Air Guide	
355391	Vial Rack (Initiator 8)	Vial 4-rack (0.2-5 mL)
355390	Vial Rack (Initiator 8)	Vial 2-rack (10-20 mL)
353478	Vial Rack (Initiator 60)	Vial 30-rack (0.2-5 mL)
354836	Vial Rack (Initiator 60)	Vial 12-rack (10-20 mL)
353930	Magnetic Stir Bars	10-20 mL, Qty 5
354878	Venting Screw Replacement	

Specifications

Heating Process

Temperature	60-250 °C (140-482 °F)
Temperature increase	2-5 °C/sec (36-41 °F)
Pressure range	0-20 bar (2 MPa, 290 PSI)
Power range	0-300 W at 2.45 GHz
Reaction vials	2 or 4 vial sizes (mL): 0.5-2, 2-5, (0.2-0.5 and 10-20 available with EXP function)
Reaction volumes	0.5-5 mL, (0.2-20 mL with EXP function)
Agitation	Magnetic stirrer

System Requirements

Temperature	18-32 °C (64-90 °F)
Humidity	20-95% RH
Electrical supply	EU: 220-240 V, 50 Hz (5 Å) US: 120 V, 60 Hz (10 Å) JP: 100V, 50/60 Hz (10 Å)
Maximum power consumed	1100 VA
Cooling	Pressurized air supply >60 L/min (2.1 cubic feet/min), 2.5 – 4 bar (0.25-0.4 MPa, 36-58 PSI)
Weight	48.9 lb (22.2 kg)
Dimensions	14.4 x 15.9 x 16.3” W x D x H (365 x 405 x 415 mm)

Interfaces

Touch screen	6.4”
Ethernet LAN	Complies with IEEE 802.3 (ANSI 8802.3) MII
Archiving/backup and printing	Via the LAN

Upgrade path

The Initiator system can be automated with Robot 8 or Robot 60.

Initiator Eight

Rack capacity	4 vials/rack (0.2-0.5, 0.5-2 and 2-5 mL) 2 vials/rack (10-20 mL)
Dimensions	15.7” x 19.7” x 22.8” W x D x H (400 x 500 x 580 mm)
Weight	64 lb (29 kg)

Initiator Sixty

Rack Capacity	30 vials/rack (0.2-0.5, 0.5-2 and 2-5 mL) 12 vials/rack (10-20 mL)
Dimensions	24.6” x 15.9” x 18.5” W x D x H (625 x 405 x 470 mm)
Weight	77 lb (34.9 kg)

Biotage

Working together

Today pharmaceutical chemists throughout the world rely on Biotage products as part of their daily workflow. Data shows that chemists have performed more than 900,000 microwave syntheses and 1.7 million flash purifications using Biotage products. As the innovators of microwave synthesis technology and cartridge based flash purification, we have set the industry standard for speed, safety and ease of use.

The new Initiator™ microwave synthesizer and SP1™ flash purification systems from Biotage each perform significant roles in the drug discovery process. Small enough to fit side-by-side in a fume hood, these instruments work together to reduce drug discovery cycle-times and improve success rates.

The Biotage consumable line includes microwave vials and flash chromatography cartridges custom engineered to deliver maximum performance.

Four optimum microwave vial sizes allow chemists to migrate from milligrams to grams without re-optimization. Durable and safe these vials are manufactured from contaminant free glass capable of withstanding pressures of 20 bars (ca 300 psi). Biotage FLASH+ cartridges are available in a variety of sizes and medias to provide selectivity choices for optimal purifications. The patented design accommodates five different loading techniques and withstands pressures up to 100 psi for faster flow rates and increased throughput.

Biotage products range from discovery through clinical trials and large-scale production. We offer application expertise and personal customer support, customizing solutions to meet the needs of customers. Biotage will continue providing new and innovative tools to meet today's research and development challenges.

Please contact your local Biotage representative for more information, visit www.biotage.com.

UNITED STATES and CANADA
Biotage
Tel: +1 434 979 2319
Toll-Free: +1 800 446 4752
ordermailbox@biotage.com

UNITED KINGDOM, EIRE
Biotage
Tel: +44 1992 501535
ordermailbox@eu.biotage.com

SWEDEN
Biotage
Tel: +46 18 56 59 00
ordermailbox@eu.biotage.com

JAPAN
Biotage
Tel: +81 422 281233
order@biotage.co.jp

Broch-0001.0305