

Single Filament Effusion Cell



- Temperatures up to 1600 C
- Standard, Hot Lip, and Cold Lip Filament Configurations Available
- Novel Thermocouple Design
- High Thermal Efficiency
- Robust, Reliable Design

Product Description

Three types of single filament cells are available depending on the source material and application that the cell is being used for. These include the standard filament, the hot lip filament and the cold lip filament. With only one filament to control, these cells are the most economical requiring only one power supply and controller. All cells are designed to provide superior performance and the ability to withstand long campaigns in the growth chamber.

The novel thermocouple design utilizes a single point thermocouple mounted to a collection band. Special attention to the construction of the thermocouple allows consistent temperature measurements from cell to cell. This consistency allows for a much more effective quality assurance monitoring.

Standard Filament Effusion Cell

The standard filament effusion cell provides a uniform filament coverage through the entire length of the cell. Despite the uniform filament density, the cell will actually be colder at the front due to the large amount of thermal radiation out the front of the cell. Despite this, the standard filament effusion cell is a good general purpose effusion cell that can be used in a variety of applications.

Hot Lip Filament Effusion Cell

The hot lip effusion cell has a higher density filament winding at the tip of the effusion cell to compensate for the large amount of heat loss out the front of the cell. This configuration is recommended for evaporating Ga or In to help reduce defect levels in the films. These defects have been traced back to the condensation of Ga or In droplets at the lip of the crucible. The higher lip temperatures achieved with the Hot Lip effusion cell helps reduce the level of defects seen in the films.

Cold Lip Filament Effusion Cell

The cold lip effusion cell reduces the density of filament at the top of the cell. This is useful for Al which tends to wet PBN crucibles. The amount of wetting seen on the crucible is directly proportional to the temperature of the PBN. Without filament windings at the top of the cell, the lip of the crucible will be cooler due to the higher radiation out the front of the cell. This cold lip will help reduce the chance of material creeping out the top of the crucible and into the cell which could potentially cause damage.

Single Filament Effusion Cell Selection Chart

E-Science provides effusion cells for all the major system manufacturers. In addition, E-Science can build effusion cells for other manufacturer's systems and for custom reactors. Please refer to the model number convention for ordering your specific effusion cell. Contact E-Science for more information.

Varian / Intevac / EPI / Veeco MBE Reactors

2" Gen II	3" Gen II, Gen III or Gen20	Gen200	Gen2000
16cc = EC-016-275-1140-SF-*	60cc = EC-060-450-1140-SF-*	200cc = EC-200-600-1250-SF-*	700cc = EC-700-800-1250-SF-*
40cc = EC-040-275-1140-SF-*	125cc = EC-125-450-1140-SF-*		

Riber MBE Reactors

32P	Compact 21	48 / 49	6000 / 7000
25cc = EC-025-275-1116-SF-*	60cc = EC-060-450-1250-SF-*	500cc = EC-500-600-1500-SF-*	700cc = EC-700-800-1300-SF-*
35cc = EC-035-275-1116-SF-*	125cc = EC-125-450-1250-SF-*		

VG Semicon / Oxford MBE Reactors

V80	V90	V100	V150
30cc = EC-030-450-1285-SF-L	85cc = EC-085-450-1150-SF-L	200cc = EC-200-600-1150-SF-L	700cc = EC-700-800-1890-SF-L
85cc = EC-085-450-1285-SF-L			

*This field designates standard filament (S), hot lip filament (HL) or cold lip filament (CL)

Model Number Convention (for custom reactors)

Model # = A - B - C - D - E - F - G	
A = EC for effusion cell	D = length (in inches * 100)
B = Capacity (in c.c.'s)	E = Type = SF for single filament
C = Flange Size	F = Filament Type
i. 275 = 2.75" CF Flange	i. S = Standard Filament
ii. 450 = 4.5" CF Flange	ii. HL = Hot Lip Filament
iii. 600 = 6.0" CF Flange	iii. CL = Cold Lip Filament
iv. 800 = 8.0" CF Flange	G = L for water cooled (if required)

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