

DUAL FILAMENT CELL DZ SERIES

ACCENTUATE EITHER A «HOT LIP» OR «COLD LIP» EFFECT

- Work Horse of the MBE machine
- Provides a pure, stable and reproducible beam flux
- Uniformities better than +/- 1%
- Robust and reliable design
- Very large range of products : from 35 cc up to 3700 cc

Dual filament cells allow the temperature gradient over the length of the crucible to be varied in order to accentuate either a “hot lip” or “cold lip” type behavior.

It **prevents condensation** on the crucible mouth by heating this zone to a higher temperature, e.g. particularly with **gallium and indium**. Furthermore, it eliminates droplets on the cell orifice, **significantly reduces morphological defect densities** (e.g. oval defects) while **improving the beam flux stability**.

It is highly recommended to use **two separate power supply** and **PID control racks** in order to take maximum advantage of the double filament configuration.

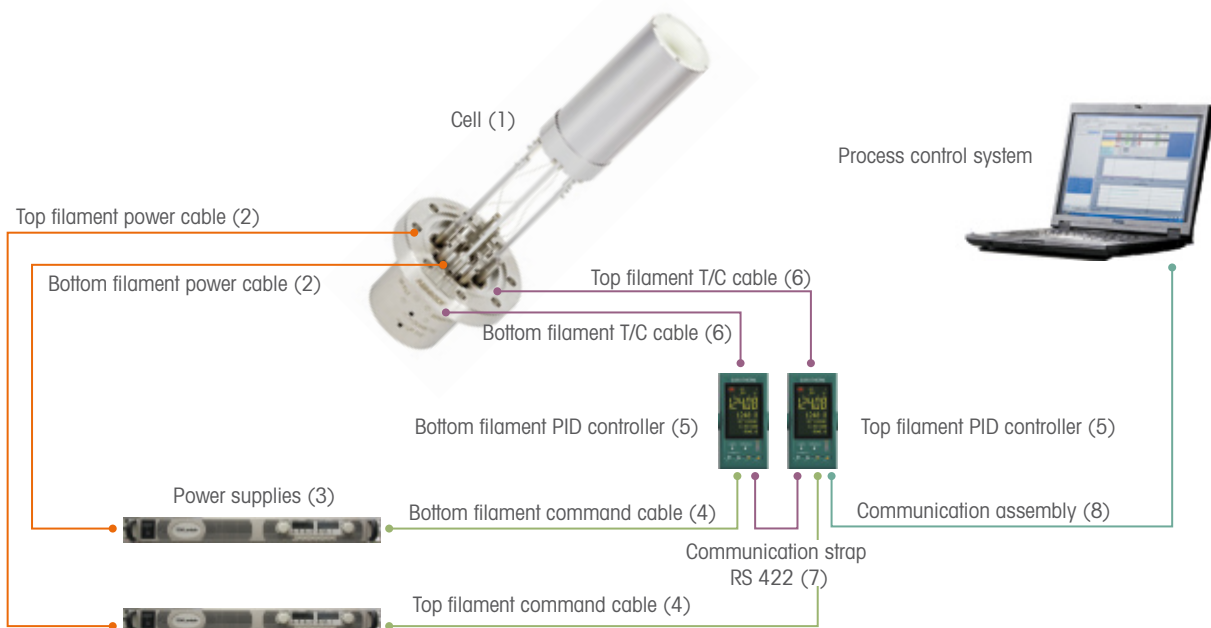


SPECIFICATIONS

CELL MODEL	S40	S63	S63	S80	S100	S100	S150	S200	S250	
CHARACTERISTICS	DZ35	DZ80VG ²	DZ60/80	DZ150	DZ200VG ²	DZ300	DZ700	DZ1700	DZ3700	
Filament	Two									
Heating filament	Tantalum									
Thermocouple	C -type ³				C-type					
Crucible	PBN									
Mounting flange	CF40 (2.75")	CF63 (4.5")	CF63 (4.5")	CF100/ CF125 (6" / 6.75")	CF100 (6")	CF125 (6.75")	CF150 (8")	CF200 (10")	CF250 (12")	
Temperature range ^{1,3}	300°C-1350°C									
Max. outgassing temp. top filament ¹	1300°C									
Max. outgassing temp. bottom filament ¹	1400°C									
Temperature stability	± 0.2°C									
WATER / GAS / ELECTRICAL										
Power consumption @ max outgas.temp *	400W	770W	770W	1315W	1820W	1900W	3460W	6000 W	9545W	
Power supply top	30V-25A	40V-19A	40V-19A	40V-38A	40V-38A	30V-25A	80V-30A	150V-34A	300V-33A	
Power supply bottom	30V-25A	60V-12.5A	60V-12.5A	40V-38A	60V-25A	80V-30A	100V-33A	150V-22A	300V-33A	
Thermocouple connector	HMPW - C - M									
Water connection ² (Swagelock fitting)	-	SWG Ø6	-	-	SWG Ø6	-	-	-	-	

- (1) Both zones heated simultaneously with crucible - (*) Power consumption = top + bottom filaments
 (2) Water shielding on VG type cells
 (3) Contact Riber for K type cells
 SWG=Twin ferrule compression ring fitting

OPERATING THE SOURCE



RESULTS

Provides Outstanding Uniformity

On MBE49 Production System

Growth and structure characterization were performed by the Ribier Application Laboratory, using the Ribier MBE49 system, with S150 DZ 700 effusion cells (Ga, Al, In) and the KPC1200 phosphorus valved cracker cell.

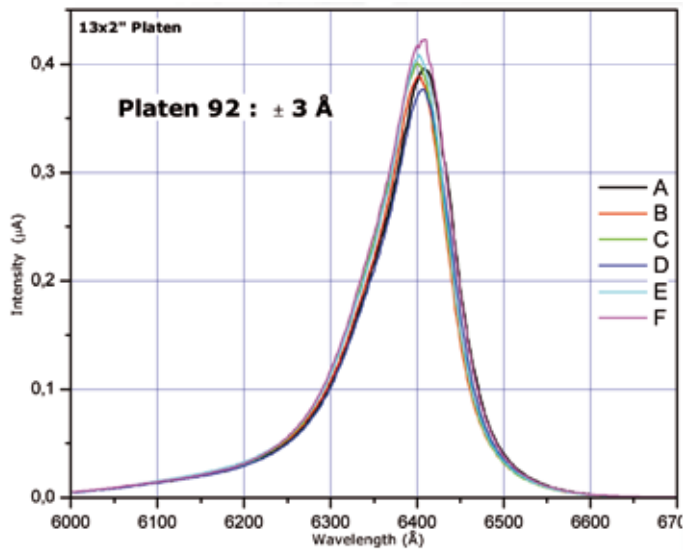
The AlGaInP/InGaP multi-quantum wells were grown on 2", GaAs(Si) substrates.

Based on photoluminescence measurements over the entire 13x2" platen, the structure demonstrates :

An excellent wavelength uniformity,

$\Delta\lambda$ = An excellent wavelength uniformity,

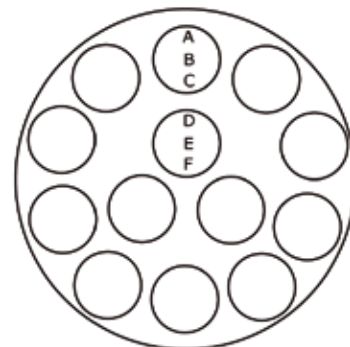
$\Delta\lambda = \pm 0.06\%$, showing that S150 DZ 700 effusion cells exhibit excellent uniformity fluxes over the entire platen.



PLATEN POSITION	WAVELENGTH (Å)
15	6404
32.5	6402
47	6402
70	6408
88	6402
102	6406

Distance from center to edge

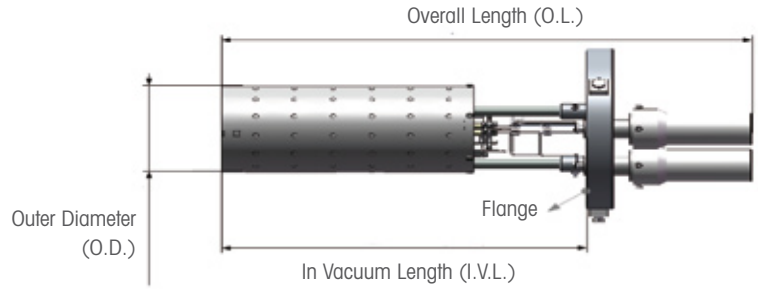
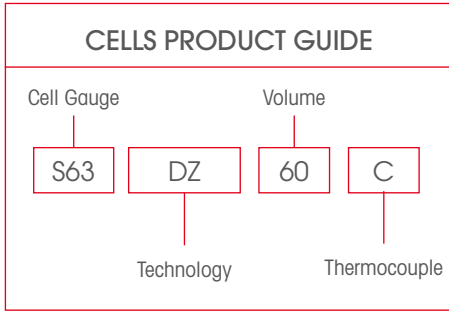
Ga _{0.515} In _{0.485} P	
(Al _{0.2} Ga _{0.3}) _{0.515} In _{0.485} P	Q.0.7
Q.0.5 → Q.0.7 gradual layer	
AlGaInP	Q.0.5
AlGaInP	Barrier
GaInP	Strained QW
AlGaInP	Barrier
GaInP	Strained QW
AlGaInP	Barrier
GaInP	Strained QW
AlGaInP	Barrier
GaInP	Strained QW
AlGaInP	Q.0.5
Q.0.7 → Q.0.5 gradual layer	
(Al _{0.2} Ga _{0.3}) _{0.515} In _{0.485} P	Q.0.7
GaAs	
GaAs(Si)	



13x2" platen

ORDERING INFORMATION

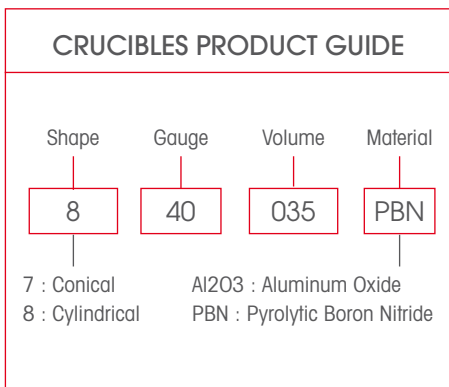
CELL



CELL MODEL	P.N.	H2O	FLANGE	CONNECT.	I.V.L.	O.D.	SYSTEM	FORMER NAME
S 40 DZ 35 C*	R240 732 1	-	CF40	Sock-Ø5,0	Contact Riber		R32/C12	ABN 135 DF
S 63 DZ 80 C VG	R241 376 4	Yes	CF63	SPC-2			V80	VG DZ-25/40
S 63 DZ 60/80 C*	R240 749 7	-	CF63	Sock-Ø5,0			C21	ABN 60/80 DF
S 80 DZ 150 C*	R240 732 8	-	CF100	WTL-Ø6			Epineat	ABN 150 DF
S 80 DZ 150 C	R241 274 1	-	CF125	WTL-Ø6			MBE412	ABN 150 DF
S 100 DZ 200 C	R235 124 4	Yes	CF100	SPC-2			V100	VG DZ 200
S 100 DZ 300 C	R241 265 5	-	CF125	WTL-Ø6			MBE412	ABN 300 DF
S 150 DZ 700 C	R240 722 6	-	CF150	WTL-Ø6			R49	ABN 700 DF
S 200 DZ 1700 C	R240 774 6	-	CF200	WTL-Ø6			R6000	ABN 1700 DF
S 250 DZ 3700 C	R241 052 5	-	CF250	WTL-Ø6			R7000	ABN 3700 DF

Please contact RIBER for other IVL or K type Cells (*)

CRUCIBLES



CELL MODEL	VOL.	CRUCIBLE	P.N.
S 40 DZ	035	8 40 035 pBN	R302 750 0
S 40 DZ	035	8 40 35 AL2O	R304 797 1
S 40 DZ	022	7 40 22 pBN	R305 919 3
S 63 DZ	25	7 63 25 pBN	R330 107 4
S 63 DZ	40	7 63 40 pBN	R330 107 6
S 63 DZ	60	7 63 60 pBN	R725 100 2
S 63 DZ	80	7 63 80 pBN	R305 263 3
S 63 DZ	80	7 63 080 pBN	R306 337 4
S 80 DZ	150	7 80 150 pBN	R330 165 9
S 100 DZ	200	7 100 200 pBN	R330 108 8
S 100 DZ	200	7 100 200 pBN-DW	R330 108 9
S 100 DZ	300	7 100 300 pBN	R330 311 0
S 150 DZ	700	7 150 700 pBN	R306 056 5
S 200 DZ	1700	7 200 1700 pBN	R305 333 5
S 250 DZ	3700	7 250 3700 pBN	R306 045 2

SOURCE SELECTION GUIDE

SYSTEMS	SOURCE MODEL	S40	S63	S80	S100	S150	S200	S250
DZ SERIES								
RIBER	MBE32	RECOMMENDED						
	Compact 12	RECOMMENDED						
	Compact 21	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED	RECOMMENDED				
	EPINEAT	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED				
	MBE412 (4"/6")	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED			
	MBE49	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED		
	MBE6000	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED	
	MBE7000	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED
VEECO /VARIAN	GEN II	RECOMMENDED						
	MOD GEN II	CONTACT RIBER FOR MORE DETAILS						
	GEN930	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED					
	GEN 20	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED					
	GEN200	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED			
	GEN2000	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS		RECOMMENDED	
VG	V80	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED	RECOMMENDED				
	V90	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED	RECOMMENDED				
	V100	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED			
	V150	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED	RECOMMENDED	
OTHER SYSTEMS		Riber sources are also available for use on systems from : Eiko, Anelva, Ulvac, SVTA and DCA, as well as custom chambers. Contact Riber for details.						

RECOMMENDED
 CONTACT RIBER FOR MORE DETAILS
 INAPPROPRIATE

TECHNOLOGICAL LEADERSHIP

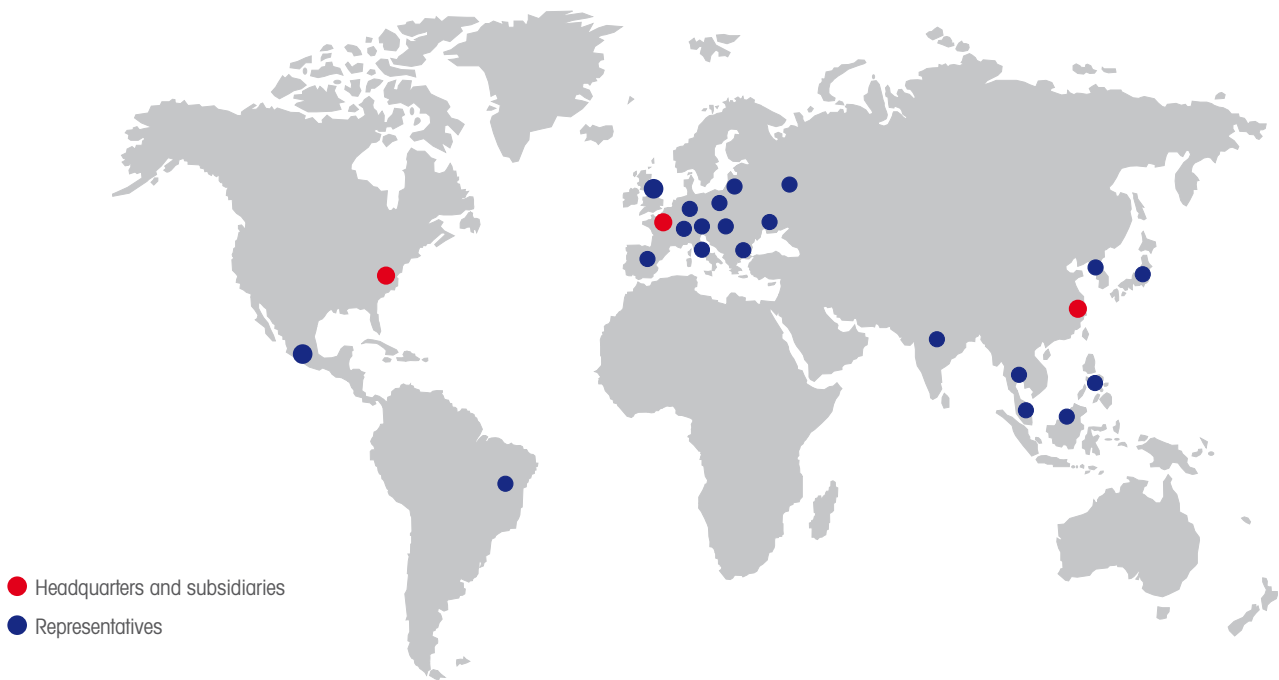
Riber is the world leading supplier of MBE processing equipment and related services.

In total, 850 of our MBE systems have been installed with at least one system in each of the 35 countries with which MBE is involved. This represents 75% of the global market.

Capitalizing on more than 30 years of experience, the company's core philosophy is to design systems in close association with customers. Riber has invented and designed major features which are now found in all MBE systems.

Riber plays a key role in the development of MBE technology, providing customers with solutions from equipment to epitaxial growth.

WORLDWIDE PRESENCE



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