

Crucible Types

Crucibles are an integral part of all MBE effusion cells as well as industrial sources.



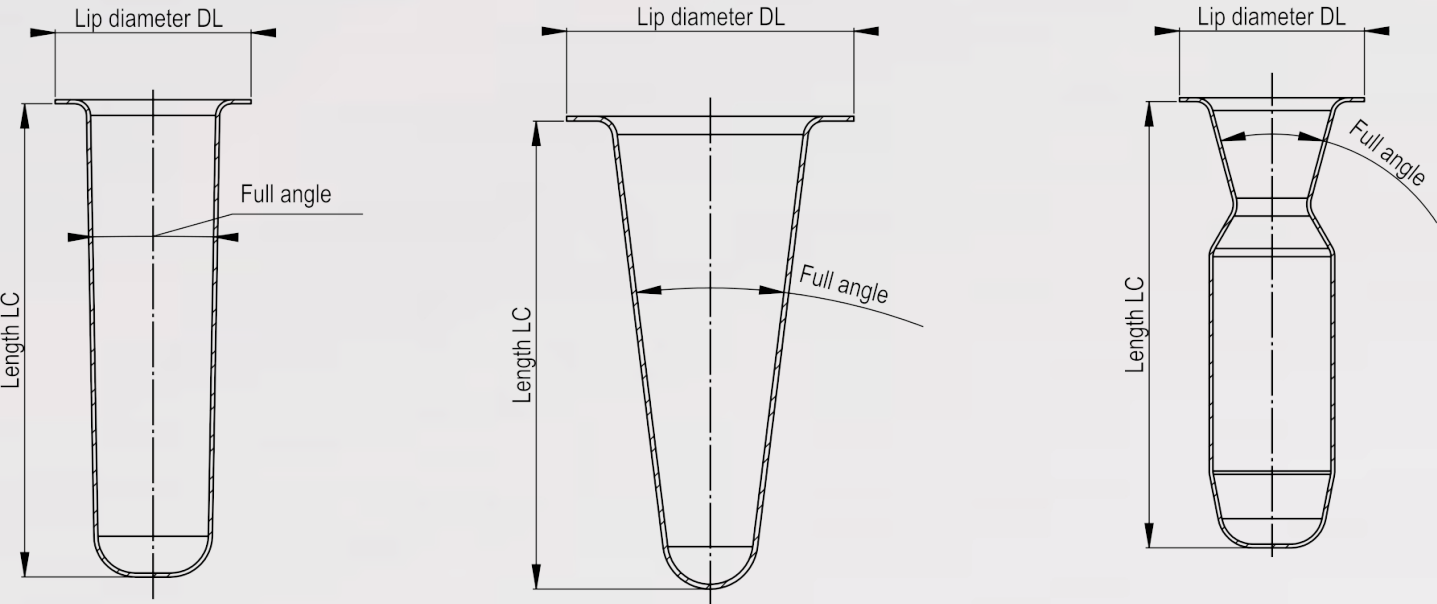
Introduction

Crucibles serve as material container for all MBE effusion cells and industrial sources. Materials used in MBE applications have different requirements concerning evaporation temperatures and chemistry. Therefore different suitable crucible materials can be applied. The shape of the crucibles influences the beam shape. The beam shape can additionally be adjusted using Beam shaping inserts (BSI) for cylindrical crucibles from Dr. Eberl MBE Komponenten in order to save material and improve beam uniformity.

Specifications

Crucibles are characterized by their loading volume. Crucibles from Dr. Eberl MBE-Komponenten are designed to match the evaporation temperature and the effusion cell geometry. The crucibles described in the following table are crucibles used in our MBE sources. For each crucible the respective part number, product code is indicated. The crucible product code specifies material, nominal capacity (in cm^3), lip diameter (in mm) and features. The nominal capacity is consistent with the capacity of the corresponding sources. The maximum dimensions of loading material chunks can be estimated based on the specified volume and the crucible length.

Product description



The crucible product code is composed as follows.

Product type	Nominal capacity [cm³]	Lip diameter LD[mm]	Material	Full angle taper	Features *
CRU	10	22	PBN	if >5°	D

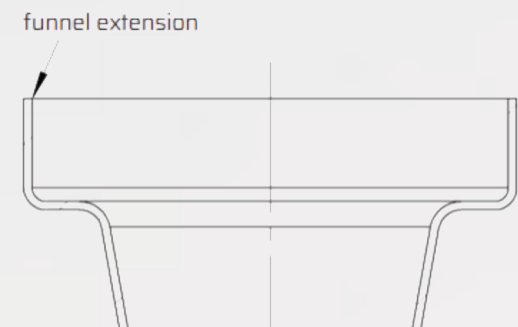
*omitted when not required
Product code: CRU 10-22-PBN-D
Product description: Crucible with 10 cm³ nominal charge, lip diameter 22mm, made from PBN, double wall

Available crucible materials

	Material	Max. temperature [°C]
PBN	pyrolytic boron nitride	1500
PG	pyrolytic graphite	2000
Al2O3	aluminium oxide	1600
Quartz	silicon dioxide	800
BeO	beryllium oxide	1750
Ti	titanium	800
W	tungsten	2000
Ta	tantalum	2000
Ir	iridium	2000
ST	stainless steel	300

*The maximum temperature permitted during outgassing/operation can be significantly lower as listed above because it depends on several interacting factors, e.g., thermocouple type, filament material, crucible material, evaporant and application. The restriction with the lowest value leads to the final maximum admissible temperature. Please always observe the maximum temperature values specified in the respective operating instructions.

Funnel extension



Abbreviations for features

- C - Conical shaped crucibles
- B - Bottleneck
- F - Funnel Extension
- D - Double wall
- T - Thread
- L - Liner (no lip, insert)
- E - Thin wall insert with hole
- N - Notch

Crucible list

Part number	Product code	Nominal capacity [cm³]	Lip diameter DL [mm]	Material	Length LC [mm]	Full angle	Bottleneck diameter (mm)
430-00-083	CRU 1-12-Al2O3	0.2	12	Al2O3	24	3	
415-00-084	CRU 1-12-PBN	0.2	12	PBN	25	3	
415-00-208	CRU 1-12-PBN-F	0.2	12	PBN	25	3	
420-00-046	CRU 1-12-PG	0.2	12	PG	25	3	
480-00-011	CRU 1-12-Quartz	0.2	12	Quartz	24	3	
430-00-080	CRU 1-14-Al2O3	0.6	14	Al2O3	25	3	
415-00-065	CRU 1-14-PBN	0.6	14	PBN	25	3	
415-00-167	CRU 1-14-PBN-F	0.6	14	PBN	25	3	
420-00-038	CRU 1-14-PG	0.6	14	PG	25	3	
480-00-014	CRU 1-14-Quartz	0.6	14	Quartz	25	3	
440-00-069	CRU 1-14-Ta	0.6	14	Ta	25	3	
455-00-061	CRU 1-14-W	0.6	14	W	25	3	
460-00-029	CRU 1-20-Ti-C24	1	20	Ti	39	24	
430-00-119	CRU 1-20-Al2O3	1,5	20	Al2O3	52	3	
435-00-026	CRU 1-20-BeO	1,5	20	BeO	52	3	
415-00-148	CRU 1-20-PBN	1,5	20	PBN	52	3	
420-00-076	CRU 1-20-PG	1,5	20	PG	52	3	
440-00-043	CRU 1-20-Ta	1,5	20	Ta	53	5	
455-00-040	CRU 1-20-W	1,5	20	W	53	0	
430-00-044	CRU 2-16-Al2O3	2	16	Al2O3	62	3	
415-00-030	CRU 2-16-PBN	2	16	PBN	65	3	
415-00-040	CRU 2-22-PBN-C16	2	22	PBN	30	16	
415-00-056	CRU 2-25-PBN	2	25	PBN	49	0	
415-00-221	CRU 2-16-PBN-FD	2	16	PBN	65	3	
415-00-338	CRU 2-22-PBN-C16F26D	2	22	PBN	30	16	
420-00-045	CRU 2-16-PG	2	16	PG	65	3	
480-00-006	CRU 2-25-Quartz	2	25	Quartz	49	0	
480-00-008	CRU 2-16-Quartz	2	16	Quartz	65	3	
420-00-048	CRU 3-30-PG	3	30	PG	25	0	
420-00-097	CRU 3-30-PG-C28	3	30	PG	25	28	
415-00-233	CRU 4-27-PBN-C20	4	27	PBN	30	20	
420-00-100	CRU 4-30-PG-C20	4	30	PG	25	20	
430-00-036	CRU 5-30-Al2O3	5	30	Al2O3	15	0	
415-00-009	CRU 5-16-PBN	5	16	PBN	104	2	
415-00-013	CRU 5-29-PBN-C20	5	29	PBN	41	20	
415-00-020	CRU 5-27-PBN-C20	5	27	PBN	40	20	
420-00-003	CRU 5-30-PG	5	30	PG	16	0	
440-00-060	CRU 5-30-Ta	5	30	Ta	16	0	
455-00-030	CRU 5-30-W	5	30	W	16	0	
430-00-154	CRU 6-22-Al2O3	6	22	Al2O3	63	2	
415-00-182	CRU 6-22-PBN	6	22	PBN	65	2	
415-00-206	CRU 6-22-PBN-D	6	22	PBN	65	2	
415-00-140	CRU 8-27-PBN-C9	8	27	PBN	60	9	
415-00-186	CRU 8-27-PBN-B20(7)	8	27	PBN	60	0	7
440-00-327	CRU 8-27-Ta	8	27	Ta	60	3	
415-00-223	CRU 9-37-PBN-C20FD	9	37	PBN	41	20	

Part number	Product code	Nominal capacity [cm ³]	Lip diameter DL [mm]	Material	Length LC [mm]	Full angle	Bottleneck diameter (mm)
455-00-054	CRU 9-32-W	9	32	W	86	2	
455-00-069	CRU 9-22-W	9	22	W	105	2	
430-00-002	CRU 10-32-Al2O3	10	32	Al2O3	85	2	
430-00-042	CRU 10-22-Al2O3	10	22	Al2O3	103	2	
435-00-002	CRU 10-32-BeO	10	32	BeO	85	2	
415-00-024	CRU 10-32-PBN	10	32	PBN	85	2	
420-00-032	CRU 10-32-PG	10	32	PG	85	2	
440-00-024	CRU 10-32-Ta	10	32	Ta	86	2	
455-00-006	CRU 10-32-W	10	32	W	86	2	
435-00-007	CRU 10-22-BeO	10	22	BeO	105	2	
456-00-001	CRU 10-18-Ir	10	18	Ir	77	0	
415-00-006	CRU 10-22-PBN	10	22	PBN	105	2	
415-00-029	CRU 10-22-PBN-D	10	22	PBN	105	2	
415-00-074	CRU 10-35-PBN	10	35	PBN	50	0	
415-00-188	CRU 10-22-PBN-F25,5	10	22	PBN	105	2	
415-00-224	CRU 10-22-PBN-F26D	10	22	PBN	105	2	
420-00-099	CRU 10-37-PG-C20	10	37	PG	46	20	
480-00-001	CRU 10-22-Quartz	10	22	Quartz	106	0	
480-00-003	CRU 10-35-Quartz	10	35	Quartz	50	1	
480-00-076	CRU 10-22-Quartz-B30(5)	10	22	Quartz	105	0	5
470-00-561	CRU 10-35-ST	10	35	ST	50	0	
14909	CRU 10-22-Ta-T	10	22	Ta	106	0	
440-00-033	CRU 10-18-Ta	10	18	Ta	77	2	
440-00-038	CRU 10-22-Ta	10	22	Ta	105	2	
460-00-026	CRU 10-35-Ti-N	10	35	Ti	50	0	
455-00-021	CRU 10-18-W	10	18	W	77	2	
455-00-046	CRU 10-22-W	10	22	W	105	2	
430-00-172	CRU 11-37-Al2O3-C24	11	37	Al2O3	41	24	
480-00-074	CRU 11-37-Quartz-C24	11	37	Quartz	41	24	
460-00-031	CRU 11-37-Ti-C24	11	37	Ti	42	24	
430-00-065	CRU 12-37-Al2O3-C20	12	37	Al2O3	60	20	
415-00-057	CRU 12-36-PBN-C20	12	36	PBN	60	20	
415-00-112	CRU 12-37-PBN-C20	12	37	PBN	60	20	
415-00-014	CRU 16-37-PBN-C10	16	37	PBN	81	10	
415-00-023	CRU 16-37-PBN-C10D	16	37	PBN	81	10	
415-00-209	CRU 20-45-PBN	20	45	PBN	55	2	
415-00-218	CRU 23-51-PBN-C28	23	51	PBN	59	28	
415-00-127	CRU 24-41-PBN-C8	24	41	PBN	114	8	
435-00-006	CRU 25-50-BeO	25	50	BeO	22	4	
415-00-015	CRU 25-50-PBN	25	50	PBN	22	2	
415-00-035	CRU 25-51-PBN-C27	25	51	PBN	54	27	
430-00-057	CRU 25-33-Al2O3	25	33	Al2O3	91	3	
435-00-014	CRU 25-33-BeO	25	33	BeO	86	3	
415-00-041	CRU 25-33-PBN	25	33	PBN	89	2	
415-00-147	CRU 25-54-PBN-C14	25	54	PBN	50	14	
420-00-014	CRU 25-50-PG	25	50	PG	22	2	
440-00-046	CRU 25-33-Ta	25	33	Ta	89	2	
455-00-028	CRU 25-33-W	25	33	W	89	2	

Part number	Product code	Nominal capacity [cm ³]	Lip diameter DL [mm]	Material	Length LC [mm]	Full angle	Bottleneck diameter (mm)
430-00-035	CRU 35-54-Al2O3-C14	35	54	Al2O3	86	14	
430-00-108	CRU 35-37-Al2O3	35	37	Al2O3	88	2	
435-00-001	CRU 35-54-BeO-C14	35	54	BeO	86	14	
435-00-009	CRU 35-37-BeO	35	37	BeO	89	2	
435-00-029	CRU 35-37-BeO	35	37	BeO	89	2	
415-00-007	CRU 35-34-PBN	35	34	PBN	140	2	
415-00-034	CRU 35-37-PBN	35	37	PBN	88	2	
415-00-067	CRU 35-37-PBN-D	35	37	PBN	88	2	
415-00-194	CRU 35-37-PBN-B(8,5)FD	35	37	PBN	95	0	8,5
415-00-201	CRU 35-37-PBN-C20F50	35	37	PBN	88	20	
415-00-202	CRU 35-37-PBN-C20F50D	35	37	PBN	88	20	
415-00-226	CRU 35-37-PBN-FD	35	37	PBN	88	2	
415-00-227	CRU 35-37-PBN-C20F44D	35	37	PBN	88	20	
415-00-232	CRU 35-34-PBN-FD	35	34	PBN	140	2	
415-00-236	CRU 35-37-PBN-B20(8,5)	35	37	PBN	95	0	8,5
420-00-016	CRU 35-34-PG	35	34	PG	140	2	
420-00-044	CRU 35-37-PG	35	37	PG	88	2	
420-00-055	CRU 35-54-PG-C14	35	54	PG	88	14	
480-00-002	CRU 35-34-Quartz	35	34	Quartz	140	2	
480-00-005	CRU 35-37-Quartz	35	37	Quartz	90	0	
440-00-044	CRU 35-37-Ta	35	37	Ta	89	2	
460-00-014	CRU 35-37-Ti	35	37	Ti	89	2	
455-00-038	CRU 35-37-W	35	37	W	89	2	
415-00-036	CRU 40-51-PBN-C12	40	51	PBN	109	12	
415-00-042	CRU 40-36-PBN	40	36	PBN	141	2	
415-00-077	CRU 40-36-PBN-D	40	36	PBN	141	2	
415-00-135	CRU 40-51-PBN-C12D	40	51	PBN	109	12	
435-00-031	CRU 46-54-BeO	46	54	BeO	60	2	
415-00-334	CRU 46-54-PBN	46	54	PBN	60	2	
435-00-021	CRU 60-54-BeO-C14	60	54	BeO	107	14	
415-00-005	CRU 60-54-PBN-C14	60	54	PBN	107	14	
415-00-032	CRU 60-37-PBN	60	37	PBN	148	1	
415-00-055	CRU 60-54-PBN-C14D	60	54	PBN	107	14	
415-00-092	CRU 60-37-PBN-D	60	37	PBN	148	1	
415-00-235	CRU 60-37-PBN-B20(8,5)	60	37	PBN	148	0	8,5
415-00-332	CRU 60-58-PBN-C14D	60	58	PBN	107	14	
415-00-337	CRU 60-51-PBN-C9	60	51	PBN	109	9	
480-00-031	CRU 60-37-Quartz	60	37	Quartz	147	1	
440-00-080	CRU 60-37-Ta	60	37	Ta	148	1	
415-00-043	CRU 70-60-PBN-C18	70	60	PBN	115	18	
415-00-330	CRU 70-54-PBN	70	54	PBN	65	0	
415-00-046	CRU 75-77-PBN-C26	75	77	PBN	68	26	
415-00-021	CRU 80-54-PBN-C8	80	54	PBN	107	8	
415-00-086	CRU 80-54-PBN-C8D	80	54	PBN	107	8	
415-00-212	CRU 80-60-PBN-C16FD	80	60	PBN	95	16	
415-00-333	CRU 80-54-PBN-C8F58D	80	54	PBN	107	8	
430-00-179	CRU 82-71-Al2O3-C14	82	71	Al2O3	69	14	
415-00-170	CRU 82-71-PBN-C14	82	71	PBN	70	14	

Part number	Product code	Nominal capacity [cm ³]	Lip diameter DL [mm]	Material	Length LC [mm]	Full angle	Bottleneck diameter (mm)
455-00-067	CRU 82-58-W-C14	82	58	W	70	14	
430-00-060	CRU 85-41-Al203	85	41	Al203	135	1	
415-00-018	CRU 85-41-PBN	85	41	PBN	140	1	
415-00-185	CRU 100-78-PBN-C14D	100	78	PBN	95	14	
415-00-011	CRU 125-54-PBN	125	54	PBN	108	2	
415-00-075	CRU 130-54-PBN	130	54	PBN	118	0	
415-00-196	CRU 130-54-PBN-B20(22)	130	54	PBN	118	0	22
415-00-044	CRU 150-60-PBN	150	60	PBN	167	2	
415-00-106	CRU 150-77-PBN-C12D	150	77	PBN	140	12	
415-00-045	CRU 155-60-PBN	155	60	PBN	115	2	
415-00-217	CRU 155-60-PBN-B(16)FD	155	60	PBN	167	0	16
415-00-100	CRU 160-60-PBN	160	60	PBN	167	0	
415-00-159	CRU 160-98-PBN-C30	160	98	PBN	39	30	
415-00-126	CRU 165-84-PBN-C20	165	84	PBN	88	20	
415-00-211	CRU 175-60-PBN	175	60	PBN	155	1	
415-00-220	CRU 175-60-PBN-B(16)FD	175	60	PBN	155	0	16
470-00-969	CRU 180-60-ST	180	60	ST	100	0	
415-00-008	CRU 200-102-PBN-C21	200	102	PBN	35	21	
415-00-012	CRU 200-58-PBN	200	58	PBN	152	1	
415-00-038	CRU 200-84-PBN-C23	200	84	PBN	153	23	
420-00-017	CRU 200-102-PG-C21	200	102	PG	35	21	
415-00-237	CRU 205-98-PBN-C26	205	98	PBN	100	26	
430-00-004	CRU 230-98-Al203-C17	230	98	Al203	142	17	
415-00-342	CRU 325-66-PBN-B(24)F68D	325	66	PBN	180	0	24
415-00-047	CRU 420-84-PBN	420	84	PBN	173	1	
415-00-210	CRU 500-90-PBN	500	90	PBN	63	1	
430-00-176	CRU 800-86-Al203	800	86	Al203	290	1	
415-00-219	CRU 800-104-PBN	800	104	PBN	190	1	
415-00-345	CRU 800-104-PBN-B(34)FD	800	104	PBN	190		34

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