

Phoenix crucible series

- Principal use
- Crucible furnace
 - Treatment ladle
 - Transfer furnace
 - Induction Furnace

PRECAUTIONS FOR CRUCIBLE USAGE

<p>1</p> <p>Be careful when storing and transporting a crucible.</p>	
<p>2</p> <p>Select a crucible stand that meets the bottom diameter of a crucible and place it in the correct position.</p>	
<p>3</p> <p>Charge ingots carefully so as not to over-stuff the crucible.</p>	
<p>4</p> <p>Do not expose the crucible to the burner's flame.</p>	<p>Correct use of an induction furnace</p> <ol style="list-style-type: none"> 1. Place the crucible set in the center. 2. Fill up the back sand sufficiently. 3. Gradually heat it up.
<p>5</p> <p>Minimize the use of flux as much as possible.</p>	<p>Putting the furnace cover</p> <p>Allow a clearance (space) between the crucible and the furnace cover.</p>
<p>6</p> <p>Pay attention to the crucible while working. Attachment of remaining molten metal and oxides will cause a crucible to break.</p>	

*Before the initial melting operation, dry the Crucible and gradually heat it up to about 300 °C over a three hour period. Then, the Crucible should be heated-up as rapidly as possible to the melting temperature to avoid oxidization of the graphite in the Crucible which occurs at the temperature of 300 - 700°C.

Our special technic developed since 1885
Realize stable and longer crucible life

Phoenix crucible series
(Carbon bonded silicon carbide graphite crucible)

- Technic cultivated long time research and development
- Plentiful product lineup to fit various qualification
- Various product lines to meet customer's demands



Nippon Crucible was established in 1885 as a first graphite crucible manufacturer in Japan. Since then we have earned good reputation by many customers. The operating conditions are recently getting more severe and higher demands for high quality products by customers. So longer and stable crucible life is required. In order to comply with these demands, we introduced new uniformed high pressure molding (CIP) and strengthened quality assurance. As a result, we succeeded to develop "Phoenix Crucibles", which have improved its quality dramatically and achieved improved and stable crucible life.

Characteristic

- 1. Thermal spalling resistant**
Higher strength to rapid heating and/or cooling and high thermal spalling resistance
- 2. Corrosion resistance**
Uniform and dense structure and higher resistance to flux penetration
- 3. Impact resistance**
Higher strength at room and higher temperature. So customers can handle and use them without anxiety
- 4. Oxidation resistance**
Higher oxidation resistance by the improvement and development of quality and special glazes, which leads longer crucible life
- 5. High thermal conductivity**
Better thermal conductivity because of higher fixed carbon rate. Short melting time is required, which can help to save fuel cost
- 6. No metal contamination**
No metal contamination during melting because carefully selected materials are used
- 7. Stable quality**
Maintain stable quality with new uniformed high pressure molding (CIP) and strengthened quality assurance

Chemical compositions & Physical properties

Main chemical composition (%)	F.C.	30 - 60
	SiC	30 - 50
Apparent porosity (%)		18 - 24
Bulk density		1.80 - 2.10
Thermal conductivity (W/mk)		19.8 - 52.3
Electric resistance (X ^Ω cm)		1.5 - 6.0
Bending strength (MPa)	at R.T.	6.9 - 17.7
	at 1200°C	4.9 - 13.2
Oxidation reduced rate (%)		<1.0(at.850°C×24hrs)
Thermal expansion rate (%)	at 800°C	0.25 - 0.35

*Figures listed here are typical and not guaranteed.

For Electric induction furnace

Shape	Outer diameter (mm)	Height (mm)	Bottom diameter (mm)	Brim full water (liter)
EK 105 HP	300	350	300	18
CD 60 HP	229	365	160	10
CD 100 HP	269	515	194	17
CD 200 HP	340	600	242	32
CD 300 HP	376	720	270	48
DK 280 HP	389	570	380	42
DK 300 HP	389	600	380	45
DK 330 HP	389	650	380	50
D 310 HP	410	600	300	48
D 330 HP	410	650	300	53
D 400 HP	410	750	300	63
D 350T HP	445	540	435	50
D 450T HP	445	720	435	70
DN 510T HP	445	765	435	75
DN 550T HP	445	825	435	81
D 570T HP	445	855	435	82
DY 550T HP	457	850	435	90
DY 600T HP	457	950	435	102
DA 500T HP	480	700	470	78
D 600T HP	512	875	500	118
D 600LT HP	512	780	500	104
DT 550T HP	510	800	495	99
DT 600T HP	510	880	495	110
DT 700T HP	510	900	495	113
DT 750T HP	510	985	495	125
DT 900T HP	510	1150	495	149
DT 1300T HP	510	1450	495	193
D 550T HP	570	550	555	83
D 700T HP	570	680	555	108
D 900T HP	570	860	555	138
D 1000T HP	570	960	555	162
DA 800T HP	640	600	620	118
DA 900T HP	640	800	620	169

*DN1350T HP to DN1750T HP are designed for the furnace with electric heater.



For Electric furnace

Shape	Outer diameter (mm)	Height (mm)	Bottom diameter (mm)	Brim full water (liter)
D 1100T HP	640	850	620	181
D 1300T HP	640	990	620	214
D 1600T HP	640	1090	620	239
D 1800T HP	640	1150	620	254
D 2000T HP	640	1240	620	276
D 2300T HP	640	1500	620	341
DN 1350T HP	690	900	380	217
DN 1400T HP	690	940	380	228
DN 1500T HP	690	1000	380	245
DN 1650T HP	690	1200	380	301
DN 1750T HP	690	1320	380	335
D 2200T HP	745	1000	735	288
D 2800T HP	745	1300	735	385
D 3000T HP	745	1400	735	417
DT 2900T HP	790	1350	770	446
D 3300T HP	850	1300	840	532
D 3400T HP	850	1350	840	554
D 4000T HP	850	1500	840	621
D 3500T HP	1035	850	1025	534
D 4500T HP	1035	1050	1025	674
D 5000T HP	1035	1200	1025	781
DB 900T HP	570	860	560	127
DB 1000T HP	570	960	560	144
DB 1050T HP	560	1000	546	151
DK 1000T HP	570	960	545	137
DK 1050T HP	570	1000	545	144
DB 1300T HP	650	990	640	208
DB 1600T HP	650	1090	640	232
DB 1800T HP	650	1150	640	246
DB 1900T HP	650	1200	640	258
DB 2000T HP	650	1240	640	268
DB 3300T HP	850	1300	830	483
DB 3400T HP	850	1350	830	504
DB 4000T HP	850	1500	820	567
DB 4500T HP	930	1590	910	748

Basin type / POT type

Shape	Outer diameter (mm)	Height (mm)	Bottom diameter (mm)	Brim full water (mm)
HB 250 HP	525	350	270	40
HB 300 HP	525	395	270	47
HB 340 HP	525	447	270	55
HB 370 HP	525	485	270	62
HB 430 HP	525	545	270	72
HB 450 HP	525	595	270	80
HB 500 HP	525	645	270	88
NA 250 HP	527	355	273	36
NA 300 HP	527	405	273	44
NA 340 HP	527	455	273	52
NA 370 HP	527	505	273	60
NB 300 HP	550	400	300	41
NB 340 HP	550	450	300	49
NB 370 HP	550	500	300	58
NB 400 HP	550	550	300	67
NC 400 HP	577	450	291	68
NC 450 HP	577	500	291	79
NC 600 HP	577	600	291	99
L 450B HP	590	560	300	90
L 500B HP	590	635	300	104
L 550B HP	590	710	300	120
PG 450 HP	590	550	270	82
PG 500 HP	590	625	270	98
PG 550 HP	590	700	270	114
PG 600 HP	590	750	270	125
HA 450S HP	622	510	300	79
HA 500S HP	622	555	300	90
HA 600S HP	622	638	300	110
HA 700S HP	622	710	300	125
HA 780S HP	622	810	300	149
PF 500 HP	650	500	300	92
PF 600 HP	650	550	300	105
PF 700 HP	650	650	300	131
PB 450 HP	717	450	300	92
PB 480 HP	717	480	300	104
PB 550 HP	718	520	300	114
PB 620 HP	720	600	300	140
PB 750 HP	722	690	300	169
PB 800 HP	723	750	300	189
PB 850 HP	724	785	300	200
PB 950 HP	725	835	300	216
PC 700 HP	773	500	300	121
PC 850 HP	775	590	300	155
PC 1100 HP	775	750	300	215
PC 1330 HP	775	900	300	272
PC 1400 HP	775	950	300	291
PA 700 HP	842	530	300	139
PA 1000 HP	855	680	300	208
PA 1200 HP	855	740	300	237
PA 1300 HP	855	800	300	265
PA 1500 HP	855	845	300	286
PA 1600 HP	855	900	300	312
PA 1800 HP	855	970	300	345
PD 1900 HP	865	1130	300	420
PA 2250B HP	1002	800	410	360
PA 3300B HP	1020	1065	410	530
PA 3300V HP	1026	1075	410	586

Shape	Outer diameter (mm)	Height (mm)	Bottom diameter (mm)	Brim full water (mm)
PA 4300V HP	1026	1325	410	760
PE 1000 HP	834	680	300	226
PE 2300 HP	840	940	300	341
PE 2500 HP	846	1000	300	367
PE 2600 HP	847	1030	300	381
PE 2800 HP	848	1130	300	426
PE 3000 HP	850	1140	300	431
PE 3200 HP	850	1240	300	476
PE 3300 HP	850	1300	300	504
PL 1150 HP	726	700	726	193
PL 1350 HP	726	800	726	225
PL 1750 HP	835	750	520	270
PL 1850 HP	835	800	520	292
PL 2300 HP	835	940	520	355
PL 2500 HP	920	750	632	344
PL 2700 HP	920	800	632	370

*PE and PL shapes are for low pressure casting and used for iron ladle or electric furnace.



Basin type

POT type

Standard type

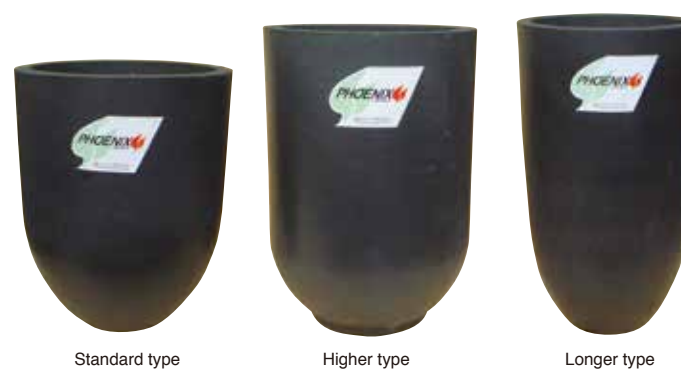
Shape	Outer diameter (mm)	Height (mm)	Bottom diameter (mm)	Brim full water (liter)
10 HP	147	167	98	1.5
15 HP	185	200	126	2.6
20 HP	185	250	126	3.7
30 HP	210	280	146	4.7
40 HP	241	310	170	7.4
50 HP	241	330	170	8.3
60 HP	275	370	180	11.2
70 HP	292	395	202	13.5
80 HP	296	390	210	13.6
90 HP	310	417	219	16.8
A100 HP	320	395	214	18
100 HP	335	395	210	18
120 HP	335	460	210	22
150 HP	373	470	254	26
170 HP	408	495	255	31
200 HP	410	595	255	40
210 HP	434	495	230	41
230 HP	434	535	230	43
250 HP	434	585	230	49
260 HP	434	600	230	52
300 HP	468	595	280	60
320 HP	468	615	280	62
300S HP	468	595	280	58
320S HP	468	615	280	60
300V HP	505	605	280	60
320V HP	505	625	280	62
400J HP	508	645	257	71
400JH HP	508	700	257	79
400 HP	527	705	273	95
480 HP	550	680	300	94
500 HP	550	710	300	99
500J HP	550	740	300	106
500JH HP	550	780	300	113
480S HP	560	680	300	96
500S HP	560	710	300	101
500JS HP	560	740	300	107
500JHS HP	560	780	300	114
620 HP	602	700	270	104
650 HP	602	710	270	106
680 HP	602	745	270	113
700 HP	602	800	270	125
740 HP	620	770	300	140
750 HP	602	835	270	132
780 HP	602	910	270	148
900 HP	620	900	300	170
1000 HP	620	930	300	177
1200 HP	635	1010	366	179
1400 HP	635	1140	366	211
1600 HP	635	1235	366	234
1700L HP	680	1220	390	260
1700 HP	680	1350	390	295

Longer type

Shape	Outer diameter (mm)	Height (mm)	Bottom diameter (mm)	Brim full water (liter)
N 100 HP	296	450	210	15
N 130 HP	320	540	214	26
N 150 HP	335	540	210	27
N 200 HP	373	600	254	35
N 250 HP	410	615	255	43
N 300 HP	410	690	255	51
N 280 HP	434	635	230	53
GN 300 HP	434	690	230	59
N 330 HP	434	715	230	61
GN 350 HP	434	795	230	70
N 350 HP	468	645	280	65
N 380 HP	468	690	280	71
N 350S HP	468	645	280	64
N 380S HP	468	690	280	70
N 350V HP	505	655	280	66
N 380V HP	505	700	280	72
N 550 HP	550	765	300	110
N 600 HP	550	795	300	115
N 620 HP	550	810	300	118
N 550S HP	560	765	300	111
N 600S HP	560	795	300	117
N 620S HP	560	810	300	119

Higher type

Shape	Outer diameter (mm)	Height (mm)	Bottom diameter (mm)	Brim full water (liter)
T 190A HP	325	685	210	36
T 190 HP	335	685	210	36
T 150 HP	373	510	254	28
T 170 HP	373	540	254	30
T 250 HP	373	735	254	45
T 350 HP	410	840	255	65
T 410 HP	468	745	280	78
T 440 HP	468	790	280	83
T 410S HP	468	745	280	76
T 440S HP	468	790	280	82
T 410V HP	505	755	280	79
T 440V HP	505	800	280	85



Standard type

Higher type

Longer type

With spout type

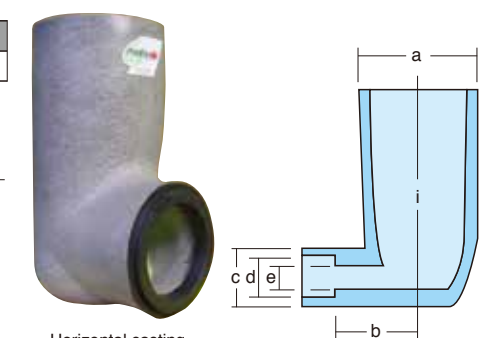
Shape	Outer diameter (mm)	Height (mm)	Bottom diameter (mm)	Length (mm)	Brim full water (liter)
SPPL 50 HP	222	384	138	135	7
SPPL 100 HP	288	450	210	122	11
SPPL 150 HP	302	535	208	204	20
SP 150 HP	310	510	208	195	16
SP 220 HP	360	540	265	178	26
SP 240 HP	378	605	226	170	34
SP 330 HP	403	660	280	165	43
SP 380 HP	440	640	250	145	50
SP 425 HP	455	750	280	150	62
SP 480 HP	480	790	280	138	80
SP 400 HP	500	650	300	138	68
SP 520 HP	540	730	270	160	87
SP 570 HP	543	795	300	140	94
SP 800 HP	602	910	300	200	142
SPPC 1380 HP	775	900	300	225	246
SPPA 1850 HP	860	980	300	225	319



With spout type

Horizontal casting

Shape	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	h (mm)
HC1100 HP	450	365	430	300	260	930



Horizontal casting

Ladle bowls

Shape	Outer diameter (mm)	Height (mm)	Brim full water (liter)
Ladle bowls 6HP	160	110	1
Ladle bowls 8HP	175	110	1.2
Ladle bowls 10HP	185	115	1.4



Ladle bowls

Runner brick

Standard bricks

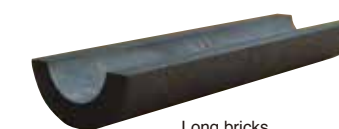
Shape	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)
Runner45 HP	150	130	112	80	62	460
Runner60 HP	190	180	120	100	70	450
Runner80 HP	230	200	130	155	85	500
Runner85 HP	150	130	110	80	65	700



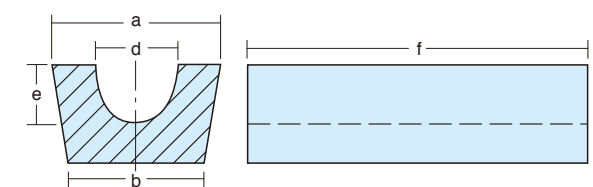
Standard bricks

Long bricks

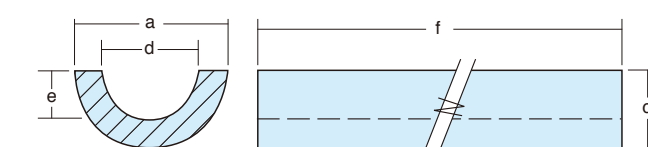
Shape	a (mm)	c (mm)	d (mm)	e (mm)	f (mm)
TA 90 HP	120	56	60	26	1200
TA 120 HP	150	71	95	42	1200
TA 200 HP	200	96	150	71	1200



Long bricks



Standard bricks



Long bricks