



PROFESSIONAL SUPPLIER OF GRAPHITE CRUCIBLE



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ZIBO SHENG KAI NEW MATERIALS CO., LTD.

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ABOUT US

Zibo Sheng Kai New Materials Co., LTD. is in Zibo City Shandong Province of China. Zibo Sheng Kai specializes in the manufacture of crucibles for non-ferrous metal smelting, and refractory products for continuous casting, it has a registered capital of 1million RMB, Zibo Shengkai has two brands, "Mars" and "SK", respectively for Chinese and overseas markets. Zibo Sheng Kai is one of the largest crucible manufacturers in China, and it uses isostatic pressing technology to produce silicon carbide graphite crucibles and clay graphite crucibles. With many years of research and field tests, the technical team of Zibo Sheng Kai has made significant efforts to solve various technical problems and developed silicon carbide graphite crucibles and clay graphite crucibles which have characteristics of high oxidation resistance, high thermal conductivity, long service life, and low energy consumption, increasing production efficiency and significantly reducing production costs for non-ferrous metal smelting companies.

Product Characteristics



Higher thermal conduction

Silicon carbide graphite crucibles use high thermal conductivity raw materials such as graphite, which shortens the melting time and saves energy; in addition, higher thermal conductivity materials are used, with dense structures, low apparent porosity, and higher thermal conductivity.



Excellent thermal shock resistance

Silicon carbide graphite crucibles have strong heat-resistant impact functions, and they are not easy to break under sharp heating and cooling. The heat shock strength is high, so any process can be carried out safely.



Anti-adhesion

Because graphite has the characteristics of not easily adhering to the molten metal, the penetration, and adhesion of the molten metal are less;



High strength

High-quality materials are selected, high-pressure isostatic pressing, fair combination, high strength, scientific product modeling and high pressure bearing capacity, and good crack resistance. So it maintains the original physical and chemical properties of natural graphite.



Higher temperature resistance

The using temperature range 400-1600°C.



Long life

Life is 3-5 times longer than the ordinary clay graphite crucible.



Corrosion resistance

Advanced materials and glaze recipes are effectively corrosion resistance.



Less metal pollution

Because of the choice of high-purity inorganic material, there are little or no harmful impurities in products in the metal melting process.



Less slag sticking

less slag hanging on the inner wall, greatly reducing the possibility of thermal resistance and expanding and cracking, and keeping the capacity maximized.

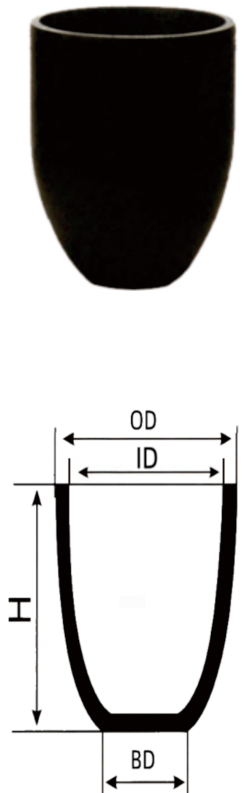


Antioxidant

Unique anti-oxidation design, and uses high-purity raw materials to protect graphite; high oxidation resistance is 5-10 times higher than the ordinary graphite crucible.

Graphite silicon carbide crucibles

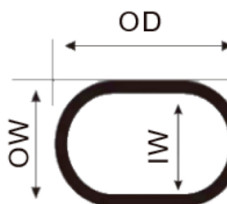
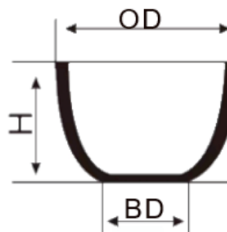
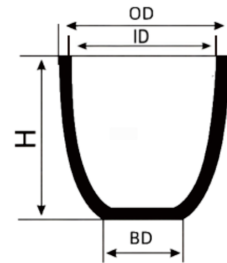
NO	Model	ODMM	HMM	IDMM	BDMM	Brim.Cap(L)
1	20	155	160	130	100	1.65
2	25	155	180	132	100	1.81
3	65	260	310	224	180	8.5
4	80	350	440	282	240	10.80
5	81	330	420	265	230	10.93
6	100	310	380	260	220	16.90
7	110	330	380	260	205	14.84
8	120	365	440	310	260	22.90
9	130	393	500	325	220	30.10
10	200	420	500	350	230	26.99
11	201	430	500	350	230	27.13
12	350	430	570	365	230	47.23
13	351	430	670	360	230	47.37
14	300	450	500	360	230	40.49
15	360	530	530	460	300	48.58
16	370	530	570	460	300	49.93
17	450	520	600	440	260	60.73
18	463	570	620	500	310	62.48
19	480	510	700	437	330	78.00
20	500	520	650	450	360	67.48
21	501	520	700	460	310	67.61
22	505	520	780	460	310	68.15
23	511	550	660	460	320	68.96
24	650	550	800	480	330	87.72
25	765	615	640	540	330	103.24
26	790	640	650	550	330	106.61
27	801	610	675	525	330	108.10
28	802	610	700	525	330	108.23
29	803	610	800	535	330	108.37
30	810	620	830	540	330	109.31
31	910	710	600	610	300	122.81
32	980	715	660	610	300	132.25
33	1000	715	700	610	300	134.95



Graphite silicon carbide crucibles

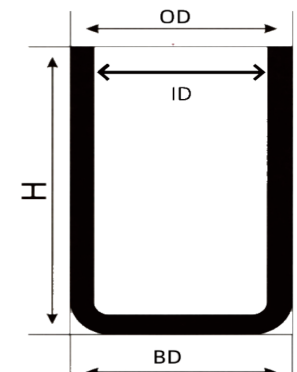
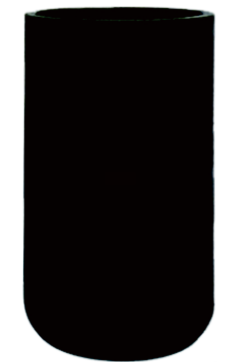
NO	Model	ODMM	HMM	IDMM	BDMM	Brim.Cap(L)
34	1050	715	720	620	300	141.70
35	1200	715	740	620	300	161.94
36	1510	740	900	640	360	203.78
37	1550	775	750	680	330	209.18
38	1560	775	750	684	320	210.53
39	1650	775	810	685	440	222.67
40	1800	780	900	690	440	242.91
41	1950	830	750	735	440	263.16
42	2000	875	800	775	440	269.91
43	2095	830	900	745	440	282.73
44	2250	880	880	780	440	303.64
45	2300	880	1000	790	440	310.39
46	2700	900	1150	800	440	364.37
47	3000	1030	830	920	500	404.86
48	3500	1035	950	925	500	472.33
49	4000	1035	1050	925	500	539.81
50	4500	1040	1200	927	500	607.29
51	5000	1040	1320	930	500	674.76

NO	Model	ODMM	HMM	IDMM	BDMM	Brim.Cap(L)
52	U700	785	520	505	420	94.47
53	U950	837	540	547	460	128.21
54	U1000	980	570	560	480	134.95
55	U1160	950	520	610	520	156.55
56	U1240	840	670	548	460	167.34
57	U1560	1080	500	580	515	210.53
58	U1580	842	780	548	463	213.23
59	U1720	975	640	735	640	232.12
60	U1820	975	620	735	640	266.00
61	U1900	853	920	562	472	252.50
62	U2000	1260	520	630	630	231.00
63	U2110	1080	700	595	495	235.00
64	U2110H550	1069	550	584	478	168.00
65	U2110H630	1074	630	589	486	205.00
66	U2110H650	1076	650	591	489	213.00
67	U2300	1280	535	680	580	310.39
68	U2340	1075	650	745	645	315.79
69	U2500	1280	650	680	580	337.38
70	U2690	1065	785	835	728	363.02
71	U2760	1290	690	690	580	372.47
72	U4750	1080	1250	850	740	641.03

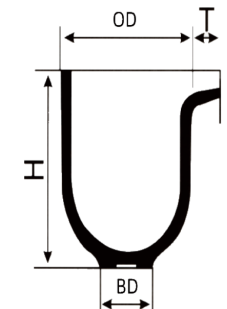
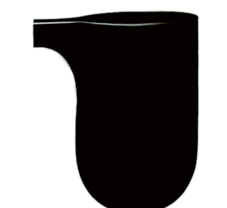


Graphite silicon carbide crucibles

NO	Model	ODMM	HMM	IDMM	BDMM	Brim.Cap(L)
73	IND205	330	505	280	320	27.67
74	IND285	410	650	340	392	38.46
75	IND300	400	600	325	390	40.49
76	IND480	480	620	400	480	64.78
77	IND540	420	810	340	410	72.87
78	IND760	530	800	415	530	102.56
79	IND700	520	710	425	520	94.47
80	IND905	650	650	565	650	122.13
81	IND906	625	650	535	625	122.27
82	IND980	615	1000	480	615	132.25
83	IND900	520	900	428	520	121.46
84	IND990	520	1100	430	520	133.60
85	IND1000	520	1200	430	520	134.95
86	IND1100	650	900	564	650	148.45
87	IND1200	630	900	530	630	161.94
88	IND1250	650	1100	565	650	168.69
89	IND1400	710	720	622	710	188.93
90	IND1850	710	900	625	710	249.66
91	IND4700	825	1620	702	820	602.00
92	IND5600	980	1700	860	965	755.74



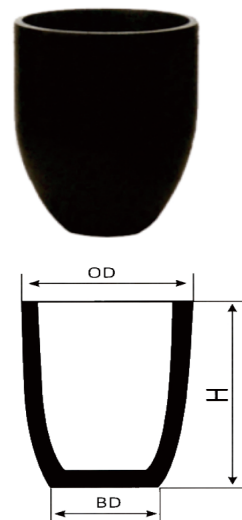
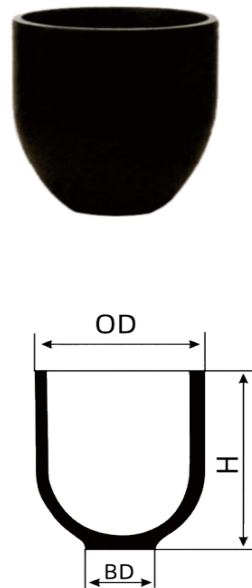
NO	Model	ODMM	HMM	IDMM	BDMM	Brim.Cap(L)
93	Z803	620	800	536	355	108.37
94	Z1800	780	900	680	440	242.91
95	Z2300	880	1000	780	330	310.39
96	Z2700	880	1175	780	360	364.37



Graphite Clay Crucibles

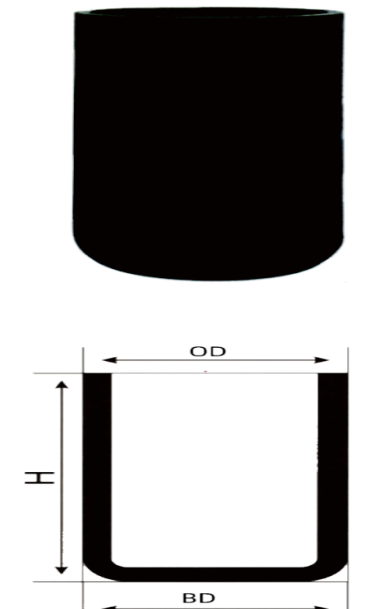
NO	Model	HMM	ODMM	BDMM	Brim.Cap(L)
CN210	570#	500	610	250	76.92
CN250	760#	630	615	250	102.56
CN300	802#	800	615	250	108.23
CN350	803#	900	615	250	108.37
CN400	950#	600	710	305	128.21
CN410	1250#	700	720	305	168.69
CN41 OH680	1200#	680	720	305	161.94
CN420H750	1400#	750	720	305	188.93
CN420H800	1450#	800	720	305	195.68
CN420	1460#	900	720	305	197.03
CN500	1550#	750	785	330	209.18
CN600	1800#	750	785	330	242.91
CN687H680	1900#	680	785	305	256.41
CN687H750	1950#	750	825	305	263.16
CN687	2100#	800	825	305	283.40
CN750	2500#	875	830	350	337.38
CNBOO	3000#	1000	880	350	404.86
CN900	3200#	1100	880	350	431.85
CN1100	3300#	1170	880	350	445.34

NO	Model	HMM	ODMM	BDMM	Brim.Cap(L)
CA300	300#	450	440	210	40.49
CA400	400#	600	500	300	53.98
CA500	500#	660	520	300	67.48
CA600	501#	700	520	300	67.61
CABOO	650#	800	560	320	87.72
CR351	351#	650	435	250	47.37

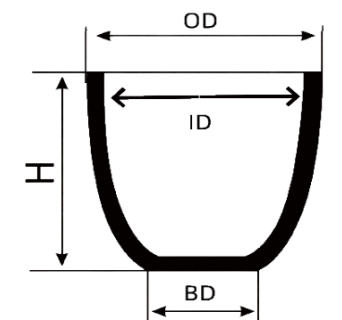


Graphite Clay Crucibles

NO	Model	HMM	ODMM	BDMM	Brim.Cap(L)
CC1300X935	C800#	1;300	650	620	107.96
CC1200×650	C700#	1200	650	620	94.47
CC650X640	C380#	650	640	620	51.28
CC800X530	C290#	800	530	530	39.14
CC510X530	C180#	510	530	320	24.29

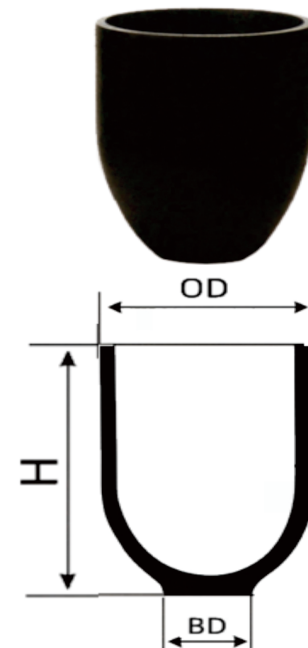


NO	Model	HMM	ODMM	BDMM	Brim.Cap(L)
CU210	570#	500	605	320	76.92
CU250	760#	630	610	320	102.56
CU300	802#	800	610	320	108.23
CU350	803#	900	610	320	108.37
cusoo	1600#	750	770	330	215.92
CU600	1800#	900	900	330	242.91

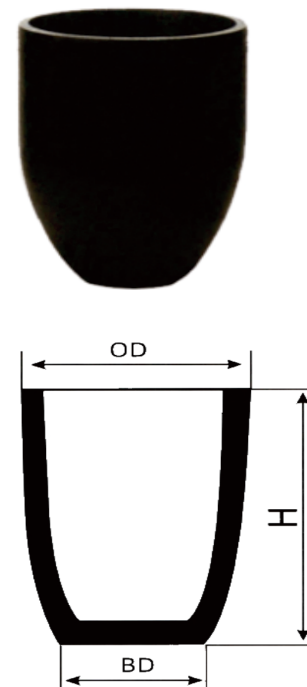


Graphite Clay Crucibles

NO	Model	HMM	ODMM	BDMM	Brim.Cap(L)
RN250	760#	630	615	250	102.56
RN500	1600#	750	785	330	215.92
RN430	1500#	900	725	320	202.43
RN420	1400#	800	725	320	188.93
RN410H740	1200#	740	720	320	161.94
RN410	1000#	700	715	320	134.95
RN400	910#	600	715	320	122.81

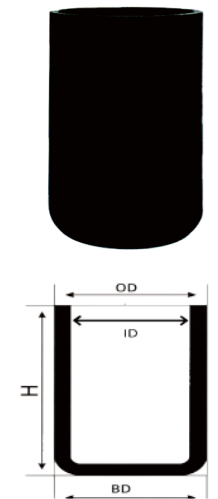


NO	Model	HMM	ODMM	BDMM	Brim.Cap(L)
RA100	100#	380	330	205	13.50
RA200H400	180#	400	400	230	24.29
RA200	200#	450	410	230	26.99
RA300	300#	450	450	230	40.49
RA350	349#	590	460	230	47.10
RA350H510	345#	510	460	230	46.56
RA400	400#	600	530	310	53.98
RA500	500#	660	530	310	67.48
RA600	501#	700	530	310	67.61
RA800	650#	800	570	330	87.72
RR351	351#	650	420	230	47.37



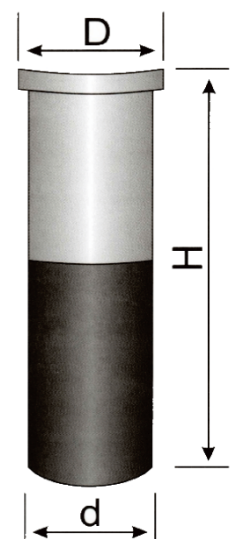
Special crucible for pre-carbonization of negative electrode materials

NO	MODEL	ODMM	HMM	IDMM	BDMM	Brim.Cap (L)
1	OD450	450	1200	400	450	150
2	OD500	500	1200	450	500	190
3	OD550	550	1200	500	550	235
4	OD600	600	1200	550	600	285

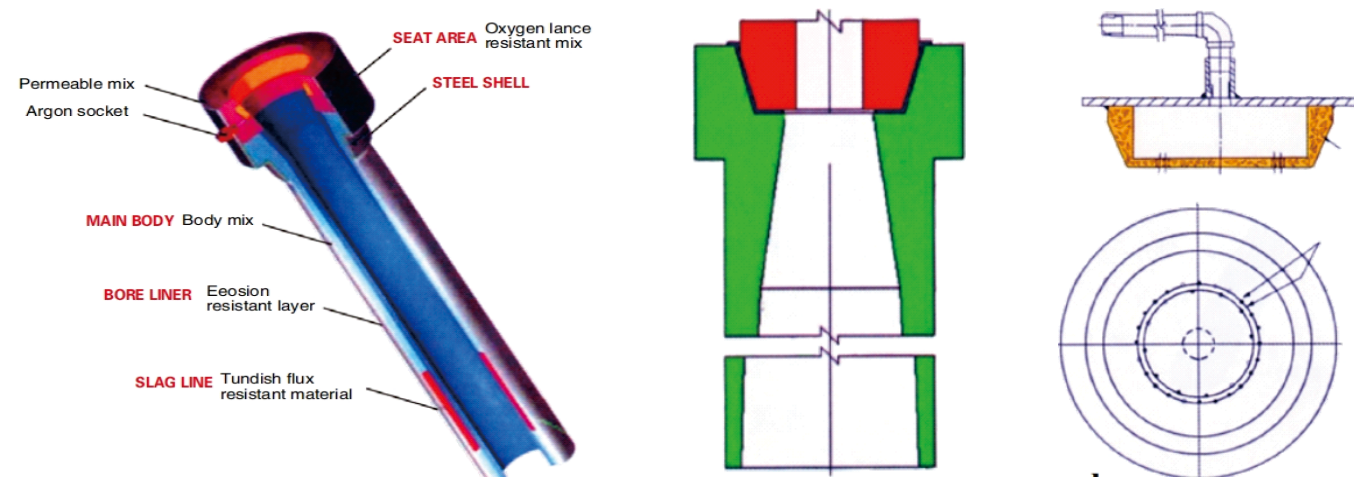


Radiant tube

NO	OD	H	ID
H850	153	855	90
H850B	233	855	160
H850C	253	855	160
H850D	273	855	200
H950	263	955	180
H950D	273	955	200
H1000	273	1005	200
H1030	273	1035	200

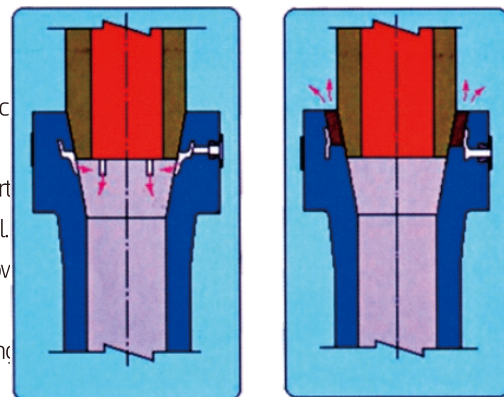


Ladle Shroud



Performance Characteristics

- We accept customized for different argon blowing design
- Oxidation resistance layer can prevent Carbon bonded material be oxidated.
- BZ type AL-C material for body part is with good property which is thermal shock resistance and erosion resistance.
- BZ type Zr-based material provides good erosion resistance properties for slag line part
- BZ type Mg material ensures excellent erosion resistance of slag line to Ca-treated steel.
- Inner layer with carbon free material guarantee the special requirements of ultra-low carbon steel, silicon steel and clean steel
- Bell shroud plays an important role in ensuring the quality of molten steel during casting.

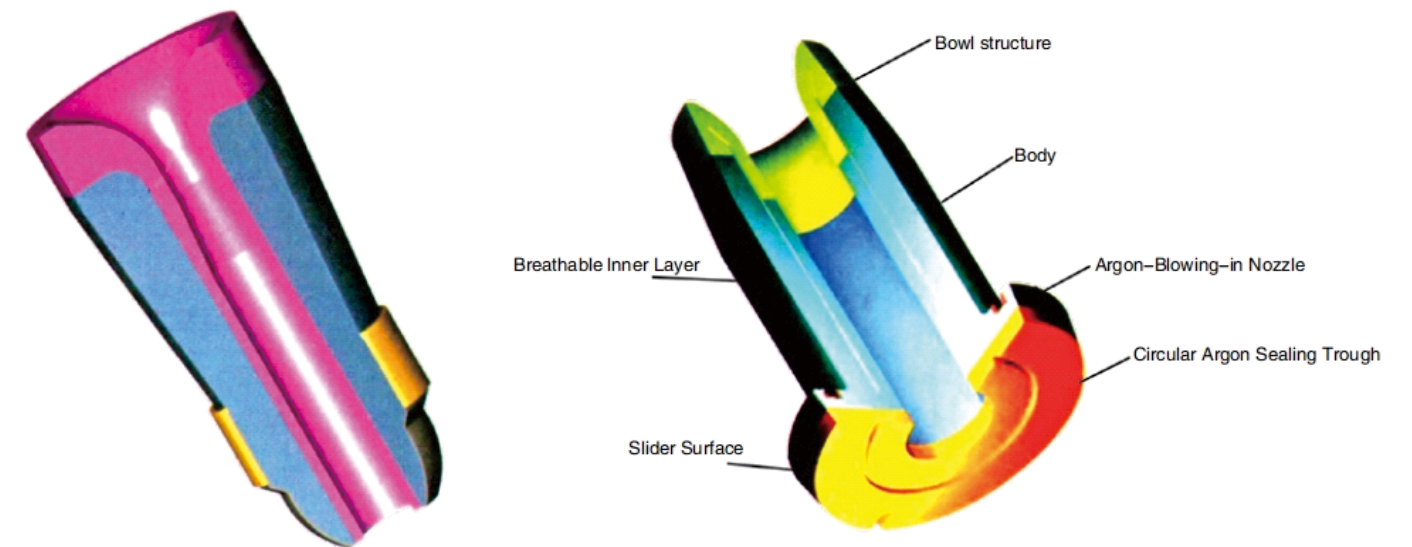


Function of Ladle Shroud

- Prevent oxidation of molten steel and the formation of non-metallic inclusion
- To reduce molten steel temperature loss from ladle to tundish
- It is preventing molten steel splashing when pouring from ladle to tundish and can make sure the minimum turnover in tundish.

Component	AL ₂ O ₃ %	Fe ₂ O ₃ %	SiO ₂ %	TiO ₂ %	ZrO ₂ %	MgO%	LOI%	Density g/cm ³	Porosity%	Fracture Strength Mpa	Type
Body	58.78	1.3	10.8	1.59	7		21.28	2.61	16.8	8.1	BZ Type
Slag line					76.2	1.71	15.01	3.65	15.61	5.87	Slag Line
Body	39.25		21.3		12		35.2	2.2	14.67	5.32	Reusable Type

Tundish Nozzle

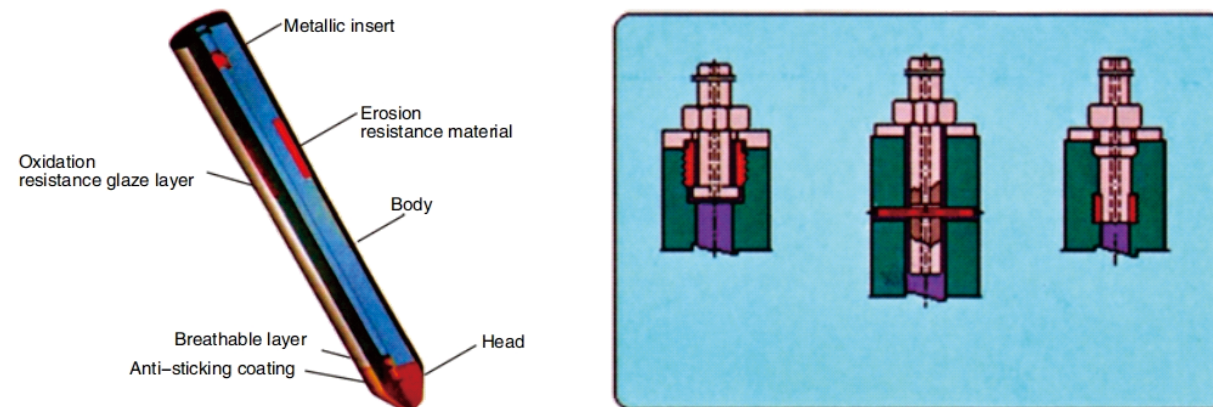


Function of Tundish Nozzle

- BZ type AL-C based material having good erosion resistance and good thermal resistance properties.
- BZ type AL-C based material for the bowl structure part having high corrosion resistance.
- BZ type anti-blocking material can prevent AL₂O₃ adhesion inside of the tundish nozzle which helps prevent nozzle be blocked.
- BZ type argon blowing design can help prevent Oxygen inhalation.
- High wearing resistance and accurate dimension used in the bottom materials ensure nozzle to achieve quick change.

Component	AL ₂ O ₃ %	Fe ₂ O ₃ %	SiO ₂ %	TiO ₂ %	ZrO ₂ %	CaO%	MgO%	LOI%	Density g/cm ³	Porosity%	Fracture Strength Mpa	Type
Body	63.15	1.15	6.83	0.87	3.25			24.58	2.54	16.42	8.67	BZ Type
Bowel Structure	86.61	0.43	0.77	0.33				11.11	2.85	17.7	6.73	BZ Type
Bowel Structure	71.43	0.91	10.65				12.1	10.85	2.78	16.3	14.5	JQ Type
Liner	64.1	0.81	12.5		4.94	0.12	0.32	16.52	2.63	22.48	10.28	Breathable Materials

Monoblock Stopper



Performance Characteristics

- Oxidation resistance glaze layer can help to prevent carbon bonded material to be oxidized.
- Stopper body is BZ type AL-C based material with good properties which is good thermal shock resistance and erosion resistance.
- Stopper head is BZ type AL-C material with good properties and good anti-erosion property.
- Stopper head is JQ type spinel material which can resistant to the most severe erosion.
- Stopper head is BZ type Mg-C material is good erosion resistance properties to Ca-treated steel.
- Slag line part is GBZ type Zircon material gives excellent erosion resistance properties.

Function of Stopper

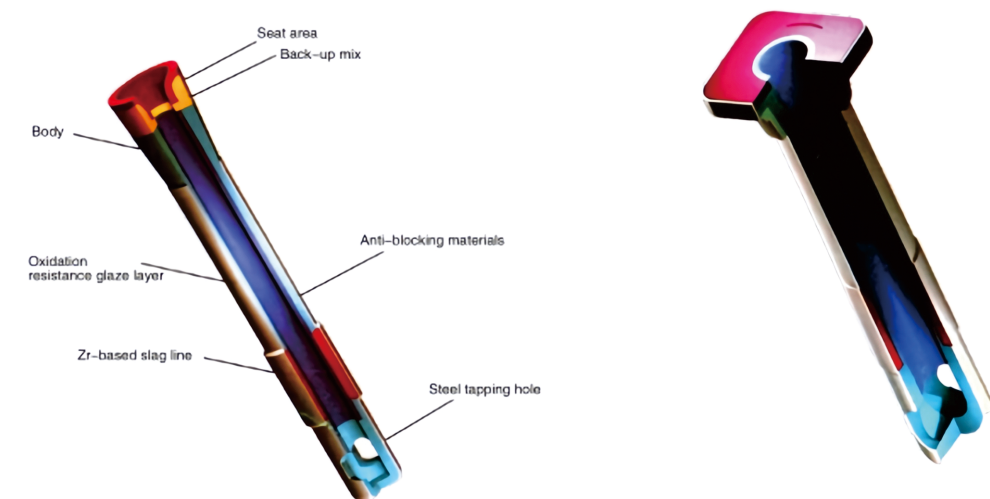
- To control the steel flow from tundish to mold.
- Work with slide gate as an shut off device and to prevent slag entrapment during casting end.
- Through stopper to blow Argon to steel channel to prevent block from inclusion deposition.

Preheating method for stopper and tundish before casting

- It takes 20minites from room tempreture to 900°C
- From 900°C to 1150°C it takes 20minites and holding at 1150°C for 2.5hours, then casting.

Component	AL ₂ O ₃ %	Fe ₂ O ₃ %	SiO ₂ %	TiO ₂ %	ZrO ₂ %	CaO%	MgO%	LOI%	Density g/cm ³	Porosity%	Fracture Strength Mpa	Type
Body	55.42	0.91	16.58	1.41	3.25			26.81	2.53	16.81	9.6	BZ Type
Head	86.61	0.43	0.77	0.33				11.11	2.85	17.7	6.73	BZ Type
Head	71.43	0.91	10.65				12.1	10.95	2.78	16.3	14.5	JQ Type
Slang line					75.1	1.71		15.1	3.78	15.61	6.97	Slag Line
Head	15.1		8.95		0.29	1.56	56.8	17.3	2.59	16.7	7.8	Ca-treated Steel

Submerged Entry Nozzle



Performance Characteristics

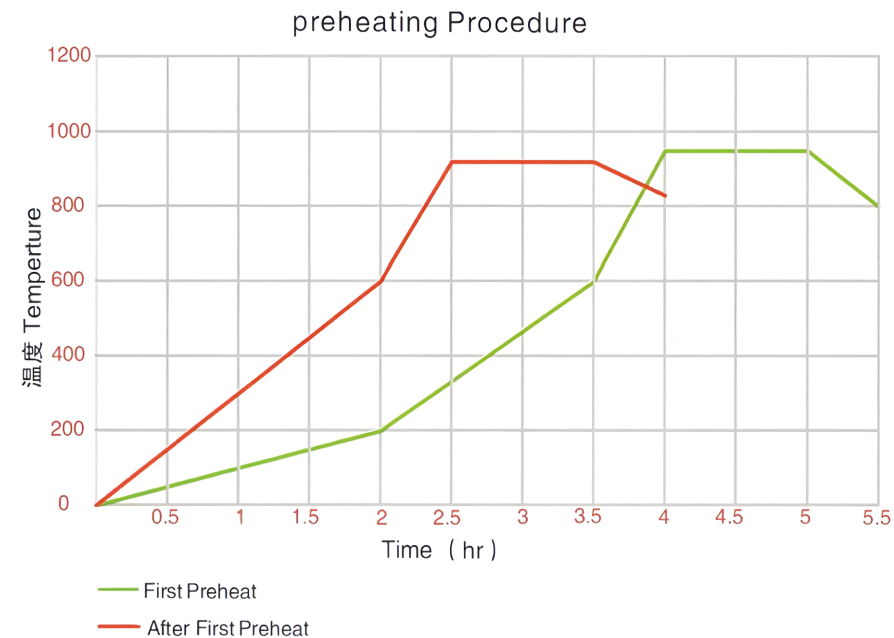
- BZ type AL-C based material having good erosion resistance and good thermal resitance properties.
- JQ type spinel material for bowl part ensures the parts which SEN worked with stoppers can resist the most severe erosion.
- BZ type argon blowing design help to prevent oxidation adhesion.
- GBZ type Zirconium material ensures excellent corrosion resistance of slag line, and is more 5.resistant to the corrosion of fluorine-containing protective slag.
- Inner layer with carbon free material guarantee the special requirements of ultra-low carbon steel, silicon steel and clean steel.

Function of Submerged Entry Nozzle

- Bowl part of SEN worked with stopper head can guarantees a perfect steel pouring control.
- Preventing molten steel from re-oxidation and affecting billet quality.
- Assuring molten steel be well distributed in molds to achieve optimal solidification.

Component	AL ₂ O ₃ %	Fe ₂ O ₃ %	SiO ₂ %	TiO ₂ %	ZrO ₂ %	CaO%	MgO%	LOI%	Density g/cm ³	Porosity%	Fracture Strength Mpa	Type
Body	63.15	1.15	6.83	0.87	3.25			24.58	2.54	16.42	8.67	BZ Type
Bowel Structure	86.61	0.43	0.77	0.33				11.11	2.85	17.7	6.73	BZ Type
Bowel Structure	71.43	0.91	10.65				12.1	10.95	2.78	16.3	14.5	JQ Type
Slang line					79.1	1.71		12.01	3.81	13.61	6.97	Slag Line
Liner	56.2	0.81	4.06		15.2	0.12		22.5	2.4	16.7	7.2	Anti-blocking Materials
Liner	52.9		13.9				21	2.1	2.51	18.71	6	Non-carbon Materials

Preheating instructions for crucible



Preheating Procedure for Crucible First Use:

- After being loaded into the furnace, the crucible should be heated slowly to 200°C (≈390°F) for 2 hours to remove any moisture that may be present.
- Subsequently, the crucible was heated at low power to 600°C (≈1100°F) after 1.5 hours and then reached 950°C (≈1750°F) after half an hour at full heating power and held for about 1 hour, which ensures that the glaze layer and anti-oxidation coating on the surface of the crucible are fully sintered to prevent oxidation, which is essential to maximize the service life of the crucibles.
- Add ingot into the crucible.
- The preheating procedure is shown in the green line.

Preheating Procedure for Crucible After First Use:

- First, the crucible should be slowly heated to 600°C (≈1100°F) after 2 hours to remove the moisture that may be present, which ensures that the glaze layer and anti-oxidation coating on the surface of the crucible are fully sintered to prevent oxidation, which is essential to maximize the service life of the crucibles.
- Subsequently, with full heating power, the temperature reached 950°C (≈1750°F) after half an hour and was maintained for about 1 hour.
- Add ingot into the crucible.
- The preheating procedure is shown in the red line.

Crucible usage and maintenance methods



The Common Problem Analysis

Slow heat conduction

- There is no preheating according to standard procedures.
- Slag influences heat conduction.
- The crucible has reached its service life.

Crucible corrosion

- Add flux before the metal is molten or excessive use of flux.
- Some fluxes contain corrosive substances.
- Fuel contains corrosive substances.
- Abnormal high-temperature operation may cause the glaze layer to melt, similar to corrosion.

Excessive oxidation

- The flame in the furnace is directly against the bottom of the crucible.
- The temperature in the top area is too low.
- The working temperature is overheated.
- Improperly hoisting or moving damages glaze layer.
- The emergent drain hole is open.

Explosion

- The crucible will heat up quickly when it is damp during storage or transportation.
- The crucible heats up rapidly during the preheating procedure.
- The added materials are not completely dried.



Middle or bottom cracks

- The crucible is impacted during transportation or installation.
- The crucible should be placed in the middle of the furnace stack smoothly and stably.
- An improper graphite stand is used.
- There is a high temperature difference in the furnace.
- The metal ingot is placed horizontally or diagonally in the crucible. Metal materials overflow.
- Slag or molten metal remains in the crucible.

Memo