Taiyuan SIMIS Investment Casting Co., Ltd

Silicon carbide ceramic foam filter

Application:

1. Iron casting alloys
2. Copper alloys
3. Bronze alloys
4. Brass alloys
5. Aluminium alloys
6. Special alloys

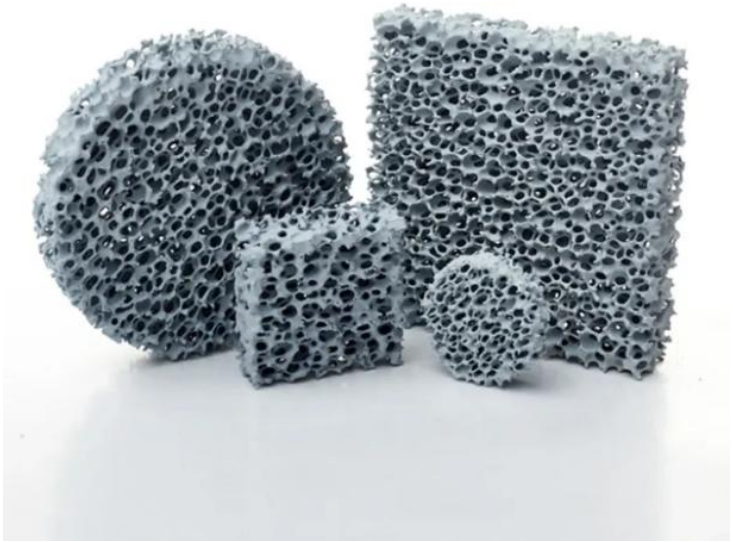
• 10ppi—for ductile iron, big gray iron, steel casting.
• 20ppi—for gray iron, malleable cast-iron,non ferrous alloy casting.
• 30ppi—for gray and malleable cast-iron, non ferrous alloy casting.

Feature:

Purify molten iron
Improve the quality of iron casting
Reduce inclusions of iron casting
Stabilize mould filling time

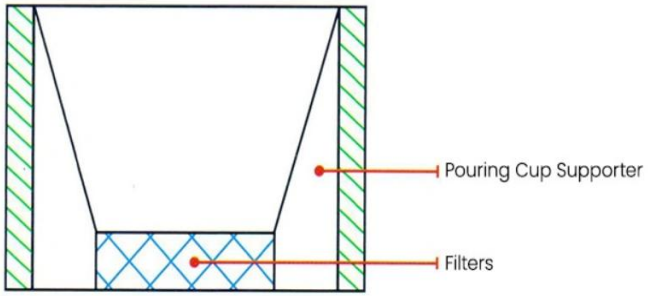
Technical Data :

Pore Density(PPi)	8~40
Porosity(%)	80~90
Refractoriness(℃)	1500
BendinaStrenath(Mpa)	0.8
Compression Strength(Mpa)	1
Thermal Shock Resistance (times/1100℃)	6

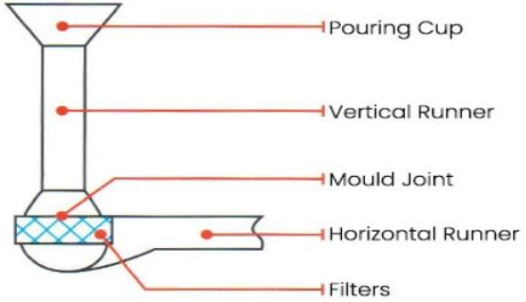


How to Set filter:

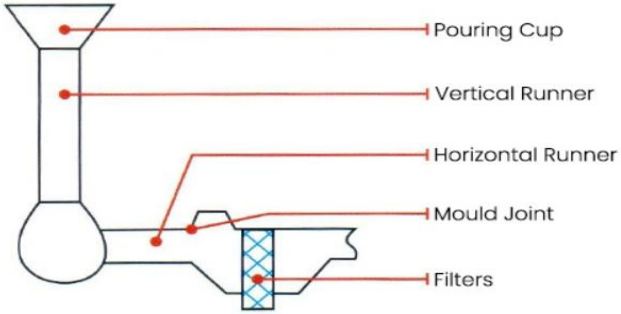
The ceramic foam filter can be used in the filtration chamber of a gating system as well as for direct pouring on the filter.Filter is usually set above or below the sprue, runner, in pouring cup.



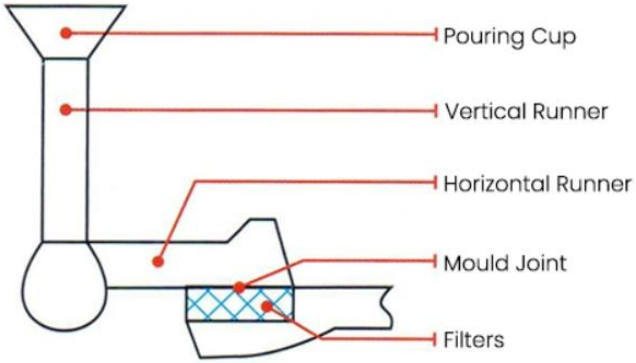
Installed in pouring cup



Installed horizontally in vertical runners



Installed vertically in horizontal runner



Installed horizontally in horizontal runner

Filter Size and Capasity

Size (mm)	10ppi				20ppi		30ppi	
	Capacity (kg)		Flow Rate (Kg/s)		Capacity (kg)	Flow Rate (kg/s)	Capacity (kg)	Flow Rate (kg/s)
	Grey Iron	Ductile Iron	Grey Iron	Ductile Iron	Grey Iron	Grey Iron	Grey Iron	Grey Iron
40×40×15	64	32	4	3	50	3	42	2
40×40×22	64	32	4	3	50	3	42	2
50×30×22	60	30	4	3	47	3	40	2
50×50×15	100	50	6	4	78	3.5	66	3
50×50×22	100	50	6	4	78	3.5	66	3
60×60×15	144	72	9	6	112	6	95	5
75×50×22	150	75	9	6	116	6	99	5
75×75×22	220	110	14	9	175	10	149	8
100×50×22	200	100	12	8	155	9	133	7
100×75×22	300	150	18	12	232	13	199	11
100×100×22	400	200	24	16	310	18	265	15
150×150×22	900	450	54	36	698	40	596	33
200×200×40	1600	800	95	64	1240	58	1060	48
Dia 40×22	40	20	3	2	39	2	33	2
Dia 50×22	70	35	4.5	3	61	4	52	3
Dia 60×22	100	50	6.5	4.2	88	5	75	4
Dia 70×22	150	75	8.8	5.5	119	7	102	6
Dia 75×22	170	88	10	6	137	8	117	6.5
Dia 80×22	200	100	11	7.2	156	9	133	7

Dia 90×22	240	120	14	9	197	11	169	9
Dia 100×22	280	140	17	11	243	14	208	12
Dia 125×22	400	220	24	16	380	22	325	18
Dia 150×22	700	350	38	25	548	32	468	26
Dia 200×40	1240	620	67	44	973	56	832	46

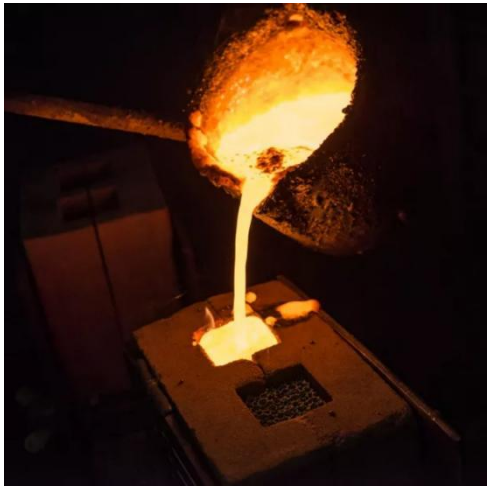
Note:
Maximum size 300MM
Standard Thickness: 22 mm
Size and porosities:
• Different size can be made upon customer request.
• Length*width*height=(40-300)*(40-300)*(10-30)mm
• With round,square and rectangle shape.
• Tolerance:-1~0mm
• Pore size: 10PPI/20PPI/30PPI
• Tolerance:± 1-2PPI

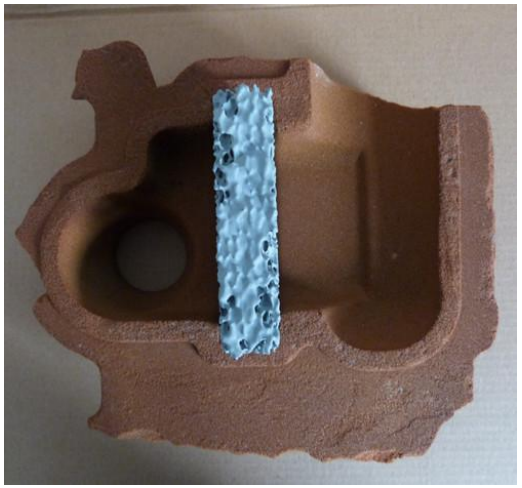
Principle Of Using Filter:

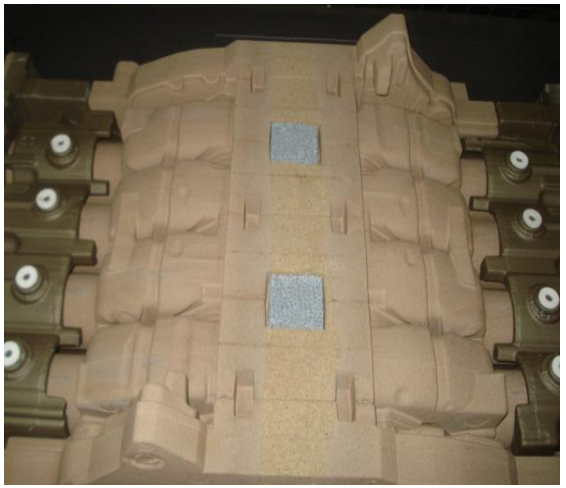
1. Set the filters as close as possible of the casting.
2.Use simple gating system without dirt trap (improve yield).
3.The working area of filter should be 4–6 times of the section of chocked flow in gating system to make sure that the pouring speed is not affected.
4.Select the proper filters according to types of metal and pouring temperature.
5.The higher porosity, the better filtration.
6.Before using the foam ceramic filter, the dust on the surface and the internal fragments should be blown off with compressed air to avoid

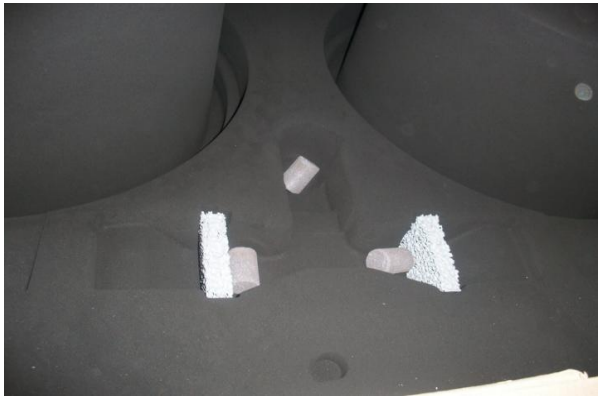
impurities contaminating the metal liquid.

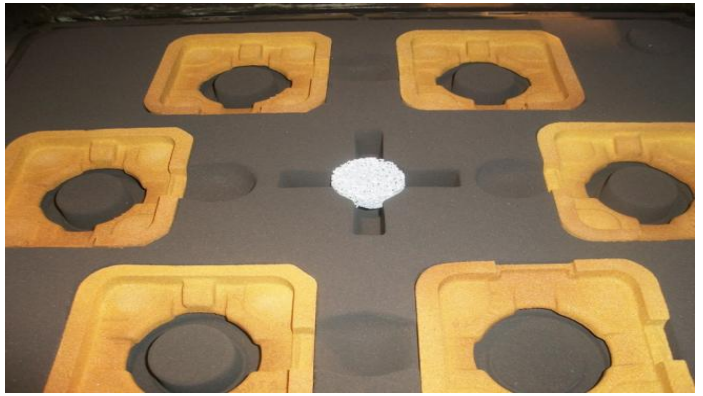
7. The filter must have a certain pressure head at the beginning of filtration to overcome the obstacle of surface tension.
8. We can not use the filter to control or affect the pouring speed.





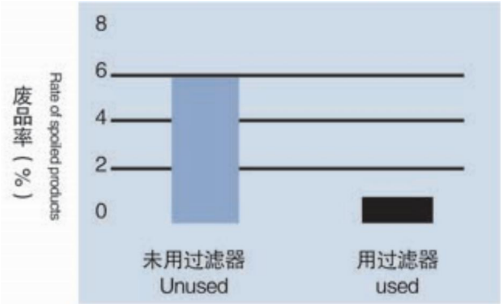
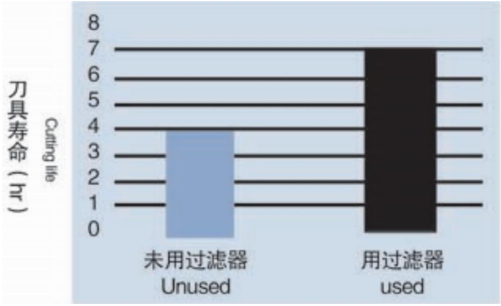
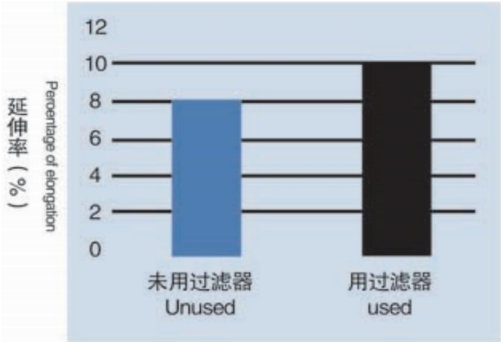
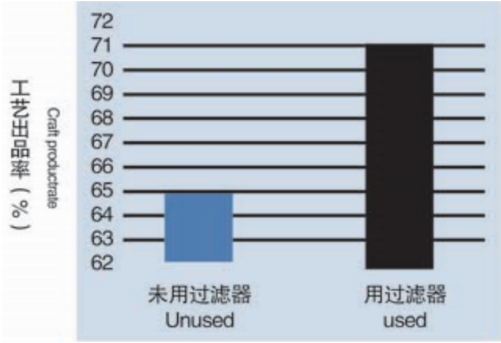






Ceramic Foam Filter Using Effect

Ceramic foam filters are mainly used for filtration of iron casting,aluminum casting,steel casting.It can effectively remove inclusions,absorb small impurities, reduce gas and harmful element, improve the metal matrix structure and the mechanical properties of castings.

1. Reduce the defect rate of the inclusion of the defective products, and reduce the defect of the inclusion of 50% or more.	2.Improve the processing performance of the casting: the tool life is improved by more than 30%
	
3.Improve the mechanical properties of casting:mechanical properties Increased by more than 10%	4.Improve casting technology production rate: the rate of production rate increased by more than 10%.
	

Alumina Ceramic Foam Filter Plate

Application:

Apply to improve quality of aluminium alloy casting and other non-ferrous alloy casting.
Aluminum alloy bar choose: 10-30ppi
Long-term casting choose: 30-50ppi
High quality aluminum profile or plate choose :40 or 50ppi
Double zero wave continuous casting and rolling choose: >50ppi
Other specifications can be customized as your requirements

Feature:

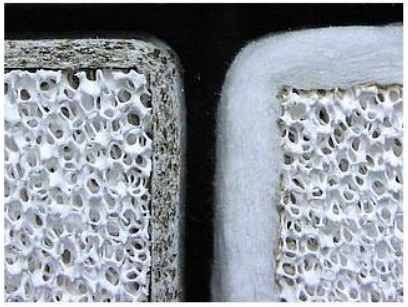
Improve metallurgical structure
Enhance mechanical properties
Change turbulence into laminar flow

Technical Data :

Color	White
AL2O3	≥83%
Porosity	≥85%
Volume Density	0.3g/cm³-0.45g/cm³
Refractory Temperature	≤1100°C
Flexural strength	＞0.5Mpa
Thermal Shock Resistance	750℃/5 times
Solubility	At the molten temperature of aluminum or aluminum alloy, the filter does not produce chemically reaction nor dissolves.

Usage Method:

1. Clean the filter box.
2. Put the filter plate into the filter box gently and press the sealing gasket around the filter plate by hand to prevent the liquid aluminium from flowing by.
3. Uniform preheating filter box and filter plate to make it close to the temperature of liquid aluminium casting.
4. Pay attention to the change of aluminium hydraulic head during casting. The normal starting pressure head is 75-150. When the molten aluminium begins to pass, the indenter will drop below 25 inches, and then the indenter will increase slowly.
5. After the filtration, remove the filter board and clean the filter box in time



Filter size and capacity :

Specification	Length	Thickness	Angle	Bend	Diagonal
12"×12"×2"/305mm	±3mm	50mm±1mm	17.5°＋1°	4mm (max)	Less than 1% of the side length
15"×15"×2"/381mm	±3mm	50mm±1mm	17.5°＋1°	4mm (max)	Less than 1% of the side length
17"×17"×2"/432mm	±3mm	50mm±1mm	17.5°＋1°	4mm (max)	Less than 1% of the side length
20"×20"×2"/508mm	±4mm	50mm±1mm	17.5°＋1°	4mm (max)	Less than 1% of the side length
23"×23"×2"/584mm	±4mm	50mm±1mm	17.5°＋1°	4mm (max)	Less than 1% of the side length
26"×26"×2"/660mm	±4mm	50mm±1mm	17.5°＋1°	4mm (max)	Less than 1% of the side length

Size (mm)	Weight (Kg)	Flow Rate (Kg/s)	Weight (Kg)	Flow Rate (Kg/s)
	10ppi		20ppi	
50×50×22	42	2	30	1.5
75×75×22	96	5	67	4
100×100×22	170	9	120	7
Dia50×22	33	1.5	24	1.5
Dia75×22	75	4	53	3
Dia90×22	107	5	77	4.5

Large size (Inch)	Weight (Ton) 20,30,40ppi	Flow Rate (kg/min)
7"×7"×2"	4.2	25 ~ 50
9"×9"×2"	6	25 ~ 75
10"×10"×2"	6.9	45 ~ 100
12"×12"×2"	13.5	90 ~ 170
15"×15"×2"	23.2	130 ~ 280
17"×17"×2"	34.5	180 ~ 370
20"×20"×2"	43.7	270 ~ 520
23"×23"×2"	57.3	360 ~ 700

Zirconia Ceramic Foam Filter

Application :

Zirconia Ceramic Foam Filters are designed for filtration of molten all types of steel like unalloyed, low alloyed, stainless and high-alloyed as well as Nickel and Cobalt-based super-alloys.

Feature:

1. Adjust the flow rate of the metal liquid through the two times inclusion and blow hole.
2. Reduce the casting inclusions ,reduce the scrap and welding repair rate.
3. Improve casting surface quality and mechanical properties.

Technical Data :

Pore Density(PPi)	10~40
Porosity(%)	75~85
Refractoriness(℃)	1700
Bulk density	0.7~1.0
Compression Strength(Mpa)	≥ 2.0
Thermal Shock Resistance (times/1100℃)	6

Regular size and Capacity

Dimensions mm	Flow rate(kg/s)		Total capacity
	Carbon steel	High-alloy steel	kg
40×40×20	2	2.5	30
50×50×22	3	4	50
55×55×22	4	5	60
Φ50×22	2.5	3	40
Φ60×25	3.5	4.5	70
Φ70×25	4.5	6	95
Φ75×25	5	6.5	110
Φ80×25	6	7.5	125
Φ90×25	8	9.5	160
Φ100×25	9.5	12	190
Φ120×25	11	14	220
Φ150×30	12.5	15	330

Noted :

1. Common sizes range: 40x40x20mm up to 150x150x30mm.
2. Round filters are available from D40x20mm up to D150x30mm. Although PPI 10 is the porosity most commonly used for steel casting, finer porosities up to PPI 40 are available on request.
3. Custom-made cut-to-size filters are also possible.
4. If the foam filter is not used with our standard core seat design or exceeds the filter capacity, the use temperature may cause its failure.
5. Try to avoid a direct metal fluid impact on the filter.When directly hitting the filter, the pouring height should not exceed 350mm.
6. Prevent and avoid extrusion and collision of products during handling and transportation.
7. The foam ceramic filter is made of stable chemical refractory and is usually non-toxic and harmless.Do not react with the metal liquid during pouring, and do not produce flue gas.There is also no harmful smoke during sand fall and sand regeneration.

WORKSHOP

Fiberglass mesh filter

Application:

Fiberglass mesh filter are manufactured with high-temperature-resistant fiber, further more, they are produced by special technique and following-process, so with special technology and stable quality.Fiberglass mesh filters are designed for filtration of iron, aluminum, steel and other castings metal liquid, which can effectively remove slag,refractory particles and non-metallic inclusions from molten metals.

Features:

Made of high temperature resistant fiber, treated by special process , produce quality stability.
High temperature fiberglass mesh is cheap and easy to use.
The effect of filtering is good, gas evolution is low, improve casting qualification rate.
Improve the mechanical properties , improve the processing efficiency.

Properties:

Types	Working temperature (℃)	Melting point (℃)	Sustaining working time（min.）	Tensile strength （kg/4ends）	gas evolution （cm3/g）
Steel liquid filtration	1600-1620	1700	5	16	60
Iron liquid filtration	1400-1450	1700	10	8	60
Copper liquid filtration	1200	1700	10	6	60
Aluminum liquid filtration	700-800	900	10	6	30
Cap-style filtration	—	—	—	—	—

Product Parameters：

SiO2	≧96%
volume weight	255-380℃
Sustaining working time (s)	80
Working temperature	700-1620
Tensile Strength	>16kg/4ends
Gas evolution	<60 cm3/g
Application	Small size cast steel

Application:

1. The Cut pieces filter mesh are used for in mold filtration like sand casting,gravity casting,etc;
2. The Cut pieces filter mesh are placed on riser sleeves,bottom or across ports in walls;
3. The cut pieces filter mesh to provide a weakened plane for riser knock-off;
4. The Cup shapes mesh filter for investment casting.

Fast immersion thermocouples for measuring the molten metal

Application :

Immersion thermocouples are used to monitor and control the temperature of liquid metal during melt preparation, holding, degassing and casting operations. Rapid response type expendable thermocouple is mainly composed of temperature probe and large paper tube. The positive and negative wires of the temperature probe are welded to the compensation wires embedded in the bracket covered by the small paper tube. The hot wire is supported and protected by quartz. The temperature probe is covered with a lid to prevent scum. All components are placed at the end of the thermocouple and bonded together with refractory filler.

Feature:

1. The world standard thread is the "heart" of the thermocouple tip and even the entire thermometer.
2. Excellent accuracy. Tolerance within 1.5 degrees Celsius.
3. It can be handled safely.
4. Range: 0 --- 1760 degrees Celsius.
5. Rapid response, measuring time no more than 3 seconds, low thermal inertia, easy operation and maintenance.

Technical parameter and specifications and models

Product Name	Graduation	Allowable Tolerance	Max. Temperature	Response Time	Measured Rate	Remarks
Expendable thermocouple	S	±3	1650℃	4-6S	≥98%	The length of thermocouples can be customized according to customers' requirement
	R	±3	1650℃			
	B	±3	1750℃			
	W	±3	1750℃			

Usage:

1. According to the object and scope of measurement, select an appropriate protective paper tube length and a suitable temperature measuring gun.
2. Install the fast thermocouple on the temperature measuring gun, and return the pointer (or digital display) of the secondary instrument to zero. At this time, it means that the contact is good and the measurement can be carried out.
3. It is advisable to insert the fast thermocouple into the molten steel at a depth of 300-400mm. When measuring, do not measure the furnace wall or slag, so as to be fast, stable and accurate. Even the immersion time in molten steel shall not exceed 5 seconds, otherwise it is easy to burn the temperature measuring gun.
4. After the temperature measuring gun is lifted out of the furnace, remove the used thermocouple and install a new one, stop for a few minutes, and prepare for the next measurement. Continuous measurement and dismantling are not allowed, otherwise the temperature difference will fluctuate.

Product show:

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Immersion Samplers with steel caps for collection of molten metal samples

Product Description:

Immersion sampler is mainly used for taking disc samples and pin samples, from heats of molten steel, alloys or other metal in basic oxygen furnaces, electric furnaces and open-hearth furnaces, are provided with slotted riser vent tubes serving to retard the escape of atmospheric air displaced by the in flowing molten metal entering .Samples have simple structure, which are widely used in continuous casting and secondary steel making furnace converter refining process, etc.Samples are available for chemical analysis and other analysis. To obtain the data of the required composition, control adjustment and composition in steel making, iron making process.

Used For

1.Collection of molten metal samples from furnaces and ladles.
2.Dip-Type Application.
3.Fits with any standard size lance assembly
4.Single-Type Use

Product Parameters

Product name	Immersion sampler
Paper Tube	300-1500mm
Probe Diameter	OD 51mm-OD 38mm
Round Cup	34*12mm
Sample time	4-6s
Temperature range	1500-1800ºC
Using method	Injection/immersion
Application	Dip-Type Application

Working Principle

When a sampler was inserted into the hot metal liquid, under the static pressure, the hot metal liquid breaks the slag protective layer,through the sampler inlet, into the sampling chamber automatically. Then the alloying element content in the steel can be analyzed by spectral analysis.
Using Method
a) Connect the molten iron sampler with suitable immersion lance b) Iron Sampler should be sunk to the depth over 350mm at an angle of 60°-65° for 4 to 6s The depth and time should be strictly carried out for its best performance. c) After taking the sample instrument from the furnace, knock the non immersed part on the ground, the sample of steel will fall down on the ground. It is best to take a sample when the molten iron temperature is above 1500°C

Product show:

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Thermal analysis sampling cup

Product Description:

The thermal sampling cup utilize the principle of thermal analysis to determine the carbon equivalent, carbon percentage, and silicon percentage in molten iron.Cups are available in square and round shape.500 degree Celsius to produce "resin bonded sand". This resin bonded sand is shot into the pre-heated mold with having the K-type thermocouple tube inside. At the temperature of 250 degree Celsius, the cup is formed by the resin bond. This cup is coated inside with silica for being thermal insulation and then filled in the cup with 15 gram of Tellurium. By means of drying this coated cup at the temperature of 80 degree Celsius for 4 hours, the carbon cup is ready for the casting control.

The main function:

1. Carbon equivalent CEL

Features:

1. Reasonable and reliable sample cup design to ensure that the polarity is correctly connected to the thermal analysis connector;
2. The horizontal quartz protection tube design makes the response faster;
3. The pouring temperature range is wide;
4. Cooling curve with good repeatability and stability;
5. High detection rate.

   Carbon content C%

   It is determined by the two temperature values of liquids temperature TL and solidus temperature TS.

   Silicon content Si%

By measuring the solidus temperature, Si can be calculated from it, and the silicon value is calibrated by an adjustment factor, which is related to the carbon in the molten iron.

6. Of course, thermal analysis can also be applied in the following three aspects:
    6.1. Pregnancy control, through the measurement of eutectic super cooling, control the inoculation.
    6.2. Predict the mechanical and physical properties of molten iron by measuring the liquidus temperature and subcooling degree.
    6.3. The calculation of nodularization rate, based on the principle of relative thermal conductivity, can calculate the nodularization rate of molten iron of nodular iron.

7. Model and its application:
    7.1. Sample cup (QC4011): Determination of CEL, C, Si
    7.2. Sample cup (QC4012): Determination of CEL after spheroidization, C; Si

Product show: