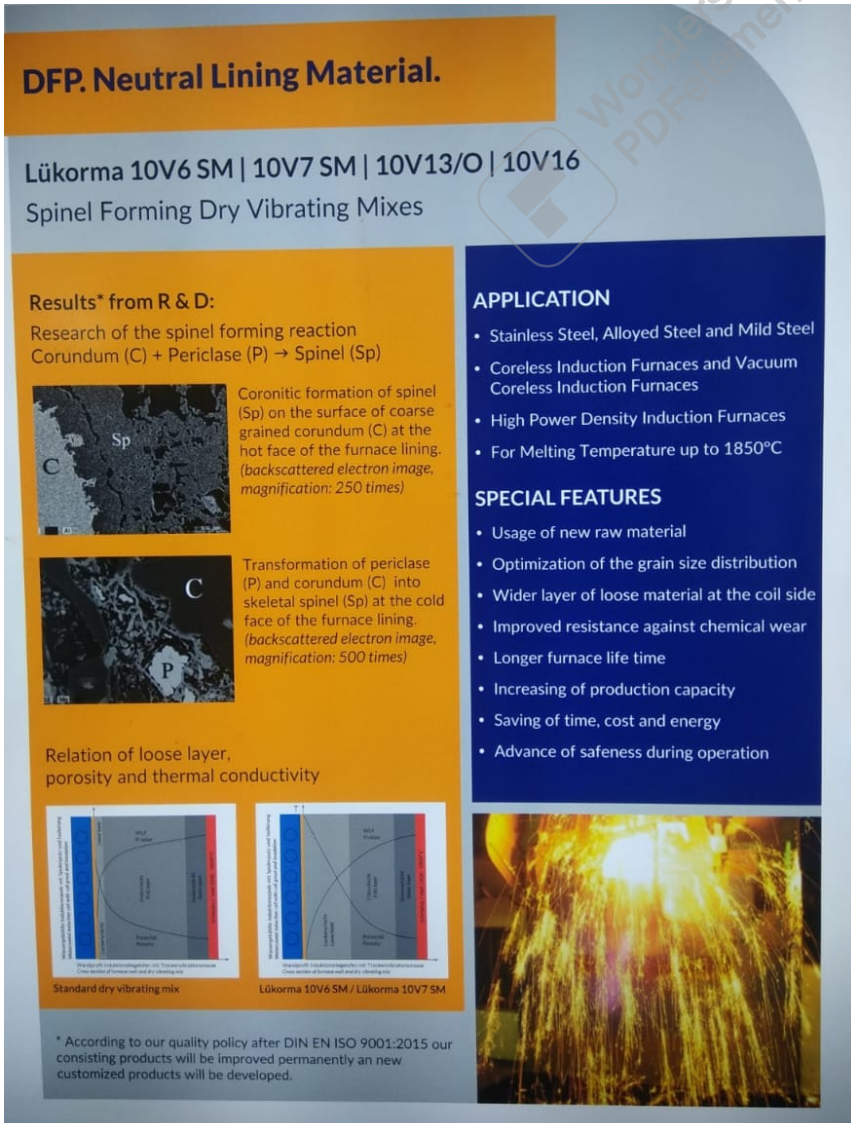
Refcast Corporation

NEUTRAL RAMMING MASS

INTRODUCTION:

Neutral ramming masses are also highly chemically stable in both acidic and basic media. All these properties of neutral ramming masses make them an ideal, state-of-the-art foundry solution for high-temperature components such as the induction blast furnace.

We at Refcast Corporation offer you with the wide range of Neutral Ramming Mass which is manufactured by making use of premium grade of raw materials and latest technology. This ramming mass is convenient, fast and simple to use. This mass has superior uniform heat stability and excellent volume stability. Currently, Neutral Ramming Mass is available in few varieties such as High Alumina Ramming Mass, and Monolithic Ramming Mass. This has enhanced usage life and is very helpful in increasing the efficiency of the furnace. This product has corrosion resistance, high impact resistance, low apparent porosityand simple on-line maintenance.



NEUTRAL LINING FOR INDUCTION FURNACE

Induction Furnaces are used for melting cast iron, mild steel and various alloys steels in foundries. Traditionally, refractory for the induction furnace is not given high importance. Normally, the selection of refractory is based on the type of slag generated by the liquid metal. If the slag generated contains high amount of acidic components like Sio2 than the silica lining is used. If the slag has high basic component than basic lining based on magnesite (Mgo) is used. For Cast Iron, ductile iron slag is acidic so silica lining is used and for mild steel, manganese steel, stainless steel basic lining is most commonly used.
Silica lining has good thermal shock abortions but poor chemical resistance.
Magnesite (Mgo) lining is more prone to thermal shocks and it develops vertical cracks.
The most common practice in foundry is to run foundries for 16 hours and hence lining has thermal shocks and develops cracks. Normally, cracks are patched every morning with some sort of patching material. In a steel alloy foundry refractory for induction furnace is of utmost important because they operates at very high temperature, they have different alloy additions which generate highly reactive slag, working practices has frequent start stops and refractory inclusions in castings increases rejections. Technological advancement in refractory and foundry industries has solved the problems related to induction furnace refractory. Neutral-Spinal or popularly known as neutral lining is the new trend in steel foundries to resolve lining related problems. Neutral lining has an advantage over both silica and basic lining in terms of chemical reaction and thermal shocks. Neutral lining is widely getting acceptance in foundries where they melt low-carbon steel, Manganese steel, high alloys steel, stainless steel and special steels.

Typical Chemical and Physical Properties of a Neutral Lining

Al2O3	(%)	:86 ±2
MgO	(%)	:12 ±1
SiO2	(%)	:< 0.1
Bulk density	(t/m³)	:2,90
Service Temperature	(℃)	:1800
Storage life	(in original packing)	:6 months min.

Advantages of Neutral Lining over Basic lining

1. Neutral lining has higher service temperature so fear of overheating of metal and penetration due to higher temperature is reduced.
2. Thermal shocks absorption capacity of neutral lining is higher than the basic lining and cracks bridges themselves on achieving temperature of 800 deg cent. Risk of metal penetration through gap reduces with neutral lining. Also neutral lining has clear powder zone behind a sintered and semi sintered zone in lining which does not allow metal to penetrate.
3. Since the erosion due to slag attack is less in neutral lining, it has higher working life. Normally it goes more than 200 hours of continues working. It saves lining cost in terms of saving in sintering power, formers, labour and down time. Furnace is available for more number of hours for production.
4. Slag sticking to neutral lining is lesser as compared to basic lining hence liquid metal quantity remains almost unchanged throughout the campaign. Especially for Manganese steel.
5. Refractory erosion is less hence the inclusion due to refractory erosion in metal and end casting reduces.

6. One can optimize lining thickness to get the highest efficiency of furnace as prescribed by manufacturer of furnaces.

Advantages of Neutral Lining over Acidic lining in steel melting

1. Silica lining erodes faster when reacts with slag formed in mild steel melting. Whereas neutral lining has very less reaction with slag and hence has very slow erosion process, so life of neutral lining is much higher than the silica lining.

2. Silica has low working temperature and hence gets fused above 1700 deg centigrade, which restricts the use of silica for low temperature alloys only. For higher temperature either basic or neutral lining is required.

3. Use of boric acid generates water vapour when heated during sintering. Also the silica material absorbs water and during sintering water gets evaporated through two turns of coil. This action deteriorates the insulation of coil and increase sparking problem. In neutral refractory no boric acid is used and hence no water comes out, if packed and stored properly there will not be any moisture problem while sintering.

4. Silica lining if once develops crack, it is very difficult to stop penetration of metal through the crack. In neutral lining cracks appear on front side when cooled but it rejoins when reheated and hence do not allow penetration of metal. Also the powder zone at the back prevents any metal penetration.

5. In neutral lining one can do fine adjustment of carbon in metal by adding oxidizing components. It is very safe in neutral lining as compared to silica lining.

6. In mild steel melting due to use of sponge iron percentage of phosphorous and sulphar is higher in some regions. It is required to bring down below specified limits as per IS which is not possible in silica lining. Neutral lining has advantage over silica lining. Due to its not reacting characteristics, one can add de-phosphorizing agents/fluxes in induction furnace lined with neutral lining and reduce phosphorous or sulphar to some extent.

Installation practice of neutral lining is same as silica ramming mass. It is rammed in bottom of furnace by using bottom vibrator. Then, it is filled in the gaps between furnace coil and lining former. The material must be rammed and compacted by using 2 arm or 3-arm lining vibrator to get the best lining life.

The sintering procedure for neutral lining is very important and it needs to follow proper procedure to get longer lining life. It takes about four hours for initial heating to reach up to 800 deg cents, then liquid metal is added from another furnace and temperature is raised to 50 deg above working temperature. Holding of metal is done at 50 deg above working temperature for one hour and then metal is poured. Next it is required to take about three to four heats continuously. Once the lining is sintered perfectly, it gives longer lining life.

Normally in silica lining patching is not done or even if it is done it is like half lining, except bottom, complete side lining is removed. In neutral lining, one can do patching by removing only sintered portion of side lining and then do former patching. It saves lining material.

1. Neutral lining has highest safety because it has 1800 deg safe working temperature so the metal penetration and down time due to metal penetration reduces by almost 100%. Money lost in remaking of furnace is saved.
2. It do not have moisture so coil related break down reduces and hence down time due to coil problems reduces where as coil insulation life increases.
3. Since furnace is available for continuous operation, down time for lining and sintering reduces which can be utilized for production, hence production increases.
4. Furnace former can be optimized to get maximum efficiency of furnace and hence can reduce power consumption and increases metal quantity per heat.
5. For making SS, you need to use a low carbon scrap which eats away silica lining but in neutral you can use as much as low carbon scrap without any fear of lining erosion.
6. In Stainless steel making through AOD, silicon content in metal is reduced in neutral lining so that it helps in reducing oxygen consumption in AOD.
7. Neutral lining Mn recovery is better and hence reduces consumption of Ferro alloys in low carbon steel melting.
8. Consumption of refractory reduces per ton of liquid metal produced hence the total handling of refractory masses reduces and also the problem of disposal of used refractory is solved, which is good for the environment.

CASTABLE RAMMING MASS

INTRODUCTION:

We are highly engaged in offering the wide range of Castable Ramming Mass which is made of granular and powder material, along with the certain amount of binder and moisture together. This mass is known for high fluidity, suitable to use, no heating, simple construction, and excellent durability. Our provided Castable Ramming Mass is available in some varieties such as non penetrative Coil grout cement, Pouring Ladle Lining Material, Treatment Ladle Lining Material, Aluminum Ladle Lining Material, and Spout Castable Ramming Mass. This product is widely appreciated by our customers, in the market for its high performance. This ramming mass is very effective as well as economical in nature.We have range of bauxite, tabular, corundum and spinal grade castable.

ACIDIC RAMMING MASS

INTRODUCTION:

Go through the wide range of Acidic Ramming Mass which is designed and manufactured by making use of premium grade of raw materials and latest technology. This ramming mass is optimized keeping in view the furnace makes and capacity, thus giving maximum and best results. This mass is widely appreciated, by our customers, in the market. Currently, Acidic Ramming Mass is available in few varieties such as Boron Oxide Premixed Silica Ramming Mass, Boric Acid Premixed Silica Ramming Mass, and Fused Silica Ramming Mass. This is characterized by thermal stability, corrosion resistance and wear resistance because it contains fewer binders, fire clay, and moisture.

Chemical Composition	SiO2	premix H3BO3	premix B2O3 C
%	98.0	1.2	0.6/0.8/1.0

BASIC RAMMING MASS

INTRODUCTION:

As a leading organization, we are actively indulged in manufacturing and supplying a wide stock of the finest Basic Ramming Mass that comprises Magnesite Ramming Mass, Mgo Ramming Mass, etc. These types of products give superior lining effects as well as allows for smooth working of furnaces. Perfect for the lining of induction furnaces, they have an ideal composition and great furnace capacity. Owing to their great wear resistance, good rust resistance, and excellent thermal stability, they are high on demand across the market. In addition to this, the array of Basic Ramming Mass is free from impurities, quality tested, and can be acquired by our significant clients in desired quantity at compromising prices.

CHEMICAL ANALYSIS

Elements	Range %
Mg0	70-85
Cr203	3-8
Sio2	3-5
Fe203	1-3
Al203	1-2

SILICA RAMMING MASS

INTRODUCTION:

Being the well-distinguished entity in the respective sector, we are eagerly involved in putting forward a broad array of the best in quality Silica Ramming Mass to the valuable patrons. The offered gamut comprises Premixed Silica Ramming Mass with Boric Acid, and Premixed Silica Ramming Mass with Boron Oxide. These kinds of products have low thermal conductivity, for which, having less thermal loss. Also, they are excellent capable to resist the fluctuation in temperature, and are great to be utilized as low cost lining material for furnace. Plus, these products call for less time to sinter and heat. Made of top-grade material with developed technology, the Silica Ramming Mass can be availed in required quantity with safe packaging.

MICA SHEET

INTRODUCTION:

We are here to offer you with the wide range of Mica Sheet which is used principally in the electronic and electrical industries. This sheet is a good conductor of heat. It protects the filament from the outer body of electric iron. It can also be used in melting and heating furnaces for insulation purposes.Currently, Mica Sheet is available in few varieties such as Mica Folien, and Mica Paper Roll. This is tested on certain quality parameters before offering to the clients. This sheet provides high thermal resistance as it is a good insulator. This sheet is very effective as well as economical to use.

Our Mica Sheet is available in two different sizes
- 0.5 mm × 1000 mm × 25 Meter Roll Pack
- 3.5 mm × 1000 mm × 10 Meter Roll Pack

GAS DIFFUSER

INTRODUCTION:

Lets have a look on the wide range of Gas Diffuser which is designed and manufactured by our skilled workers by making use of premium grade of raw materials and latest technology. This diffuser is procured from recognized vendors to ensure its high standard of quality. The component is appreciated for the long lasting and corrosion resistance features across the country. Right now, Gas Diffuser is available in few varieties such as Argon Purging Plugs, Gas Purging Plug, and Ladle Gas Purging System. This is also used to diffuse digester gases such as hydrogen sulphide and sulphur dioxide.It is very effective and safe to use.

DETAILS

Following extensive development and investment we are able to offer to hot metal industries a complete range of gas diffusers, making technology available for improvement to metal quality and economics of operation.

Our gas diffusers can complement hot metal processes from the smallest investment foundry to the largest integrated steelworks.

Benefits of gas diffusers:

- Reduction in scrap rate
- Improve quality of castings
- Reduction in pin-holing
- Removal of inclusions
- Reduction in gas content
- Temperature homogenization
- Distribution of alloying agents and de-oxidants

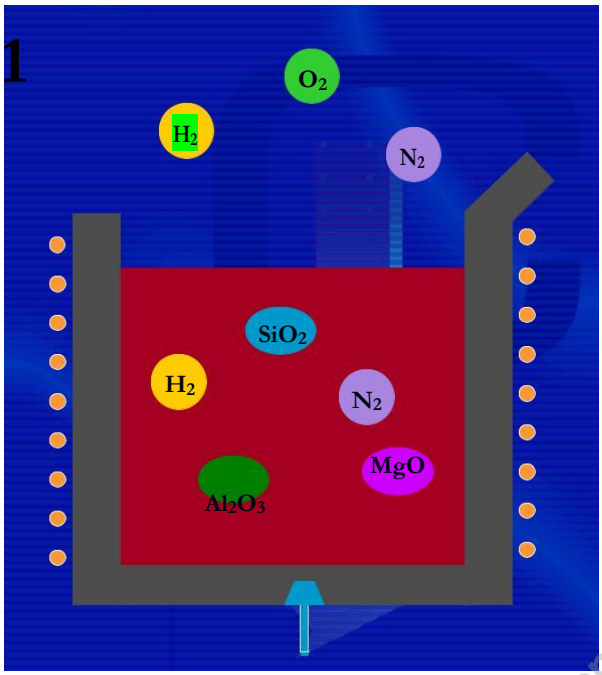
For many years our area of specialisation has been the development, manufacture and supply of dry-rammed induction furnace linings. With this knowledge, gas diffusers and associated materials suitable for integration in the furnace lining have been developed: bringing the advantages of inert gas treatment of liquid metal in the induction furnace.

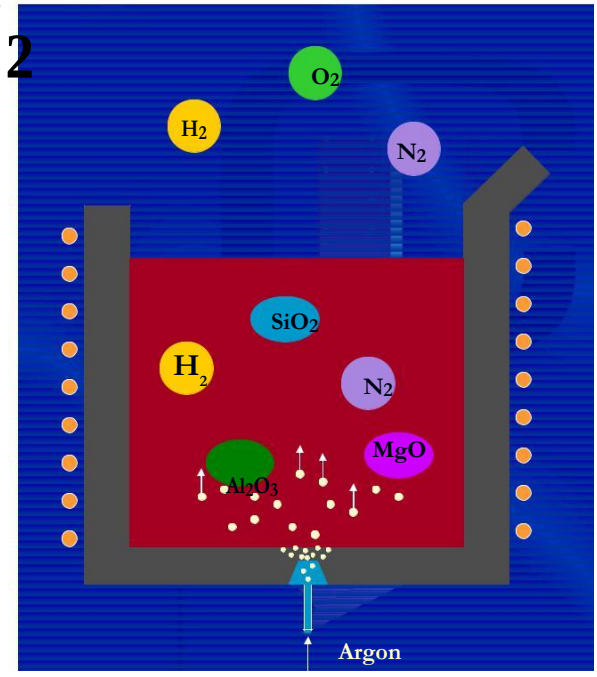
We believe that each client's plant has differing characteristics and should be individually considered with respect to the perceived requirements of the user. Therefore, a series of key questions must be asked:

- What does the client wish to achieve from gas injection? – Melt Homogenisation/ Degassing/ Fluxing of melt/Cleanliness.
- Do they require gentle motion or vigorous stirring of the melt?
- What gas line pressure is available?
- Will gas flow be on at all times when there is liquid metal contact, or will there be significant times when the plugs will be off-line?
- Will gas flow control be automated or simple, manual control?
- What purging gas (es) will be utilised?

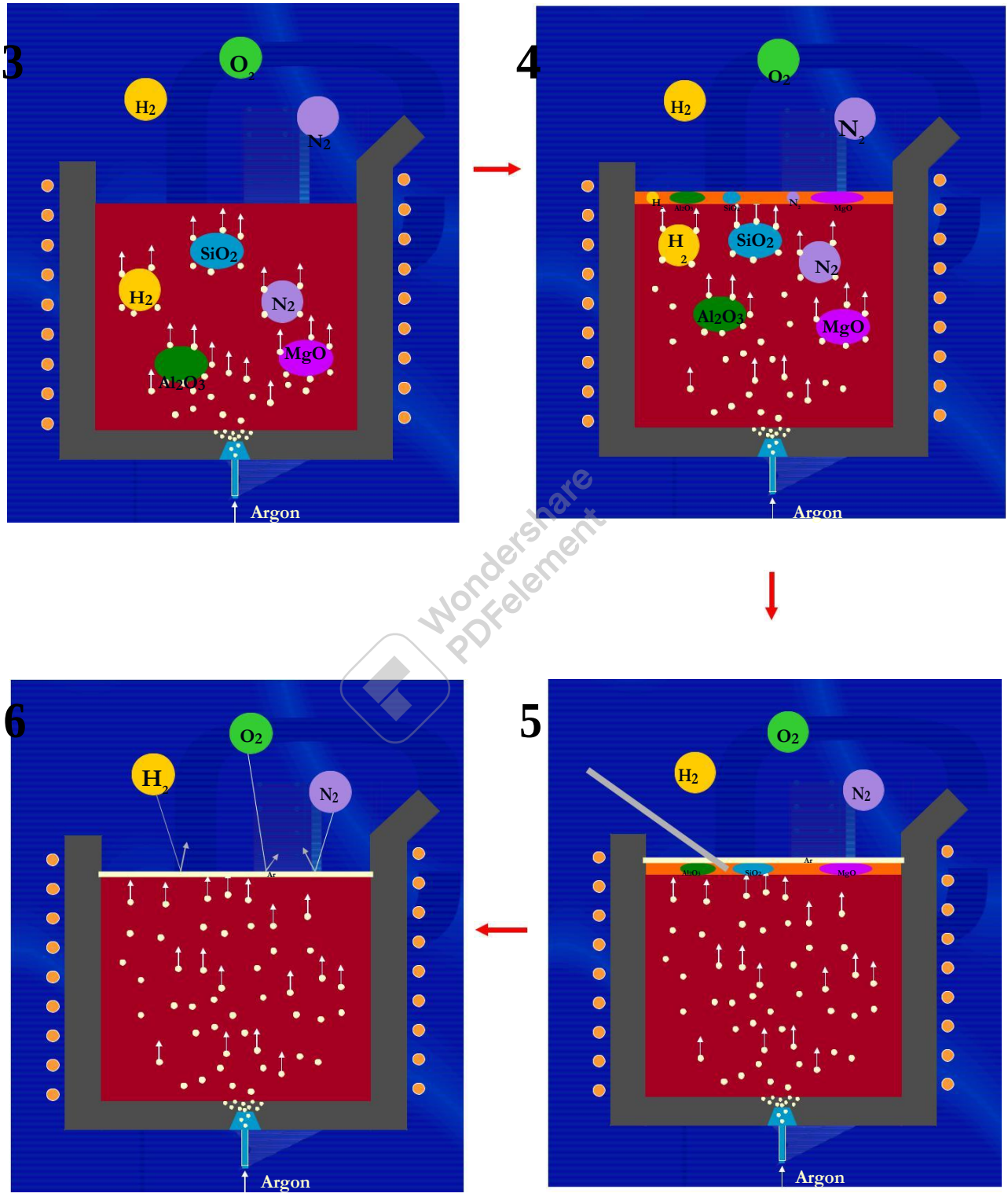
Gas Diffuser Action

The following diagrams demonstrate the processes occurring in the melt as a gas diffuser operates:





Gas Diffuser Action



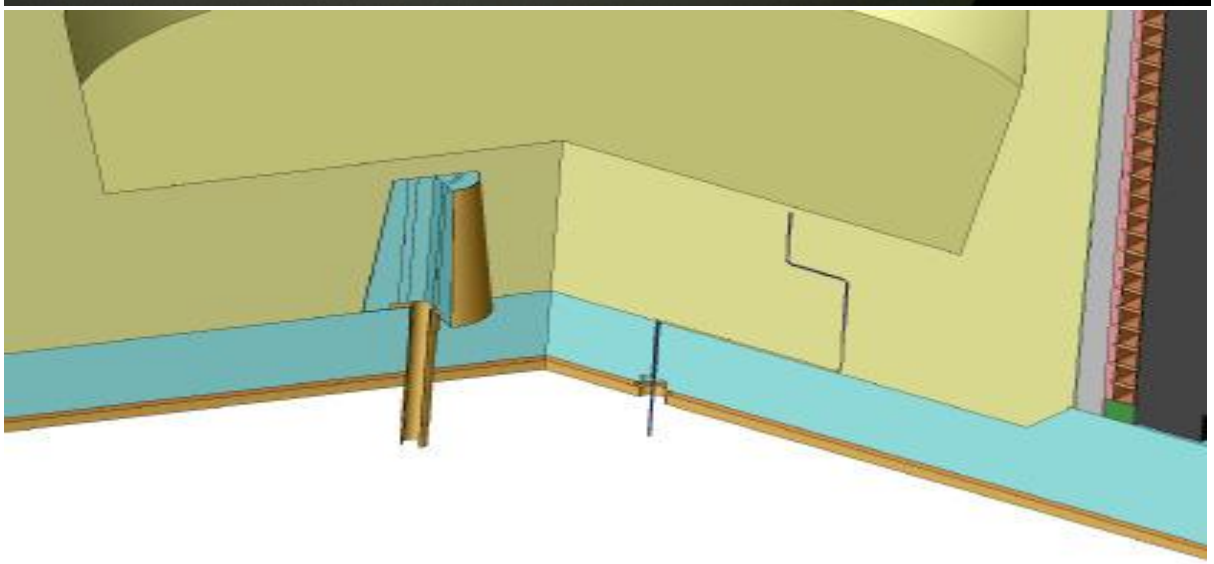
Gas Diffusers Installation in the Induction Furnace

1. Plugs need a minimum 75-100MM of STEEL-RAM material in the floor above the plus;

2. Plugs must be installed near the center of the floor of the furnace;

3. Plugs diffusing should not be run if less than 1/3 of the metal in the furnace.

4. Plugs can be used for several linings depend on the situation



PRECAST LADDLE

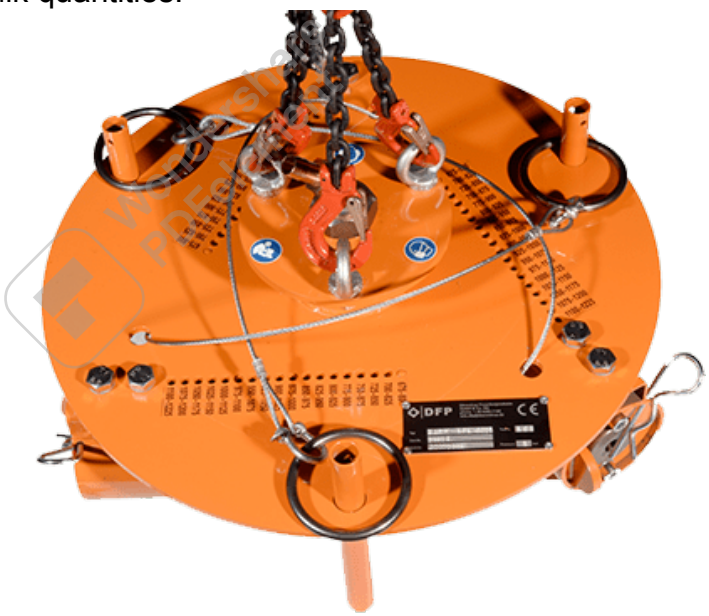
INTRODUCTION:

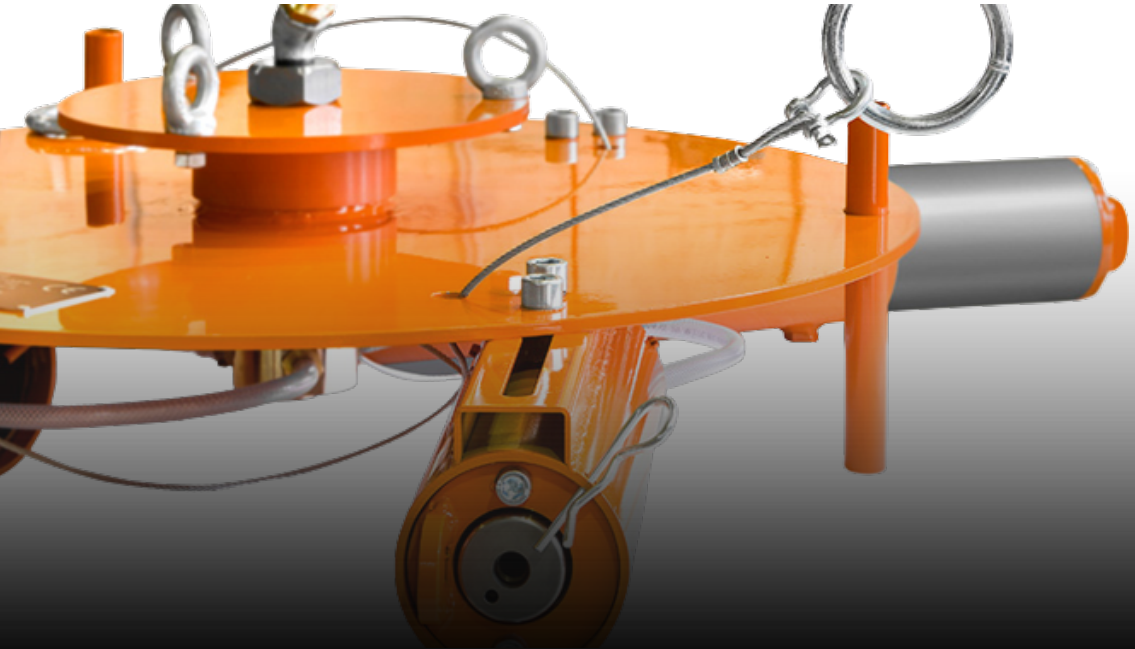
We are highly engaged in offering the wide range of Furnace Precast Pouring which is provided in various sizes and configurations, along with different other specifications. This pouring is used for large scale serial production. This pouring is suitable for all alloys, including steel, iron, and non-ferrous alloys. Our reliable Furnace Precast Pouring is available in some varieties such as Precast Crucibles, Precast Pouring Ladle, Precast Ladle, Precast Pouring Spout, Precast Launder, and Graphite Converter Plate. This maximizes refractory life and provide desired thermal results and freeze planes. This pouring is very cost effective and can be easily availed at cheaper rates, by our valued customers, in bulk quantities.

Automatic Lining Vibrator

INTRODUCTION:

We are highly engaged in providing the wide range of Automatic Lining Vibrator which is tested under different parameters to ensure its effectiveness and flawlessness. This vibrator is known for its unique features like operational fluency, vibration free operation, highly durable, consistent performance, low maintenance, and user-friendly working. Our Automatic Lining Vibrator is available in some varieties such as Manual Lining Forking Tools, Furnace Lining Vibrator, Lining Vibrator, and Ramming Vibrator. This completes ramming operation in a very short time. This vibrator is very cost effective and can be easily availed by our eminent customers, at reasonable rates, in bulk quantities.





Furnace Coil Coating Material

INTRODUCTION:

Backed by developed production facilities and skillful professionals, we are instrumental in proposing a wide stock of the best quality Furnace Coil Coating Material to innumerable esteemed patrons. The gamut comprises Furnace Grouting Material, Furnace Coil Coating Cement. These types of materials have tremendous thermal stability, and high temperature bearing capability as they are made of the best in grade impurity free earthy substances added with a variety of elements under the guidance of domain experts. Plus, they are tested by well-experienced quality checking professionals to guarantee their optimum results, purity, and long shelf life. Over and above, clients can get needed amount of Furnace Coil Coating Material with us at market justified prices with moisture proof packaging options.

Precast Crucibles

INTRODUCTION:

The offered Precast Crucibles is a highly finished container which is especially designed for the casting applications for pouring the molten metals into the molds with the help of runners and other casting channels. It is manufactured by using best quality refractory materials that offers less thermal conductivity and carbon dioxide emission. It is available in various different shapes and sizes that can be customized as per the demands of the customers in bulk at a reasonable and low price

ALUMINIUM SHOTS

INTRODUCTION:

We are highly obliged in offering the wide range of Aluminium Shot which is used for removing oxidation skin, precision casting, hardware tool, machinery manufacturing, automobile spare parts, apparatus, and so on. This shot is tested under different parameters to ensure its high quality. This is widely appreciated by our customers, in the market. Currently, Aluminium Shot is available in few varieties such as Aluminium Shot, Aluminium Notch Bar, and Aluminium Cube. This shot is delivered by breaking up the metal precisely. This shot is very cost effective and can be easily availed by our eminent customers, at reasonable rates, in bulk quantities

Our Aluminum shots come in a range of sizes and specifications to meet your specific needs.
Our aluminum shots are of the highest purity, with a content of 95-96% Purity.
In addition to our aluminum shots, we also offer other high-quality aluminum-related products such as aluminum cubes and aluminum notch bars.

Chemical Composition

Al	96.2
Si	1.8
Fe	0.53
Cu	0.12
Mn	0.22
Mg	0.035
Cr	0.017
NI	0.12
Zn	0.14
Sn	<0.060
Ti	0.15
Pb	0.10
Be	0.0002
Bi	<0.050
Ca	0.0085
Cd	0.089
Sr	<.0005
V	<.0100
Zr	0.0090

BENTONITE POWDER

INTRODUCTION:

Bentonite is a crucial binder used for preparing molding sand, among other things, in foundries. MI-BOND is a selectively mined, high montmorillonite sodium bentonite that is processed and milled under controlled supervision, providing a unique foundry molding system with several key benefits.

Features:
High Swelling
High GCS & WTS
Wide moisture tolerance
Good bond development
This leads to the good casting surface

Typical Properties:

Parameters Specifications
Moisture(% by wt) 10-14
pH 9-10.5
Free Swelling(m) Min 30
MBA Value 370-420
Particle Size (passing 200 Mesh) 84-90
Gelling Time Instant

Bentonite for Construction and Civil Engineering: MI-GEL
Product Description: MI-GEL is a selectively mined, high montmorillonite sodium bentonite, processed and milled under controlled supervision, possessing well-balanced chemical and physical properties. It is designed to cater to all requirements of diaphragm walling, piling, pipe jacking, tunneling, or drilling.

Features:
High viscosity
Good gel strength
Low water loss
High liquid limits
Good suspension capabilities
Fine particles penetrate deep into cleavages and cracks to clog pores

Typical Properties:

Parameters Specifications

Moisture 10-14
pH 9-10
Free swelling (ml) 26-30 ml min.
Liquid limit (%) 500-550
MBA value 380-420
Filter ate loss of 15-17 ml
Marsh funnel viscosity (sec) 40 min. (5% Bentonite addition)
Particle size (passing 200 mesh)

CERAMIC BLANKET

INTRODUCTION:

Go through the wide range of Ceramic Sheet which is designed and manufactured by making use of premium grade of raw materials and latest technology. This sheet is used in chemical and material processing, dielectric and electrical insulating. This sheet is known for its unique features such as rugged construction, light weight, remarkable quality, simple to handle and excellent durability. Ceramic Sheet is available in few varieties such as Cerawool Blanket, Ceramic Paper Roll, and Ceramic Fiber Blanket. This is offered with in diversified thickness, designs and specifications. This sheet is very effective as well as economical and safe to use.

We are pleased to offer you our range of fire blankets to meet your specific requirements. Our products are available in various densities and dimensions, and we have the following options available:

SPECIFICATIONS:

A: 7.30m x 0.610m x 25mm Thick, Density: 64kg/m³
B: 7.30m x 0.610m x 25mm Thick, Density: 96kg/m³
C: 7.30m x 0.610m x 25mm Thick, Density: 128kg/m³

Chemical Composition

			A	B	C
A.Al_2O_3	%	:	41.81	41.81	41.81
B.SiO_2	%	:	53.98	53.98	53.98
C.ZrO_2	%	:	3.67	3.67	3.67
D.Fe_2O_3	%	:	0.064	0.064	0.064

FUSED SILICA

INTRODUCTION:

We are here to provide you with the wide range of Fused Silica which is tested under different parameters to ensure its effectiveness and flawlessness. This silica is used to make various refractory shapes such as crucibles, trays, shrouds, and rollers. This silica is known for high service temperature, super thermal shock resistance, high chemical durability, low electrical conductivity and excellent durability. Right now, Fused Silica is available in few varieties such as Fused Silica Sand, Fused Silica Powder, and Quartz Silica Powder. This silica is made from high purity silica, using unique fusion technology to ensure the highest quality. This product is very effective as well as economical too.

Fused silica is an amorphous siliceous glass produced by high temperature fusion of high quality crystalline silica (quartz). This fusion produces a substance characterized by very low thermal expansion and a high resistance to temperature and thermal shock.

We are pleased to introduce our Fused Silica Sand, which is available in various sizes and specifications to suit your needs. Our Fused Silica Flour size includes -100, -120, -200, -325, and -400, while our Fused Silica Sand size ranges from 10/20, 20/50, 30/50, 50/100, to 80/120.

Quality Certificate

Testing Standard: GB/T3284-2015. SJ/T 10675-2002

Production Name:		Fused silica		**Production Date:**		Nov 20-28,2021		**Sampling Date:**	Nov 20-28,2021				
Chemical Analysis	**Items**	SiO_2	Fe_2O_3	Al_2O_3	Na^+	Cl^-	Fe^{3+}	PH	XRD Test				
	Unit	%	%	%	%	%	PPM						
	-10/20	99.88	0.0054	0.038					quartz phases SiO_2			<0.1%	
	-30/50												
	50/100								Cristobalite SiO_2			<0.1%	
	-120												
	-200	99.85	0.0056	0.089					Amorphous SiO_2			>99%	
	-325			0.095									
Particle Sizes	**Items**	D50	+4mesh	+10mesh	+20mesh	+30mesh	+50mesh	+70mesh	+100mesh	+200	-200mesh	-325mesh	Pan
	Unit	um	%	%	%	%	%	%	%		%	%	%
	-10/20			2.0	84.0								14.0
	-30/50				0.1	28.0	67.0						4.9
	-50/100						7.0		85.0				8.0
	-120								8.0				92.0
	-200										90.0		
	-325											91.0	

CHEMICAL COMPOSITION		*OTHER PROPERTIES*	
SiO_2 (%)	99.9%	**Moisture (%)**	<0.15
Fe_2O_3 (ppm)	0.0065%	**Loss on Ignition (%)**	<0.15
Al_2O_3 (ppm)	0.017%	**PH**	6-8
Na_2O (ppm)	NIL	**Specific Gravity (g/cm³)**	2.2
K_2O (ppm)	NIL	**Whiteness (%)**	>95
WATER SOLUBLEION CONTENT		**EC (us/cm)**	<5.0
Na^+ (ppm)	<10	**Conductive**	**< 5 us/cm**
Cl^- (ppm)	<10	**Fusion Temp**	**1800**
Fe^{2+} (ppm)	<100	**Softening Temp**	**1400-1500**
		quartz	**NIL**
		Cristobalite	**< 0.1%**

SILICA SAND

INTRODUCTION:

Go through the wide range of White Silica Sand which is used to produce flat glass for building and automotive use, container glass for foods and beverages, and tableware. This silica sand is obtained by the quartz materials from the sources. This sand is widely supplied to different industries for various applications.White Silica Sand is required for production of fiberglass insulation and reinforcing glass fibers. This sand is available in few varieties such as Washed Silica Sand, Bentonite white wash silica sand, and Washed White Silica Sand. This is very cost effective and can be easily availed by our eminent customers, at reasonable rates, in bulk quantities.

We have silica sand available in various sizes :
1.00-2.00mm, 1.00-1.50mm, 0.50-1.50mm, 0.25-0.70mm, 0.17-0.50mm, 0.14-0.29mm,
(12-18Mesh), (16-25Mesh), (20-33 Mesh), (24-60 Mesh), (30-80 Mesh), (50-100 Mesh)

It is generally used in Ceramic, Glass, Solvent Plants, Foundries, F.B.C Boiler Based Industries etc.