



**One Stop Solution for all Your Refractories Needs,**



**MPR REFRACTORIES LTD.**



## **INTRODUCTION**

Company was established in the year 1988. One of the most internationally recognized & preferred organization with ISO certification. MPR is privileged of being India's First and only Refractory Manufacturer in the country to have been presented the Prestigious DSIR National Award for best R & D efforts by Ministry of Science & Technology, Government of India.

All this with over 30 Years of service excellence over timely quality deliverable.

MPR Refractories aim to provide latest technology at best value & outstanding Customer care experience to its privileged Clients.



## **FOUNDER.**

MPR Refractories was founded by Late Shri M.P.Rao a Ceramic Engineer graduated from the Benaras Hindu University in 1944. He was associated with various organizations of repute and was a well-known figure in the refractory fraternity in the country. MPR Refractories was started at Hyderabad with a VISION to cater's to the needs of the Steel, Cement, Chemical, Metallurgical and Other Allied Industries in the year 1988.

## **VISION**

"MPR is to participate Consistently in extending our generation limits and expanding our production Capacities with innovative and consistent quality products with a specific end Goal to meet the growing worldwide demand and therefore hold our position at The fore-front of the refractory Industry."

## **AWARDS & RECOGNISATION.**

MPR Refractories Ltd is the first and only Refractory manufacturer in the country to have been presented the prestigious.

DSIR National Award for best R & D efforts by Ministry of Science & Technology, Government of India.

MPR Refractories Ltd is an ISO 9001 certified Company.



# INDEX



## 1. Management Messages

**CHAIRMAN.**

**DIRECTOR.**

## 2. Regular Products:

**Product details as per Industry Utility.**

**ALUMINIUM INDUSTRIES.**

**CEMENT INDUSTRIES.**

**FERROUS FOUNDRIES.**

**IRON INDUSTRIES.**

**STEEL INDUSTRIES**

**Detailed Specification.**

**Ferro Alloys**

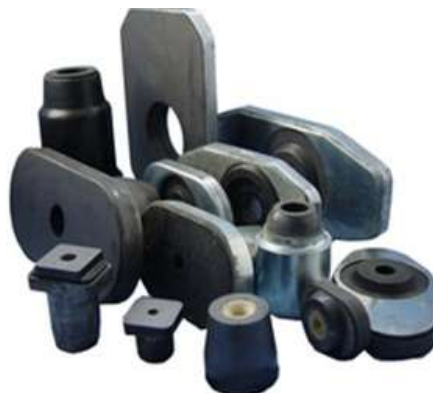
**Mechanical Items**

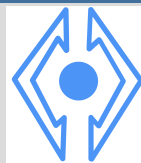
## 3. Castables.

## 4. Mortars

## 5. Customised Products.

## 6. Value Added Services.





## **CHAIRMAN'S MESSAGE.**

*I have always believed any business in this world can be made successful with two things first one is a strong internal desire and the second is to have the right people to support you,*

*We at MPR takes our employees and Stakeholders as our family and believe in them stand by them and look forward not just for business but for an overall transformation of every individual who joins us in this amazing journey called life.*

*Thanks regard*

*Chairman*

---

## **DIRECTOR MESSAGE.**

*It is my immense pleasure to introduce you to MPR refractory products. The details available in this catalog will provide a small synopsis about us.*

*I am glad to share with you that MPR Refractories Ltd has emerged as a thriving and strong refractory manufacturer. We have been providing refractory solutions to various industries i.e. Steel, Cement, Fertilizer, and Glass.*

*We have been a pioneer for over the last 30 Years with quality and innovative products at affordable prices due to our diligence and prudent policy in combating the challenges in the present competitive global economy. Apart from manufacturing refractory products, the company has been providing a new level of innovative, efficient, and affordable solutions to improve productivity and reduce energy consumption in steel manufacturing sector.*



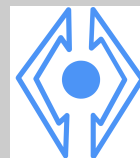
*Thanks, Regards  
Rajeev Mishra*

# PRODUCTS.



MPR has a wide product range in SGP, Zirconia Nozzles, Bricks, Casables, Tundish, Monolithic & Mortars covering :

S. No	Material Description	Unit	Unit wt Kg
1	Slide Gate Plate 1QC	Nos	3.2
2	Ladle Nozzle 1QC	Nos	2.6
3	Collector Nozzle 1QC	Nos	2.3
4	Collector Nozzle Extn. 1QC	Nos	2.6
5	GP-II Porous Plug	Nos	6.5
6	Ladle Well Block 1QC (White)	Nos	50
7	Ladle Well Block 1QC (Black)	Nos	51
8	GP-II Porous Plug Well Block (White)	Nos	50
9	GP-II Porous Plug Well Block (Black)	Nos	50
10	Slide Gate Plate 2 QC	Nos	6.3
11	Ladle Nozzle 2 QC	Nos	5.7
12	Collector Nozzle 2 QC	Nos	4.5
13	Collector Nozzle Extn. 2 QC	Nos	5
14	GP-III Porous Plug	Nos	11.5
15	Ladle well block 2 QC Std.	Nos	85
16	Porous Plug Well Block GP-III	Nos	85
17	Safflow System (Hand Operated Plate)	Nos	2.1
18	Ladle Nozzle HO	Nos	2.7
19	Collector Nozzle HO	Nos	1.7
20	Ladle Well Block HO	Nos	30
21	95% Tundish Nozzles	Nos	0.7
22	95% Tundish Nozzles 6mm wall thickness	Nos	0.75
23	Tundish Nozzle Graphite	Nos	0.75
24	95% Tundish Nozzle for Quick Change Mechanisam	Nos	0.35
25	95% CNC Nozzle	Nos	0.35
26	95% Composite Nozzles (Square / Round)	Nos	3.3
27	Tundish Well Block	Nos	1.6
28	Tundish Well Block (for Ramming Mass)	Nos	18
29	90K Mortar	M.T	1
30	NFC - Silica based	M.T	1
31	NFC - Chromo based	M.T	1
32	NFC - Zircon based	M.T	1
33	70% Mortar	M.T	1



S. No	Material Description	Unit	Unit wt Kg
34	Casting Powder	M.T	1
35	Ramming Mass	M.T	1
36	Coil Coating Compound (95% Alumina)	M.T	1
37	95% Castable	M.T	1
38	90% Castable	M.T	1
39	90S Castable	M.T	1
40	70% Castable	M.T	1
41	60% Castable	M.T	1
42	50% Castable(FC Super)	M.T	1
43	Bricks - (All sizes)	No.s	
44	Tundish Board	Set	
45	Pre- Cast Pre-fired - (All Shapes)	No.s	
46	Ladle Covering Compound (Radex)	M.T	1
47	Lancing pipe - (All Variety)	Mts	1
48	Temperature Tips	Nos	
49	Gar Seal	M.T	1
50	Gar Pack	M.T	1
51	Starter Tubes	Set	
52	Ladle Shroud	No.s	1
53	Mono Block Stopper	No.s	1
54	Sub-Entry Nozzle	No.s	1
55	Ferro Manganese	M.T	1
56	Ferro Silicon	M.T	1
57	Silico-Manganese	M.T	

**\*We Do Provide Customized Products Based on your Specific Requirements / Designs:**

Today MPR Refractories is one of the most modern state of the art refractory plants in the country with the following facilities:

Closed circuit crushing & grinding system.

Intense mixers.

PLC controlled high capacity presses.

Continuous oil fired tunnel kilns of (+) 1700 OC.

High temperature furnaces for special products with High precision & Quality.



## ALUMINIUM INDUSTRIES.

In An Aluminium production facility the process is complex wherein the flow of activities include extraction of metallic aluminium from minerals followed by reprocessing through different facilities, where we for see several type of furnaces in the production of aluminium semi-finished products. It is in these Re-melting stages that our advanced refractory products are utilised while the primary aluminium production relies on refractory bricks.

MPR Refractories offer solutions for the entire aluminium industry. Products for primary aluminium are mainly shaped products such as Fireclay bricks, Insulating bricks and Alumina bricks, which can be supplied by us.

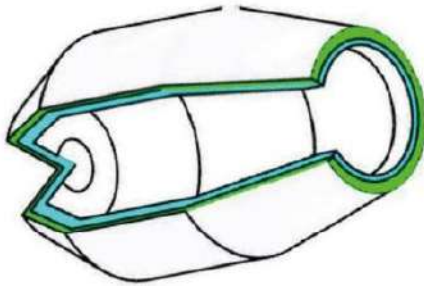
Aluminium having strong affinity for oxygen, results to different mechanisms of oxidation of molten aluminium alloys. The bath surface passivation stops the process at the interface with the furnace atmosphere, but the reaction can proceed at the surface of refractory or in its burden layers. This results in the development of corundum, which can be prevented by the correct use of our refractories.

There are two main areas where corundum may be formed: First At the bath surface because of direct oxidation:  
 $4\text{Al (melt)} + 3\text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$

In the refractory starting from the liquid contact surface (under the bath level), because of the higher affinity to oxygen of metallic aluminium diffused from the bath into refractory according to the reaction:  
 $4\text{Al (diff)} + 3\text{SiO}_2 \rightarrow 2\text{Al}_2\text{O}_3 + 3\text{Si}$

Different Application Points are:

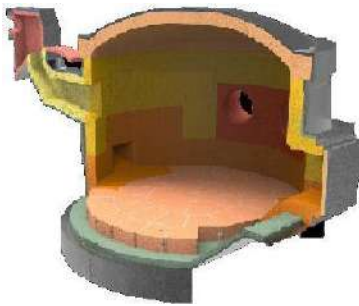
- 1. Tilting furnace,**
- 2. Round top charge melting and holding furnace,**
- 3. Shaft type reverberator furnace,**
- 4. Electrical heating furnace,**
- 5. Channel induction furnace,**
- 6. Road transfer ladle,**
- 7. Rotary drum furnace**



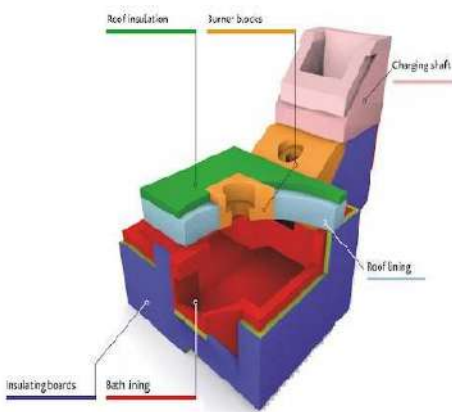
AREA	MATERIAL REQ	ISSUE ADDRESSED
Working lining cylinder	low cement castable; dense bricks	low porosity, resistance to AI
Working lining cones	low cement castable; dense bricks	low porosity, resistance to AI
Flim	low cement castable	low porosity, resistance to AI
Nozzles	low cement castable	low porosity, resistance to AI
Safety lining	medium/low cement castable	conductivity, strength, resistance to AI
Insulation layer	insulating castable/board	insulation properties



AREA	MATERIAL REQ	ISSUE ADDRESSED
Working lining	low cement or self flowing castable	anti wetting to AI and strength
Insulation layer 1	insulating castable	thermal conductivity and strength
Insulation layer 2	insulating board	thermal conductivity
Cover lining	low or MW insulating castable	thermal conductivity and strength
Cover insulation	insulating boards	thermal conductivity



AREA	MATERIAL REQ	ISSUE ADDRESSED
Burner	low cement, no cement castable, plastic, gunning mix	thermal shock, temperature
Inlet	medium, low cement castable	strength, abrasion, resistance against AI
Spout working lining	medium, low cement castable	strength, abrasion, resistance against AI
Roof working lining	low cement castable, gunning mix	thermal shock
Roof insulation	LW insulating castable	thermal conductivity, density
Upper wall working lining	low cement castable, plastic, gunning mix	thermal shock
Upper wall safety/insulation lining	LW, MW insulating castable	thermal conductivity, strength
Lower wall working lining	low cement castable, plastic	resistance against AI, strength, abrasion
Lower wall safety/insulation lining	low cement castable, MW castable	thermal conductivity, resistance against AI
Bath working lining	low cement castable	resistance against AI, strength
Bath safety/insulation lining	low cement castable, MW castable	thermal conductivity, strength
Door working lining	medium, low cement castable	density, strength, resistance against AI
Door safety/insulation lining	LW insulating castable, insulating boards	density, thermal conductivity
Insulation second layer	insulating boards	thermal conductivity



AREA	MATERIAL REQ	ISSUE ADDRESSED
Roof working lining	low cement castable	thermal shock
Shaft working lining	medium, low cement castable	thermal shock, strength
Roof and shaft insulation	LW insulation castable	thermal conductivity, density
Burner	no cement castable, plastic	thermal shock
Bath working lining	no cement castable	resistance against AI, strength
Bath insulation/safety lining	medium, low cement castable, MW castable	thermal conductivity, resistance to AI, strength
Chute roof	low cement castable	thermal shock, strength
Chute bottom	no cement castable	resistance against AI, strength, abrasion
Main opening lintel	medium, low cement castable	strength, thermal shock
Door working lining	medium, low cement castable, MW castable	thermal conductivity, density
Door insulation/safety lining	LW insulating castable, insulating boards	density, thermal conductivity
Insulation second layer	insulating boards	thermal conductivity



AREA	MATERIAL REQ	ISSUE ADDRESSED
Roof working lining Roof insulation Bath working lining Bath safety/insulation lining Burner Chimney Spout Lower wall working lining Lower wall safety/insulation lining Upper wall working lining Upper wall safety/insulation lining Door working lining Door safety/insulation lining Insulation second layer	low cement castable, gunning mix LW insulating castable low cement castable low cement castable, MW castable low cement, no cement castable, plastic, gunning mix MW insulating castable medium, no cement castable no cement castable, plastic low cement castable, MW castable low cement castable, plastic, gunning mix LW, MW insulating castable medium, low cement castable LW insulating castable, insulating boards insulating boards	thermal shock thermal conductivity, density resistance against Al, strength thermal conductivity, strength thermal shock, temperature thermal conductivity, density strength, abrasion, resistance against Al resistance against Al, strength, abrasion thermal conductivity, resistance against Al thermal shock thermal conductivity, strength density, strength, resistance against Al density, thermal conductivity thermal conductivity



FIRE CLAY HIGH ALUMINA BRICKS

Name	Al2O3 (%) Min	Fe2O3 (%) Max	A.P. (%) Max	B.D. (cm/cc) Min	CCS (kg/cm2) Min	PLC (%) Max	PCE (SQ) Min	RUL T <sub>200</sub> (°C) Min	Application Area
MPR - BF	36	1.70	18	2.15	300	± 0.30 at 1450 0C/ 2 hrs.	31	1450	Blast Furnace Stack Lining
MPR - BF-D	42	1.50	16	2.25	400	± 0.5 at 1450 0C/ 2 hrs.	33	1500	Blast Furnace Lining
MPR-45 N	45	1.50	21	2.20	350	± 0.50 at 1500 0C/ 2 hrs.	34	1450	Blast Furnace lining, cement rotary kiln lime calcinations kiln, glass tank furnace
MPR-45 D	45	1.50	16	2.30	450	± 0.30 at 1450 0C/ 2 hrs.	34	1500	-do-
MPR 50 D	50	1.30	18	2.35	350	± 0.30 at 1500 0C/ 2 hrs.	34	1530	Anode baking furnace
MPR-55D	55	1.50	18	2.40	500	± 0.50 at 1450 0C/ 2 hrs.	35	1520	Blast Furnace lining, cement rotary kiln, lime calcinations kiln, glass tank furnace
MPR-LF -60	59	1.20	18	2.50	500	± 0.50 at 1450 0C/ 2 hrs.	36	1600	BF hot blast main, glass tank furnace
MPR-LF -50	50	1.10	18	2.40	400	± 0.5 at 1450 0C/ 4 hrs.	34	1520	Anode baking furnace
MPR -SIC-AL-65	65	1.50	12	2.65	400	-	36	1650	Torpedo Ladle
MPR 45 B	45	3.5	22	2.25	300	± 1.5 at 1350 0C/ 2 hrs.	33	1350	Cement Plants
MPR 50 B	50	3.5	22	2.30	350	± 1.5 at 1400 0C/ 2 hrs.	33	1370	-do-
MPR-60B LF	60	2.50	22	2.45	450	± 2.0 at 1450 0C/ 2 hrs.	35	1420	
MPR -60 B	60	3.00	22	2.40	400	-do-	34	1400	
MPR - 62	62	1.50	22	2.40	350	± 0.40 at 15000C/ 2 hrs.	36	1500	Blast furnace stove checkers, BF lining
MPR -62 D	62	1.20	16	2.50	600	± 0.20 at 15000C/ 2 hrs.	36	1550	Blast furnace hearth & tuyere
MPR 62 LF	62	1.2	18	2.52	500	± 0.3 at 15000C/ 2 hrs.	36	1600	Blast Furnace checkers
MPR-70 LF	70	1.5	20	2.60	500	± 0.3 at 15000C/ 2 hrs.	36	1550	Rotary Kiln Lining
MPR-Mul-70 S	70	0.80	20	2.50	500	± 0.20 at 15000C/ 2 hrs.	36	1700	Blast Furnace hearth & tap hole, glass tank furnace
MPR-Mul-70 (F)	70	0.5	17	2.55	600	± 0.20 at 15000C/ 2 hrs.	36	1720	Blast Furnace hearth & tap hole, glass tank furnace
MPR-70 B (LF)	70	2.5	20	2.60	500	± 0.30 at 16000C/ 2 hrs.	36	1480	EAF roof, ladle
MPR -70 B	70	3.0	22	2.55	450	± 0.30 at 16000C/ 2 hrs.	35	1440	EAF roof
MPR-80B (LF)	80	2.5	20	2.70	500	± 0.30 at 16000C/ 2 hrs.	37	1500	-do-
MPR -80 B	80	3.0	22	2.70	500	± 3.0 at 16000C/ 2 hrs.	35	1460	-do-
MPR-85 TAB	84	1.5	20	2.70	700	± 0.5 at 15000C/ 2 hrs.	37	1580	Aluminum melting & holding furnace.
MPR-85 D	85	1.5	20	2.90	500	± 0.5 at 15000C/ 2 hrs.	37	1650	Torpedo ladle lining



# CEMENT INDUSTRIES.



Our Refractory Solutions have been developed by R&D Team keeping in mind special operating conditions required in the cement manufacturing process. In today's Environment more and more alternative fuels are burned and special refractory materials are required, throughout cement-making process one has to keep in mind all special requirements regarding the correct choice of refractory materials mainly the design of the plant, raw materials used in operation process & the various fuel options, all these have critical influence on the refractories required.

Last but not the least alkali infiltrations, build-ups, abrasion and the use of alternative fuels, must all be carefully evaluated and one need to act accordingly.

All the major Points of operations have to be well addressed as per the specific needs be it:

## 1. Burner lance.

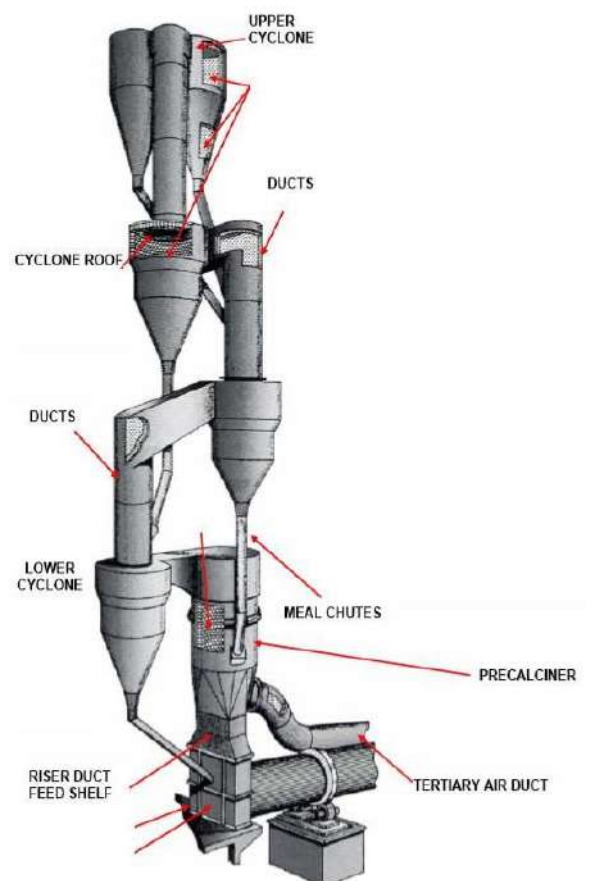
It's a critical area with specific requirements based on kiln and grid cooler design, raw materials used, and fuel type. Immense thermal pressure, abrasion, infiltration and chemical attack need to be considered in the right proportion for the monolithic used to line the lance effectively.

## 2. Preheater (Cyclones and connecting ducts).

One of the most important stage for the optimum performance of a cement plant is its cyclones system. Each pre-heating system design is different and unique and each cyclone system must be analysed in order to identify the critical refractory zone based to temperature exposed & accordingly evaluate the effects of alkali, chlorine infiltration, and all other factors which may influence the performance of refractory materials used in the various cyclone systems.

## 3. Calciner.

Being the initial step of the clinker production process. Its main property of refractory lining is to withstand to the chemical attacks coming from the hot gases of the process. Refractory materials must have low porosity and good thermal stability.



**TYPICAL PREHEATER TOWER**

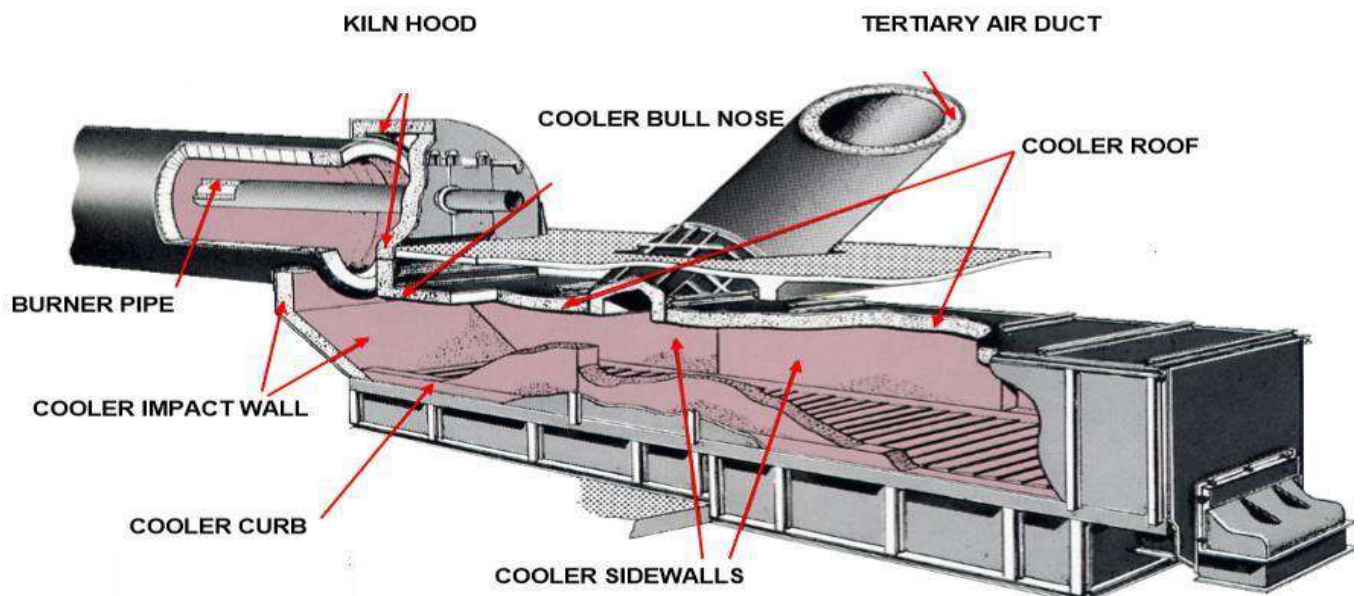


#### 4. Riser duct.

It is one of the most firefighting area due to continuous build-ups, alkali infiltration & chemical impacts to the steel anchors. As a general rule we offer lining of the duct with bricks in the round sections along with castables in the square sections for better performance and limited concerns.

#### 5. Smoke chamber.

An area, where build-ups, frequent use of high pressure water pump results in causes thermal shock require special care as well we do supplies product as per clients need to overcome this situation of pressure.



#### 6. Nose ring.

Be it a high thermal shock, mechanical or chemical attack resistance. The nose ring area requires specified monolithic refractory material which can overcome all above issues we do support customised monolithic based on your desired design.

#### 7. Tertiary Air duct.

Being one of the most stressed area we suggest abrasion resistant castables & fireclay bricks.

#### 8. Grate cooler.

Since clinker falls off the kiln into the grate as a result this area is also automatically becomes problematic high thermal shock and abrasion are few to be named .As a solution we use high quality raw materials and special binders in our monolithics products, which are capable of supressing conditions at this point.

#### 9. Kiln hood.

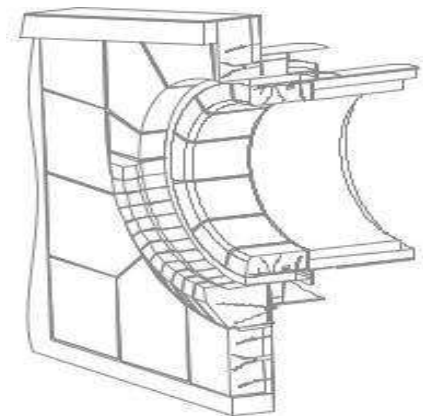
As it's a moderate area we advise refractories with low thermal conductivity, good abrasion resistance and good resistance to chemical attack mainly 40-50-60 % Aluminium bricks perform quite well.

#### 10. Pre-cast Shapes.

As stated above for all critical areas such as grate cooler roof & bull nose we can mfg monolithic precast shapes to our customers for quicker establishment of infra and uninterrupted operation.

#### 11. Other Products.

We do support all our clients over specified customised products as per their requirements give us the design and we make it for you.





## FIRE CLAY HIGH ALUMINA CERAMIC SETTING

### CERAMIC SETTING MORTARS

Brand Name	Setting	Sintering Temp. (OC) Min	Grading (mm)	Application Temp (OC) Max	Al2O3 (%) Min	Fe2O3 (%) Max	PCE (SK) Min	Application Area
PR-HGM	Ceramic	1300	0-0.5	1400	33	2.5	32-33	Laying HG Bricks
MPR-45 M	Ceramic	1350	0-0.5	1450	42	2.0	33	Laying 42-45% Alumina Bricks
MPR-60 M	Ceramic	1350	0-0.5	1500	60	2.0	35	Laying 50-60% Alumina Bricks
MPR-70 M	Ceramic	1350	0-0.5	1550	70	2.0	35	Laying 70% Alumina Bricks
MPRmul-70 M	Ceramic	1400	0-0.5	1600	70	1.5	36	Laying Mullite Bricks
MPR-80 M	Ceramic	1400	0-0.5	1650	80	2.5	36	Laying 80% Alumina Bricks
MPR-90 M	Ceramic	1400	0-0.5	1700	90	2.0	36	Laying 90% Alumina Bricks

### CHEMICAL SETTING MORTARS

Brand Name	Setting	Sintering Temp. (OC) Min	Grading (mm)	Application Temp (OC) Max	Al2O3 (%) Min	Fe2O3 (%) Max	PCE (SK) Min	Application Area
MPRASF-50	Air	1100	0-0.5	1550	50	4	32	Laying 45-50% Alumina bricks
MPRASN-50	Air	1100	0-1	1550	50	4	32	-do-

### PLASTIC MASSES

Brand Name	Setting	Sintering Temp (OC) Min	Grading (mm)	Application Temp. (OC) Max.	Al2O3 (%) Min	Fe2O3 (%) Max.	PCE (SK) Min	Application Area
MPRPM-50	Chemical	1100	0-5	1600	50	1.0	35	Incinerators for medium & high temperature application with high strength at intermediate temperature
MPRPM-80	Chemical	1100	0-5	1750	80	1.5	38	Steel & Aluminum furnace
MPRPM-90	Chemical	1100	0.5	1750	88	0.5	38	Silver Melting furnace & Acid regeneration plant



# FERROUS FOUNDRIES.



In a Ferrous foundries we process a wide range of alloys / material for a variety of applications through process of melting and casting a metal and obtain desired shape and properties through predesigned moulds.

Evolution at foundries is a continuous process as per desired requirements & applications. Automotive industry is one of the key and most important potential market. In today's environment foundry equipment has therefore evolved to a level that they are future ready to support the growing needs of not just the automotive industry but also other applications & for the same we at MPR Refractories have a full range of refractories to cater all related requirements of the foundry Process. We are committed to support new markets keeping in mind environment and efficiency.

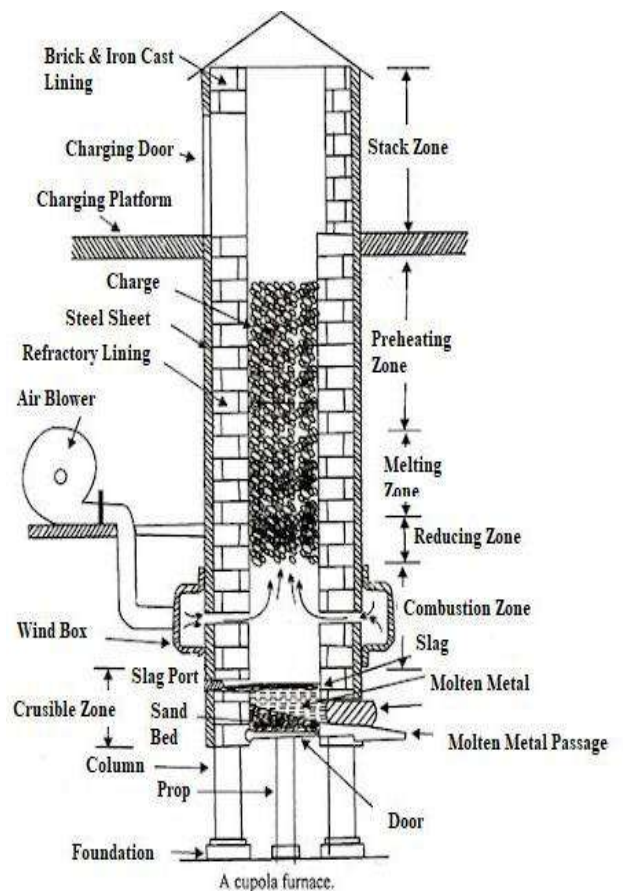
As we are aware apart from regular Products as required in the process cement chemical bond refractories are indispensable & most demanding applications. Which are monolithics based on a non-hydraulic bonding system which allows for higher permeability to gases resulting in quicker dry-out.

We can suggest number of Products for different stages of Ferrous Foundries mainly:

## 1. Cupola Furnace.

In refractory linings terms there are mainly two philosophies: long campaign or daily cupola. Daily linings are mainly acid ramming masses that can be easily wrenched out and substituted, partially or totally, every day whereas In a long campaign cupolas linings are made of alumina based refractories that are adapted to the different zones. These can normally be operated one or two weeks before relining. This is where we can be a value addition to our customers.

Further developments are unlined cupolas where melting zone and stack have a water cooled shell which does not require refractories and can be operated for several weeks.

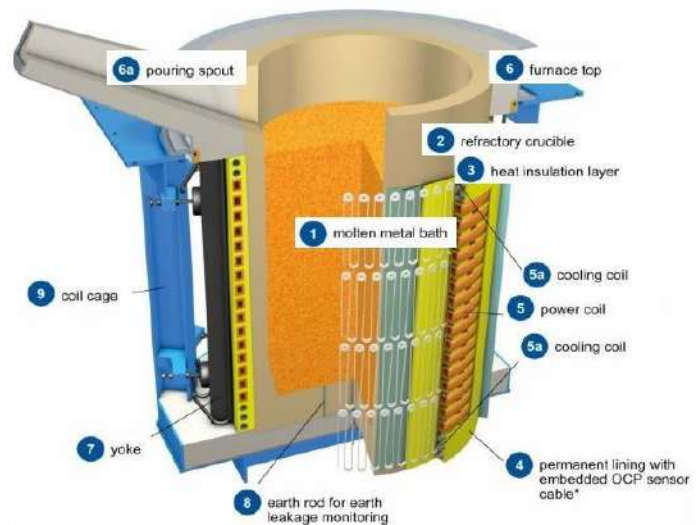




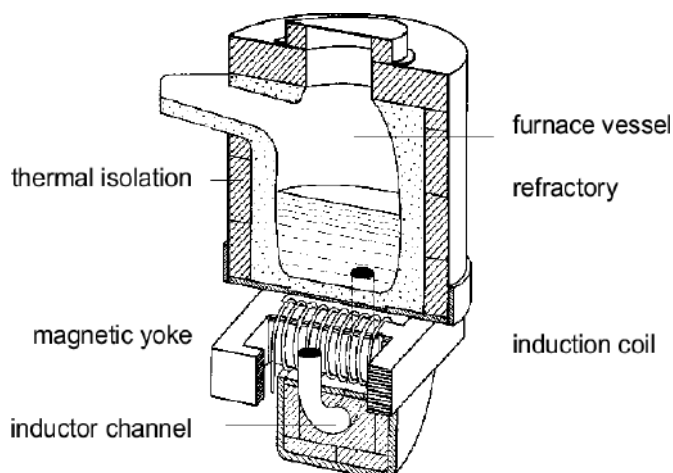
AREA	MATERIAL REQ		ISSUE ADDRESSED
	Long Campaign	Daily Lining	
Charging zone	gunning mix, regular castable	gunning mix, regular castable	abrasion , CO resistance
Stack	gunning mix, low cement castable	gunning mix, low cement castable	abrasion, thermal shock, CO resistance
Melting zone	SiC+ C castable or gunning mix, low cement castable	Silica ramming or gunning mix	liquid metal corrosion, CO resistance
Tuyere zone	SiC+ C ramming mix	Silica ramming mix	thermal shock, metal corrosion, CO resistance
Hearth	SiC+ C castable, SiC+ C ramming mix	Silica ramming mix	liquid metal corrosion
Siphon	SiC+ C castable, SiC+ C ramming mix	Silica ramming mix	liquid metal corrosion
Structural components			
Tuyere			
Tubes			

## 2. Coreless induction furnace.

It has become a primary preferred furnace in this age of foundries mainly due to its flexibility, ease of use along with controlled emissions. Size, power and frequency of these furnaces have increased during the years, they can be used both for melting and holding purposes. Silica based linings are dominantly used in to melt iron, while alumina based dry mixes are the most common refractory material in this furnace to melt steel.



Area	Material	Issue Addressed
Shell		
Top cap	dry mix, low cement castable, patching material	sintering behavior; liquid metal corrosion
Spout	low, ultra low cement castable	thermal shock, liquid metal corrosion
Upper ring and bottom	low, ultra low cement castable	thermal shock, liquid metal corrosion
Working lining	dry mix	sintering behavior; liquid metal corrosion
Safety lining	low cement castable	thermal shock, liquid metal corrosion
Slip plane	mica foil	
Slip plane	mica + fiber foil	
Coil grout	trowelling material	sticking and sealing behavior
Structural components		



## 3. Channel induction furnace

It is critical point utilized for holding purpose as a buffer between the casting line and the melting (cupola) furnace.

The power is induced through the inductor in the bottom around a loop of molten metal, where failures of refractory lining are most likely to occur.

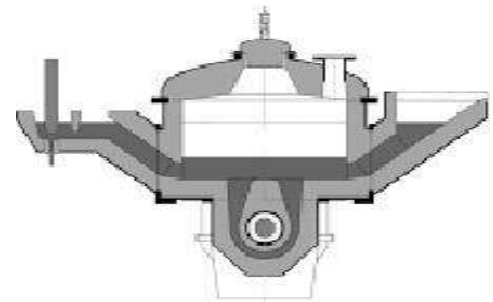
The furnace is operated 24 hours per day & observe immense pressure



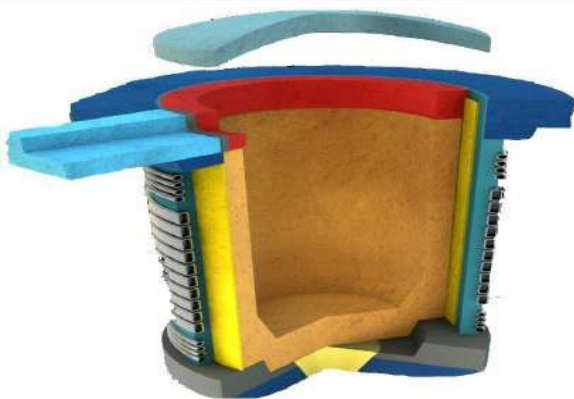
AREA	MATERIAL REQ	ISSUE ADDRESSED
Shell		
Spout	low, ultra low, no cement castable	resistance against molten metal, strength, thermal shock
Pot working lining	low, ultra low, no cement castable	resistance against molten metal, sintering behavior
Pot safety lining	regular castable, gunning mix	strength, resistance against molten metal
Pot insulation	insulating bricks, MW insulating castable	thermal conductivity, strength
Insulation second layer	insulating boards	thermal conductivity

#### 4. Press-pouring Furnace.

This evolution of the channel furnace is operated in inert atmosphere and allows for the finest control over temperature and poured volume along with high flexibility.



AREA	MATERIAL REQ	ISSUE ADDRESSED
Shell		
Spouts working lining	low, ultra low, no cement castable	resistance against molten metal, strength, thermal shock
Pot working lining	low, ultra low, no cement castable	resistance against molten metal, strength
Pot safety lining	regular castable, gunning mix	strength, resistance against molten metal
Pot first insulation	insulating bricks, MW insulating castable	thermal conductivity, strength
Insulation	insulation boards	thermal conductivity



#### 5. Coreless Automatic press-pouring Furnace.

This furnace combines the features of Coreless furnaces and channel press the furnace in the same set of equipment. Refractories for this application also meet a compromise of properties. The press pour channel is created inside the refractory lining.

AREA	MATERIAL REQ	ISSUE ADDRESSED
Shell		
Casting nozzle	ultra low cement castable, precast shape	liquid metal corrosion, thermal shock
Inlet outlet basin	regular, low cement and ultra low cement castable	liquid metal corrosion, thermal shock
Bath and press pour channel	dry mix, ramming mix	sintering behavior, liquid metal corrosion
Bath safety lining	self flowing castable	patching behavior, resistance to liquid metal
Supporting ring	low and ultra low cement castable	strength, liquid metal corrosion
Lower insulation	ceramic paper, micro porous board	thermal conductivity
Upper insulation	gunning mix, micro porous	thermal conductivity, strength
Slip layer 1	mica foil	
Slip layer 2	mica foil	



## FIRE CLAY HIGH ALUMINA CASTABLES

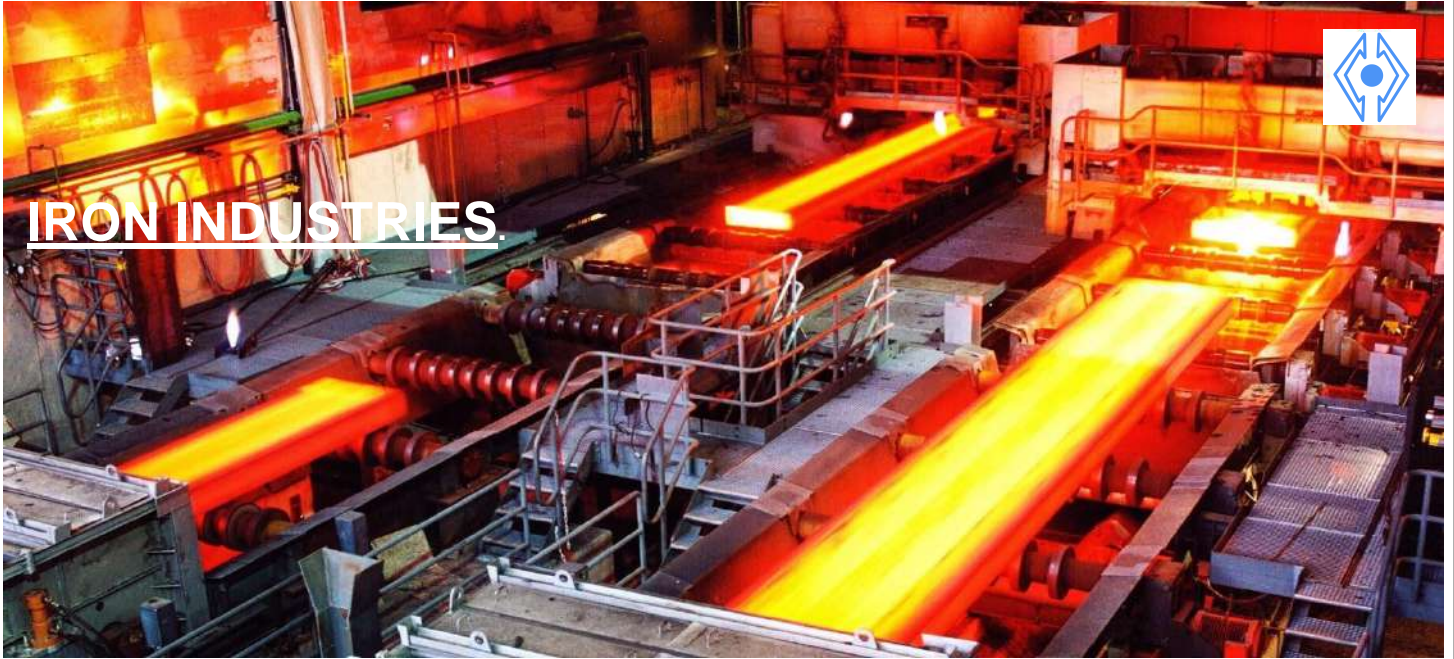
### INSULATING CASTABLES

Brand Name	Al <sub>2</sub> O <sub>3</sub> (%) Min	Fe <sub>2</sub> O <sub>3</sub> (%) Max	B.D. (gm/cc) Min	Cold Crushing Strength (Kg/cm <sup>2</sup> )				Thermal Conductivity at 5000C hot (%) Face temp. (Kcal/m/hr C)			Water Grain Size Addition (mm) By wt. (%)		Appli- cation Area
				Dried at 1100C / 24 hrs Min	Fired at 14000C / 3 hrs Min	Fired at 15000C / 3 hrs Min	Fired at 1300/ 4 hrs Min	Max	Max	Max	Max	Max	
MPR insulcast 7	25	5.0	0.85	15	6	8	-	0.2	±1.0 11000C	1100	70-80	0.5	Back up lining
MPR insulcast 8S	35	4.0	0.8	25	15	12	-	0.26	±1.0 12000C	1200	40-50	0.5	Heaters, stacks duct in petroleum application
MPR insulcast 9	25	4.0	1.00	20	8	10	-	0.29	±1.0 11000C	1100	50-60	0.5	Petroleum reformer
MPR inulcast9HS	25	4.0	1.00	25	10	12	-	0.3	±1.0 13000C	1300	50-60	0.5	Heaters, stacks ducts in petroleum

### INSULATING CASTABLES

Brand Name	Al <sub>2</sub> O <sub>3</sub> (%) Min	Fe <sub>2</sub> O <sub>3</sub> (%) Max	B.D. (gm/cc) Min	Cold Crushing Strength (Kg/cm <sup>2</sup> )				Thermal Conductivity at 5000C hot (%) Face temp. (Kcal/m/hr C)			Water Grain Size Addition (mm) By wt. (%)		Appli- cation Area
				Dried at 1100C / 24 hrs Min	Fired at 14000C / 3 hrs Min	Fired at 15000 C / 3 hrs Min	Fired at 1300/ 4 hrs Min	Max	Max	Max	Max	Max	
MPR Insulcast 10S	32	6.0	1.1	25	10	12	-	0.3	±1.0 11000C	1100	60-70	0.5	-do-
MPR insulcast 11	35	4.0	1.25	40	30	40	60	0.31	±1.0 13000C	1300	40-50	0.5	Heaters, stacks duct in petroleum application, DRI kiln
MPR Insulcast 11L1	45	1.50	1.25	60	50	40	70	0.31	±1.0 13000C	1300	40-50	0.5	Heaters stacks duct in petroleum application.
MPR Insulcast 13	35	3.5	1.40	60	40	50	100	0.33	±1.0 13000C	1350	40-50	0.5	-do-
MPR insulcast 13 L1	45	1.5	1.45	100	50	55	70	0.33	±1.0 13000C	1350	40-50	0.5	-do-
MPR insulcast 15	3	1.5	1.50	90	60	60	90	0.43	±1.0 13000C	1350	30-40	0.5	-do-
MPR insulcast 15 L1	48	1.0	1.50	150	90	60	90	0.49	±1.0 13000C	1350	30-40	0.5	-do-

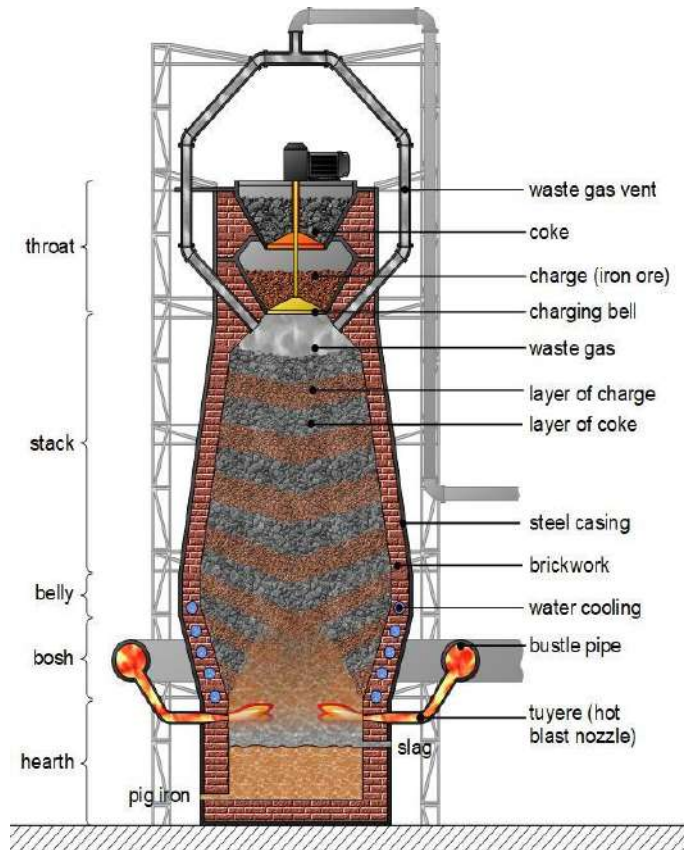
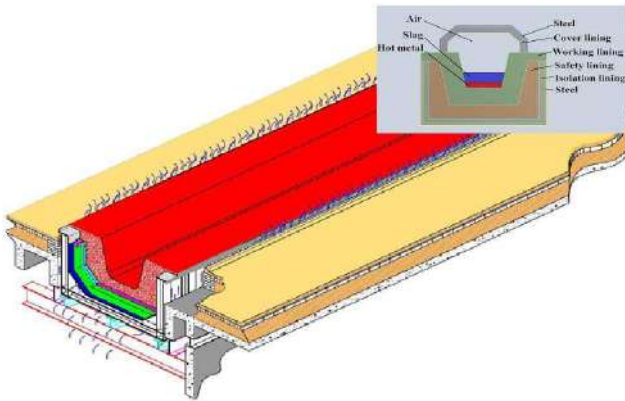




# IRON INDUSTRIES.

Iron Industry is dynamic operation module either you make good money or you lose drastically due to errors over Production Process, The most crucial point for an industrialist in this trade is achieve longer **Blast furnace** life due to two reasons one its time consuming exercise & second the cost involved is high.

Though the hearth remains the most critical zone for repair, the stack can always be re-profiled. robotic maintenance or manual installations by lifting platform are today are well established techniques used worldwide.



We support best with best Refractories for the Blast furnace in order to have better service life extension & related environmental/safety issues keeping in mind factor like cost reduction without compromising quality and help our clients with Value for money products & services.

We Focus over Runner design, product architecture, along with accurate emphasis over application technology that contribute to desired performance of the **Casthouse**. We provides reliable high alumina - silicon carbide - carbon products for all **working** and **safety linings** of the runners keeping in mind long campaign service life ,Low and ultra-low cement castable ,Brown fused alumina and silicon carbide based ,High erosion resistant, Iron and slag resistant , Thermal cycling/thermal shock resistant ,Low cracking behaviour & Pitch-free and no toxic emission with Long service life, No cracks formation use of Oxidation resistant, High mechanical properties, Casted on site in precast blocks, Designed for zoned lining with Pitch-free and no toxic emission for Safety Linings.



AREA	MATERIAL REQ	ISSUE ADDRESSED
Working lining	Vibrating ags castable, shotcrete or ramming mix	Iron and slag resistance, thermal shock, oxidation, abrasion resistance
Bottom safety lining	Vibrating or shotcrete castable	Thermal shock, mechanical characteristics
Sidewalls safety lining	Vibrating castable or precasted blocks	Thermal shock, mechanical characteristics
Back filling	Self flowing castable, dry mix	Thermal shock, thermal conductivity
Permanent lining	Vibrating castable or chamotte bricks	Thermal shock, mechanical characteristics
Shell protection	Insulating board, insulating paper	Thermal conductivity

**IRON RUNNER SLAG RUNNER**

AREA	MATERIAL REQ	ISSUE ADDRESSED
Working lining	Ags vibrating castable, shotcrete, precasted blocks or ramming mix	Iron/slag resistance, thermal shock, abrasion resistance
Safety lining	Vibrating castable, self flowing castable	Thermal shock, mechanical resistance
Safety lining	Chamotte bricks	Thermal shock, mechanical resistance

**TILTER**

AREA	MATERIAL REQ	ISSUE ADDRESSED
Working lining	Ags vibrating castable, shotcrete or ramming mix	Iron/slag resistance, thermal shock, abrasion and impact resistance
Working lining	Vibrating ags reinforced castable	Iron/slag resistance, thermal shock, abrasion and impact resistance
Permanent lining	Chamotte bricks or vibrating castable	Thermal shock, mechanical characteristics
Shell protection	Insulating board or insulating paper	Thermal conductivity

**TAPHOLE CLAYS**

Controlled Casting rate, corrosion resistance and balancing the Taphole wear and the renewal of the “mushroom” are all aspects creating synergy between the user’s demand and the producer’s capability.

Special attention is paid to the product design and manufacturing to ensure stable furnace operation and hearth walls protection.

We Supply best in class clay that can support you with Daily iron production up to 10,000 t/d, Short intermediate tapping time, 18 min ,Prolonged continuous operation on the same taphole, more than 18 days & easy drilling at the scheduled time.

All this along with Long and stable taphole length, Low specific consumption, Longer casting duration i.e over 200 mi ,Lowest emission & Controlled casting rate.





Brand Name	Al <sub>2</sub> O <sub>3</sub> (%) Min	Fe <sub>2</sub> O <sub>3</sub> (%) Max	BD (gm/cc) Min	Cold Crushing Strength (Kg/cm <sup>2</sup> ) Min.				PLC (%) At Max	Service Temp. (OC) Max	Refractoriness Temp (OC) Min	Water By WT (%)	Max Grain Size (mm)	Application Area
				1100C /24 hrs	8000C /3 hrs	11000C /3 hrs	15000C /3 hrs						
MPR LC-45	4.5	1.25	2.3	700	800	900	1000	± 1.0 (1500 OC/3 h)	1500	1720	6.7	0.5	Cement Kiln, DRI kiln, Incinerators
MPR LC-60	60	1.0	2.5	700	800	900	1000	± 1.0 (1500 OC /3 h)	1600	1800	5.5-6.5	0.5	-do-
MPR LC -70	70	1.5	2.7	700	800	900	1000	± 1.0 (1500 OC /3 h)	1600	1800	5.6	0.5	Cement Kiln, DRI kiln, Incinerators, Tundish,
MPR LC 70 (L1)	70	1.0	2.75	700	800	900	1000	± 1.8 (1500 OC /3 h)	1600	1800	5.6	0.5	Cement Kiln, Incinerators
MPR LC 80	80	1.5	2.6	800	900	1000	1200	± 1.8 (1550 OC /3 h)	1600	1800	4.5-5.5	0.5	DRI Kiln, Alumina Kiln, Lances
MPR LC-90	90	1.0	3.0	950	950	1100	1200	± 0.5 (1550 OC /3 h)	1750	1800	4.0-5.0	0.5	Rotary kiln nose rings, striker pads, launders

### CASTABLES FOR SPONGE IRON KILN

Brand Name	B.D.(g/cc) 1100 C/ 24 hrs Min	Cold Crushing Strength (kg/cm <sup>2</sup> ) Min				PLC (%) 1100 OC / 3 hrs max	PLC (%) Max	Grain Size (mm)
		Dried at 1100C/ 24 hrs	8000C/ 3 hrs	Fired at 11000C/ 3 hrs	14000C/ 3 hrs			
MPR LC-45 SI	2.2	500	600	700	800	+ /0.3	+ /0.5 14000C / 3 hrs	(0-5)
MPR LC-60 SI	2.3	500	600	700	800	+ /0.3	+ /0.5 14000C / 3 hrs	(0-5)
MPR LC-62 MSI	2.3	600	700	800	900	+ /0.3	+ /0.5 14000C / 3 hrs	(0-5)
MPR LC-70 SI	2.4	600	700	800	900	+ /0.3	+ /0.5 14000C / 3 hrs	(0-5)
MPR LC-80 SI	2.5	700	800	900	1000	+ /0.3	+ /0.5 14000C / 3 hrs	(0-5)
MPR LC-70 SI	2.1	300	200	150	400	+ /0.5	+ /1.0 14000C / 3 hrs	(0-5)
MPR Insul-11SI	1.25 max	40	30	40	-	+ /0.8	+ /1.0 13000C / 3hrs	(0-5)



# STEEL PLANTS.



We at MPR Refractories aim to support our prestigious clients over solution's with ladle lining & Develop advanced monolithic products and services we do support & supply customised solutions in accordance to our customer needs so that they achieve optimum performance levels & cost effective desired Products at any given point and time.

Our main focus remains over to minimizing costs by lowering the specific consumption and by extending the service life of the ladles which is a critical point of control for any Steel Plant management. We are specialised with Castables and Precasted solutions for steel treatment as well as for all the secondary metallurgy devices. All are products help you against all kinds of Chemical ,Abrasion attacks and are capable to withstand High mechanical & Thermal shock more over are Compatibility with repairs at any given point and time .

Tundish being a crucial final vessel where steel cleanness has to be ensured. We ensure uniformity of the steel temperature, control turbulences and steel flow & ensuring safety of the linings during long casting sequences

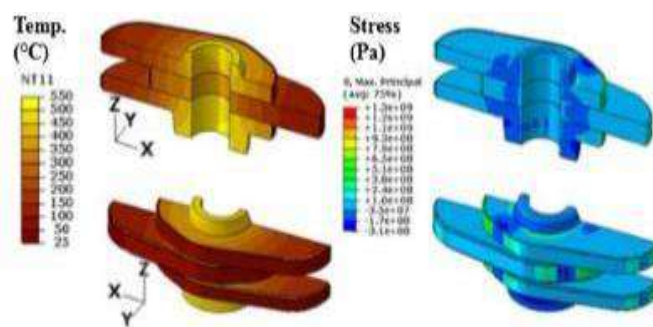


Figure 14. Thermo and mechanical behavior in preheating stage

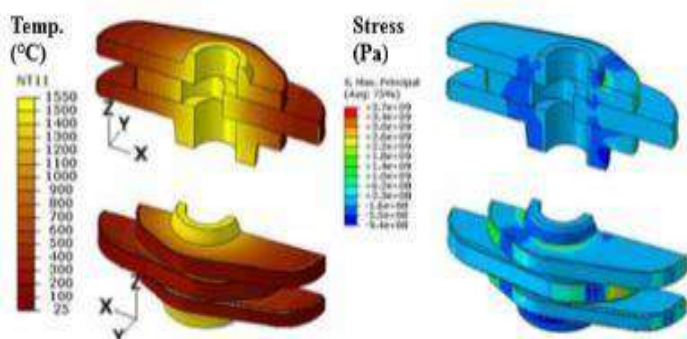


Figure 15. Thermo and mechanical behavior in continuous casting stage

We even Support with Monolithic safety lining, basic spray for working lining, and precasted pieces that can be manufactured in different quality grades to match different Client demands & Shared Designs.

Our R&D Team believes on continuous improvements of different products based over our clients requirements be it about SGP mechanism, Well blocks or Nozzles ,we ensure quality as our topmost priority



## SLIDE GATE PLATES

Brand Name	A.P.* (%) Max	B.D.* (gm/cc) Min	Al <sub>2</sub> O <sub>3</sub> (%) Min	Fe <sub>2</sub> O <sub>3</sub> (%) Max	Cr <sub>2</sub> O <sub>3</sub> (%) Max	MgO (%) Min	F.C. (%) Min	ZrO <sub>2</sub> (%) Min	HMOR 14000C (kg/cm <sup>2</sup> ) Min	Application Area
SLIDE PLATE : MPR - 98 M	17	2.95	-	-	-	97	-	-	-	Continuous casting
MPR-80 MS	8	2.80	-	-	-	80	-	-	100	Continuous casting
MPR- 85 AC	16	3.10	84	-	-	-	4	-	-	Ingot & continuous casting
MPR- 85 AZCN	16	3.00	80	-	-	-	4	5.5	-	Continuous casting
MPR- 85 AZCS	16	3.00	72	-	-	-	4	9.0	-	Continuous casting
MPR -AZCLP	6	3.00	75	-	-	-	4	9.0	100	Continuous casting
NOZZLE MPR- CN 90	20	3.00	88	0.5	3	-	-	-	-	Nozzle for slide gate system
MPR -LN 90	18	2.95	84	-	-	-	4	-	-	Nozzle for slide gate system
MPR -LN 90 S	12	2.90	90	-	-	-	2	-	-	Nozzle for stopper head system
MPR -LN 90 G	12	2.90	-	-	-	90	5	-	-	Nozzle for slide gate system



## COLLECTOR NOZZLES

Brand Name	A.P.* (%) Max	B.D.* (gm/cc) Min	Al <sub>2</sub> O <sub>3</sub> (%) Min	Fe <sub>2</sub> O <sub>3</sub> (%) Max	Cr <sub>2</sub> O <sub>3</sub> (%) Max	MgO (%) Min	F.C. (%) Min	ZrO <sub>2</sub> (%) Min	HMOR 14000C (kg/cm <sup>2</sup> ) Min	Application Area
SLIDE PLATE : MPR - 98 M	17	2.95	-	-	-	97	-	-	-	Continuous casting
MPR-80 MS	8	2.80	-	-	-	80	-	-	100	Continuous casting
MPR- 85 AC	16	3.10	84	-	-	-	4	-	-	Ingot & continuous casting
MPR- 85 AZCN	16	3.00	80	-	-	-	4	5.5	-	Continuous casting
MPR- 85 AZCS	16	3.00	72	-	-	-	4	9.0	-	Continuous casting
MPR -AZCLP	6	3.00	75	-	-	-	4	9.0	100	Continuous casting
NOZZLE MPR- CN 90	20	3.00	88	0.5	3	-	-	-	-	Nozzle for slide gate system
MPR -LN 90	18	2.95	84	-	-	-	4	-	-	Nozzle for slide gate system
MPR -LN 90 S	12	2.90	90	-	-	-	2	-	-	Nozzle for stopper head system
MPR -LN 90 G	12	2.90	-	-	-	90	5	-	-	Nozzle for slide gate system

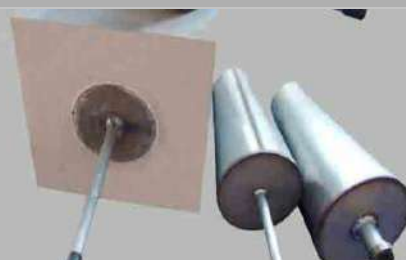


## LADLE NOZZLES

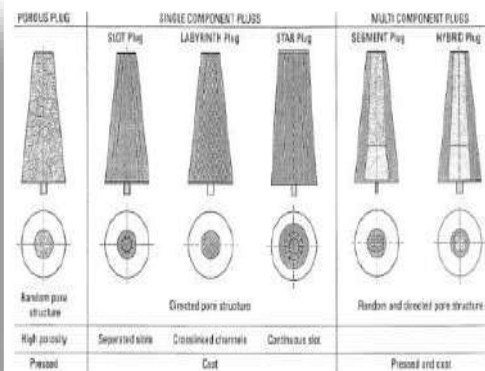


Brand Name	A.P.* (%) Max	B.D.* (gm/cc) Min	Al2O3 (%) Min	Fe2O3 (%) Max	Cr2O3 (%) Max	MgO (%) Min	F.C. (%) Min	ZrO2 (%) Min	HIMOR 14000C (kg/cm2) Min	Application Area
SLIDE PLATE : MPR - 98 M	17	2.95	-	-	-	97	-	-	-	Continuous casting
MPR-80 MS	8	2.80	-	-	-	80	-	-	100	Continuous casting
MPR-85 AC	16	3.10	84	-	-	-	4	-	-	Ingot & continuous casting
MPR-85 AZCN	16	3.00	80	-	-	-	4	5.5	-	Continuous casting
MPR-85 AZCS	16	3.00	72	-	-	-	4	9.0	-	Continuous casting
MPR-AZCLP	6	3.00	75	-	-	-	4	9.0	100	Continuous casting
NOZZLE MPR- CN 90	20	3.00	88	0.5	3	-	-	-	-	Nozzle for slide gate system
MPR-LN 90	18	2.95	84	-	-	-	4	-	-	Nozzle for slide gate system
MPR-LN 90 S	12	2.90	90	-	-	-	2	-	-	Nozzle for stopper head system
MPR-LN 90 G	12	2.90	-	-	-	90	5	-	-	Nozzle for slide gate system

## POROUS PLUGS



Brand Name	A.P.* (%) Max	B.D.* (gm/cc) Min	Al2O3 (%) Min	Fe2O3 (%) Max	Cr2O3 (%) Max	MgO (%) Min	F.C. (%) Min	ZrO2 (%) Min	HIMOR 14000C (kg/cm2) Min	Application Area
POROUS PLUG	18	-	88	-	-	50	-	-	-	Steel Ladle, LRF, VOD





TUNDISH NOZZLES

Brand Name	AP* (% Max)	B.D.* (gm/cc) Min	Al2O3 (%) Min	Fe2O3 (%) Max	ZrO2 (%) Min	Application Area
MPR-ZRN 66	20	3.65	-	-	65	Tundish
MPR-ZRN 75	20	3.85	-	-	74	-do-
SEATING BLOCK: MPR.TWB	21	2.20	45	3.5	-	Seating Block for Zircon nozzle



WELL BLOCKS

Brand Name	AP* (% Max)	B.D.* (gm/cc) Min	Al2O3 (%) Min	Fe2O3 (%) Max	Cr2O3 (%) Max	MgO (%) Min	FC (%) Min	ZrO2 (%) Min	HMOR 14000C (kg/cm2) Min	Application Area
MPR WB 96	-	2.90	96	-	-	-	-	-	-	Well Block/ Seating Block
MPR WB 98	-	3.00	98	-	-	-	-	-	-	Well Block /Seating Block
MPR WB LCC	-	2.75	75	0.7	-	-	-	-	-	Well Block/ Seating Block





MPR Refractories Ltd has established itself as a reliable sub-contractor for manufacturing exchangeable metering nozzles compatible with Vesuvius – CNC/SYS120 nozzle changer system used in integrated steel plants. Our nozzles were certified for its reliability, high metallurgical quality, and performance. Zirconia metering nozzles is one of our niche products that are manufactured under close supervision at our dedicated nozzle manufacturing division, ZIRCONIA, METERING NOZZLES. MPR REFRACTORIES LTD manufactures a wide range of Zirconia metering nozzles for continuous casting of steel.

These nozzles include:

- Tundish Metering Nozzle.
- Exchangeable Metering Nozzle.
- Stationery Upper Nozzle Insert.
- Exchangeable Lower Nozzle Insert.



#### STATIONERY UPPER NOZZLE INSERT

- The stationary nozzle located within the Tundish lining channels molten steel into the exchangeable nozzle. These nozzles contain a Zirconia insert pressed into a high alumina body. Depending upon the customer requirement, Zirconia Insert alone can be supplied or the insert can be co-moulded into a high alumina body. For the co-moulded body, contacting surfaces are ground to exacting tolerances for maximum surface contact.

#### STATIONERY LOWER NOZZLE INSERT

- The exchangeable nozzle located at the bottom of the tundish is hydraulically actuated with no disturbance to steel stream. These nozzles contain a Zirconia insert pressed into a high alumina body. Depending upon the customer requirement, Zirconia Insert alone can be supplied or the insert can be co-moulded into a high alumina body. For the co-moulded body, contacting surfaces are ground to exacting tolerances for maximum surface contact.



#### KEY FEATURES

- Extended casting sequence
- Magnesia stabilized high-density Zirconia insert.
- Consistent casting speeds
- High purity metallurgy
- Reliability in performance
- High Dimensional Accuracy
- Compatible with Vesuvius CNC/SYS120 nozzle changer system.



# Ferro Alloys



## Ferro Manganese

Ferro manganese is an iron and manganese alloy that typically contains approximately 80% manganese. Mainly used to prevent the bad effects of sulfur, ferro manganese. It also acts as a deoxidizer and combines with sulfur, thereby enhancing the product's hot-working properties.

## Silico-Manganese

Silico Manganese is an alloy of between 65% and 68% manganese, between 16% and 21% silicon, and between 1.5% and 2% carbon. It is produced by smelting slag with coke and flux of quartz from high carbon Ferro Manganese or manganese. The smelting temperatures are high and more energy is needed for silicon quartz.



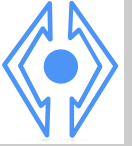
## Ferro Silicon

Ferro silicon is an iron and silicon alloy. The average content of silicon weight ranges from 15% to 90%. A high proportion of iron silicides are present in it. Ferro silicon is formed in the presence of iron by reducing silica or sand with coke.

# Mechanical Items



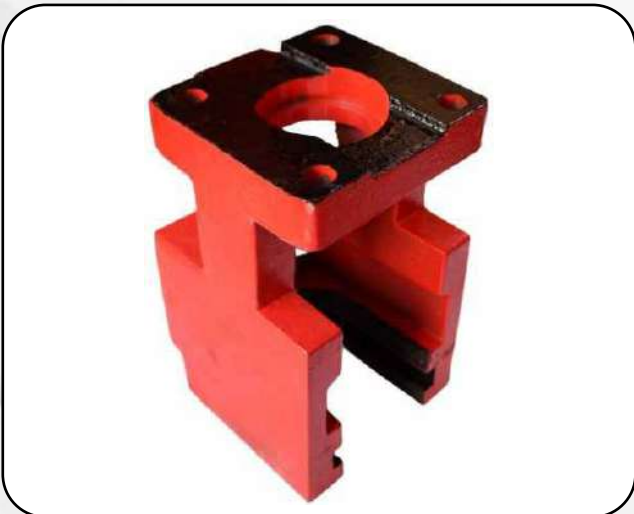
- Ladle Slide Gate Mechanism System (1QC - 2QC)(Manual)
- Eye Bolt & Expansion Compensating Nuts
- Nozzle Holder
- Slider
- Fixed Plate / Fixed Plate Holder
- Housing Cover (Along with Gliding Rails, Protection Tube & Pin)
- Adaptor Frame (Along with Guide Bush & Keys)
- Cylinder Bracket Slide Gate
- Centering Ring / Centering Ring Jig
- Hydraulic Cylinder - Flange and Coupling
- Seal Kit for Hydraulic Cylinder
- Protection Box Assembly
- Dummy Bar / Dummy Bar Bolt
- Plugs - Cast Iron / Copper
- Extension Rod
- Eccentric Clamping Device
- Gliders
- Gliding Rails
- Dumping Unit Washer
- Silicon O Rings / O Rings / Oil Seal
- Hose Rayon Braided / Hose with S.S. Braiding / Wire Braided Hose
- Cable Compensating
- Spray Nozzles
- Hydraulic Power Pack Assembly
- Manual Slide Gate - Movable Setter / Base Plate / Cover Plate
- M. S. Lancing Pipe



**Adaptor Frame**



**Ladle Slide Gate Mechanism**



**Cylinder Bracket**



**Fix Plate**



**Housing Without Fix Plate**



**Ladle Slide Gate Mechanism**



**Nozzle Holder**



**Silicon 'O' Rings**



**Slider**



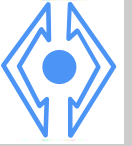
**Hydraulic Cylinder Seal Kit**



**Spray Nozzle**



**Centering Ring**



**Dummy Bar Bolt**



**Dummy Bar Bolt**



**Dummy Bar**



**Eye Bolt**



**Gun Metal**



**Heat Compensating Nut Bolt**



**Hydraulic Cylinder**



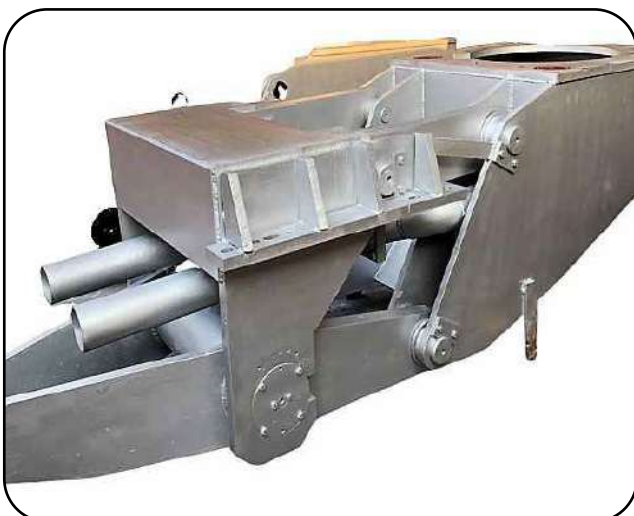
**Hydraulic Power Pack Assembly**



**Hydraulic Power Pack**



**Mould Jacket Assembly**



**Mould Oscillation Unit**



**Calm Shaft Assembly**



**MPR REFRACTORIES LTD.**

**ISO 9001:2015 CERTIFIED COMPANY**

**MPR Refractories Ltd.,**

**HEAD OFFICE:**

# 1-2-234/13/45/B, Sriman Aishwarya Towers,  
Flat No: 202, 2nd Floor, Opp : NTR Stadium,  
Indira Park Road, Hyderabad - 500 029.

<https://mprrefractories.com/>

**PLANT OFFICE:**

Plot No 140 B&C, IDA Bollaram | Jinnaram Mandal | Hyderabad - 502325

Tel +91-9599913322 | [ambujg@mprrefractory.com](mailto:ambujg@mprrefractory.com) | [salesmpr1@gmail.com](mailto:salesmpr1@gmail.com) | [info@mprrefractories.com](mailto:info@mprrefractories.com)