



HENAN INTEGRITY MATERIAL CO.,LTD.



REFRACTORY PRODUCTS



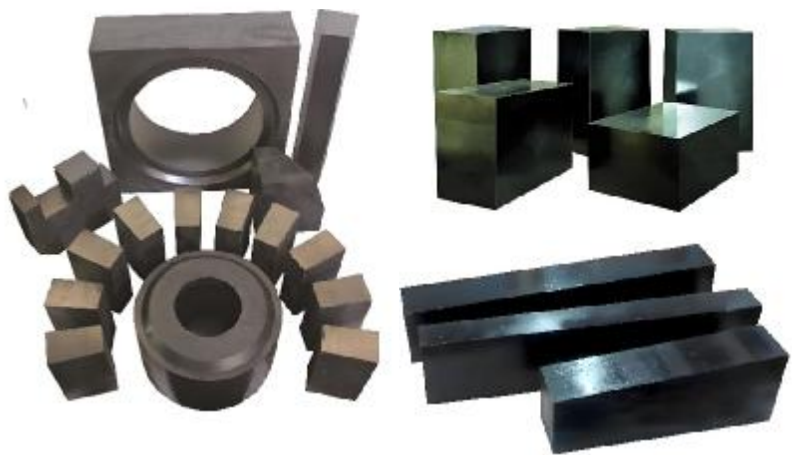
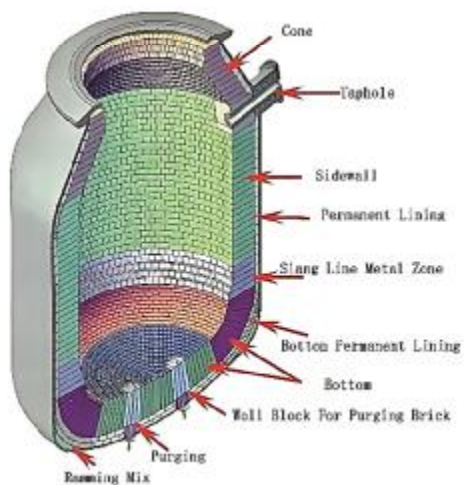
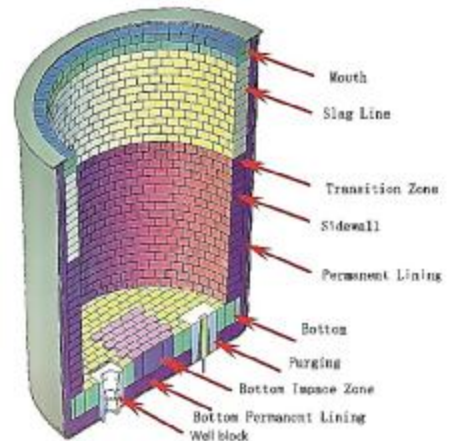
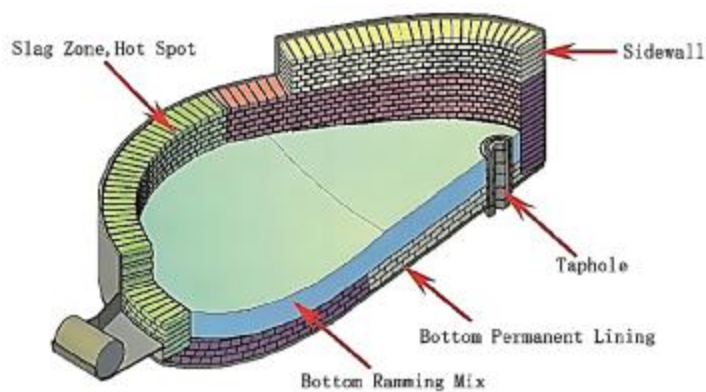
## COMPANY PROFILE

HENAN INTEGRITY MATERIAL CO.,LTD as HIMC located in Chinese Refractory bases Zhengzhou City Henan province in China .was founded in Aug,2008. 1 wholly-owned subsidiaries for HENAN METALLURGY MATERIAL LIMITED and Two joint venture factories (Luoyang & Shandong Tai'An) .The company has registered Capital 30 million RMB . There are about 220 employees, design of the high temperature industry.

The company has been focusing on the production for SEN, Ladle Shroud, Mono-stopper, sliding gate plate & nozzle and other high-grade refractories for more than 16 years, the quality is stable and cover almost all parts of metallurgy industry, such as, BF, EAF, LF, Ladle, Tundish. As a high tech enterprise we gain numbers of new technologies and new products. We provide customers with safe, reliable and high-performance refractory solutions in order to meet the different needs of customers .With strict quality management based on ISO9001:2008 quality assurance system, we have a Magnesia base and a Aluminum base refractory production lines, forming the annual production output of 10000 tons of unshaped refractories and 20000 tons shaped refractory products ,which can meet the different requirements of customers. The products mainly serve steel melting and foundry enterprises.

Our slide gate plates like flocon4200,6300,CS60,80,LS70,FT160 are widely used in the South east,Middle east,and Europe Market.

Meanwhile,with good performance and high stability of SEN,ladle shroud,Stopper,the black refractory is highly praised by our customers.



### MgO-C BRICK INTRODUCTION

#### Product Name: Magnesia-Carbon Bricks For Ladle、 EAF、 BOF

#### Product Description

Using high-purity, high-density, large crystal magnesite and high-purity graphite as main raw materials, together with unique antioxidant and binder, HIMC manufactures a complete range of magnesia-carbon bricks. With the features of high strength, excellent resistance against slag, high refractoriness, good thermal shock resistance, the products are widely applied to ladle、 EAF、 BOF working lining, especially to slag zone. Optimum designs are offered to fit individual applications and actual smelting conditions and reliable performances have been proven.

#### Main Properties

Brand(HIMC-)	MT-10A	MT-10B	MT-10C	MT-14A	MT-14B	MT-12A
MgO (%) ; ≥	80.0	78.0	77.0	80.0	78.0	79.0
CaO (%) ; ≤	1.0	1.0	1.6	1.0	1.5	1.0
C (%) ; ≥	10	10	10	14	14	12
BD(g/cm <sup>3</sup> ) ; ≥	3.02	3.02	3.02	3.02	3.02	3.02
AP (%) ; ≤	4.0	5.0	5.0	4.0	5.0	5.0
CCS (MPa) ; ≥	50	50	50	50	50	50

## SLIDING GATE INTRODUCTION



### Product Name: High Temperatures Fired Slide Plates & High performance slide plate

#### Product Description

HIMC series of slide plates fired at high-temperatures show the features of high strength, good erosion resistance and excellent thermal shock resistance. The products are the best choice for large and medium sized ladles and con-casting tundishes. HIMC series of slide plates fired at high-temperatures cover Al<sub>2</sub>O<sub>3</sub>-C based, Al<sub>2</sub>O<sub>3</sub>-Zr<sub>2</sub>O<sub>3</sub>-C based and magnesia-spinel based, which can meet various needs of different steel grades.

#### Main Properties

Brand(HIMC-)	HY-HBC	HY-HBZ-Z	HY- SC885	HY-HBZ-G	HY-HBZ-MG
Al <sub>2</sub> O <sub>3</sub> %	≥85	≥80	≥80	≥80	≤13
SiO <sub>2</sub> %	/	/	< 5.0	< 4.0	≤3.0
MgO %	/	/	/	/	≥70
ZrO <sub>2</sub> %	/	≥8.0	≥7.0	≥7.0	/
C %	≤6.0	≤7.0	≤5.0	≤3.5	≤6.0
Bulk density (g/cm <sup>3</sup> ) ≥	> 3.00	> 3.05	> 3.05	> 3.00	≥3.00
Apparent porosity (%) ≤	≤10	≤10	≤10	≤10	≤11
Cold crushing strength(MPa) ≥	> 120	> 120	> 120	> 120	≥110
Hot Modulus of rupture (1400C°×0.5h) (MPa) ≥	≥15	≥15	≥15	≥15	≥10

## INNER & LOWER NOZZLE INTRODUCTION



### Product Name:Ladle nozzle

#### Product Description

HIMC developed series of corundum based ladle Inner nozzles with new technique. The nozzles have the features superior resistance to thermal shock, erosion, oxidation and long service life etc. The products have been widely used in steelworks worldwide..

HIMC series of lower nozzles for ladle are made from corundum, bauxite, flake graphite, antioxidant and phenolic resin. They show the features of excellent thermal shock resistance, stable performance, good excellent corrosion and erosion resistance, strong cracking resistance etc

#### Main Properties

Brand(HIMC)	Low carbon content			Medium carbon content	
	IN-M	IN-M2	IN-O	IN-A	IN-B
Al <sub>2</sub> O <sub>3</sub> %	≥85	≥75	-	≥72	≥68
MgO%	-	-	≥70	-	-
C%	≤3	≤4	≤4	≤8	≤8
Bulk density (g/cm <sup>3</sup> )	≥2.9	≥2.85	≥2.75	≥2.8	≥2.75
Apparent porosity (%)	≤14	≤14	≤14	≤14	≤14
Cold crushing strength(MPa)	≥75	≥65	≥45	≥40	≥40
Hot modulus of rupture, (MPa)	≥12	≥12	≥10	≥10	≥10
Application area (Ladle)	≥60MT	≥40MT	High erosion steel	40-80MT	≤50MT

#### Main Properties Lower nozzles

Brand(HIMC)	LN-KLT-M2	LN-FO	LN-KLT-A	LN-KLT-B
Al <sub>2</sub> O <sub>3</sub> (%)≥	75	70	72	68
C(%)≤	4	4	8	8
Bulk density(g/cm <sup>3</sup> )≥	2.85	2.75	2.80	2.75
Apparent porosity(%)≤	14	14	14	14
Cold crushing strength (MPa), ≥	65	55	40	40
Modulus of rupture (MPa) ≥	12	10	10	10
Application	All kinds of ladles		Ladles more than 80t	Ladles less than 80t

## FILLER SAND FOR NOZZLE INTRODUCTION



### Product Name : Fillers sand for Ladle nozzle

#### Product Description

HIMC-YL series of fillers for ladle tapping hole are made from silica sand, high-quality chromite and additions, which show the features of non-floating, high self-open rate More than 98%), easy installation and safety.

#### Main properties

Brand	HIMC-YL25	HIMC-YL22	HIMC-YL19	HIMC-YL17	HIMC-YL12
SiO <sub>2</sub> (%) ≤	5	85	12	60	18
Cr <sub>2</sub> O <sub>3</sub> (%) ≥	44	-	32	8	25
C (%) ≤	1	2	1	1	2
Refractoriness(C°) ≥	1750	1750	1750	1750	1750
Loose specific weight(g/cm <sup>3</sup> ) ≤	2.15	1.95	2.15	2.03	2.10

Packaging: Export wooden case(Ton bag),Small packing for 5kgs,10kgs,20kgs

Handling & storage: Always move or store under dry conditions.

## SUBMERGED ENTRY NOZZLE (SEN) INTRODUCTION



### Product Name: Submerged Entry Nozzle (SEN)

#### Product Description

The HIMC series of SEN is ISO-pressed product with special reinforcement at slag line. HIMC SENs enjoy good reputation for excellent slag resistance, clog-proof, long life and safety etc. HIMC has supplied SENs with fast-changeable system and SENs for thin slab casting for many customers worldwide, demonstrating reliable performance and long life.

Brand	HIMC-SEN-50		HIMC-SEN-40	
	Body	Slag line	Body	Slag line
Al <sub>2</sub> O <sub>3</sub> (%) ≥	50	-	40	-
SiO <sub>2</sub> (%) ≤	6	-	15	-
C+SiC (%) ≥	25	13	25	15
ZrO <sub>2</sub> (%) ≥	3	75	-	70
CaO (%) ≥	-	-	-	-
Cold crushing strength (MPa) ≥	20	20	20	20
Modules of rupture (MPa) ≥	6	5	6	5
Apparent porosity (%) ≤	18	19	18	20
Bulk density (g/cm <sup>3</sup> ) ≥	2.40	3.40	2.20	3.20
Thermal shock resistance (cycle) ≥	5		5	

Packaging: Export wooden case

Handling & storage: Always move or store under dry conditions.

## LADLE SHROUD INTRODUCTION



### Product Name: Ladle Shroud

#### Product Description

The HIMC serial ladle shrouds are ISO-pressed  $Al_2O_3-C$  based products, featuring superior thermal resistance to erosion/corrosion, oxidation and thermal cycling, etc. They are easy to install and preheat is unnecessary. HIMC has supplied ladle shrouds for decades of customer worldwide, proving reliable performances and long casting life.

#### Main Properties

Brand	HIMC-LST-A	HIMC-LST-B
$Al_2O_3$ (%) $\geq$	50	35
$SiO_2$ (%) $\leq$	10	25
$C+SiC$ (%) $\geq$	25	30
Cold crushing strength (MPa) $\geq$	20	18
Modulus of rupture (MPa) $\geq$	6	5
Apparent porosity (%) $\leq$	17	18
Bulk density (g/cm <sup>3</sup> ) $\geq$	2.40	2.30
Thermal shock resistance (cycles) $\geq$	5	5

Packaging: Export wooden case

Handling & storage: Always move or store under dry conditions.



## MONO BLOCK STOPPER INTRODUCTION



### Product Name: Mono block stopper

#### Product Description

The series of mono block stoppers include alumina-carbon type and magnesia-carbon type to suit for individual casting conditions. A broad range of designs are available for stopper head or slag line, reliable and satisfactory performances have been achieved in decades of operations worldwide.

#### Main Properties

Item	HIMC-MBS-183A		HIMC-MBS-183B	
	Head	Body	Head	Body
Al <sub>2</sub> O <sub>3</sub> (%), ≥	65	50	60	45
C+SiC (%), ≥	20	25	20	25
SiO <sub>2</sub> (%), ≤	5	-	8	-
Apparent porosity (%), ≤	18	-	19	-
Bulk density (g/cm <sup>3</sup> ), ≥	2.6	2.4	2.5	2.3
Cold crushing strength (MPa), ≥	20	20	18	18
Modulus of rupture (MPa), ≥	6	5	5	4
Thermal shock resistance (times), ≥	5		5	

Packaging: Export wooden case

Transportation & storage: Keep dry and handle with care. To be kept upright.

**SKIMMER BLOCK&IMPACT PAD INTRODUCTION**

**Product Name: Skimmer Block, Impact Pad and Well Block**
**Product Description**

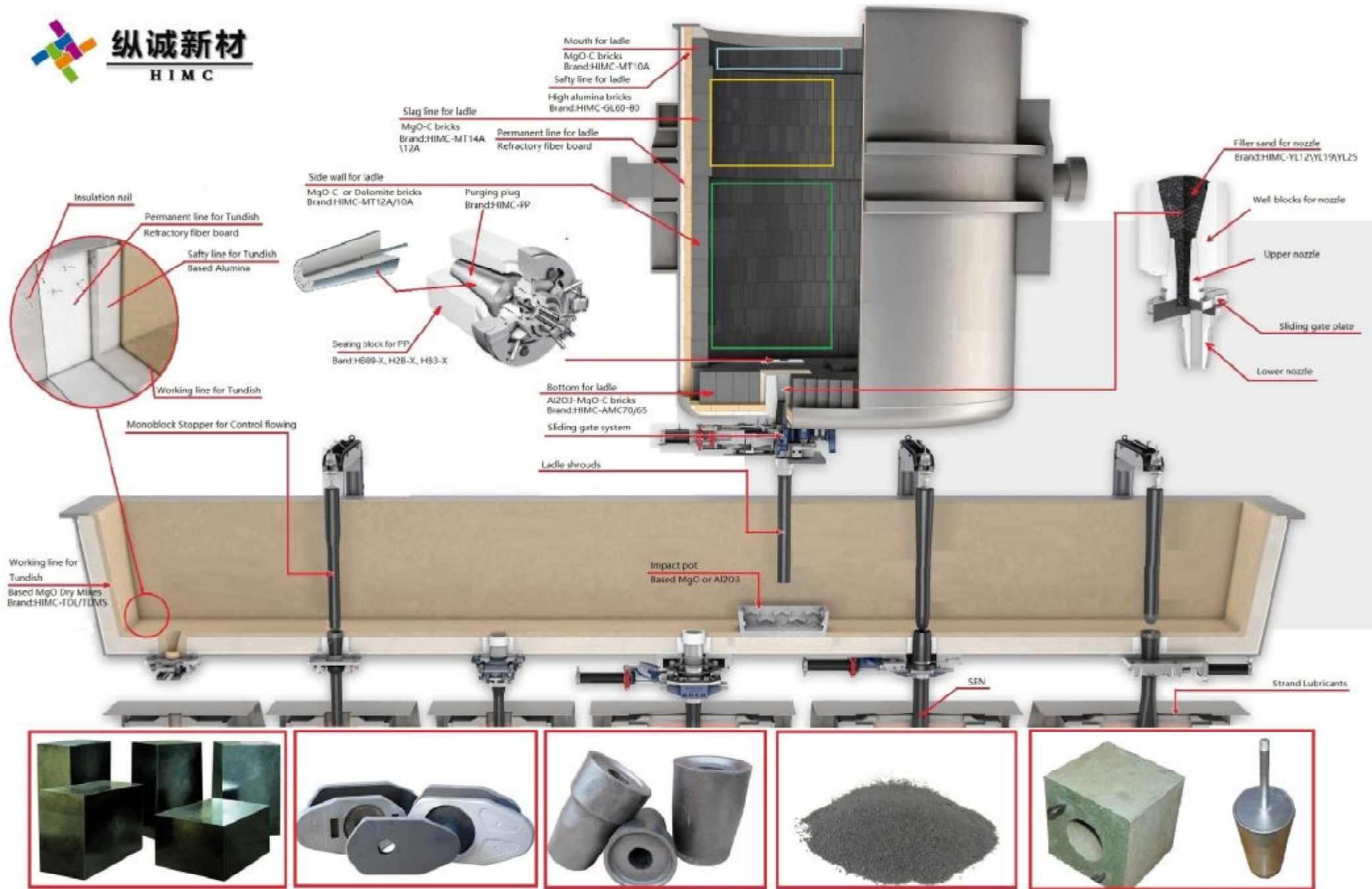
HIMC offers a wide range of precast shapes for tundish such as MgO-based or MgO-Al<sub>2</sub>O<sub>3</sub>-based and Al<sub>2</sub>O<sub>3</sub>-based skimmer blocks, impact pads and nozzle well blocks. Individual design is available to meet needs of specific operation condition. HIMC series products feature high fired strength, superior resistance to erosion/corrosion, long service life.

**Main Properties**

Item		HIMC-A45-X	HIMC-A80-X	HIMC-WS8-X	HIMC-YZJ-1	HIMC-YZJ
Al <sub>2</sub> O <sub>3</sub> (%) ≥		45	80	80	5	-
MgO ≥		33	6	4	80	85
SiO <sub>2</sub> ≤		10	7	7	8	7
BD(g/cm <sup>3</sup> ) ≥	110°C×24h	2.90	3.00	3.05	2.90	2.85
MOR(MPa) ≥	110°C×24h	10	3	5	7	10
CCS(MPa) ≥	110°C×24h	60	20	35	50	58
Linear change (%)	110°C×24h	±0.1	±0.1	±0.1	±0.1	±0.1

Packaging: Export wooden pallet.

Handling & storage: Always move or store under dry conditions





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