

Refractory materials for molten iron
transportation and pretreatment systems

铁水运输及预处理系统 耐火材料



Factory VR



焦作金鑫恒拓新材料股份有限公司

JiaoZuo JinXin HengTuo Advanced Materials Co.,Ltd

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COMPANY 公司简介

Jiaozuo Jinxin Hengtuo Advanced Materials Co., Ltd

Company profile

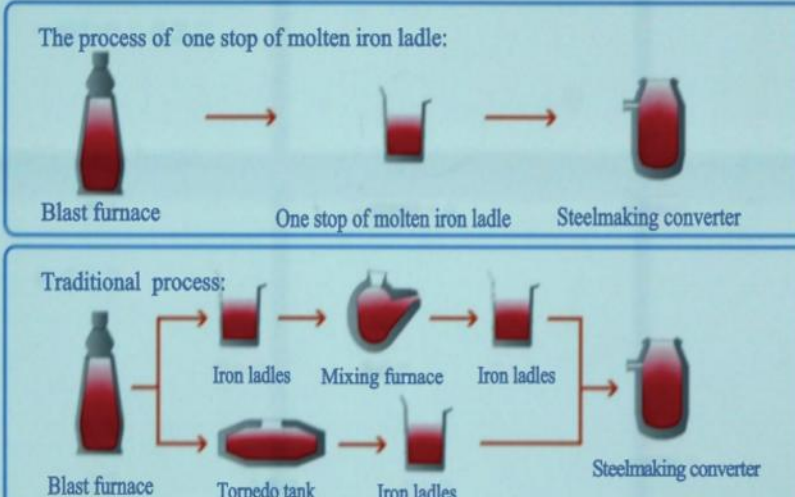
Jinxin Hengtuo was established in July 2011 with a registered capital of 100.58 million yuan. The company currently has more than 400 employees, it will achieve an output value of 500 million yuan and profits and taxes of 70 million yuan in 2022. It is a national high-tech enterprise, a national-level specialized and new "little giant" enterprise, a postdoctoral innovation practice base in Henan Province, and a single champion in the manufacturing industry in Henan Province. The company is the world's largest manufacturer of aluminum-silicon unshaped refractory materials.

The company is domestically leading and world-class in the fields of refractory materials for industrial furnaces, solid waste treatment, and one-tank refractory materials for molten iron. It leads the industry in intelligent manufacturing and is a benchmark enterprise in intelligence, digitalization, and automation. With stable product quality and high cost performance, it is a strategic partner of Baowu Group, MCC and other enterprises. In the past ten years, it has successfully provided high-quality products and system problem solutions for more than 4,000 industrial furnaces of Baowu, Shougang, Anshan Iron and Steel and other enterprises. On October 17, 2016, the company was listed on the "New Third Board". In May 2020, it entered the innovation level and has become a provincial key reserve listed enterprise. The company closely follows the national promotion of environmental protection, new energy, military and aerospace fields, relies on scientific and technological progress and technological innovation, and after three to five years of hard work, strives to achieve an output value of 1 billion yuan and successfully land on the main board. We strive to build Jinxin Hengtuo into an internationally competitive and respected world-class enterprise and a pearl in the field of new materials.

Jiaozuo Jinxin Hengtuo Advanced Materials Co., Ltd

New energy-saving refractory materials-- Refractory materials for one stop of molten iron ladles

The process of one stop of molten iron ladle:



Traditional process:

Blast furnace → Iron ladles → Mixing furnace → Iron ladles → Steelmaking converter

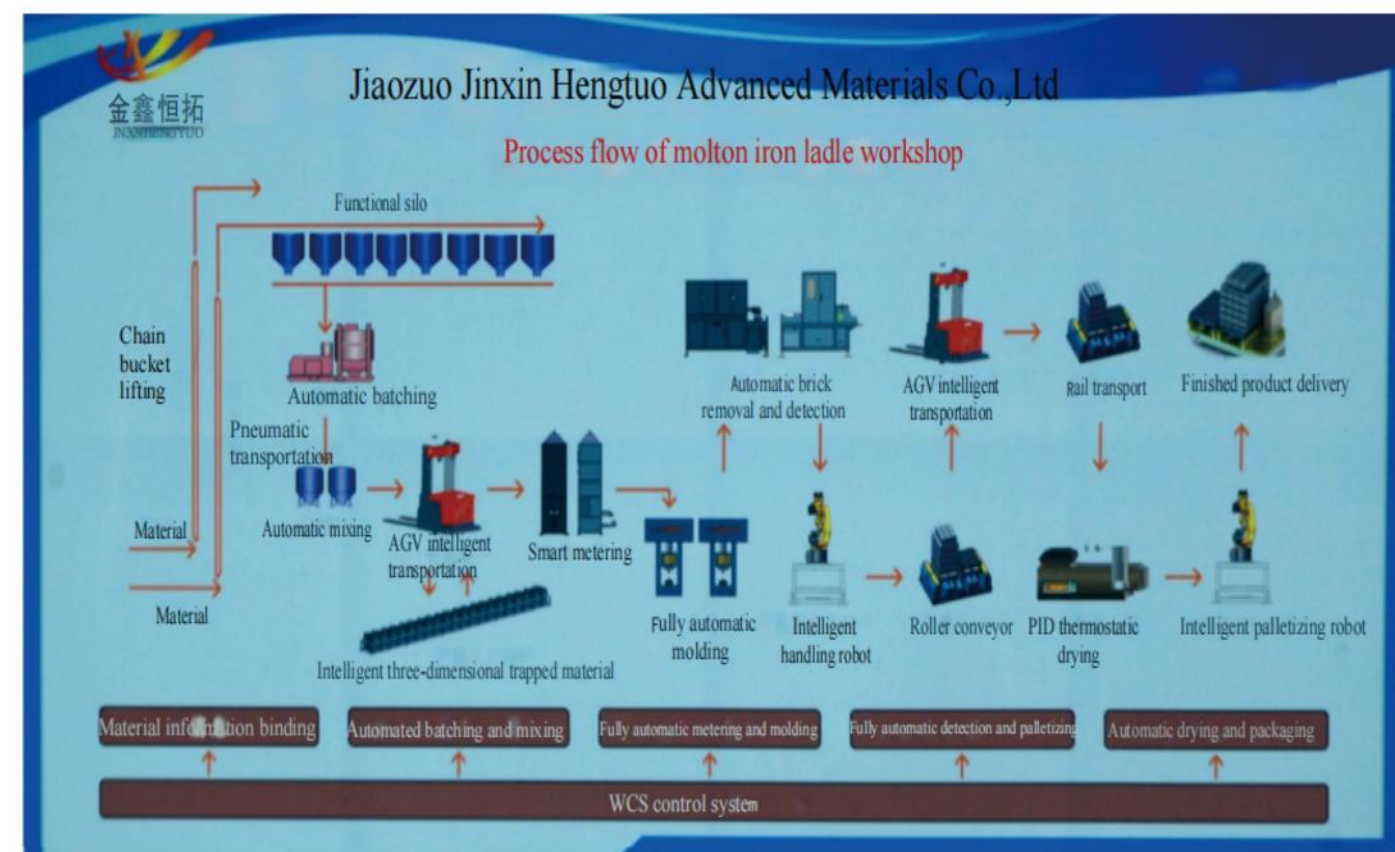
New process:

Blast furnace → One stop of molten iron ladle → Steelmaking converter

The company provides EPC regional general contracting services such as design, production, installation, operation and maintenance for more than 20 steel companies such as Baowu, Guangxi Steel, Shougang, and Anshan Iron and Steel, accounting for 15% of the national production capacity.

Take the one tank of Baowu Shougang's molten ladle as an example:

1. Process optimization, saving more than 100 million yuan in infrastructure investment;
2. The process is shortened and the number of employees reduced by about 100;
3. Increase the amount of scrap steel added by 10% and reduce carbon emissions by about 1 million tons per year;
4. The turnover rate is increased by more than 20%, the temperature of the molten iron entering the furnace is increased by 30 degrees, and the annual energy saving is 300 million yuan.





APTITUDE
HONOR 资质荣誉



RESEARCH >>> DEVELOPMENT 研究开发

Jinxin Hengtuo provides leading technology and system solutions in the refractory industry. It is committed to providing customers with knowledge, experience, products and services through continuous technological innovation and new product research and development, helping them solve problems that arise in the development process, and thus achieving sustainable development together with customers.

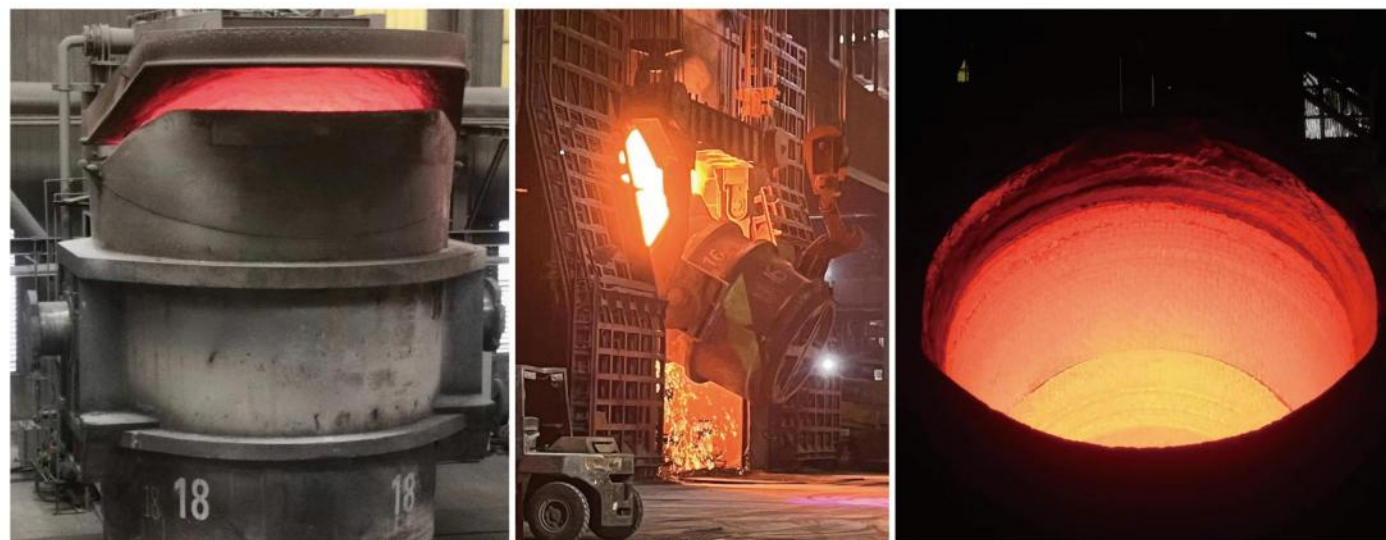
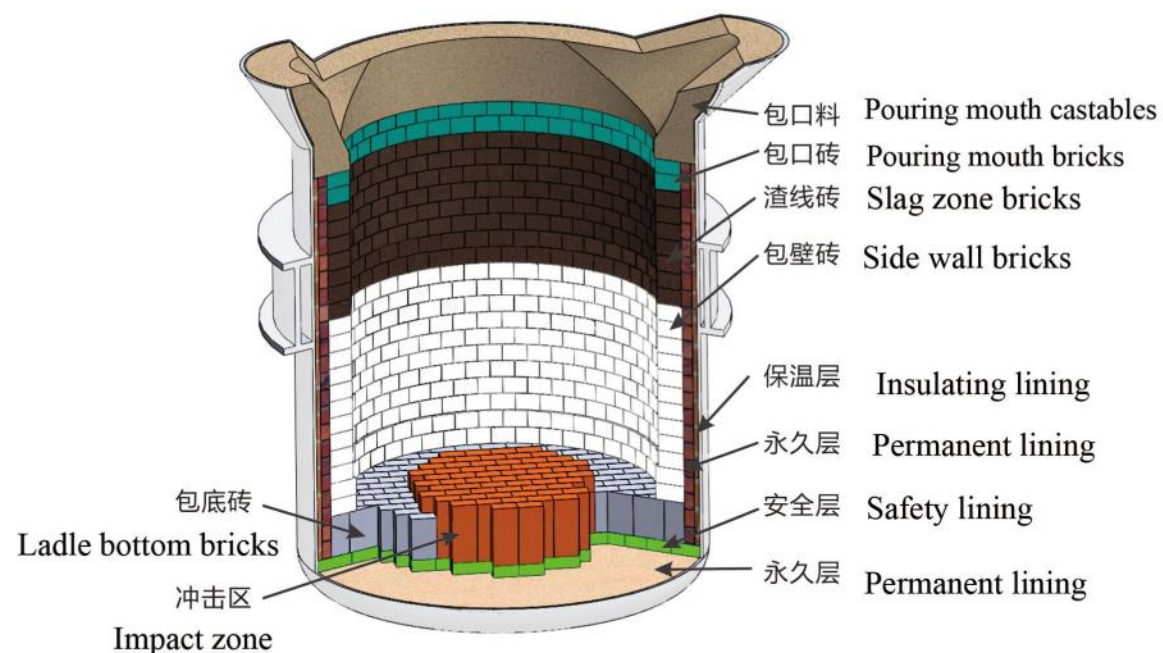


SMART FACTORY >>> 智慧工厂

Intelligent production equipment, large-scale packaging, unmanned palletizing. Build a comprehensive industrial information platform to achieve real-time analysis of various data in the production system, and support online service functions such as fault warning, remote control, and quality diagnosis.



Molten Iron ladle Brick Series



Iron ladle side wall bricks and ladle bottom bricks

Item		JX-ASCC-TB50 JX-ASCC-TD50	JX-ASCC-TB55 JX-ASCC-TD55
Al ₂ O ₃ (%)		≥50	≥55
SiC+C (%)		≥15	≥15
Apparent porosity (%)	200°C×24h	≤10	≤10
Bulk density (g/cm ³)	200°C×24h	≥2.7	≥2.75
Cold compressive strength (MPa)	200°C×24h	≥40	≥40

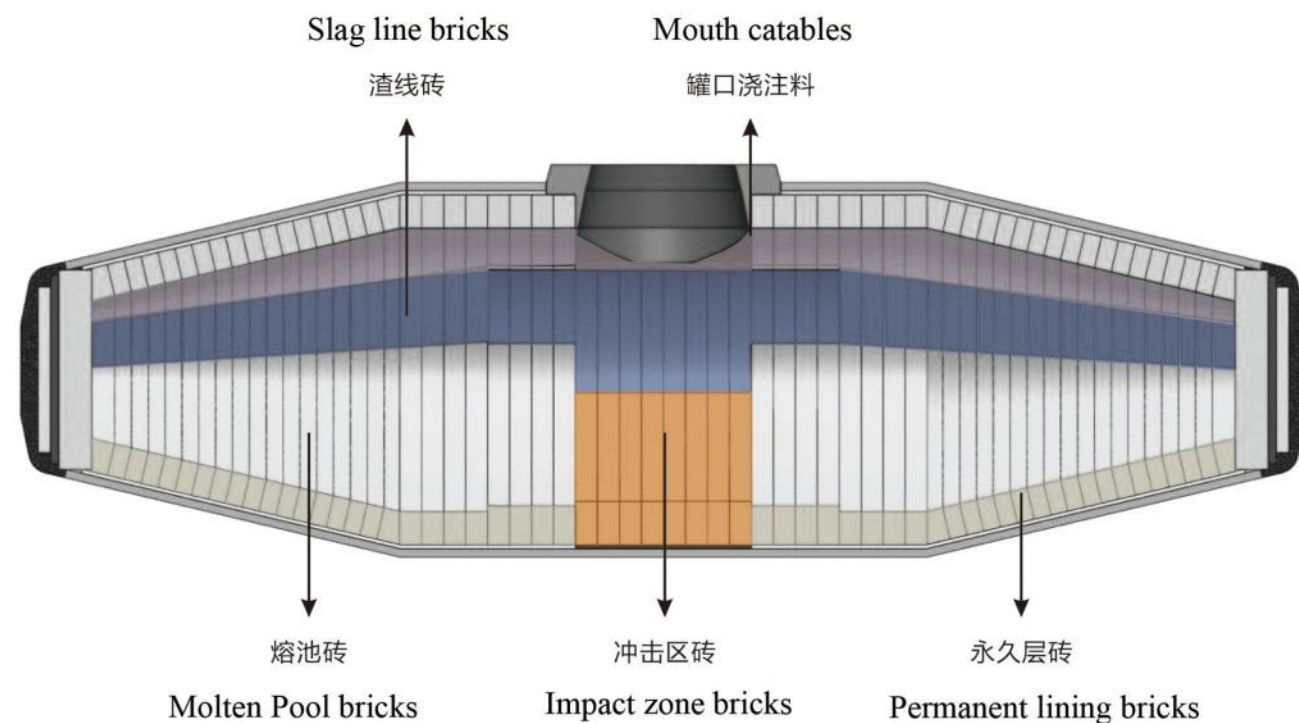
Iron ladle slag line bricks

Item		JX-ASCC-TZ55	JX-ASCC-TZ60
Al ₂ O ₃ (%)		≥55	≥60
SiC+C (%)		≥16	≥16
Apparent porosity (%)	200°C×24h	≤10	≤10
Bulk density (g/cm ³)	200°C×24h	≥2.75	≥2.8
Cold compressive strength (MPa)	200°C×24h	≥40	≥40

Pouring mouth bricks

Item		JX-ASCC-BK30	JX-ASCC-BK40
Al ₂ O ₃ (%)		≥30	≥40
SiC+C (%)		≥5	≥8
Apparent porosity (%)	200°C×24h	≤18	≤12
Bulk density (g/cm ³)	200°C×24h	≥2.3	≥2.5
Cold compressive strength (MPa)	200°C×24h	≥30	≥30

Torpedo car bricks series



Torpedo car molten pool bricks

Item		JX-ASCC-YR60	JX-ASCC-YR65
Al ₂ O ₃ (%)		≥60	≥65
SiC+C (%)		≥16	≥16
Apparent porosity (%)	200℃×24h	≤9	≤9
Bulk density (g/cm ³)	200℃×24h	≥2.8	≥2.85
Cold compressive strength (MPa)	200℃×24h	≥40	≥40

Torpedo car slag line bricks

Item		JX-ASCC-YZ65	JX-ASCC-YZ70
Al ₂ O ₃ (%)		≥65	≥70
SiC+C (%)		≥18	≥18
Apparent porosity (%)	200℃×24h	≤9	≤9
Bulk density (g/cm ³)	200℃×24h	≥2.85	≥2.9
Cold compressive strength (MPa)	200℃×24h	≥40	≥45

Torprdo car impact zone bricks

Item		JX-ASCC-YC65	JX-ASCC-YC70
Al ₂ O ₃ (%)		≥65	≥70
SiC+C (%)		≥15	≥15
Apparent porosity (%)	200℃×24h	≤9	≤9
Bulk density (g/cm ³)	200℃×24h	≥2.9	≥2.95
Cold compressive strength (MPa)	200℃×24h	≥45	≥45

Desulfurization device



KR mixer

When the KR mixer is used for hot metal desulfurization, it is immersed in the hot metal ladle and stirred at a speed of 110-140r/min, so that the hot metal is in a vortex motion, and the hot metal and the desulfurizer are fully mixed and reacted. Compared with the desulfurization spray gun, it has high desulfurization efficiency, low desulfurizer consumption, and low metal loss, and has become the main refractory device for hot metal pretreatment.

Item		JH-KR60
Al ₂ O ₃ (%)		≥60
SiC+C (%)		≥5
Bulk density (g/cm ³)	110°C×24h	≥2.5
	1500°C×3h	≥2.45
Cold Modulus of rupture (MPa)	110°C×24h	≥5
	1500°C×3h	≥8
Cold compressive strength (MPa)	110°C×24h	≥25
	1500°C×3h	≥60

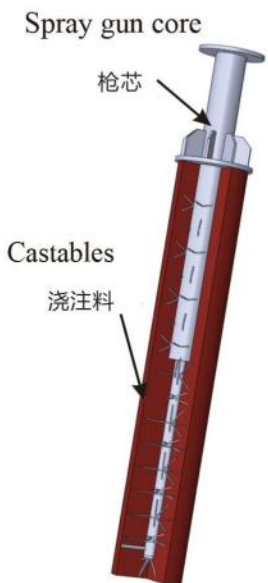
Desulfurization spray gun

Item		JH-PQ-TS
Al ₂ O ₃ (%)		≥60
Bulk density (g/cm ³)	110°C×24h	≥2.5
	1500°C×3h	≥2.45
Cold Modulus of rupture (MPa)	110°C×24h	≥4
	1500°C×3h	≥8
Cold compressive strength (MPa)	110°C×24h	≥25
	1500°C×3h	≥50



Dephosphorization spray gun

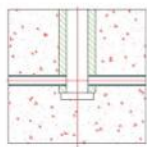
Item		JH-PQ-TP
Al ₂ O ₃ (%)		≥65
Bulk density (g/cm ³)	110°C×24h	≥2.55
	1500°C×3h	≥2.5
Cold Modulus of rupture (MPa)	110°C×24h	≥5
	1500°C×3h	≥8
Cold compressive strength (MPa)	110°C×24h	≥30
	1500°C×3h	≥50



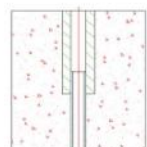
Metallurgical spray gun

The spray metallurgical spray gun mainly uses powdered refining agents, such as CaSi, with argon or nitrogen as the carrier to achieve molten steel purification. Compared with the molten iron pretreatment spray gun, the refractory materials used in the spray metallurgical spray gun are more severe in use conditions, and the slag erosion and thermal shock damage are more serious. The spray gun refractory material is corundum. Main categories: argon blowing spray gun, alloy spray gun, slag gathering spray gun.

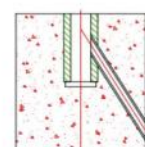
Item		JH-PQ-CY
Al ₂ O ₃ + ZrO ₂ (%)		≥90
Bulk density (g/cm ³)	110°C×24h	≥2.95
	1500°C×3h	≥2.9
Cold Modulus of rupture (MPa)	110°C×24h	≥5
	1500°C×3h	≥8
Cold compressive strength (MPa)	110°C×24h	≥30
	1500°C×3h	≥60



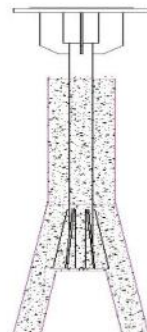
Inverted T type
倒T型



Direct blowing type
直吹型



Oblique blow type
斜吹型



Trumpet gun
喇叭枪

PRODUCT INTRODUCTION 产品介绍

General brick products

Unburned Brick

Item	JH-NBS
Al ₂ O ₃ (%)	≥40
Bulk density (g/cm ³)	≥2.2
Apparent porosity (%)	≤24
Cold compressive strength (MPa)	≥25

Fireclay bricks

Item	JH-PN40	JH-PN42
Al ₂ O ₃ (%)	≥40	≥42
Bulk density (g/cm ³)	≥2.15	≥2.20
Apparent porosity (%)	≤24	≤22
Cold compressive strength (MPa)	≥30	≥35

High aluminum bricks

Item	JH-LZ55	JH-LZ65	JH-LZ75
Al ₂ O ₃ (%)	≥55	≥65	≥75
Bulk density (g/cm ³)	≥2.3	≥2.4	≥2.5
Apparent porosity (%)	≤24	≤24	≤24
Cold compressive strength (MPa)	≥40	≥50	≥60

PRODUCT INTRODUCTION 产品介绍

Pyrophyllite Bricks

Item	JH-YLS
Al ₂ O ₃ (%)	≤23
SiO ₂ (%)	≥73
Fe ₂ O ₃ (%)	≤1.8
Bulk density (g/cm ³)	≥2.1
Apparent porosity (%)	≤18
Cold compressive strength (MPa)	≥25

Light weight fireclay bricks

Item	JH-NG1.3
Al ₂ O ₃ (%)	≥25
Bulk density (g/cm ³)	≤1.3
Cold compressive strength (MPa)	≥5
Heating shrinkage (%) 1300°C×12h	≤2
Thermal conductivity (350±25) °C/{W/ (m.k) }	≤0.55



Castable series

High aluminum castables

The permanent layer of the iron ladle is mainly casted with castables, among which the most commonly used is the permanent layer high-aluminum castable specially used for the iron ladle. This castable has good high temperature resistance and corrosion resistance, can resist the corrosion of molten iron and slag, and also has good thermal shock resistance and reduces temperature drop. By using specially designed castables, the durability and stability of the iron ladle can be effectively improved, thereby reducing maintenance costs and improving production efficiency.



Item		JX-TBJ60	JX-TBJ65	JX-TBJ70
Al ₂ O ₃ (%)		≥60	≥65	≥70
Bulk density (g/cm ³)	110°C×24 h	≥2.3	≥2.4	≥2.5
	1350°C×3 h	≥2.25	≥2.35	≥2.45
Cold compressive strength (MPa)	110°C×24 h	≥30	≥30	≥30
	1350°C×3 h	≥50	≥50	≥50
Cold Modulus of rupture (MPa)	110°C×24 h	≥4	≥4	≥4
	1350°C×3 h	≥6	≥6	≥6
Usage		Permanent layer castables for iron ladles and torpedo cars		

PRODUCT INTRODUCTION 产品介绍

Al₂O₃-SiC castables

The Al₂O₃-SiC castables for the iron ladles/torpedo car mouth is mainly considered to be eroded by molten iron. It is cast as a whole using a specially developed castables, which does not shrink at the use temperature and has high strength; there is less slag on the ladle mouth, which is easy to clean after slag, and has good resistance to molten iron erosion and permeability. This product has the characteristics of strong resistance to slag erosion, erosion resistance, and good thermal shock stability.



Item		JX-SK60	JX-TBD65X	JX-YLK70
Al ₂ O ₃ (%)		≥60	≥65	≥70
SiC+C (%)		≥3	≥5	≥5
Bulk density (g/cm ³)	110°C×24 h	≥2.35	≥2.4	≥2.6
	1450°C×3 h	≥2.3	≥2.35	≥2.55
Cold compressive strength (MPa)	110°C×24 h	≥40	≥40	≥40
	1450°C×3 h	≥60	≥60	≥60
Cold Modulus of rupture (MPa)	110°C×24 h	≥5	≥5	≥5
	1450°C×3 h	≥8	≥8	≥8
Usage		Iron ladle mouth castables	Iron ladle bottom repairing castables/Torpedo car lining repairing castables	Torpedo car mouth castables

Coating series

Coating for permanent lining

Main products: clay coating, high-alumina coating; it is beneficial to form surface bonding between working layer bricks and permanent layer, avoid point bonding, and improve the safety of iron clad use.

Coating for working lining

Main products: Al₂O₃-SiC coating; repair of local damage to the working layer.

Coating for ladle mouth

Main products: anti-slag coating; anti-sticking slag.



Item		JX-TTM45	JX-TTM50	JX-TFZ45	JX-TBT60
Name		Clay coating	High aluminum coating	Anti-slag coating	Al ₂ O ₃ -SiC coating
Al ₂ O ₃ (%)		≥45	≥50	≥45	≥60
Bulk density (g/cm ³)	110°C×24 h	≥1.8	≥1.9	≥1.8	≥2.3
	1350°C×3 h	≥1.75	≥1.85	≥1.7	≥2.25
Cold compressive strength (MPa)	110°C×24 h	≥10	≥10	≥5	≥10
	1350°C×3 h	≥30	≥30	≥20	≥50
Cold Modulus of rupture (MPa)	110°C×24 h	≥3	≥3	≥2	≥3
	1350°C×3 h	≥8	≥8	≥5	≥10

Spray castables

Spray castables: easy to construct, no formwork required, the construction surface can be quickly covered by spray equipment, significantly shortening the construction time and improving construction efficiency. The equipment is simple, flexible to move, and requires less construction personnel.

Item		JX-PS65
Al ₂ O ₃ (%)		≥65
SiC+C (%)		≥5
Bulk density (g/cm ³)	110°C×24 h	≥2.4
	1450°C×3 h	≥2.35
Cold compressive strength (MPa)	110°C×24 h	≥30
	1450°C×3 h	≥60
Cold Modulus of rupture (MPa)	110°C×24 h	≥5
	1450°C×3 h	≥8
Usage		Torpedo lining repairing castables

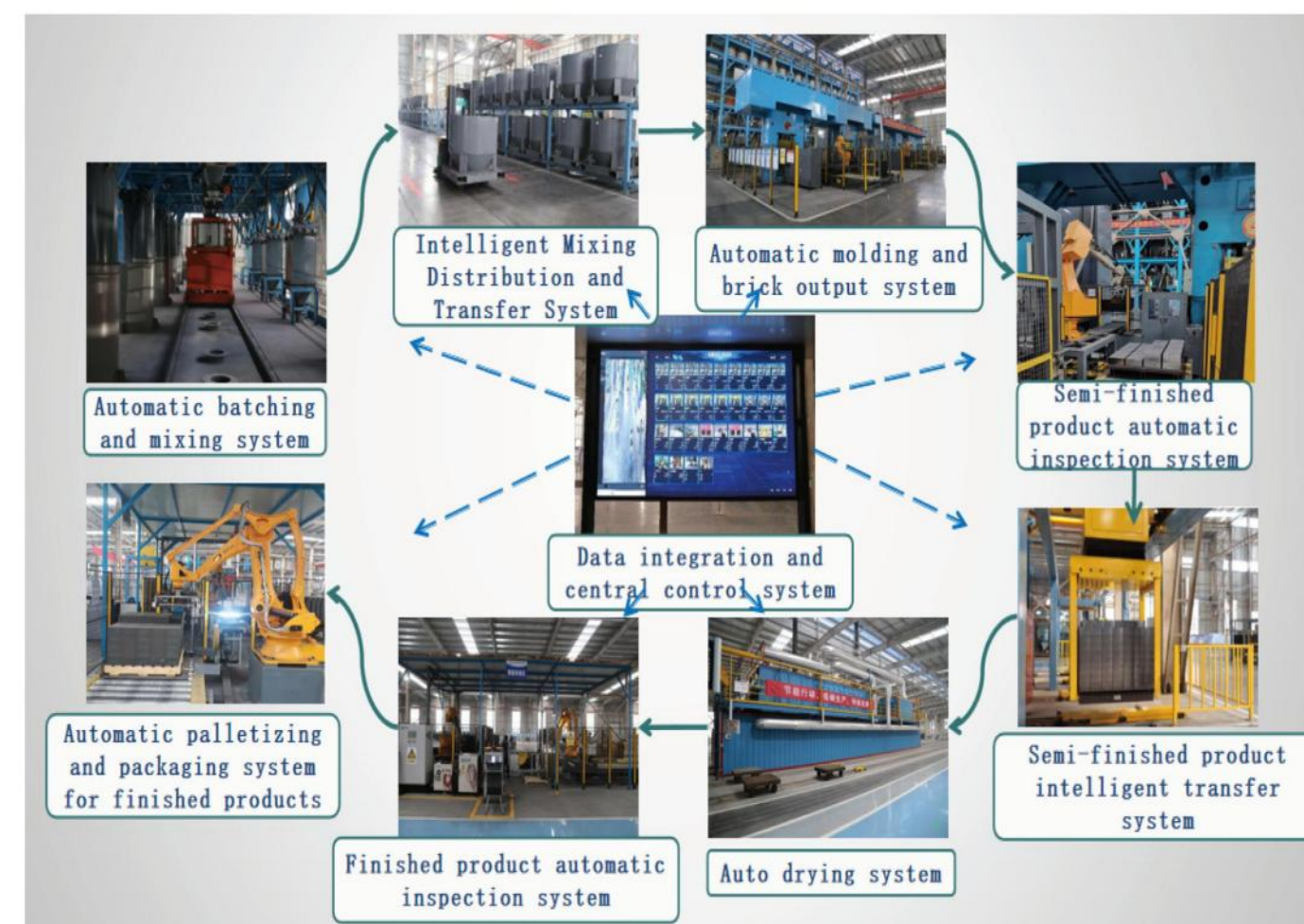
Firreclay series

The refractory fireclay series produced by Jinxin Hengtuo Company include clay, high alumina, etc. This series of products has the characteristics of suitable solidification time, high bonding strength and good high temperature performance.

Item	Al ₂ O ₃ -SiC fireclay	High aluminum fireclay	Fireclay
	JX-HN-ASC70	JX-HN-A60	JX-HN-N42
Al ₂ O ₃ (%)	≥65	≥60	≥42
SiC+C (%)	≥8	-	-
Grain size distribution ≤0.074mm (%)	≥50	≥50	≥50
Grain size distribution ≥0.5mm (%)	≤2	≤2	≤2

INTELLIGENT MANUFACTURING 智能制造

Smart Manufacturing



Patents



Certificate of Scientific and Technological Achievements

Registration No. 9412020Y1563

After review and verification, "The development of iron ladle working lining bricks for one tank of molten iron pretreatment" has been confirmed as a scientific and technological achievement, and this certificate is hereby issued.

Completion unit: Jiaozuo Jinxin Hengtuo Advanced Materials Co., Ltd.

Issuing authority:
Henan Provincial Department of Science and Technology
Issuing date: September 10, 2020

Honors--National level



Jiaozuo Jinxin Hengtuo Advanced Materials Co., Ltd.

National-level specialized and innovative "little giant" enterprise

Ministry of Industry and Information Technology
August 2022

(Note: Specialized and innovative "little giant" enterprises are the best among "specialized and innovative" enterprises, and are leading enterprises that focus on niche markets, have strong innovation capabilities, high market share, master key core technologies, and have excellent quality and efficiency)

Three system certificates



Honors--Provincial level



2021

Henan Province "Gazelle" Enterprise (Science and Technology Small Giant Enterprise)

Henan Provincial Department of Science and Technology
December 2021

(Note: Henan Province's "Gazelle Enterprises" refer to enterprises that have entered a high-growth period after starting a business by relying on technological innovation or business model innovation. These enterprises are characterized by high innovation level, rapid development speed, good growth, high growth potential, and broad market prospects. They are awarded by the Henan Provincial Department of Science and Technology.)