

Steel making Refractories





Created in 2009, Trasteel Group has become one of the leading players in the steel industry

Trasteel Group was founded in 2009 as the result of the vision of a group of entrepreneurs and professionals with 40 years of international experience in the steel industry.

Today, Trasteel is a trading and industrial Group active in the steel, energy and metallurgical sectors. Headquartered in Lugano, it has over 900 employees operating in four trading desks and various industrial plants in Europe, Middle East and Asia-Pacific.

Leveraging on the combined experience, the mission of the Group is to provide better, deeper and more flexible services to the whole supply chain.

Since the high quality of the supplied materials is not enough to meet the evermore sophisticated needs of the market, Trasteel Group keeps expanding its horizons by maintaining high dynamism and diversification.

Sustainability and innovation are priorities and key aspects for the Group to focus on. Long-term targets are not an easy challenge to face, but Trasteel is committed to broaden its ESG policies.

+150

products supplied

+1.000

specialists worldwide
and growing



DISCOVER MORE
ABOUT OUR ESG VISION

Trasteel network



+50

markets covered

+4.000

customers



DISCOVER MORE ABOUT
THE STEEL MARKET

● **Headquarters**

Switzerland, Luxembourg

● **Trading Offices**

Lugano, Dusseldorf, Dubai, Shanghai, Bayuquan, Buenos Aires, Istanbul, Goma, Singapore, New York, France, Spain, Finland

● **Industrial Premises**

San Giorgio di Nogaro, Massa, Racconigi, Sesto Al Reghena, Cavallerleone, Lombardore (Italy), Nova Pazova (Serbia), Bayuquan (China), Izmir (Turkey)

● **Markets Covered**

EU, United Kingdom, Turkey, Israel, Serbia, Ukraine, Kazakhstan, Uzbekistan, Azerbaijan, U.A.E., Saudi Arabia, Oman, Brazil, Chile, Colombia, Argentina, Perù, Bolivia, Mexico, USA, Canada, Japan, South Korea, China, Malaysia, Indonesia, Philippines, Vietnam, Thailand, Taiwan, Australia, South Africa, Congo (DRC), Egypt, India, Algeria, Morocco, Tunisia, Pakistan, Norway

Refractory solutions

As partner of the majors refractory manufacturers, Trasteel can provide a full range of refractory products for steel making applications, cement plants and industrial furnaces like reheating furnaces for rolling mill or aluminum melting furnaces.

Thanks to a team of skilled and experienced technicians, Trasteel International can also provide its customers with a full range of services for refractories used in the steel industry: engineering, manufacturing, logistics, installation, supervision, after sales assistance and global refractory management service with guaranteed performance.

All the refractory production in the factories is carried out under the direct control of Trasteel's engineers: all the materials are subject to strict testing procedures and afterwards are successfully delivered to Customers in Europe, North, Center and South America, CIS Countries, Middle East, Africa, China, Korea, Japan and Australia.

- **Electric Arc Furnace (EAF)**
- **Torpedo car**
- **BOF converter**
- **Transfer ladle - AMC**
- **Treatment ladle Mgo-C / AMC solution**
- **Treatment Ladle Dolomite**
- **AOD converter**
- **RH degasser**
- **Tundish**
- **Continuous casting**
- **Ingots casting**
- **Special shapes**
- **Sliding gate mechanical system**
- **Refractory material for sliding gate**



Trasteel activities

Trasteel owns an important stake in one of the major Chinese Producer of Magnesia-Carbon and Alumina-Magnesia-Carbon refractory bricks. The established Joint Venture is incorporated under the name of "Yingkou Liangyu - Trasteel Refractory Co. Ltd."

Trasteel is acting as the exclusive marketing arm of the Joint Venture on all activities related to overseas marketing, sales, production financing and technology advancement. The Chinese Partner, Liaoning Liangyu Synthetic Refractory Co.,Ltd, has conferred to the Joint Venture their equipment and facilities. The production facilities are located in Dashiqiao City, Liaoning, a province in China close to the highest quality raw material sources for refractory production and major transportation.

The New Joint Venture integrates production and research facilities and is able to produce, with a capacity of about 70'000 MT/year, the following range of products:

- Magnesia Carbon bricks for converters, electric arc furnaces and ladles
- Magnesia Alumina Carbon bricks
- Alumina Silicon Carbide bricks
- Fired Magnesia and fired Magnesia Chrome Bricks
- Fired Magnesia Spinel bricks
- Sliding Gate Plates and Nozzles for Tundish and Ladle flow control
- Various unshaped products for lining installations and maintenance of steel making units.

Our Joint Venture partner owns a magnesite mine with discovered deposits of raw magnesite of 30 million MT with an annual output of 200'000 MT assuring to the Joint Venture a reliable and competitive source of fused and sintered Magnesia raw materials.

In order to control its materials and to develop tailor made production based on customers needs, Trasteel established a technical center located in Dalian Development Zone, China serving as the company' Scientific & Research laboratory. Thanks to the latter, Trasteel is able to analyze all the raw materials used during the production and to test the quality of the final product. The Company implemented this strict and structured approach in order to guarantee the constancy of its production and to make sure that all its guidelines and procedures are respected, so that if necessary immediate actions can be taken during the production.

Trasteel owns a stake in one of the major Chinese producers of alumina and silice refractories. This joint venture is named Trasteel Zibo Refractories and it is specialized in the production of casting bricks, coke oven bricks and cowper bricks.

The Functions of Trasteel Technical Center are:

- Quality control system for raw materials and finished products
- Chemical, physical and mineralogical test
- Quality control on all mixes used for the production of finished refractories
- Microstructural investigation for crystal size and component distribution
- Customers support with the development of dedicated solutions and receipts for the most demanding and extreme working conditions

In addition Trasteel has established long-term partnerships with major manufactures of other refractories products:

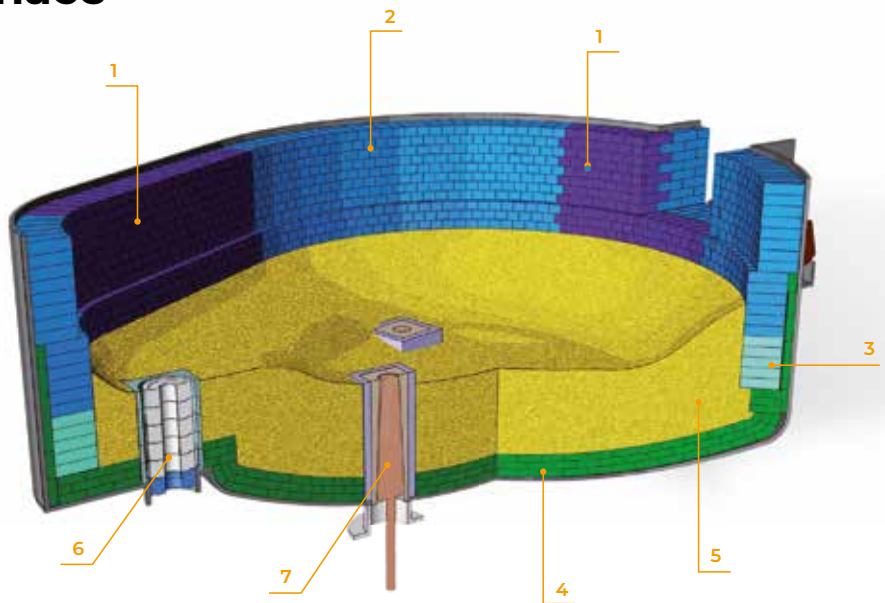
- Isostatic products for continuous casting machine
- Special shape like purging plugs, EAF plugs, tap hole and well block
- Insulating materials

Having direct control over the Joint venture facilities and thanks to a team of skilled and long-term experienced technicians, Trasteel Refractory Solution can provide its customer with a full range of services including: refractory engineering, training, logistics, installation supervision, after sales assistance and global refractory management service aimed at guaranteeing and even exceeding the performances.



Electric Arc Furnace (EAF)

1. Hot spot reinforcement
2. Slag line lining
3. Lower side wall lining
4. Permanent lining
5. Hearth ramming
6. EBT system
7. Purging system



WORKING LINING BRICKS

Quality Name	MgO (%)	CaO (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	Carbon (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
A10C5	97.86	1.12	0.42	0.48	10	3.10	2.9	52	Burners area
EA14L5	98.17	0.89	0.39	0.39	14	3.05	3	45	Hot spot and slag zone
EI14L5	97.58	1.16	0.56	0.57	14	3.05	3	40	Slag zone
I12C2	97.19	1.33	0.65	0.67	12	3.07	4	42	Slag zone
IP12L2	97.18	1.39	0.68	0.61	12	2.99	4	38	Upper sidewall
O10C2	96.12	1.74	0.88	0.83	10	3.08	4	43	Lower sidewall
I10C2-F3	97.16	1.12	1.04	0.61	10	3.04	4	40	Underbath

SAFETY LINING BRICKS

Quality Name	MgO (%)	CaO (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
M95F	95.00	1.90	2.00	0.80	-	2.95	17	60	Safety lining
M93F	93.00	2.60	3.40	1.00	-	2.93	18	60	Safety lining

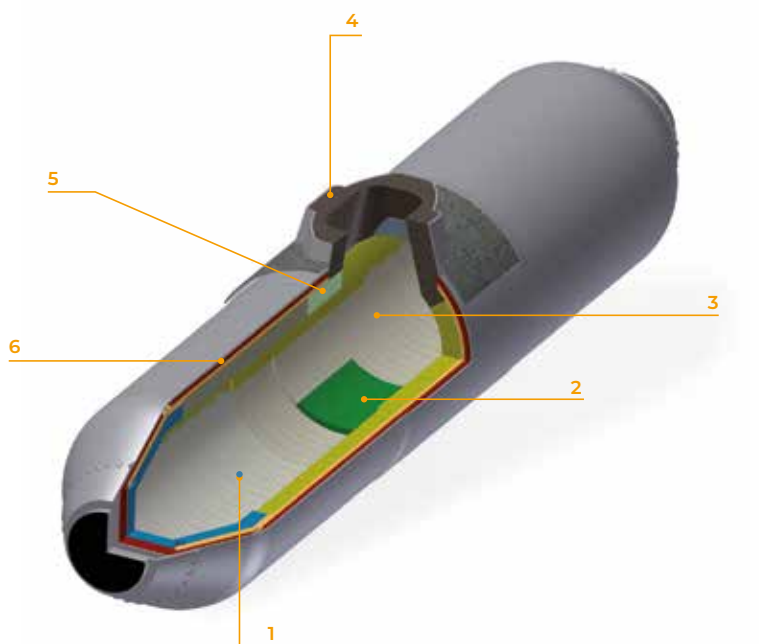
UNSHAPED MATERIALS

Quality Name	MgO (%)	CaO (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	BD (g/cm ³)	Grain Size (mm)	CCS (MPa)	Application
HEARTH-M83	83.00	9.00	1.30	5.00	0.50	2.20	0-6	-	Hearth ramming mass
REP-M82HF	82.00	10.00	0.80	6.50	0.50	2.20	0-8	-	Fettling mass
RAM-M94U	94.50	1.20	0.75	0.80	0.40	2.72	0-6	-	Joints ramming mass
GUN-M84S	84.00	3.50	7.00	2.50	2.00	2.00	0-3	-	Gunning for hot and cold reparations
MOR-M91	87.00	2.10	4.50	5.00	1.50	-	0-1	-	Mortar for the installation of safety lining bricks

The table does not represent all the available products. More qualities can be produced according to Customer requirements.

Torpedo Car

1. Slag line
2. Impact zone
3. Metal zone
4. Mouth
5. Charging hole
6. Safety lining



WORKING LINING BRICKS

Quality Name	Al ₂ O ₃ (%)	SiC (%)	MgO (%)	Carbon (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
615ASC	71.00	6.20	-	14.5	3.05	7	50	Slag zone
311ASC	80.20	2.70	2.10	10.8	3.21	6	53.8	Slag zone and metal zone
511ASC	72.10	5.30	-	10.5	2.98	6.9	52.6	Slag zone and metal zone
611ASC	70.50	6.00	-	11	2.93	8	58	Metal zone
1212ASC	65.20	11.75	-	12	2.98	7.6	48.7	Impact zone
213ASC	81.00	2.60	-	13.2	3.12	6.4	45	Charging hole

SAFETY LINING BRICKS

Quality Name	Al ₂ O ₃ (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	K ₂ O+Na ₂ O (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
SI82-TP	-	82.00	0.45	0.48	2.24	13.2	40.3	Safety lining
SI82B-TP	15.20	82.00	0.45	0.48	2.22	14.5	32	Safety lining

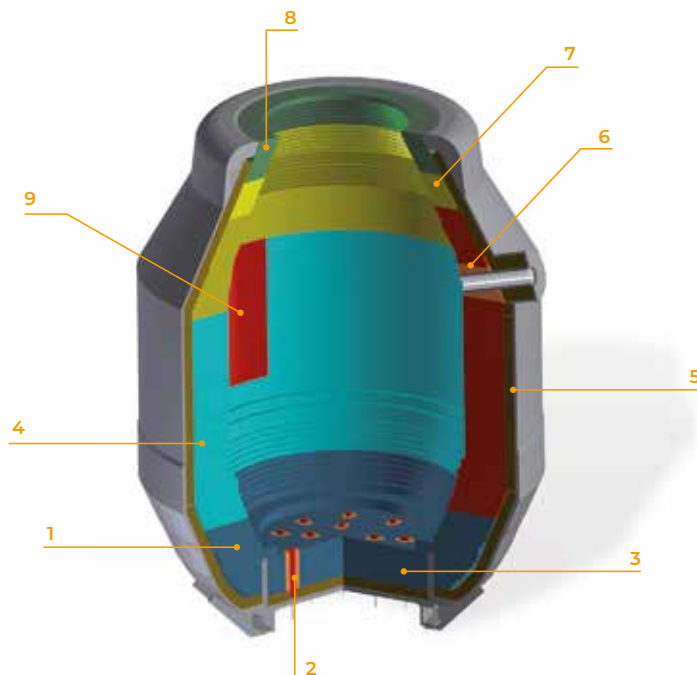
UNSHAPED MATERIALS

Quality Name	Al ₂ O ₃ (%)	SiC (%)	SiO ₂ (%)	Grain Size (mm)	BD (g/cm ³)	MOR - 1450°Cx3h (MPa)	CCS - 1450°Cx3h (MPa)	Application
CAST-A68BC	68.12	-	8.80	0-8	2.62	12.6	-	Castable to be used in outside area of charging hole
CAST-A76MB	76.00	-	13.50	0-6	2.76	9.8	-	Castable for charging hole
CAST-A59B-MIX	59.96	-	15.60	0-8	2.36	-	21.8	Coating mix for safety lining
MOR-A60SIC	58.80	34.50	-	0-0.2	-	2	-	Mortar for the installation of safety lining bricks

The table does not represent all the available products. More qualities can be produced according to Customer requirements.

BOF converter

1. Lower cone
2. Purging plugs
3. Bottom
4. Slag line
5. Safety lining
6. Taphole reinforcement
7. Upper cone
8. Mouth
9. Scrap impact area



WORKING LINING BRICKS

Quality Name	MgO (%)	SiO ₂ (%)	CaO (%)	Fe ₂ O ₃ (%)	Carbon (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
A10C6	98.36	0.31	0.88	0.35	10	3.01	2.9	45	Purging plugs reinforcement area
EA14R6	98.15	0.39	0.90	0.39	14	2.99	3	40	Barrel and Trunions area Scrap impact area
E14C6	98.12	0.40	0.91	0.40	14	2.99	3	40	Burrel and Trunions area
E110L3	97.64	0.54	1.18	0.52	10	3.01	4	40	Lower and Upper Cone
I14C6	97.23	0.64	1.30	0.65	14	2.99	3	42	Barrel
IP10L3	97.22	0.66	1.34	0.61	10	3.01	4	40	Mouth
OP10L3	97.06	0.79	1.60	0.68	10	3.00	4	40	Bottom and Joints area

SAFETY LINING BRICKS

Quality Name	MgO (%)	SiO ₂ (%)	CaO (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
M95F	95.00	2.00	1.90	0.80	-	17.00	60	1650	Safety lining

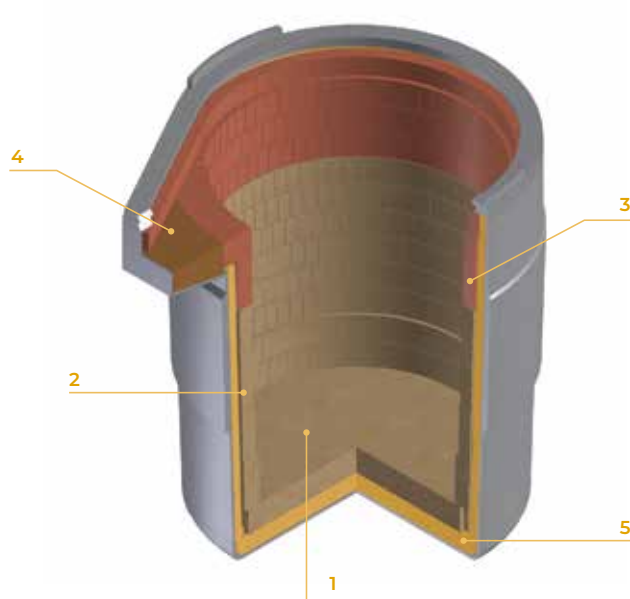
UNSHAPED MATERIALS

Quality Name	MgO (%)	SiO ₂ (%)	CaO (%)	Fe ₂ O ₃ (%)	Grain Size (mm)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
RAM-M94U	94.50	0.75	1.20	0.80	0.40	2.72	0-6	20	Joints ramming
RAM-M65V	67.00	23.00	4.00	3.00	3.00	1.80	0-2	-	Backfilling safety material
RAM-A75P	-	20.00	-	2.50	75.00	2.00	0-5	-	Protective ramming of a flange
MOR-M93	93.00	2.50	1.80	1.30	0.50	-	0-0.5	-	Mortar for the installation of safety lining bricks

The table does not represent all the available products. More qualities can be produced according to Customer requirements.

Transfer ladle - AMC

1. Bottom
2. Sidewall
3. Slag zone
4. Spout
5. Safety lining



WORKING LINING BRICKS

Quality Name	Al ₂ O ₃ (%)	MgO(%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	Carbon (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
1274C	10.00	74.00	-	-	12	3.06	4	45	Slag zone and sidewall
1060CS	16.00	60.00	-	-	10	3.06	7	45	Slag zone and sidewall
712BCS	76.70	11.80	1.00	-	6.9	3.10	6	60	Sidewall and transition
810C	78.00	9.92	-	0.70	8	3.20	7	60	Impact area
510C	78.00	9.90	0.46	0.70	8	3.20	7	60	Bottom impact reinforcement
825B	55.70	25.46	-	1.80	8	3.06	7	50	Barrel and bottom

SAFETY LINING BRICKS

Quality Name	Al ₂ O ₃ (%)	CaO (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	MgO (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
HA75B-L	76.00	-	-	1.60	-	2.47	26	55	Safety lining
HA65B-L	66.00	-	-	1.90	-	2.42	26	50	Safety lining

UNSHAPED MATERIALS

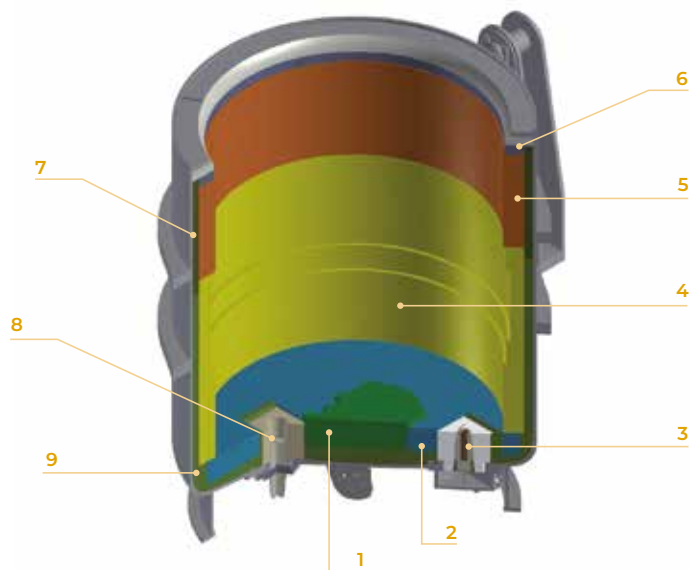
Quality Name	MgO (%)	CaO (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	BD (g/cm ³)	Grain Size (mm)	CCS (MPa)	Application
CAST-M85	85.00	4.00	9.00	2.00	1.00	2.47	0-5	-	Castable for refractory lining installation
CAST-A85CB	-	1.02	-	0.80	85.17	2.90	0-8	-	Castable for refractory lining installation
CAST-A96T	-	0.80	-	-	96.25	2.95	0-5	-	Castable for refractory lining installation
PLAST-A70B	-	-	18.74	1.44	75.14	2.30	0-5	-	Plastic flange ramming
RAM-M65V	68.00	4.00	28.00	10.00	3.00	2.30	0-3	-	Backfilling mass
MOR-A80	-	-	-	-	80.00	-	0-1	-	Mortar for the installation of safety lining bricks

The table does not represent all the available products. More qualities can be produced according to Customer requirements.

Treatment Ladle

Mgo-C / AMC solution

1. Impact bottom reinforcement
2. Bottom
3. Purging system
4. Sidewall
5. Slag zone
6. Freeboard
7. Safety lining - Slag area
8. Slide gate system
9. Safety lining - Sidewall and bottom area



WORKING LINING BRICKS

Quality Name	MgO (%)	CaO (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	Carbon (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
EA14L4	98.02	0.94	0.40	0.43	14	3.05	3	47	Slag zone reinforcement
E14C4	98.05	0.95	0.44	0.43	14	3.05	3	40	Slag zone
E112L4	97.61	1.17	0.55	0.55	12	3.07	3	45	Slag zone
I10C1	97.11	1.37	0.67	0.70	10	3.06	4	45	Sidewall and transition
IP8L1	97.10	1.43	0.70	0.63	8	3.03	4.5	41	Sidewall and bottom
O6C1	96.11	1.75	0.87	0.83	6	3.10	5	40	Bottom

SAFETY LINING BRICKS

Quality Name	MgO (%)	CaO (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
M91F	91.50	2.50	4.10	1.20	-	2.92	19	60	Safety lining - Slag area
HA80B-L	-	-	-	1.80	81.00	2.92	23	75	Safety lining - Sidewall and bottom area
FC42	-	-	-	2.00	42.00	2.15	24	25	Insulation lining

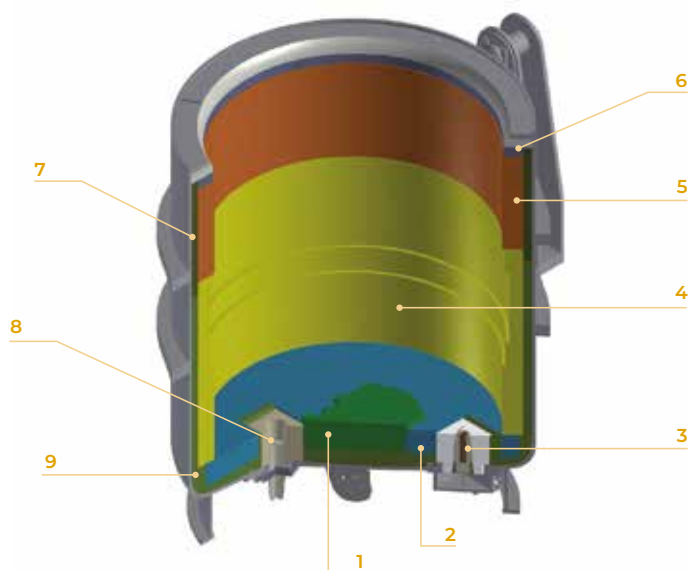
UNSHAPED MATERIALS

Quality Name	MgO (%)	CaO (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	BD (g/cm ³)	Grain Size (mm)	CCS (MPa)	Application
CAST-M85	85.00	4.00	9.00	2.00	1.00	2.47	0-5	-	Castable for refractory lining installation
CAST-A85CB	-	1.02	-	0.80	85.17	2.90	0-8	-	Castable for refractory lining installation
CAST-A96T	-	0.80	-	-	96.25	2.95	0-5	-	Castable for refractory lining installation
PLAST-A70B	-	-	18.74	1.44	75.14	2.30	0-5	-	Plastic flange ramming
RAM-M65V	68.00	4.00	28.00	10.00	3.00	2.30	0-3	-	Backfilling mass
MOR-A80	-	-	-	-	80.00	-	0-1	-	Mortar for the installation of safety lining bricks

The table does not represent all the available products. More qualities can be produced according to Customer requirements

Treatment Ladle Dolomite

1. Impact bottom reinforcement
2. Bottom
3. Purging system
4. Sidewall
5. Slag zone
6. Freeboard
7. Safety lining - Slag area
8. Slide gate system
9. Safety lining - Sidewall and bottom area



WORKING LINING BRICKS

Quality Name	MgO (%)	CaO (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	Carbon (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
MDB-KI-60F	60.70	37.30	0.80	0.60	-	2.98	12.8	68	Slag zone
MDB-KI-40F	40.90	57.10	0.60	0.70	-	2.93	13.2	65	Slag zone
MDB-KI-51	50.90	47.20	0.60	0.60	5.7	2.94	3.9	63	Slag zone and sidewall
MDB-KI-40	40.60	57.10	0.80	0.80	3.7	2.96	3.9	73	Sidewall and bottom
MDB-KI-43	41.00	57.00	0.70	0.60	7.5	2.90	4.8	58	Sidewall and bottom
MDB-KI-42	40.80	57.10	0.70	0.60	5.5	2.93	4.6	62	Bottom

SAFETY LINING BRICKS

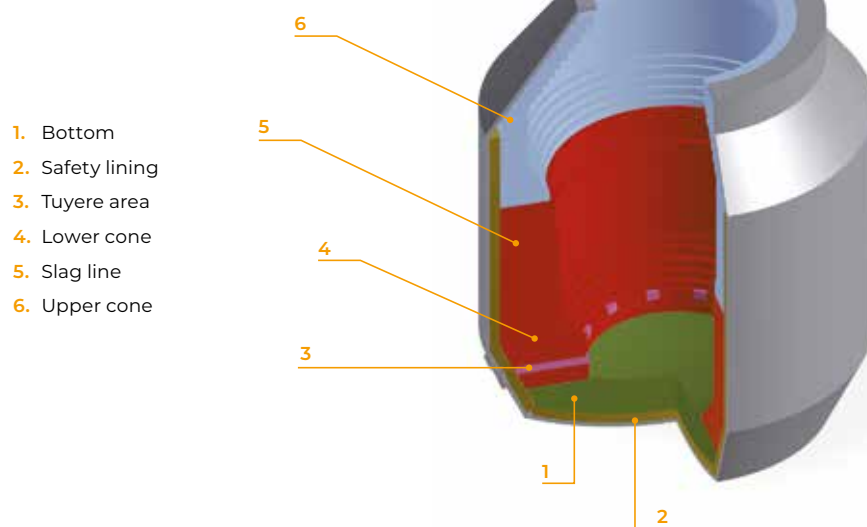
Quality Name	MgO (%)	CaO (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
M91F	91.50	2.50	4.10	1.20	-	2.92	19	60	Safety lining - Slag area
HA80B-L	-	-	-	1.80	81.00	2.92	23	75	Safety lining - Sidewall and bottom area
FC42	-	-	-	2.00	42.00	2.15	24	25	Insulation lining

UNSHAPED MATERIALS

Quality Name	MgO (%)	CaO (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	BD (g/cm ³)	Grain Size (mm)	CCS (MPa)	Application
DOLO-KI-RAM	58.00	37.50	1.70	2.40	0.80	2.80	0-6	-	Ramming mass
DOLO-KI-FIL	41.00	57.00	0.90	0.70	0.60	2.45	0-6	-	Backfilling mass

The table does not represent all the available products. More qualities can be produced according to Customer requirements.

AOD Converter



WORKING LINING BRICKS

Quality Name	MgO (%)	CaO (%)	SiO ₂ (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
MDB-20A	75.00	22.00	1,2	1.10	0.5	2.98	15	70	Slag line
MDB-20AF	75.20	20.60	1.10	0.90	0.4	2.93	14,5	80	Slag line
MDB-30AF	63.50	31.10	1.30	1.20	0.45	2.93	14,5	80	Upper and lower cone
MDB-30AF-TR	64.50	31.50	1.10	0.90	0.4	2.93	12,5	90	Trunion
MDB-25AF-TR	72.00	25.00	1.20	0.70	0.5	2.96	14,5	60	Tuyere Area

SAFETY LINING BRICKS

Quality Name	MgO (%)	SiO ₂ (%)	CaO (%)	Fe ₂ O ₃ (%)	Cr ₂ O ₃ (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
M93F	93.00	3.40	2.96	1.00	-	2.93	18	60	Safety lining
M95F	95.20	2.00	1.90	0.80	-	2.95	16	70	Safety lining
CR19	58.00	-	1.30	14.00	19	3.15	18	55	Safety lining

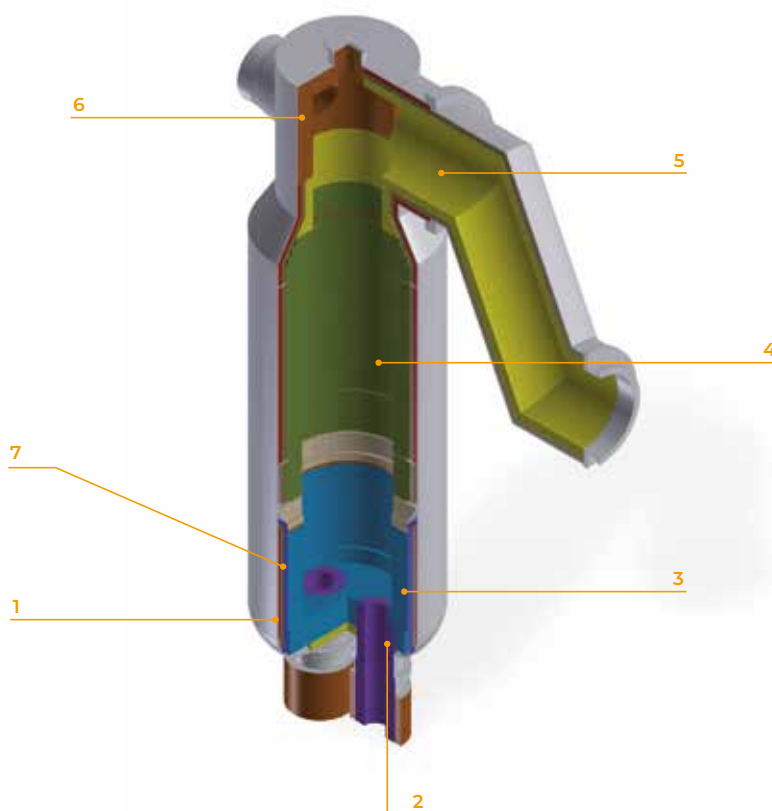
UNSHAPED MATERIALS

Quality Name	MgO (%)	SiO ₂ (%)	CaO (%)	Fe ₂ O ₃ (%)	LOI	BD (g/cm ³)	Grain Size (mm)	CCS 1600°Cx3h (MPa)	Application
MOR-MD35-J	57.00	4.00	35.00	1.30	-	-	0-5	-	Dolomite mortar
RAM-MD65-V	60.00	-	25.00	-	3.50	2.00	0-3	-	Backfilling material
RAM-MD65	65.00	-	20.00	-	3.50	2.00	0-6	-	Ramming material

The table does not represent all the available products. More qualities can be produced according to Customer requirements.

RH Degasser

1. Insulation lining
2. Snorkel
3. Lower tank
4. Upper tank
5. Syphon
6. Dome
7. Safety lining



WORKING LINING BRICKS

Quality Name	MgO (%)	Al ₂ O ₃ (%)	Fe ₂ O ₃ (%)	Cr ₂ O ₃ (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
MFS85	86.50	9.00	-	-	3.16	7.5	110	Bricks for chamber working lining
CAST-A92TCS	6.00	92.00	-	-	3.05	16.8	125	Castable for snorkels and circulator
CAST-A70CM	-	70.00	-	-	3.00	16.5	42.5	Castable for alloy chule
CR19D-RH	60.00	6.00	12.00	19.00	3.23	15	60	Bricks for lower tank
CR20D-RH	62.50	5.20	10.00	20.00	3.21	16	50	Bricks for upper tank and syphon

SAFETY LINING BRICKS

Quality Name	MgO (%)	Al ₂ O ₃ (%)	Fe ₂ O ₃ (%)	Cr ₂ O ₃ (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
CR19D	58.00	14.00	-	19.00	3.15	18	55	Safety lining
FC42	-	42.00	2.00	-	2.15	24	25	Safety lining
FC35MLW06	-	36.00	3.00	-	0.55	-	2.4	Insulation lining

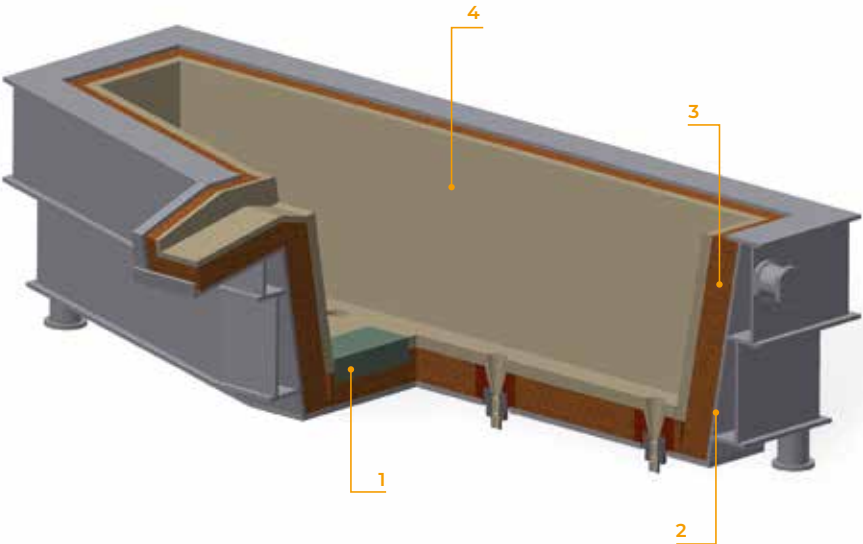
UNSHAPED MATERIALS

Quality Name	MgO (%)	Al ₂ O ₃ (%)	Fe ₂ O ₃ (%)	Cr ₂ O ₃ (%)	BD (g/cm ³)	Grain Size (mm)	CCS 1600°Cx3h (MPa)	Application
CAST-A90C-1K	-	91.50	-	-	3.05	0.6	102	Castable for snorkels
CAST-A90C-2K	-	91.00	-	-	3.04	0-3	100	Filling for snorkels
CAST-A87CS-1S	8.50	87.20	-	-	3.10	0-6	82.5	Castable for snorkels
CAST-A87CS-2S	8.00	87.80	-	-	3.12	0-3	90.20	Filling for snorkels

The table does not represent all the available products. More qualities can be produced according to Customer requirements.

Tundish

- 1. Impact pad
- 2. Insulation
- 3. Safety lining
- 4. Working lining



WORKING LINING BRICKS

Quality Name	MgO (%)	SiO ₂ (%)	CaO (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	BD (g/cm ³)	Grain Size (mm)	TC (1000°C) (W/mK)	Application
GUN-M67TN	67.00	20.00	1.80	4.50	2.50	1.10	0-1	0.5	Gunning material for working lining
GUN-M75TN	75.00	15.00	3.00	5.50	0.60	1.30	0-0.5	0.5	Gunning material for working lining
GUN-M85TN	85.00	5.00	9.00	0.50	0.20	1.40	0-0.5	0.5	Gunning material for working lining
DRY-M78TN	78.00	16.00	2.50	3.00	0.50	1.90	0-1	0.5	Dry setting mix
DRY-M80TN	80.00	1.30	13.00	4.50	1.20	1.90	0-1	0.5	Dry setting mix

SAFETY MATERIALS

Quality Name	Al ₂ O ₃ (%)	SiO ₂ (%)	CaO (%)	Fe ₂ O ₃ (%)	TiO ₂ (%)	BD (g/cm ³)	Grain Size (mm)	CCS (1500°Cx3h) (Mpa)	Application
CAST-A75B-TN	75.00	18.00	3.60	1.20	2.15	2.60	0-3	50	Castable for safety lining
CAST-A82B-TN	82.00	12.50	1.00	1.30	2.5	3.25	0-6	125	Low cement castable for safety lining

INSULATION LINING

Quality Name	Al ₂ O ₃ (%)	SiO ₂ (%)	ZrO ₂ (%)	Fe ₂ O ₃ (%)	K ₂ O+Na ₂ O (%)	BD (g/cm ³)	Max. Temperature (°C)	TC (600°C) (W/mK)	Application
ALSITHERM1430-B128	34.00	50.00	15.00	0.15	0.15	0.13	1430	0.18	Insulating panel
ALSITHERM1260-B300	44.00	52.00	-	0.50	0.90	0.30	1260	0.13	Insulating panel

The table does not represent all the available products. More qualities can be produced according to Customer requirements.

Continuous Casting



LADLE SHROUD

Quality Name	Al ₂ O ₃ (%)	SiO ₂ (%)	ZrO ₂ (%)	Si+SiC(%)	Carbon(%)	BD(g/cm ³)	AP(%)	CCS (MPa)	MOR(MPa)	Application
SHR-A50B	50.00	11.00	-	3.00	26.00	2.20	19	20	6	SHR Body / Cold start
SHR-A60B	60.00	10.00	-	3.00	20.00	2.30	15	22	7	SHR Body / Cold start
SHR-Z75SL	-	-	75.00	3.00	12.00	3.50	16	16	5	SHR Slagline
SHR-A60H	58.00	10.00	-	4.50	26.00	2.30	18	21	5	SHR Head

SUBMERGED ENTRY NOZZLE

Quality Name	Al ₂ O ₃ (%)	SiO ₂ (%)	ZrO ₂ (%)	Si+SiC(%)	Carbon(%)	BD(g/cm ³)	AP(%)	CCS (MPa)	MOR(MPa)	Application
SEN-A50B	50.00	11.00	-	3.00	26.00	2.20	19	20	6	SHR Body / Cold start
SEN-A60B	60.00	12.00	-	4.50	22.00	2.30	15	22	7	SHR Body / Cold start
SEN-Z80SL	-	-	80.00	3.00	12.00	3.80	14	16	5	SHR Slagline
SEN-A80H	80.00	-	-	4.50	15.00	2.30	18	21	5	SHR Head

MONOBLOCK STOPPER

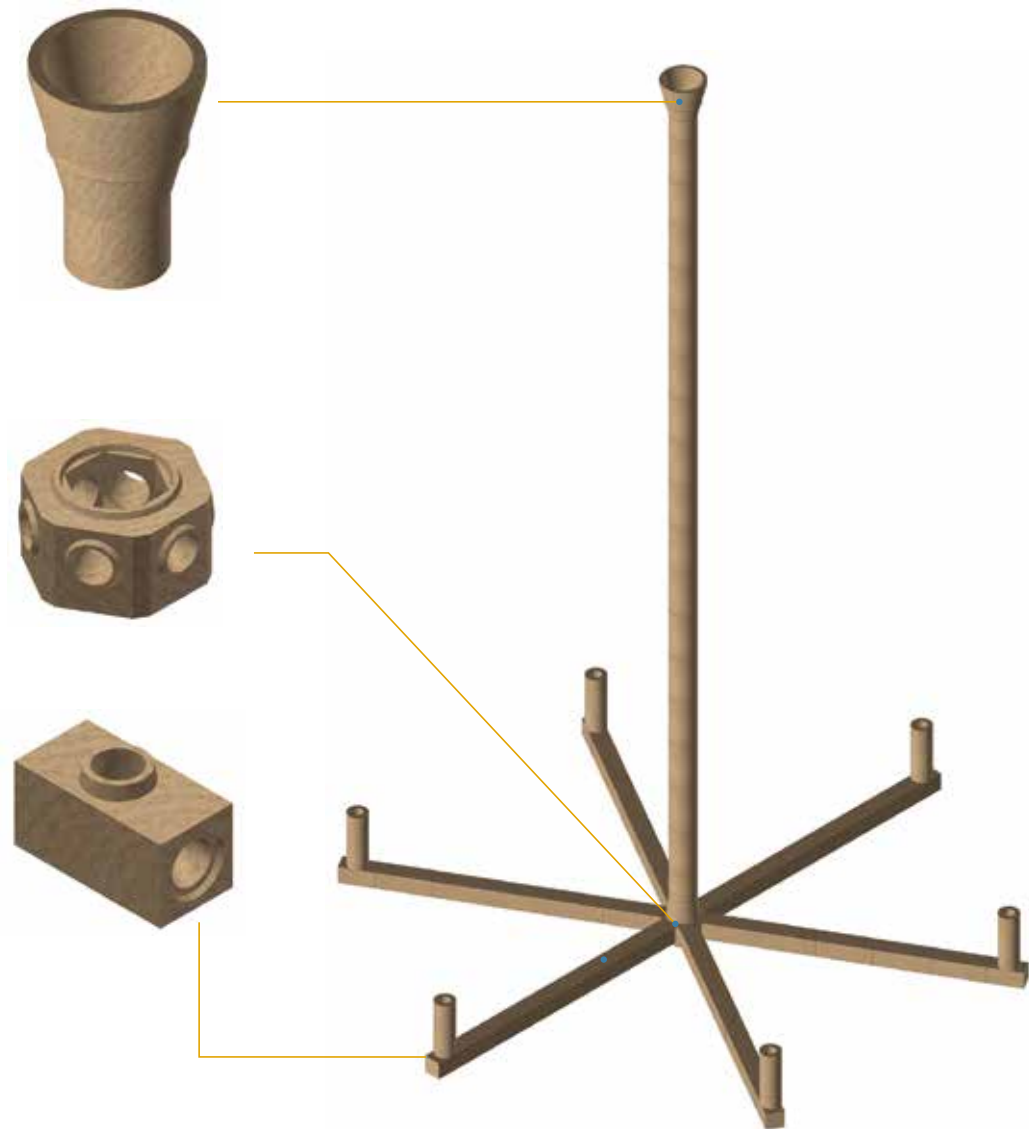
Quality Name	Al ₂ O ₃ (%)	SiO ₂ (%)	ZrO ₂ (%)	Si+SiC(%)	Carbon(%)	BD(g/cm ³)	AP(%)	CCS (MPa)	MOR(MPa)	Application
MBS-A50B	50.00	16.00	-	3.00	29.00	2.40	18	18	4	MBS Body
MBS-A60B	60.00	11.00	-	3.00	24.00	2.65	17	21	5	MBS Body
MBS-Z65L	-	-	65.00	3.00	21.00	3.20	17	15	5	MBS Slagline
MBS-A80H	80.00	-	3.00	5.00	10.00	2.75	17	20	6	MBS Head

TUNDISH NOZZLE

Quality Name	Al ₂ O ₃ (%)	SiO ₂ (%)	ZrO ₂ (%)	Si+SiC(%)	Carbon(%)	BD(g/cm ³)	AP(%)	CCS (MPa)	MOR(MPa)	Application
TN-A55B	55.00	11.00	-	-	27.00	2.45	15	20	6	TN Body
TN-A65B	66.00	11.00	-	-	20.00	2.55	16	22	7	TN Body
TN-Z75SL	-	-	75.00	-	16.00	3.60	15	18	7	TN Slagline
TN-M65H	-	8.00	-	65.00	15.00	2.70	16	25	8	TN Head

The table does not represent all the available products. More qualities can be produced according to Customer requirements.

Ingots Casting



CASTING BRICKS

Quality Name	Al ₂ O ₃ (%)	Fe ₂ O ₃ (%)	SiO ₂ (%)	TiO ₂ (%)	Refractoriness Cs/sc	°C Max service temperature	Apparent Porosity (%)	Bulk Density (kg/dm ³)	Cold Crushing Strenght (MPa)
CB40H	≥ 40	≤ 2.3	≤ 54	-	32	1750°C	≤26	≥2.10	≥30
CB60H	≥ 60	≤ 2.2	≤ 30	2.3	33	1750°C	≤26	≥2.20	≥30
CB60L		≤ 1.8		2.3		1750°C			
CB70H	≥ 70	≤ 2.2	≤ 27	2.2	36	1800°C	≤24	≥2.30	≥38
CB70L		≤ 1.8		2		1800°C			
CB70U		≤ 1.4		2		1800°C			
CB70HL		≤ 1.2		2		1800°C			
CB80H	≥ 78	≤ 2,2	≤ 20	1.5	38	1840°C	≤23	≥2.30	≥40
CB80L		≤ 1.8		1.5		1840°C			
CB80U		≤ 1.4		1.5		1840°C			
CB80HL		≤ 1.2		1.5		1840°C			

The table does not represent all the available products. More qualities can be produced according to Customer requirements.

Special Shapes



SPECIAL BLOCKS

Quality Name	MgO (%)	SiO ₂ (%)	CaO (%)	Fe ₂ O ₃ (%)	Carbon (%)	BD (g/cm ³)	AP (%)	CCS (MPa)	Application
A15C7-SR	98.06	0.43	0.89	0.41	15.00	2.98	4	40	EAF EBT
E15C7-SR	97.80	0.38	0.97	0.58	15.40	2.97	5	30	EAF EBT
A15C7T	98.13	0.40	0.92	0.40	15.00	2.99	4	40	Converter tap hole
EA14RT	98.20	0.40	0.98	0.42	14.00	2.96	4	40	Converter tap hole

ROOF

Quality Name	MgO (%)	SiO ₂ (%)	CaO (%)	Fe ₂ O ₃ (%)	Cr ₂ O ₃ (%)	BD (g/cm ³)	Grain Size (mm)	CCS 1600°Cx3h (MPa)	Application
CAST-A90CSDLT	6.00	90.00	0.80	0.05	-	3.10	0-8	95	EAF spout
CAST-A90CCR	-	90.00	-	0.50	2.30	3.15	0-6	100	EAF and LF roof precast block

UNSHAPED MATERIALS

Quality Name	MgO (%)	SiO ₂ (%)	CaO (%)	Fe ₂ O ₃ (%)	Cr ₂ O ₃ (%)	Al ₂ O ₃ (%)	BD (g/cm ³)	Grain Size (mm)	Application
THF-M47O	47.00	44.00	0.60	8.00	2.00	-	-	2-6	EBT and tap hole olivine
RAM-M94V	93.50	1.00	1.80	1.20	0.80	0.3	2.20	0-5	EBT filling

The table does not represent all the available products. More qualities can be produced according to Customer requirements.

Sliding Gate Mechanical System



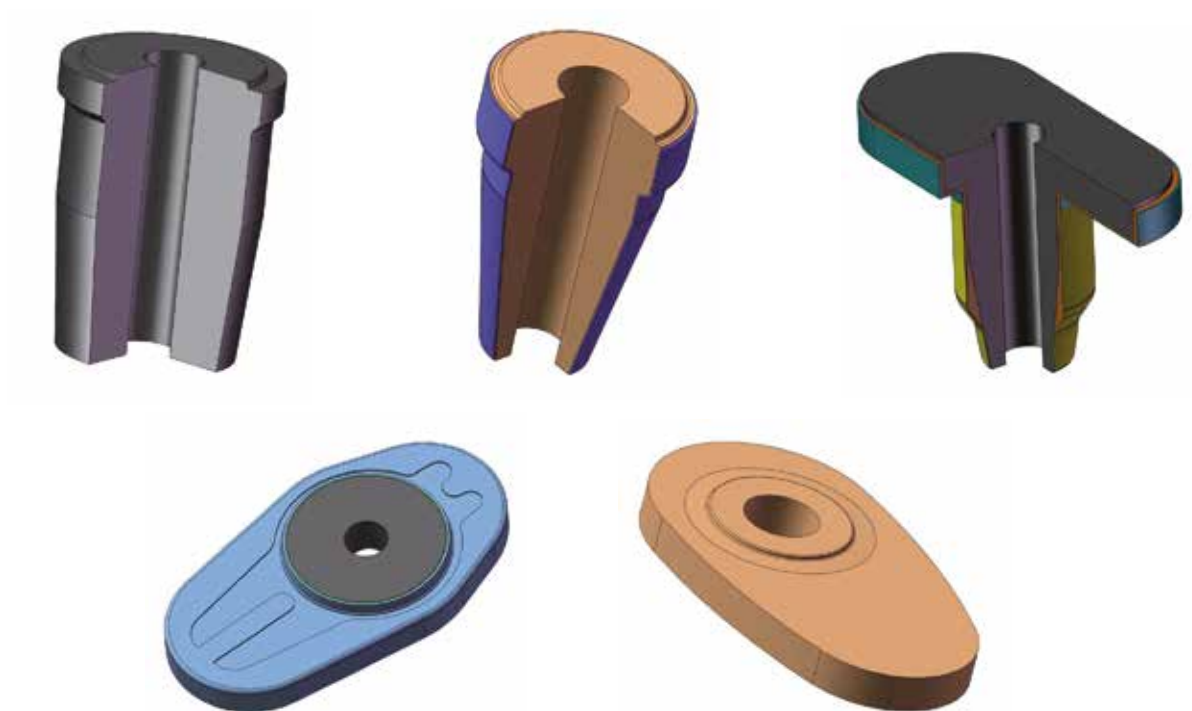
The Sliding Gate System TES series is an innovative Ladle Slide Gate that offers a state-of-the-art technology engineered to suit all steel plants requirements in terms of:

Reliability

- Reliability and operational safety
- Longer sequences of casting
- Insulated structure/springs to avoid overheating
- Air cooling device to increase lifetime of mechanical components
- User friendly operation
- Fast and safe refractory replacement
- Sturdy and ergonomic design
- Targeted maintenance of independent components"

Model	TES30	TES60	TES80
Dimensions	285x928x448 mm	349x1164x560 mm	377x1285x700 mm
Stroke	105 mm	132 mm	180 mm
Casting bore diameter (mm)	20-50 mm	30-60 mm	50-80 mm
Ladle Capacity	15-50 ton	50-130 ton	150-220 ton
n° of springs for each pack	3	4	5

Flow control refractories



SLIDE GATE PLATES

Quality Name	Al ₂ O ₃ (%)	MgO(%)	ZrO ₂ (%)	Carbon(%)	BD(g/cm ³)	AP(%)	CCS(Mpa)	Application
SP-A70BU	72.00	-	-	6.00	2.85	8	70	Alumina Carbon unfired plate
SP-A85BU	86.00	-	-	3.00	3.10	10	100	Alumina Carbon unfired plate
SP-A75ZF	75.00	-	6.50	7.00	3.05	7	115	Alumina Zirconia Carbon fired plate
SP-A80CF	80.00	-	-	5.00	3.00	9	93	Alumina Carbon fired plate
SP-M80AF	12.00	80.00	-	2.50	2.97	10	85	Magnesia Fired Plate

NOZZLES

Quality Name	Al ₂ O ₃ (%)	MgO(%)	ZrO ₂ (%)	Carbon(%)	BD(g/cm ³)	AP(%)	CCS(Mpa)	Application
IN-A80	80.00	-	-	4.00	3.00	13	65	Inner Nozzle
IN-A90	90.00	-	-	4.00	3.00	12	100	Inner Nozzle
CN-A80	80.00	-	-	5.00	3.00	15	75	Collector Nozzle
CN-A90	90.00	-	-	3.00	3.00	13	90	Collector Nozzle

The table does not represent all the available products. More qualities can be produced according to Customer requirements.

Technical assistance and optimization of refractories applications

Trasteel prouids itself on the quality of its engineering staff, which is capable of optimizing the performance of its materials even in extreme working conditions.

Besides, it can offer a wide range of services, teaming up with customer's technical staff and reducing the trans-formation costs of the mill.

Trasteel technical team provides complete assistance and consulting in order to maximize the results of its products.

Its services go beyond a simple product-related service, as listed below:

- Study, design and optimization of all refractories lining by using thermal calculation and dynamic model
- On-site training to steel plant technicians on the refractory operation
- Development of 4.0 Industry, by providing software and tools in order to monitor the refractories life with forecast analysis and therefore bettering the stock management
- Detailed practical and theoretical studies related to the electric arc furnaces and their operations
- Monitoring and optimization of operational, mechanical and electrical variables which affect the performances of the electric arc furnaces
- Monitoring and optimization of operational and mechanical performance of the refractory
- Calculation of productivity increase
- Furnace start-up assistance
- Furnace Regulation
- Hydraulics
- Evaluation of power supply system
- Evaluation of transformer performance
- Evaluation of load current and current balance between phases
- Optimization of melting efficiency
- Optimization of graphite electrodes consumption
- Customized Reporting
- Interaction with customer's data – PLC
- Inspection of accessories



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