

Refractories for steelmaking and
continuous-casting system

炼钢及连铸系统 用耐火材料



联合荣大企业集团
Allied Rongda Enterprises



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continuous-casting system

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高素质人才 · 高效率管理 · 高品质产品 · 高技术服务
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High temperature coating for prevention of slag sticking

电炉小炉盖预制件

Preshaped Cover for EAF

用途 Application

- 电炉炉顶三角区
- Top triangular area of EAF cover

特性 Characteristics

- 预制成型，现场直接安装，使用方便
- 热态强度高，可以经受电炉运行时的高频振动
- 可以经受频繁的急冷急热环境条件
- 耐冲刷，抗炉渣侵蚀性能优异
- 使用寿命长
- Precasted and dried, direct installation on site, easy to use
- High thermal strength, can withstand high frequent vibration when the EAF is running
- It can withstand frequent hot and cold thermal shock
- Erosion resistant, excellent resistance to slag corrosion
- Long service life



电炉小炉盖预制件
Electric furnace cover prefabs

用法 Usage

- 现场直接安装使用
- Direct installation and use on site

技术指标 Technical index

型号 Type	材质 Material	体积密度 (g/cm ³) B.D	化学成分 (%) Chemistry		耐压强度 (MPa) CCS		抗折强度 (MPa) MOR		线变化率 (%) PLC
			Al ₂ O ₃	Cr ₂ O ₃	110°Cx24h	1500°Cx3h	110°Cx24h	1500°Cx3h	1500°Cx3h
RDG-1	刚玉质 Corundum	3.1	≥90	—	≥50	≥80	≥8.0	≥12	0 ~ +0.8
RDG-2	铬刚玉质 Chrome corundum	3.1	≥85	≥3	≥50	≥80	≥8.0	≥12	0 ~ +0.8
RDG-3	高铝质 High alumina	2.9	≥82	—	≥40	≥70	≥7.0	≥10	±0.5
RDG-4	高铝质 High alumina	2.8	≥78	—	≥40	≥70	≥7.0	≥10	±0.5

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

电炉喷补料

Gunning Materials for EAF

用途 Application

- ✦ 用于电炉炉壁、炉底的热态喷补
- ✦ Hot spraying for side wall and bottom of EAF

特性 Characteristics

- ✦ 耐火度高，抗侵蚀能力强
- ✦ 附着率高，回弹低
- ✦ 易烧结，耐冲刷
- ✦ High refractoriness and strong corrosion resistance
- ✦ High adhesion and low rebound
- ✦ Easy to sinter, good erosion resistance

用法 Usage

- ✦ 喷涂施工
- ✦ Spraying construction

技术指标 Technical index

型号 Type	体积密度(g/cm ³) B.D	耐火度(℃) SK	化学成分(%) Chemistry		热态抗折强度(MPa) MOR 1400℃x1h	线变化率(%) PLC 1500℃x3h	
			MgO	CaO			
RDP-1	≥2.0	≥1850	≥80	—	≥0.2	0~-1.0	
RDP-2	≥2.1	≥1850	≥85	—	≥0.2	0~-1.0	

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

电炉炉底干打料

Dry Ramming Materials for Bottom of EAF

用途 Application

- ✦ 用于电炉炉底和炉坡
- ✦ Used for bottom and slope of EAF

特性 Characteristics

- ✦ 易烧结，强度高
- ✦ 体积稳定性好
- ✦ 抗钢水渗透、冲刷
- ✦ 耐炉渣侵蚀
- ✦ Easy to sinter, high strength
- ✦ Good volume stability
- ✦ Good resistance to penetration and washout of molten steel
- ✦ Strong resistance to slag erosion



电炉炉底打结料
Ramming mixes for EAF bottom

用法 Usage

- ✦ 干法捣打
- ✦ Dry ramming

技术指标 Technical index

型号 Type	体积密度 (g/cm ³) B.D	耐火度 (°C) SK	化学成分 (%) Chemistry			耐压强度 (MPa) CCS	线变化率 (%) PLC
			MgO	CaO	Fe ₂ O ₃		
RDD-80	≥2.5	≥1850	≥80	≥5	≥6	1550°Cx1h ≥30	1500°Cx3h 0 ~ +1.5
RDD-85	≥2.6	≥1850	≥85	≥5	≥6	≥35	0 ~ +1.5

有关技术参数可根据具体使用环境临时约定
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电炉出钢口填料

Packin Sand for Taphole of EAF

用途 Application

- 用于偏心底电炉出钢口填充
- Used for filling the taphole of eccentric bottom EAF

特性 Characteristics

- 选用优质抗侵蚀、难烧结颗粒耐火骨料
- 特殊高温复合润滑剂配料
- 可实现完全自然开浇
- High quality refractory and refractory granular aggregate is adopted
- Special high temperature compound lubricant ingredient
- Fully natural taping can be realized

用法 Usage

- 溜管流入、投掷
- Inflow through a pipe chute or hand throwing

技术指标 Technical index

型号 Type	化学成分 (%) Chemistry		耐火度 (°C) SK	临界粒度 (mm) Critical particle size	含水率 (%) Rate of water content
	MgO	SiO ₂			
RDT-1	≥50	≤40	≥1750	5	0.02
RDT-2	≥60	≤30	≥1790	5	0.02

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

环保型“水基”镁质大面白流料

Environment Friendly Water Borne Self Flowing Magnesia Castable for Converter Repairing

特性 Characteristics

- 环保无污染，烧结过程不产生有毒气体
- 不含沥青，不向钢水中带入C和S
- 自流性好，炉内自流铺展
- 烧结时间短，一般1吨料不超过20min
- 烧结充分，无夹心层喷溅隐患
- 结构致密耐冲刷，使用寿命可达传统料的3倍以上
- Environmental friendly, non toxic and harmful gas in sintering process
- No asphalt, no adding C and S to the molten steel
- Good flowing performance, self spreading in the furnace
- Sintering time is short, generally a ton of material not more than 20min
- Sufficient sintering, no sandwich layer and no splash hazard
- Compact structure, the service life can be more than 3 times of the traditional material

用法 Usage

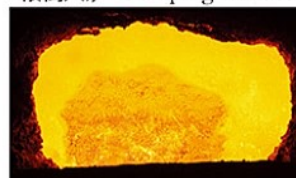
- 现场加液体结合剂搅拌好后倾倒入炉内
- Mix dry powder with liquid binder into selfflow castable which is then poured into the hot converter



现场搅拌 Site mixing



倾倒入炉 Dumping furnace



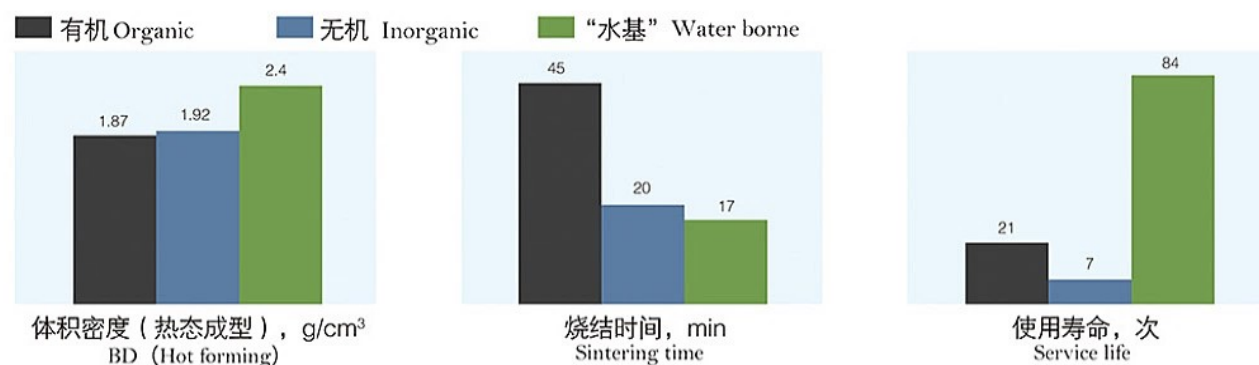
快速烧结 Rapid sintering



兑入铁水 Pure into molten iron

【几种转炉大面白流料典型性能对比】

Comparison of typical performance of several kinds of refractories for converter repairing



技术指标 Technical index

型号 Type	化学成分 (%) Chemistry				体积密度 (g/cm ³) B.D			烧后抗折强度 (MPa) MOR			流动性 (mm) Mobility	
	MgO	C	SiO ₂	S	1000°Cx3h			1000°Cx3h			1550°Cx3h	
RBL-W1	≥85	-	≤12	-	≥2.8			≥8			≥8	
											常温	
											≥240	

有关技术参数可根据具体使用环境临时约定

The related technical parameters should be confirmed temporarily according to the specific use environment

传统型转炉大面白流料

Traditional Self Flowing Materials for Converter Repairing

用途 Application

- 主要用于转炉炉底、迎钢面、出钢面等部位的修补
- Mainly used for converter bottom, adding steel surface, tapping steel surface and other parts of the repair

特性 Characteristics

有机结合大面料 (RBL-1, RBL-2)

- 流动性能好, 附着率高
- 烧结时间短, 结合强度高
- 抗冲刷, 使用寿命长

无机结合大面料 (RBL-3, RBL-4)

- 挥发份少, 无刺激性气体逸出, 绿色环保
- 施工性能好、粘附力强
- 烧结时间较有机结合大面料更短

Organic combination of self flowing materials for converter (RBL-1, RBL-2)

- Good flow performance, high adhesion rate
- Short sintering time, high bonding strength
- Good erosion resistance, long service life

Inorganic combination of self flowing materials for converter (RBL-3, RBL-4)

- Less volatile, no irritating gas escape, green environmental protection
- Good construction performance, strong adhesion
- The sintering time is shorter than the organic combined self flowing materials for converter

用法 Usage

- 清理待修补部位的钢渣
- 热态投掷该料到待修补部位
- 摇动炉体, 料将自行铺展开
- 待料烧结成整体后即可投入使用
- Cleaning the steel slag on the part needs to be repaired
- The material is hand throwing to the part to be repaired
- Shaking the furnace body, the material will be spread out on its own
- After sintering into a whole, the converter is ready to be use

技术指标 Technical index

型号 Type	化学成分 (%) Chemistry			体积密度 (g/cm³) B.D	抗折强度 (MPa) MOR		硬化时间 (Min) Hardening time
	MgO	C	SiO ₂	1000°Cx3h	1000°C	1500°C	1000°C
RBL-1	≥80	≥8	-	≥2.4	≥5	≥8	≤50
RBL-2	≥75	≥10	-	≥2.2	≥4	≥6	≤50
RBL-3	≥85	-	≤10	≥2.5	≥5	≥8	≤25
RBL-4	≥80	-	≤12	≥2.5	≥4	≥6	≤25

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

转炉喷注料

Shotcrete Castable for Converter Repairing

用途 Application

- 转炉各部位喷补作业
- Repair operation for various parts of converter

特性 Characteristics

- 需水量小，约5~6%
- 喷补层结构致密，强度高，有效地提高了材料的抗侵蚀性及耐磨性
- 反弹率小于5%，喷注过程无粉尘
- 湿法喷注的炉衬寿命可达干法喷涂的2倍以上
- Water (liquid) requirement is less than 5~6%
- The structure of the coating is compact and the strength is high, which can improve the corrosion resistance and wear resistance of the material
- The rebound ratio is less than 5%, no dust in the shotcrete process
- The lining life of shotcrete can be more than 2 times of dry guning

用法 Usage

- 专用设备遥控操作
- Special equipment, remote control operation

技术指标 Technical index

型号 Type	化学成分 (%) Chemistry		体积密度 (g/cm ³) B.D		抗折强度 (MPa) MOR		线变化率 (%) PLC	
	MgO	SiO ₂	1000℃x3h	1550℃x3h	1000℃x3h	1550℃x3h	1000℃x3h	1500℃x3h
RZPZ-1	≥85	≤12	≥2.7	≥2.8	≥8	≥8	0~-0.2	0~-1.0

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

转炉喷补料

Gunning Materials for Converter Repairing

用途 Application

- ✦ 延长转炉使用寿命
- ✦ 降低耐火材料单耗和炼钢成本
- ✦ Prolonging the service life of converter lining
- ✦ Reducing the unit consumption of refractory materials and the cost of steelmaking

特性 Characteristics

- ✦ 附着率高
- ✦ 粘结强度高，不易剥落
- ✦ 硬化迅速，喷补均匀，强度高
- ✦ 耐高温、抗侵蚀、抗冲刷
- ✦ High adhesion rate
- ✦ High bonding strength, not easy to peel
- ✦ Quick hardening, uniform gunning and high strength
- ✦ High temperature resistance, Good erosion resistance, Good resistance to flowing flushing

用法 Usage

- ✦ 专用设备人工操作
- ✦ Special equipment, manual operation

技术指标 Technical index

型号 Type	化学成分 (%) Chemistry			体积密度 (g/cm ³) B.D	抗折强度 (MPa) MOR		线变化率 (%) PLC
	MgO	CaO	SiO ₂	110°Cx24h	1000°Cx3h	1550°Cx3h	1500°Cx3h
RZP-1	≥80	≤3	≤8	2.4~2.6	≥2	≥10	-1~-2
RZP-2	≥75	≤10	≤10	2.2~2.4	≥2	≥8	-1~-2

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

挡渣球、挡渣塞

Slag Skimming Ball and Stopper

用途 Application

- 提高钢水清洁度
- 提高转炉出钢口耐火材料的使用寿命
- Improve cleanness of molten steel
- To improve the service life of refractory material for converter taphole

特性 Characteristics

- 强度高、抗热震性好、耐火度高
- 抗钢水冲刷和熔渣侵蚀
- 降低劳动强度
- 表面沟槽设计，不挡钢水
- 挡渣效率高，有效减少下渣量
- High strength, good thermal shock resistance, high refractoriness
- Good corrosion resistance of molten steel and slag erosion
- Reduce labour intensity
- Well surface groove design will not blocking the molten steel
- Efficiency slag skimming reduced slag leakage

用法 Usage

- 出钢后期投入到出钢口位置，挡渣塞的棒体部分应插入出钢口
- Put it into the taphole at the later stage of tapping, The rod part of the Slag skimming stopper shall be inserted into the taphole

技术指标 Technical index

型号 Type	化学成分 (%) Chemistry	体积密度 (g/cm ³) B.D	烧后抗折强度 (MPa) MOR		耐压强度 (MPa) CCS		耐火度 (°C) SK
	Al ₂ O ₃	110°C × 24h	110°C × 3h	1500°C × 3h	110°C × 3h	1500°C × 3h	
RZD-A	≥ 70	4.2~4.6	≥ 5	≥ 10	≥ 30	≥ 50	≥ 1790

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

钢包浇注料、无碳砖

Castables and Non Carbon Bricks for Ladle

用途 Application

- ✦ RBY-Z用于钢包永久层浇注
- ✦ RBJ-1、RBJ-2用于钢包工作衬浇注或砌筑
- ✦ RBY-Z is used for casting the permanent layer of ladle
- ✦ RBJ-1、RBJ-2 is used for casting ladle lining

特性 Characteristics

钢包浇注料:

- ✦ 浇注钢包整体性好
- ✦ 耐侵蚀, 耐冲刷, 抗剥落

钢包无碳砖:

- ✦ 预制成型, 现场可直接使用
- ✦ 简单烘烤, 钢包快速投入使用
- ✦ 微膨胀, 砖与砖之间结合紧密, 不渗钢
- ✦ 无水泥结合, 高温性能优异, 耐渣侵蚀性好
- ✦ 不含碳, 避免对钢水增碳, 特别适合洁净钢及不锈钢使用
- ✦ 强度高, 抗剥落, 使用寿命长

永久层浇注料:

- ✦ 流动性好, 施工方便
- ✦ 微膨胀, 不会产生收缩裂纹
- ✦ 高密实, 长寿命

Castables for ladle:

- ✦ The casted ladle has good integrity
- ✦ Corrosion resistance, erosion resistance, spalling resistance

Non carbon Preshaped bricks for ladle:

- ✦ Preshaped & dried, it can be used directly on site
- ✦ Simple baking, ladle can be put into used quickly
- ✦ Slight expansion, the bond between bricks and bricks are tight, no leakage of steel
- ✦ No cement combination, high temperature performance, good slag corrosion resistance
- ✦ No carbon contained, avoid carburizing of molten steel, especially suitable for the use of clean steel and stainless steel
- ✦ High strength, anti stripping, long service life

Castables for permanent layer of ladle :

- ✦ Good fluidity , convenient construction
- ✦ Slight expansion, will not produce shrinkage cracks
- ✦ High density, long life

用法 Usage

- ✦ 钢包浇注料: 现场浇注
- ✦ 无碳钢包砖: 预制
- ✦ Castables for ladle: Vibrating cast on site
- ✦ Non carbon bricks for ladle: Preshaped brick

技术指标 Technical index

型号 Type	材质 Material	体积密度 (g/cm³) B.D	抗折强度 (MPa) MOR		耐压强度 (MPa) CCS		线变化率 (%) PLC	化学成分 (%) Chemistry	
			110°C × 24h	1550°C × 3h	110°C × 24h	1550°C × 3h	1550°C × 3h	Al ₂ O ₃	MgO
RBJ-1	铝镁质 Aluminum magnesium	≥2.8	≥10	≥12	≥45	≥70	0~+1.0	≥80	≥8
RBJ-2	铝-尖晶石质 Aluminum spinel	≥3.0	≥10	≥15	≥50	≥70	0~+0.5	≥85	≥3
RBY-ZA	高铝质 High alumina	≥3.0	≥10	≥15	≥50	≥70	0~+0.5	≥88	-
RBY-ZS	铝尖晶石质 Aluminum spinel	≥3.0	≥10	≥15	≥50	≥70	0~+0.5	≥82	≥5

有关技术参数可根据具体使用环境临时约定

The related technical parameters should be confirmed temporarily according to the specific use environment

钢包内衬修补料

Materials for Repairing Lining of Ladle

用途 Application

- 适用于钢包包底冲击区、透气砖以及水口座砖周围修补
- It is suitable for repairing the impact area of ladle bottom, the top surrounding of purging plugs and well block

用法 Usage

- 专用机械喷涂或人工投射
- Special mechanical spraying or manual hand throwing

技术指标 Technical index

型号 Type	材质 Material	体积密度 (g/cm³) B.D	线变化率 (%) PLC	耐压强度 (MPa) CCS		化学成分 (%) Chemistry	
			1550℃ × 3h	110℃ × 24h	1550℃ × 3h	Al₂O₃	MgO
RBX-1	铝镁质 Aluminum magnesium	≥2.6	±0.5	≥30	≥40	≥75	≥8
RBX-2	铝尖晶石质 Aluminum spinel	≥2.6	0 ~ -0.5	≥35	≥45	≥75	≥3

有关技术参数可根据具体使用环境临时约定

The related technical parameters should be confirmed temporarily according to the specific use environment

钢包引流沙

Packing Sand for Ladle Tapping Hole

用途 Application

- 钢包出钢口填充
- Filling of ladle tapping hole

用法 Usage

- 溜管流入、投掷
- Inlet through pipe chute or hand throwing

技术指标 Technical index

型号 Type	化学成分 (%) Chemistry				耐火度 (°C) SK	临界粒度 (mm) Critical particle size	含水率 (%) Rate of water content
	MgO	SiO₂	Cr₂O₃	Fe₂O₃			
RBX-1	≥40	≤40	-	-	≥1750	3	0.02
RBX-2	-	≥20	≥30	≤10	≥1750	3	0.02

有关技术参数可根据具体使用环境临时约定

The related technical parameters should be confirmed temporarily according to the specific use environment

钢包透气砖、座砖

Purging Plugs for Ladle and Well Block for Purging Plug

用途 Application

- 钢包底部吹氩设备
- Argon blowing equipment at bottom of ladle

特性 Characteristics

- 经高温烧成，体积稳定性好，强度高
- 结构致密，气孔率低，抗熔渣侵蚀
- 热震稳定性好，抗剥落
- 热态强度高，耐气流冲刷
- 透气性良好
- After high temperature sintered, the volume stability is good, the strength is high
- Densified structure, low porosity and resistance to slag corrosion
- Good thermal shock stability, anti stripping
- High hot strength, strong flow erosion resistant
- Good air permeability



透气砖

用法 Usage

- 现场直接安装使用
- Direct installation and use on site

技术指标 Technical index

型号 Type	材质 Material	体积密度 (g/cm ³) B.D	耐压强度 (MPa) CCS		抗折强度 (MPa) MOR	线变化率 (%) PLC	化学成分 (%) Chemistry		
			110°C × 24h	1550°C × 3h	1550°C × 3h	1550°C × 3h	Al ₂ O ₃	MgO	Cr ₂ O ₃
RT-AM	铝镁质 Aluminum magnesium	≥3.1	≥40	≥80	≥12	0 ~ +0.5	≥80	≥4	-
RT-A	刚玉质 Corundum	≥3.2	≥50	≥90	≥12	0 ~ +0.5	≥90	-	-
RT-AC	铬刚玉质 Chrome corundum	≥3.2	≥50	≥90	≥12	0 ~ +0.5	≥88	-	≥3
RZ-AM	铝镁质 Aluminum magnesium	≥3.1	≥40	≥80	≥12	0 ~ +0.5	≥80	≥4	-
RZ-A	刚玉质 Corundum	≥3.2	≥50	≥90	≥12	0 ~ +0.5	≥90	-	-
RZ-AC	铬刚玉质 Chrome corundum	≥3.2	≥50	≥90	≥12	0 ~ +0.5	≥88	-	≥3

有关技术参数可根据具体使用环境临时约定

The related technical parameters should be confirmed temporarily according to the specific use environment

刚玉自流料

Alumina Based Self-Flow Castables

用途 Application

- ✦ 透气砖与座砖缝隙填充
- ✦ 电炉炉盖三角区填充
- ✦ 钢包上部边缘
- ✦ 真空脱气钢包盖
- ✦ 中间包包底填缝
- ✦ 钢包包底缝隙填充
- ✦ Gap filling of Purging plugs and well block
- ✦ Casting of triangle area of EAF cover
- ✦ Upper edge of ladle
- ✦ Vacuum degassing ladle cover
- ✦ Gap filling of tundish bottom
- ✦ Gap filling of ladle bottom

特性 Characteristics

- ✦ 具有良好的抗侵蚀性
- ✦ 优良的热震稳定性
- ✦ 热态强度高
- ✦ 微膨胀，可以减少缝隙，避免钢水的渗透
- ✦ 流动性可调，狭小空隙可实现自流填充
- ✦ It has good resistance to erosion
- ✦ Excellent thermal shock stability
- ✦ High thermal strength
- ✦ Slight expansion, can reduce gaps, to avoid the penetration of molten steel
- ✦ The fluidity can be adjusted. And the narrow spaces can be filled with self-flowing castable

用法 Usage

- ✦ 现场加水搅拌浇注
- ✦ Adding water and mixing and pouring on site

技术指标 Technical index

型号 Type	体积密度 (g/cm ³) B.D	抗折强度 (MPa) MOR		耐压强度 (MPa) CCS		化学成分 (%) Chemistry	
		110℃ × 24h	1550℃ × 3h	110℃ × 24h	1550℃ × 3h	Al ₂ O ₃	CaO
RLA-1	≥3.1	≥8	≥12	≥50	≥80	≥90	≤1.2

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

钢包沿预制件

Preshaped Cermet Block for Ladle Upper Edge Protection

用途 Application

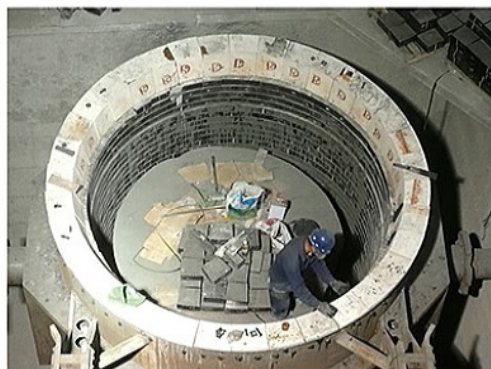
- ✦ 用于钢包包沿
- ✦ For protection of upper edge of ladle

特性 Characteristics

- ✦ 以刚玉-莫来石为基体，外加20-35%的不锈钢纤维，经特殊工艺预制而成
- ✦ 抗折、耐压强度极高，耐磨性优异
- ✦ 大幅提高钢包沿寿命
- ✦ 组合式结构，可单独更换损坏的局部，降低耐材单耗和工作量
- ✦ Corundum, corundum-mullite were used as matrix, additional 20-35% stainless steel fiber, preshaped by special process
- ✦ High modulus of rupture, high crushing strength, excellent wear resistance
- ✦ The service life of ladle upper edge has been increased substantially
- ✦ Preshaped blocks are bolted on to the upper edge of the ladle in to a ring structure. Local damaged block can be replaced separately and easily. Refractory consumption is low

用法 Usage

- ✦ 螺栓链接再钢包钢结构上
- ✦ Direct bolted connecting to the steel structure of the ladle



技术指标 Technical index

型号 Type	化学成分(%) Chemistry				体积密度(g/cm³) B.D	抗折强度(MPa) CCS		线变化率(%) PLC
	Al ₂ O ₃	SiO ₂	CaO	不锈钢纤维		110℃ × 24h	1200℃ × 3h	
RLR-M	≥62	≤33	≤2.8	≥15 (外加)	≥3.4	≥120	≥150	±0.5

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

钢包精炼炉 (LF) 炉顶预制件

Preshaped Lid of LF Furnace

用途 Application

- 钢包精炼炉炉顶
- LF furnace top cover

特性 Characteristics

- 耐急冷急热，抗剥落
- 对高碱度渣具有良好的耐侵蚀、渗透性
- 具有高的耐火度，高温性能优异
- 强度高
- 长寿命
- Have good performance of cold resistance and heat resistance, anti stripping
- Have good corrosion resistance and permeability resistance to high basic slag
- With high refractoriness, high temperature performance
- High strength
- Long service life



LF精炼炉炉顶预制件

用法 Usage

- 现场直接安装使用
- Direct installation and use on site

技术指标 Technical index

型号 Type	体积密度 (g/cm ³) B.D	耐压强度 (MPa) CCS		抗折强度 (MPa) MOR		线变化率 (%) PLC	化学成分 (%) Chemistry	
		110°C × 24h	1500°C × 3h	110°C × 24h	1500°C × 3h	1500°C × 3h	Al ₂ O ₃	CaO
RJL-1	≥2.9	≥50	≥70	≥8.0	≥10	0 ~ +0.5	≥85	≤1.5
RJL-2	≥2.8	≥40	≥70	≥7.0	≥10	±0.5	≥80	≤2.0

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

CAS/CAS-OB装置浸渍罩

Immersion Tube of CAS/CAS-OB Device

用途 Application

- ✦ CAS/CAS-OB装置浸渍罩
- ✦ Immersion tube of CAS/CAS-OB device

特性 Characteristics

- ✦ 体积稳定性好
- ✦ 强度高
- ✦ 有良好的热震稳定性
- ✦ 抗熔渣侵蚀
- ✦ 抗剥落
- ✦ Good volume stability
- ✦ High strength
- ✦ Have a good thermal shock stability
- ✦ Anti-slag corrosion
- ✦ Anti-stripping

用法 Usage

- ✦ 现场浇注
- ✦ Vibrate casting on site

【技术指标】 Technical index

型号 Type	材质 Material	体积密度 (g/cm ³) B.D	耐压强度 (MPa) CCS		抗折强度 (MPa) MOR		线变化率 (%) PLC	化学成分 (%) Chemistry	
			110℃ × 24h	1500℃ × 3h	110℃ × 24h	1500℃ × 3h	1500℃ × 3h	Al ₂ O ₃	MgO
RJC-1	铝镁质 Alumina magnesia	≥3.0	≥30	≥60	≥6	≥12	±0.5	≥90	≥4

有关技术参数可根据具体使用环境临时约定

The related technical parameters should be confirmed temporarily according to the specific use environment

RH真空脱气装置浸渍管

Immersion Tube of RH Vacuum Degasser

用途 Application

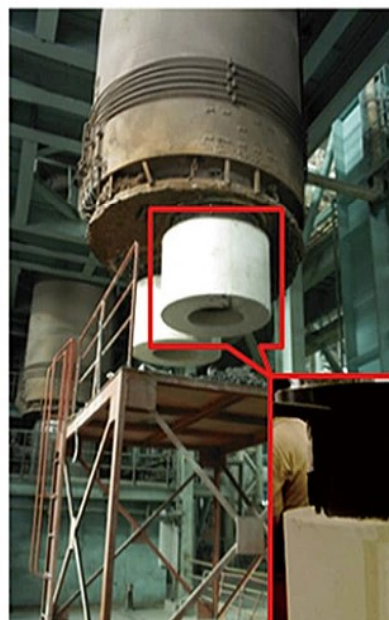
- ✦ RH装置浸渍管
- ✦ Immersion tube of RH degasser

特性 Characteristics

- ✦ 抗熔渣侵蚀性好
- ✦ 抗急冷急热性能优异
- ✦ 强度高，耐冲刷
- ✦ 耐火度高，高温性能优异
- ✦ Corrosion resistance of slag is good
- ✦ Have good performance of thermal shock resistance
- ✦ High strength, Erosion resistant
- ✦ High degree of refractoriness, excellent high temperature performance

用法 Usage

- ✦ 预制成型
- ✦ Precasted molding



RH浸渍管

技术指标 Technical index

型号 Type	材质 Material	体积密度 (g/cm ³) B.D	耐压强度 (MPa) CCS		抗折强度 (MPa) MOR		线变化率 (%) PLC	化学成分 (%) Chemistry	
			110℃ × 24h	1550℃ × 3h	110℃ × 24h	1550℃ × 3h	1550℃ × 3h	Al ₂ O ₃	MgO
RJR-1	刚玉质 Corundum	≥3.1	≥50	≥100	≥7.0	≥15	±0.5	≥92	—
RJR-2	刚玉-尖晶石质 Corundum spinel	≥3.1	≥50	≥100	≥7.0	≥15	±0.5	≥90	≥4

有关技术参数可根据具体使用环境临时约定

The related technical parameters should be confirmed temporarily according to the specific use environment

中间包用耐火材料示意图

Schematic Diagram of Refractories for Tundish

包盖

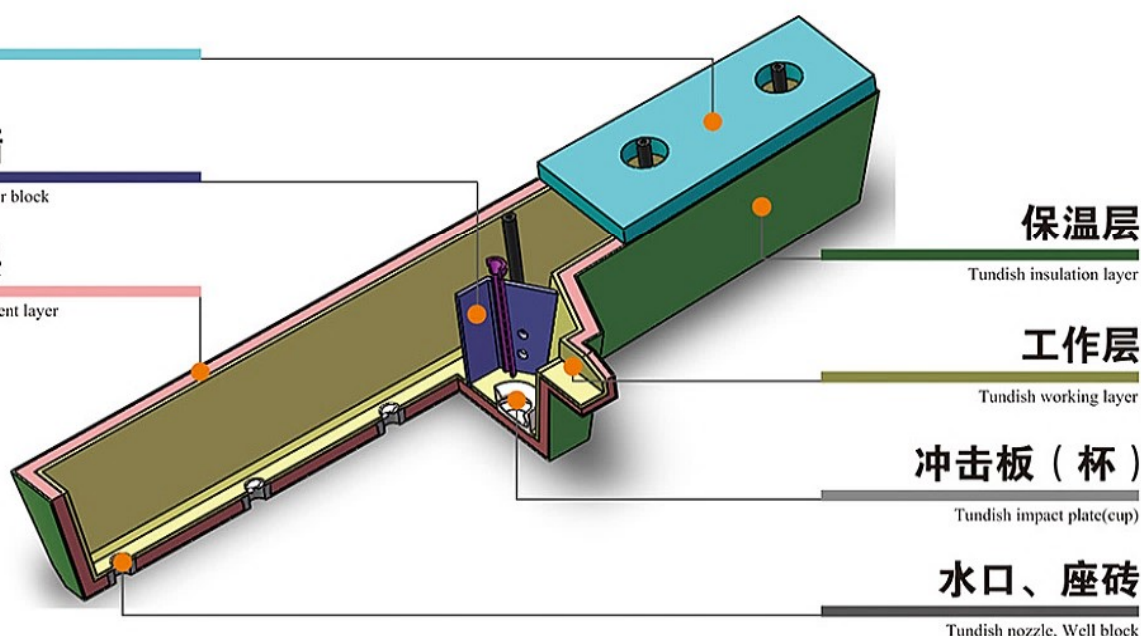
Tundish cover

挡渣墙

Tundish skimmer block

永久层

Tundish permanent layer



保温层

Tundish insulation layer

工作层

Tundish working layer

冲击板 (杯)

Tundish impact plate (cup)

水口、座砖

Tundish nozzle, Well block

中间包包盖浇注料

Refractory Castables for Tundish Cover

用途

Application

- 用于连铸中间包包盖
- Used for tundish cover of continuous casting

用法

Usage

- 现场浇注
- Vibrate casting on site

特性

Characteristics

- 不锈钢纤维增强
- 抗剥落
- Stainless steel fiber reinforced
- Anti stripping

技术指标

Technical index

型号 Type	体积密度 (g/cm ³) B.D	耐压强度 (MPa) CCS		抗折强度 (MPa) MOR		线变化率 (%) PLC	化学成分 (%) Chemistry
		110℃ × 24h	1500℃ × 3h	110℃ × 24h	1500℃ × 3h	1500℃ × 3h	Al ₂ O ₃
RTG-A	≥ 2.50	≥ 40	≥ 80	≥ 6.0	≥ 10	± 0.5	≥ 60
RTG-L	≥ 2.50	≥ 30	≥ 50	≥ 8.0	≥ 10	± 0.5	≥ 70

有关技术参数可根据具体使用环境临时约定

The related technical parameters should be confirmed temporarily according to the specific use environment

中间包涂抹料

Magnesia Based Plastering Mixture for Tundish Lining

用途 Application

- 连铸中间包工作层
- Used for tundish working layer of continuous casting

特性 Characteristics

- 不含磷，浇注过程不污染钢水
- 黏附力强，易于涂抹，可快速烘烤
- 具有较好的耐高温性和抗熔渣的侵蚀性
- 使用后易翻包
- No phosphorus, does not pollute the molten steel in casting process
- Strong adhesion, easy to coat, can be quickly heatup
- Have better resistance to high temperature and corrosion resistance of slag
- Easy to separate from tundish permanent layer after use

用法 Usage

- 手工涂抹或机械喷涂
- Manual coating or mechanical spraying

技术指标 Technical index

型号 Type	材质 Material	体积密度 (g/cm ³) B.D	耐压强度 (MPa) CCS		线变化率 (%) PLC	化学成分 (%) Chemistry		
			110℃ × 24h	1550℃ × 3h	1550℃ × 3h	MgO	CaO/Cr ₂ O ₃	SiO ₂
RTT-M	镁质涂抹料 Magnesium	≥2.2	≥6	≥10	0 ~ -2.5	≥85	-	≤3
RTT-G	镁铬质涂抹料 Magnesia chrome	≥2.2	≥5	≥8	0 ~ -2.5	≥75	≥5	≤2
RTT-C	镁钙质涂抹料 Magnesium calcium	≥2.0	≥5	≥8	0 ~ -2.5	≥75	≥5	≤2

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

中间包干式振动料

Magnesia Based Dry Vibration Material for Tundish Lining

用途 Application

- 连铸中间包工作层
- Used for tundish working layer of continuous casting

特性 Characteristics

长寿型

- 干料振动成型，施工方便快捷
- 不会与永久层发生粘连，易于翻包
- 使用寿命长，大于30h

环境友好型

- 烘烤过程挥发份少、无异味
- 不含有机物，不会对钢水增碳造成二次污染
- 尤其适合不锈钢和洁净钢浇铸使用

自固化干式料

- 震动成型，30分钟后可脱模，无需烘烤
- 环境友好
- 使用寿命长

Longevity type

- Dry vibration molding, convenient construction
- Not binding with the permanent layer, easy to disengage from tundish after use
- Long service life, more than 30h

Environmentally friendly type

- Have less volatile components and no peculiar smell in the heatup process
- No organic compounds containing so that no recarburization pollution to the molten steel
- Especially suitable for casting of stainless steel and clean steel

Magnesia based self-hardening castable for tundish lining

- Vibrating cast in mold. Self-hardening and the mold can be removed after 30 minutes, no need to heatup for hardening
- Environment friendly
- Long service life

用法 Usage

- 配套模具震动成型
- RDG-1、RDG-2带内模250℃烘烤2-3h脱模
- RDG-3成型完无需烘烤，放置30min即可脱模
- Vibrate cast in mold
- RDG-1, RDG-2 with inner mold, bake at 250 degrees, the mold can be removed after 2-3h
- RDG-3 does not require baking with mold after casting, The mold can be removed 30 minutes after casted

技术指标 Technical index

型号 Type	材质 Material	体积密度 (g/cm ³) B.D	耐压强度 (MPa) CCS		线变化率 (%) PLC	化学成分 (%) Chemistry		
			110℃ × 24h	1550℃ × 3h	1550℃ × 3h	MgO	CaO/Cr ₂ O ₃	SiO ₂
RTG-Y	长寿型干式料 Longevity type	≥2.1	≥15 (250℃)	≥7	0 ~ -1.0	≥82	-	≤3
RTG-W	环保型干式料 Environmental protection type	≥2.1	≥15 (250℃)	≥7	0 ~ -1.5	≥82	-	≤5
RTG-3	自固化干式料 Self curing dry vibration material	≥2.1	≥5 (30min)	≥7	0 ~ -1.0	≥82	-	≤3

有关技术参数可根据具体使用环境临时约定

The related technical parameters should be confirmed temporarily according to the specific use environment

中间包挡渣堰、冲击板

Preshaped Skimmer Block and Impact Plate for Tundish

用途 Application

- 改变中间包内钢水流场
- 保证中间包使用过程中的安全性
- Changing the flow field of molten steel in tundish
- Ensure the safety use of the tundish

特性 Characteristics

- 热态强度高
- 碱性堰板还具有吸附钢水中夹杂物洁净钢水的作用
- 均为无磷浇注料
- 抗剥落、抗钢水与熔渣的侵蚀
- High thermal strength
- The alkaline skimmer block and plate also has the function of absorbing inclusion of molten steel and cleaning molten steel in tundish
- All no phosphorus
- Anti stripping, good corrosion resistance of molten steel and slag

用法 Usage

- 堰板和冲击板均为预制块，现场直接安装使用
- All are preshaped blocks, direct installation and use on site

【技术指标】 Technical index

型号 Type	体积密度 (g/cm ³) B.D	抗折强度 (MPa) MOR	耐压强度 (MPa) CCS		化学成分 (%) Chemistry		
		110°C × 24h	110°C × 24h	1550°C × 3h	Al ₂ O ₃	MgO	SiO ₂
RTD-A	≥2.9	≥8	≥50	≥80	≥75	—	≤1.5
RTD-M	≥2.8	≥8	≥50	≥50	—	≥80	≤5
RTC-A	≥2.9	≥9	≥55	≥90	≥80	—	≤1.5
RTC-M	≥2.8	≥9	≥55	≥60	—	≥80	≤5

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

中间包气幕挡墙

Preshaped Gas-curtain Skimmer Dam for Tundish

用途 Application

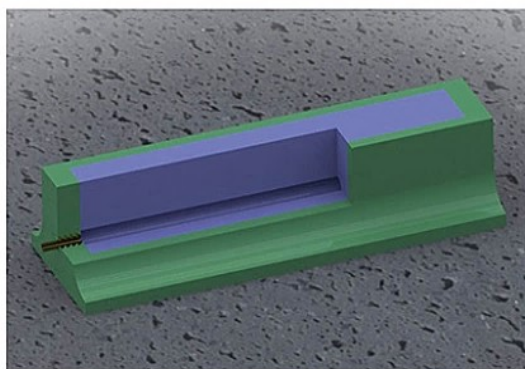
- 中间包底吹氩气，去除钢中微小夹杂
- 改变中包内钢水流动场，延长钢水停留时间
- 增强钢水搅拌，使成分、温度更均匀
- Argon blowing at the bottom of tundish, to remove micro inclusions in molten steel
- Changing the flow field of molten steel in tundish, prolonging residence time of molten steel
- Strengthen stirring of molten steel, to make the composition and temperature more uniform

特性 Characteristics

- 无需对中包做改动，安装相当方便
- 气幕捕捉夹杂物，使其上浮，去除效果显著
- 减小滞止区体积，增大活塞流和全混区体积
- 与中包整体寿命同步
- There is no need to change the tundish structure, the installation is very convenient
- Gas screen capturing inclusions, float it up, removal effect is remarkable
- The volume of stagnation zone is decreased, and the piston flow and total mixing volume are increased
- Synchronization with the overall service life of the tundish

用法 Usage

- 现场直接安装使用
- Direct installation and use on site



【技术指标】 Technical index

型号 Type	体积密度 (g/cm ³) B.D	显气孔 (%) Apparent porosity	抗折强度 (MPa) MOR	耐压强度 (MPa) CCS		化学成分 (%) Chemistry		
		1550℃ × 3h	110℃ × 24h	110℃ × 24h	1550℃ × 3h	Al ₂ O ₃	CaO	SiO ₂
RTQ-T	2.3	≥ 25	≥ 5	≥ 10	≥ 15	≥ 88	≤ 1	≤ 8
RTA-Z	≥ 2.9	≤ 18	≥ 8	≥ 40	≥ 50	≥ 85	≤ 1	≤ 12

有关技术参数可根据具体使用环境临时约定

The related technical parameters should be confirmed temporarily according to the specific use environment

中间包永久层浇注料

Refractory Castables for Tundish Permanent Layer

用途 Application

- ✦ 用于连铸中间包永久层
- ✦ Used for tundish permanent layer of continuous casting

特性 Characteristics

莫来石浇注料

- ✦ 热震稳定性好，不易开裂；
- ✦ 使用寿命长

低水泥自流浇注料

- ✦ 自流性好，易于施工
- ✦ 结构密实，强度高；
- ✦ 不粘工作层。

Mullite castable

- ✦ Good thermal shock stability, not easy to crack
- ✦ Long service life

Low cement bonded selfflowing castable

- ✦ Self leveling and easy to construct
- ✦ Compact structure, high strength
- ✦ No binding with working layer

用法 Usage

- ✦ 现场浇注
- ✦ Self flowing cast on site

技术指标 Technical index

型号 Type	材质 Material	体积密度 (g/cm ³) B.D	耐压强度 (MPa) CCS		抗折强度 (MPa) MOR		线变化率 (%) PLC	化学成分 (%) Chemistry
			110°C × 24h	1550°C × 3h	110°C × 24h	1550°C × 3h	1550°C × 3h	Al ₂ O ₃
RTY-A	高铝 High alumina	2.5	≥30	≥60	≥5	≥11	0~+0.5	≥65
RTY-M	莫来石 Mullite	2.5	≥30	≥60	≥5	≥10	0~+0.5	≥60

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

防粘渣高温涂料

High Temperature Coating for Prevention of Slag Sticking

用途 Application

- ✦ 用于连铸渣罐和炉口
- ✦ Used for continuous casting slag bucket and converter mouth

特性 Characteristics

- ✦ 粘度较高，附着力好
- ✦ 干燥后强度较高
- ✦ 在渣与罐壳之间形成均匀隔离层
- ✦ 与工况部位表面结合牢固，耐热流或渣液冲刷
- ✦ 易脱罐，与罐壳不粘连。
- ✦ Higher viscosity, Good adhesion
- ✦ High strength after drying
- ✦ A uniform isolation layer is formed between the slag and the bucket shell
- ✦ Combined firm with the working surface, resistance to heat flowing or slag flushing
- ✦ Easy to separate from the bucket, non adhesion with bucket shell



用法 Usage

- ✦ 喷射施工
- ✦ Spraying construction

技术指标 Technical index

型号 Type	体积密度 (g/cm ³) B.D	粘结抗折强度 (MPa) MOR	耐火度 (°C) SK	线变化率 (%) PLC	化学成分 (%) Chemistry
		1500°C × 3h		1000°C × 3h	Al ₂ O ₃
RFZ-M	0.2	≥ 10	1800	-0.1 ~ +0.2	≥ 52

有关技术参数可根据具体使用环境临时约定
The related technical parameters should be confirmed temporarily according to the specific use environment

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