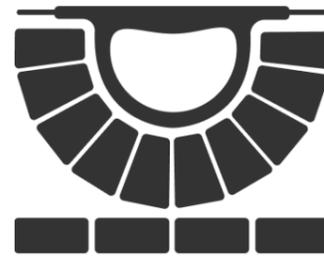




**Refractory Solutions  
for  
Aluminium Industry**



فرآورده‌های  
نسوز  
خاوران

**ZOB FELEZAT MOHSENI Company (ZFMCo) has been operating since 1962 in the field of production and distribution of casting materials by taking advantage of the experience and expertise of distinguished and committed people.**

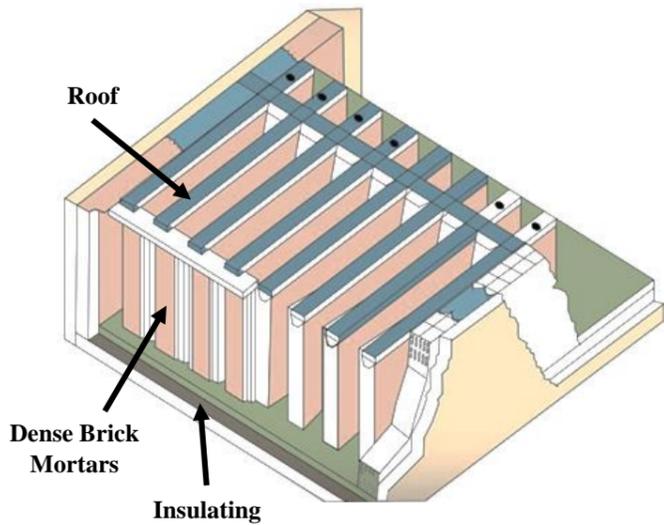
**In this regard, since 2022, in cooperation with industry experts, professors and graduates of prestigious universities, ZFMCo has been working in the field of producing all kinds of refractory materials and providing expert advice with the aim of more appropriate use of refractory products.**

**We hope to facilitate the process of activity of Iran's casting industry with efforts and perseverance like in the past decades.**

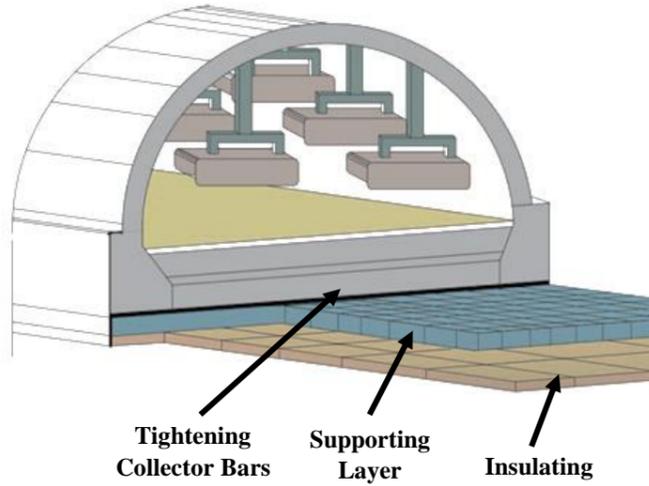
شرکت ذوب فلزات محسنی از ابتدای ۱۳۴۱ با بهره‌گیری از تجربه و تخصص افراد ماهر و متعهد در زمینه تولید و توزیع مواد ریخته‌گری شروع به فعالیت کرده است و با توجه به حسن شهرت و تجربه موفق در بیش از ۶۰ سال فعالیت، از سال ۱۴۰۱ تصمیم به تولید انواع مواد نسوز صنایع ریخته‌گری، فولاد، سیمان، نفت و گاز و... نموده است.

در این راستا با همکاری متخصصین صنعت و دانش پژوهان و فارغ التحصیلان رشته مواد، سرامیک و متالورژی دانشگاه‌های معتبر کشور و ارتباط با دانشگاه‌ها، فعالیت خود را در زمینه تولید انواع مواد نسوز، مشاوره (در طراحی برآورد، نصب و بهره‌برداری) آغاز کرده است. امید است که با استعانت از پروردگار متعال بتوانیم رضایت مندی مشتریان و صنایع متالورژی در این زمینه هم مانند مواد ریخته‌گری طبق سنوات گذشته کسب نمائیم.

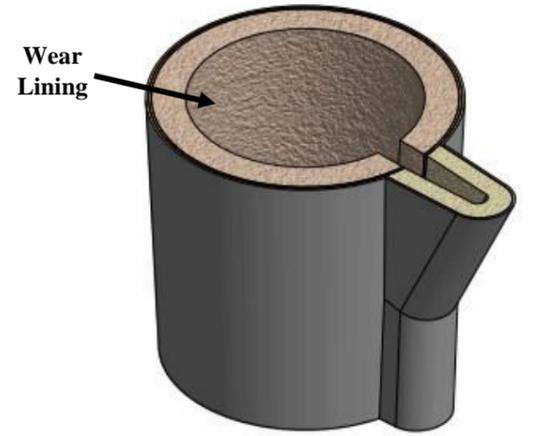
# Primary Aluminium



**Anode Baking Furnace**



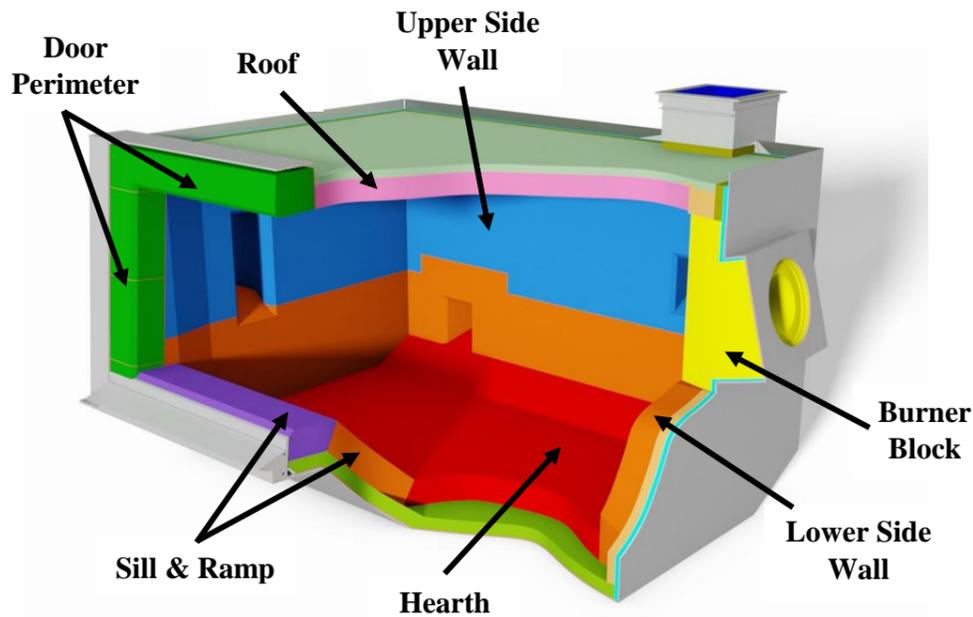
**Electrolysis Pot Cells**



**Metal Transfer Ladle**

Zone	Product Name	Classification	Main Raw Materials	Chemical Analysis (%)			Material Required (kg/m <sup>3</sup> )	M.S.T (°C)	CCS 800°C (MPa)	
				Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>				
Anode Baking Furnace	Roof	KH-REF.CAST 45R-LI	RCC	Fireclay	44.6	36.9	2.8	2,100	1300	30
	Dense Brick Mortar	KH-REF.MOR 40	Mortar	Fireclay	40.2	43.3	2.5	1,700	1300	-
	Insulating	KH-REF.CAST 1600 LIGHT	Insulating castable	Lightweight chamotte	39.5	35.6	6.5	1,600	1100	6.0
Pot Cells	Tightening Collector Bars	KH-REF.FLOW 80L/M-15ZS	LCC	Mullite & Zircon	67.0	20.9	ZrO <sub>2</sub> : 9.8	2,850	1650	130
	Supporting Layer	KH-REF.CAST 50M	MCC	Chamotte	46.0	45.4	1.9	2,250	1400	80
		KH-REF.CAST 50L	LCC	Chamotte	46.6	45.7	1.9	2,300	1400	120
	Insulating	KH-REF.CAST 1600 LIGHT	Insulating castable	Lightweight chamotte	39.5	35.6	6.5	1,600	1100	6.0
Transfer Ladle	Wear Lining	KH-REF.FLOW 75/A	Self-flowing castable	Andalusite	73.6	22.3	0.7	2,650	1650	80
		KH-REF.CAST 85L	LCC	Bauxite	83.5	9.0	1.7	2,750	1700	150

# Melting and Holding Furnace

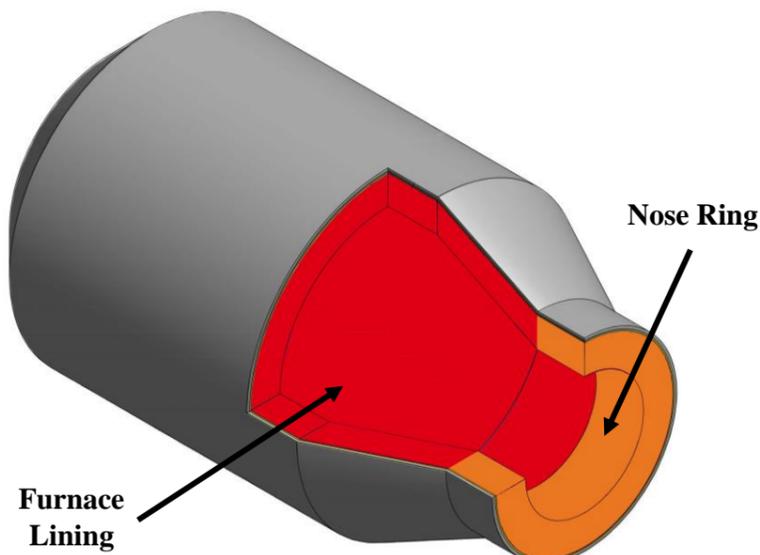


Zone	Product Name	Classification	Main Raw Materials	Chemical Analysis (%)			Material Required (kg/m <sup>3</sup> )	M.S.T (°C)	CCS 800°C (MPa)
				Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>			
Roof	KH-REF.CAST 65L-AC	Non-wetting LCC	Chamotte & Bauxite	62.1	26.5	1.7	2,600	1350	90
	KH-REF.CAST 70L/M-AC	Non-wetting LCC	Mullite	64.4	27.7	0.5	2,650	1400	85
	KH-REF.CAST 50L-AC	Non-wetting LCC	Chamotte	44.5	43.1	1.8	2,300	1150	110
Roof Insulation	KH-REF.CAST 1000 LIGHT	Insulating castable	Expanded clay & Perlite	34.7	38.5	7.1	1,000	1050	2
	KH-REF.CAST 600 LIGHT	Insulating castable	Perlite & Expanded clay	31.4	39.8	7.7	600	1000	0.5
Upper Sidewall	KH-REF.CAST 85L-AC	Non-wetting LCC	Bauxite	79.3	9.6	1.7	2,750	1500	135
	KH-REF.CAST 70L/M-AC	Non-wetting LCC	Mullite	64.4	27.7	0.5	2,650	1400	85
	KH-REF.CAST 65L-AC	Non-wetting LCC	Chamotte & Bauxite	62.1	26.5	1.7	2,600	1350	90
Lower Sidewall & Flux Line	KH-REF.CAST 85L-AC	Non-wetting LCC	Bauxite	79.3	9.6	1.7	2,750	1500	135
	KH-REF.CAST 65L-AC	Non-wetting LCC	Chamotte & Bauxite	62.1	26.5	1.7	2,600	1350	90
	KH-REF.FLOW 90L-15SC	Self-flowing castable	Bauxite & SiC	75.2	4.2	1.2	2,800	1500	155
Hearth	KH-REF.CAST 85L-AC	Non-wetting LCC	Bauxite	79.3	9.6	1.7	2,750	1500	135
	KH-REF.CAST 65L-AC	Non-wetting LCC	Chamotte & Bauxite	62.1	26.5	1.7	2,600	1350	90
	KH-REF.CAST 90L-AC	Non-wetting LCC	Fused alumina	89.1	3.3	0.5	3,100	1600	155
Subhearth	KH-REF.CAST 1000 LIGHT-AC	Non-wetting insulating castable	Lightweight chamotte	39.9	27.4	7.5	1,000	1000	10
	KH-REF.CAST 1500 LIGHT-AC	Non-wetting insulating castable	Lightweight chamotte	40.4	31.2	6.1	1,500	1000	20
Sill & Ramp	KH-REF.CAST 70L/M-40SC	LCC	Mullite & Silicon carbide	36.2	20.3	SiC: 38.0	2,650	1500	185
	KH-REF.CAST 85L-AC	Non-wetting LCC	Bauxite	79.3	9.6	1.7	2,750	1500	135
	KH-REF.CAST 90L-AC	Non-wetting LCC	Fused alumina	89.1	3.3	0.5	3,100	1600	155
Burner Block	KH-REF.CAST 60L/A	LCC	Andalusite	61.5	35.1	0.5	2,550	1600	35
	KH-REF.PLAST 85-P	Chemical bonded plastic mass	Bauxite	78.8	10.6	P <sub>2</sub> O <sub>5</sub> : 2.9	2,800	1650	30
Door Perimeter	KH-REF.CAST 70L/M-AC	Non-wetting LCC	Mullite	64.4	27.7	0.5	2,650	1400	85
	KH-REF.CAST 65L-AC	Non-wetting LCC	Chamotte & Bauxite	62.1	26.5	1.7	2,600	1350	90
	KH-REF.CAST 1000 LIGHT-AC	Non-wetting insulating castable	Lightweight chamotte	39.9	27.4	7.5	1,000	1000	10
Repair Materials	KH-REF.BOND 90P	Chemical bonded castable	WFA & Phosphoric acid	86.3	3.3	P <sub>2</sub> O <sub>5</sub> : 5.2	2,700	1300	40
	KH-REF.BOND 60/A-P	Chemical bonded castable	Andalusite	55.1	30.9	P <sub>2</sub> O <sub>5</sub> : 4.4	2,400	1250	50

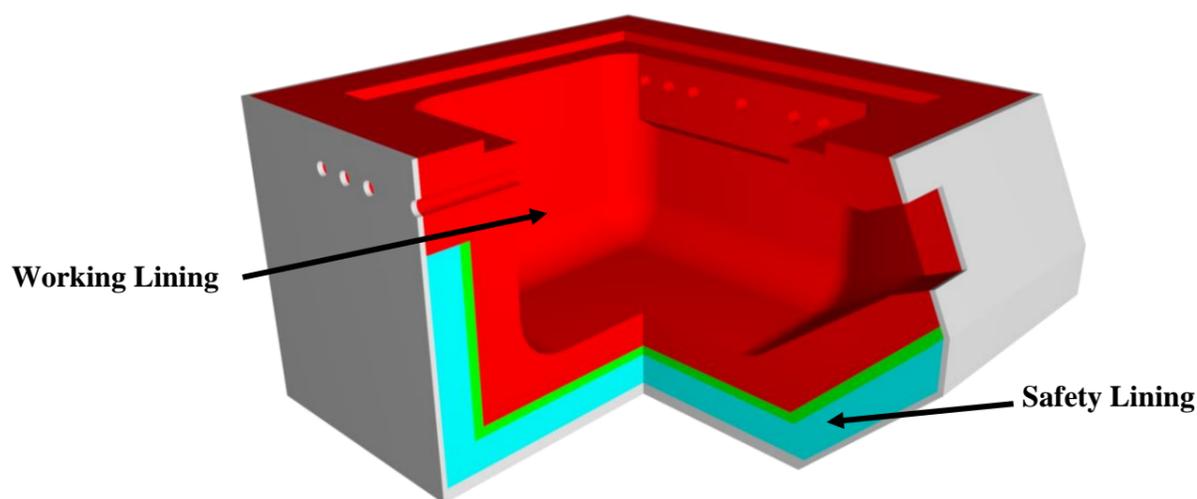
## Refractory Solutions for Aluminium Industry

Rev1.10/08/2023

# Rotary Furnace & Die-Casting Holder



Zone	Product Name	Classification	Main Raw Materials	Chemical Analysis (%)			Material Required (kg/m <sup>3</sup> )	M.S.T (°C)	CCS 800°C (MPa)
				Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>			
Furnace Lining	KH-REF.CAST 50L	LCC	Chamotte	46.6	45.7	1.9	2,300	1400	120
	KH-REF.CAST 85L	LCC	Bauxite	83.5	9.0	1.7	2,750	1700	150
	KH-REF.CAST 70L/M-AC	Non-wetting LCC	Mullite	64.4	27.7	0.5	2,650	1400	85
	KH-REF.CAST 85L-AC	Non-wetting LCC	Bauxite	79.3	9.6	1.7	2,750	1500	135
Nose Ring	KH-REF.CAST 70L/M-AC	Non-wetting LCC	Mullite	64.4	27.7	0.5	2,650	1400	85
Repair Materials	KH-REF.BOND 90P	Chemical bonded castable	WFA & Phosphoric acid	86.3	3.3	P <sub>2</sub> O <sub>5</sub> : 5.2	2,700	1300	40
	KH-REF.BOND 60/A-P	Chemical bonded castable	Andalusite	55.1	30.9	P <sub>2</sub> O <sub>5</sub> : 4.4	2,400	1250	50



Zone	Product Name	Classification	Main Raw Materials	Chemical Analysis (%)			Material Required (kg/m <sup>3</sup> )	M.S.T (°C)	CCS 800°C (MPa)
				Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>			
Working Lining	KH-REF.CAST 70L/M-AC	Non-wetting LCC	Mullite	64.4	27.7	0.5	2,650	1400	85
	KH-REF.CAST 85L-AC	Non-wetting LCC	Bauxite	79.3	9.6	1.7	2,750	1500	135
	KH-REF.CAST 65L-AC	Non-wetting LCC	Chamotte & Bauxite	62.1	26.5	1.7	2,600	1350	90
Safety Lining	KH-REF.CAST 1500 LIGHT-AC	Non-wetting insulating castable	Lightweight chamotte	40.4	31.2	6.1	1,500	1000	20
	KH-REF.CAST 1200 LIGHT	Insulating castable	Expanded clay & Perlite	36.5	38.8	6.4	1,200	1100	9

## Refractory Solutions for Aluminium Industry

Rev1.10/08/2023

# Transport Ladles



**Ladler**



**Ladle**

Zone	Product Name	Classification	Main Raw Materials	Chemical Analysis (%)			Material Required (kg/m <sup>3</sup> )	M.S.T (°C)	CCS 800°C (MPa)
				Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>			
Working Lining	KH-REF.CAST 70L/M-AC	Non-wetting LCC	Mullite	64.4	27.7	0.5	2,650	1400	85
	KH-REF.CAST 70L/M-70SC	LCC	Silicon Carbide	21.7	6.6	SiC: 66.5	2,650	1400	80
	KH-REF.CAST 85L-AC	Non-wetting LCC	Bauxite	79.3	9.6	1.7	2,750	1500	135
	KH-REF.BOND 90P	Chemical bonded castable	WFA & Phosphoric acid	86.3	3.3	P <sub>2</sub> O <sub>5</sub> : 5.2	2,700	1300	40
Back-up Lining	KH-REF.CAST 1500 LIGHT-AC	Non-wetting insulating castable	Lightweight chamotte	40.4	31.2	6.1	1,500	1000	20
	KH-REF.CAST 45R-AC	Non-wetting RCC	Expanded clay	40.7	33.2	5.4	1,800	1050	25
Repair Materials	KH-REF.BOND 90P	Chemical bonded castable	WFA & Phosphoric acid	86.3	3.3	P <sub>2</sub> O <sub>5</sub> : 5.2	2,700	1300	40
	KH-REF.BOND 60/A-P	Chemical bonded castable	Andalusite	55.1	30.9	P <sub>2</sub> O <sub>5</sub> : 4.4	2,400	1250	50



**Refractory Solutions for Aluminium Industry**

Rev1.10/08/2023