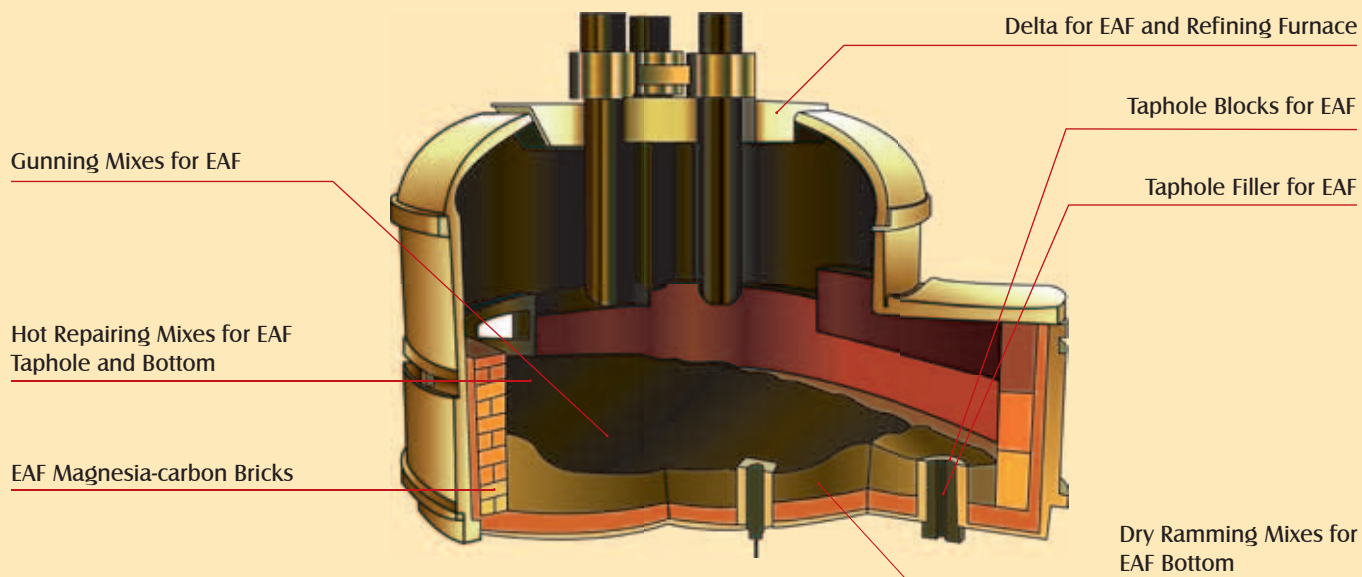


# Refractory Products for EAF



## Delta Sections

Modern EAFs usually have a cast core piece in the cover. Horton supplies monolithic delta pieces for different furnace types using casting mixes, specially designed for an extremely long lifetime. We supply these delta sections in our assembly parts plant either tailored to customer's specifications or according to our own design and prepare them with special drying curves for direct application. We also supply the required casting mixes and offer supervision of the lining work on customer's site by our technical field service.

Al <sub>2</sub> O <sub>3</sub> +MgO % Min.	80	80	90	
Al <sub>2</sub> O <sub>3</sub> +Cr <sub>2</sub> O <sub>3</sub> % Min.				88
Bulk Density g/cm <sup>3</sup> Min.	2.80	2.85	3.10	3.00
Modulus of Rupture MPa Min.	5	10	12	6
Cold Crushing Strength MPa. Min.	25	60	60	40
Application	EAF, LF	EAF, LF	EAF, LF	EAF, VD



# HORTON

High Quality Products with the Best Service

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# Refractory Products for EAF

## Gunning Mixes

Using top quality magnesia-based materials, unique binding systems and external reactants, Horton series of gunning mixes for EAF feature high adhesive strength, low rebound rate, good erosion and corrosion resistance. They are optimal products for cold and hot repair maintenance.

MgO		70%	80%
CaO		5%	-
Bulk Density g/cm <sup>3</sup>	100°C x24h	2.40	2.40
	1500°C x3h	2.50	2.50
Cold Crushing Strength MPa	100°C x24h	8	12
	1500°C x3h	30	20
Modulus of Rupture MPa	100°C x24h	3	4
	1500°C x3h	7	8
Water addition %		9~11	9~11
Max. service temperature °C		1750	1700

## Hot Repairing Mixes

While changing taphole bricks in process of steel-making, it's inevitable to create some joints around taphole and cracks in partial area. In order to patch the joints and cracks under high temperature, Horton specially developed series of hot repair mixes, which are made from magnesia-based materials abundant of ferrous and calcium elements. This series of products show the features of high strength at low temperature and high fired strength, excellent erosion/corrosion resistance.

MgO Min.		75%	75%	70%
C		-	2%	8%
CaO		6%	4%	-
Fe <sub>2</sub> O <sub>3</sub>		3%	2%	-
Bulk Density g/cm <sup>3</sup>	200°C x16h	-	-	2.20
	1500°C x3h	2.7	2.6	2.1
Cold Crushing Strength MPa	200°C x16h	-	-	15
	1500°C x3h	25	25	15
Repairing Method		Ramming	Ramming	Throwing
Max. Service Temperature °C		1750	1750	1750

# Refractory Products for EAF

## Dry Ramming Mixes

Horton series of dry ramming mixes for EAF are made from high quality synthetic materials, additives and binding agents according to the theory of tightest piling-up, which show the features of excellent resistance against molten steel penetration, superior erosion/corrosion resistance, easily-sintering, high bulk density and easy installation, etc. The products are ideal choices for HP/UHP EAF bottom.

MgO		80	80	88
CaO		4	7	1
Fe <sub>2</sub> O <sub>3</sub>		3	3	-
Cold Crushing Strength MPa	1600°C x3h	30	35	30
Bulk Density g/cm <sup>3</sup>	1600°C x3h	2.8	2.8	2.8
Grain Size mm		0~5	0~5	0~5
Max. service temperature °C		1750	1750	1750

## Magnesia-carbon Bricks

On the basis of different application parts and conditions, using high-purity, high-density, large crystal magnesite and high-purity flake graphite as raw materials, adopting high-pressure shaping technique, and under the help of antioxidant, Horton supply series of magnesia-carbon bricks for EAF lining. The series of products have been widely used in steelworks worldwide. They show the features of high strength, excellent resistance against slag, good thermal shock resistance, high refractoriness etc., proving high performances.

MgO % Min.	97.5	97	95	97.5	96	97
Al <sub>2</sub> O <sub>3</sub> % Max.	0.1	0.2	0.2	0.1	0.2	0.2
CaO % Max.	1.0	1.0	1.6	1.0	1.0	1.0
Fe <sub>2</sub> O <sub>3</sub> % Max.	0.3	0.4	0.6	0.3	0.4	0.4
SiO <sub>2</sub> % Max.	0.4	0.6	1.2	0.4	0.8	0.6
C % Min.	10	10	10	14	14	12
Bulk Density g/cm <sup>3</sup> Min.	2.95	2.90	2.85	2.96	2.95	2.95
Apparent Porosity % Min.	4.0	5.0	5.0	4.0	5.0	5.0
Cold Crushing Strength MPa Min.	35	35	30	40	35	40

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# Refractory Products for EAF

## Taphole Blocks for EAF

Horton series of taphole are made from high purity fused magnesite or 98 large crystal magnesite, with special antioxidants and resin binder. Mono block taphole bricks are ISO-Pressed, while assembly taphole is formed by friction press. The series of products show good oxidization resistance, high strength, excellent erosion resistance, long life and easy of installation.

MgO % Min.	97.5	97.5	97.5	97.5
Al <sub>2</sub> O <sub>3</sub> %	0.1	0.1	0.1	0.1
Fe <sub>2</sub> O <sub>3</sub> %	0.3	0.3	0.3	0.3
CaO %	1.0	1.0	1.0	1.0
SiO <sub>2</sub> %	0.4	0.4	0.4	0.4
C %	10	14	10	14
Apparent Porosity % Max.	4	4	5	5
Bulk Density g/cm <sup>3</sup> Min.	2.95	2.92	2.95	2.92
Cold Crushing Strength MPa Min.	40	40	35	35
Hot Modulus of Rupture MPa Min.	1400 °C x0.5h	12	10	12



## Holloware Casting Sets/Bottom Pouring Bricks

Horton proposes a complete of aluminous refractory shapes for the pressurized casting of high quality casts. These shapes, that are characterized by the alumina content (between 40% and 70%). In order to meet the specific requirements of each steel plant, besides those of the actual market in particular as regards cast products, Horton has set up a vast assortment of moulds and is therefore in a position to produce custom-made products or special shapes according to different production requirements.

Properties	Material			
	HTN-50	HTN-40	HTN-60	HTN-70
Refractoriness °C	≥1750	≥1710	≥1780	≥1790
Apparent porosity %	≤18	17-25	25	27
Cold crushing strength Mpa	≥39.2		≥19.6	≥19.6
Permanent linear change %	1400 °C x2h 0~-0.3	1400 °C x2h +0.1~-0.3	1500 °C x2h +0.2~-0.3	1500 °C x2h +0.2~-0.3
Chemical properties Al <sub>2</sub> O <sub>3</sub> %	≥50	≥40	≥60	≥70

