RAW MATERIALS

TRASTEEL

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TRASTEEL

Trasteel Group is a Swiss based Company, established in September 2009, active in production and trading of steel related products such as graphite electrodes, raw materials for refractory, flat and long products, steel making raw materials such as coking coal, coke and iron ore, non-ferrous metals and solid fuel such as steam coal and pet-coke.

The Group operates as producer in the steel making consumables and refractory raw materials industry through different partnerships put in place directly with some of the major suppliers, offering stable and high quality products.

Trasteel idea comes from the entrepreneurship of a group of executives active in the steel industry for more than 25 years. To invest in industrial assets with clear sustainability and competitive long term advantages is the main strategy of the Group. This grants the support of the trading activities, allowing the development of a multitasking and flexible company able to mitigate the high volatility of the markets. Trasteel, in parallel to its trading activities, offers to its Customers a complete range of services, from shipping and logistic to financing, thereby forming an entire business chain with a 360° approach.

Trasteel positioned itself as a multi-geographical player with major focus on China,Middle East, Europe, Turkey, CIS countries and South America. The Head Office of the Group is based in Lugano, Switzerland, while representative offices are located in South America, UAE, China, Italy, Russia, Congo and South Africa; the rest of the market is entirely covered through the network of agents and Group's representatives.

During the fiscal year of 2018 the Company generated a consolidated turnover in excess of half a billion US dollars and employing almost 100 Professionals.

HEADQUARTER

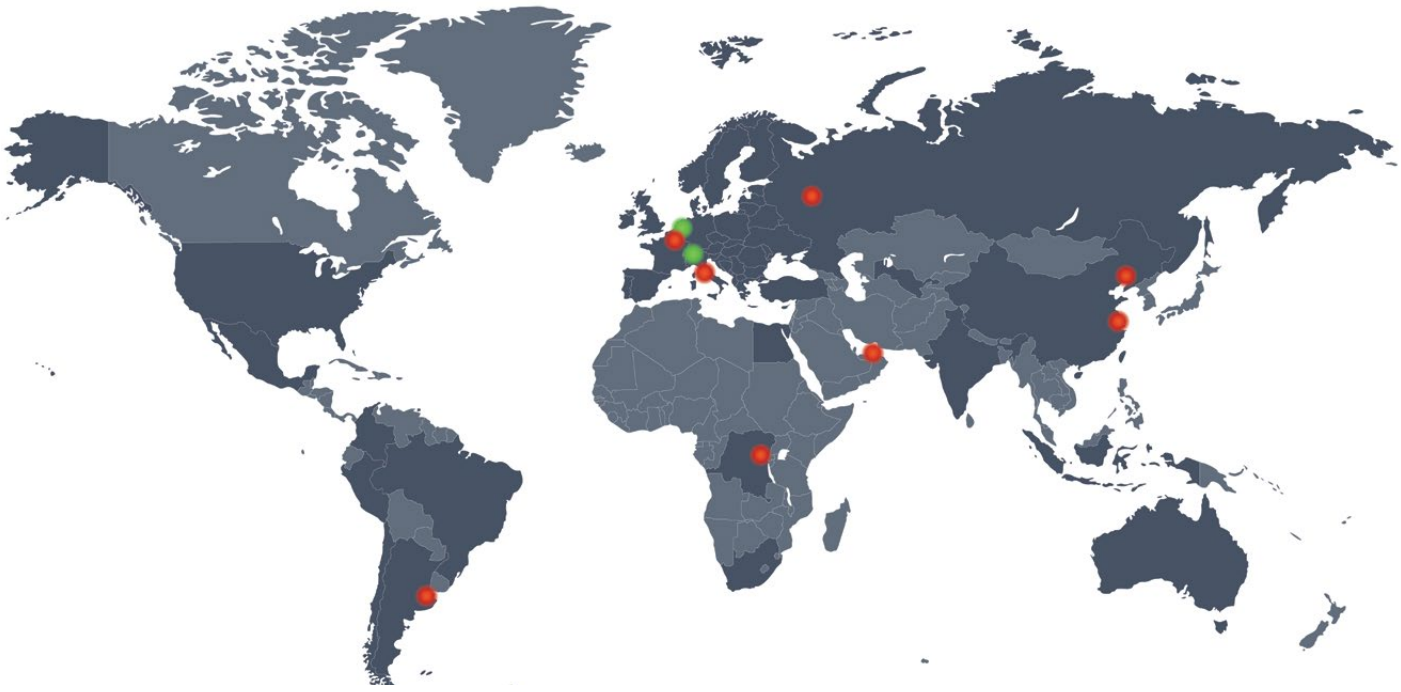
- Switzerland
- Luxembourg

OPERATIONAL OFFICES

- Lugano
- Dubai
- Shangai
- Bayuquan
- Buenos Aires
- Moscow
- Massa
- Goma

MARKETS COVERED

- Europe
- Turkey
- Russia
- Ukraine
- Arab Emirates
- Brazil
- Chile
- Colombia
- Argentina
- Perù
- Mexico
- USA
- Indonesia
- Philippines
- Australia
- South Africa
- Congo
- Egypt
- Uzbekistan
- Azerbaijan
- India



BUSINESS MODEL

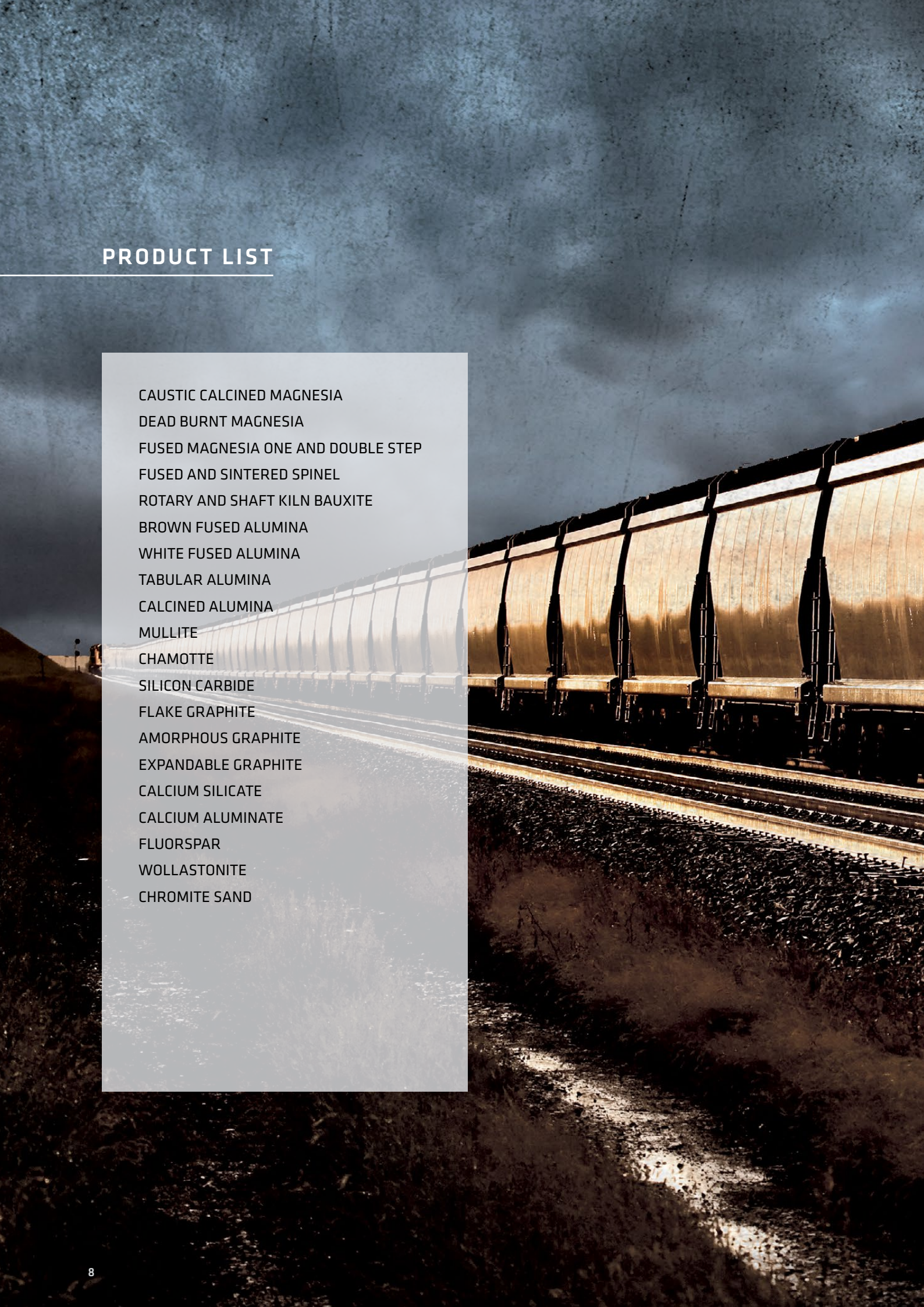
Trasteel is working since 10 years with some of the major raw materials producers worldwide with a particular focus on China and South Africa.

In fact, the business model is based on long-term partnerships with only one selected producer for each material. In this way Trasteel can control and supervise the entire production chain through its own staff present in the partners' plants. The priority is given to the quality of the materials and of the logistics services, ensuring that the products are delivered timely to the final customers as per contractual requirements.

The goal of the Group is to establish long-lasting relationships with its stakeholders thanks to its reliability and financial soundness, providing a tailor-made support for different needs and situations.

The growing leadership position gained by Trasteel is the result of years of effort and investments, R&D carried out by its technical experts and especially the stability of the supply even in difficult and tough market conditions.

PRODUCT LIST



CAUSTIC CALCINED MAGNESIA
DEAD BURNT MAGNESIA
FUSED MAGNESIA ONE AND DOUBLE STEP
FUSED AND SINTERED SPINEL
ROTARY AND SHAFT KILN BAUXITE
BROWN FUSED ALUMINA
WHITE FUSED ALUMINA
TABULAR ALUMINA
CALCINED ALUMINA
MULLITE
CHAMOTTE
SILICON CARBIDE
FLAKE GRAPHITE
AMORPHOUS GRAPHITE
EXPANDABLE GRAPHITE
CALCIUM SILICATE
CALCIUM ALUMINATE
FLUORSPAR
WOLLASTONITE
CHROMITE SAND

Caustic Calcined Magnesia	CCM90		CCM92		CCM95	
	Typical	Limits	Typical	Limits	Typical	Limits
MgO	91.2 %	90.0 % min	92.6 %	92.0 % max	95.8 %	95.0 % min
SiO2	3.00 %	3.50 % max	2.50 %	3.00 % max	0.80 %	1.00 % max
CaO	2.10 %	2.50 % max	1.90 %	2.20 % max	1.50 %	1.70 % max
Al2O3	0.85%	1.00 % max	0.65 %	0.75 % max	0.25 %	0.30 % max
Fe2O3	0.85 %	1.00 % max	0.75 %	1.00 % max	0.80 %	0.90 % max
Loss on Ignition	4.50 %	5.50 % max	4.50 %	5.00 % max	4.50 %	5.00 % max
Grain Distribution	120#, 200#, 325#					

Dead Burnt Magnesia	DBM90		DBM92		DBM97	
	Typical	Limits	Typical	Limits	Typical	Limits
MgO	91.5 %	90.0 % min	92.5 %	92.0 % max	97.5 %	97.0 % min
SiO2	4.20 %	4.50 % max	3.50 %	4.00 % max	0.60 %	0.80 % max
CaO	2.20 %	2.50 % max	1.80 %	2.00 % max	1.30 %	1.70 % max
Al2O3	1.20%	1.50 % max	0.85 %	0.85 % max	0.20 %	0.30 % max
Fe2O3	1.20 %	1.50 % max	1.20 %	1.50 % max	0.60 %	0.80 % max
Loss on Ignition	0.50 %	0.80 % max	0.50 %	0.60 % max	0.10 %	0.30 % max
Bulk Density	3.16 g/cm3	3.14 g/cm3	3.16 g/cm3	3.15 g/cm3	3.28 g/cm3	3.27 g/cm3
Grain Distribution	200#, 0-1/1-3/3-6/3-15/0-30 mm					

Fused Magnesia One Step	FM96		FM97		FM97.5	
	Typical	Limits	Typical	Limits	Typical	Limits
MgO	96.2 %	96.0 % min	97.3 %	97.0 % max	97.7 %	97.5 % min
SiO2	1.00 %	1.20 % max	0.55 %	0.75 % max	0.35 %	0.50 % max
CaO	2.30 %	2.50 % max	1.35 %	1.60 % max	1.00 %	1.20 % max
Al2O3	0.27%	0.30 % max	0.25 %	0.30 % max	0.25 %	0.30 % max
Fe2O3	0.85 %	1.00 % max	0.65 %	0.75 % max	0.45 %	0.60 % max
Loss on Ignition	0.15 %	0.30 % max	0.10 %	0.30 % max	0.05 %	0.15 % max
Bulk Density	3.44 g/cm3	3.41 g/cm3	3.50 g/cm3	3.48 g/cm3	3.52 g/cm3	3.48 g/cm3
C/S	2	1.8-2	2.5-3	2 min	2.5-3	2 min
Grain Distribution	200#, 0-1/1-3/3-6/0-40 mm					

Fused Magnesia Double Step	FM97-LC		FM97.5-LC		FM97.8-LC	
	Typical	Limits	Typical	Limits	Typical	Limits
MgO	97.2 %	97.0 % min	97.6 %	97.5 % max	97.9 %	97.8 % min
SiO2	0.65 %	0.80 % max	0.55 %	0.60 % max	0.50 %	0.55 % max
CaO	1.50 %	1.70 % max	1.45 %	1.60 % max	1.20 %	1.30 % max
Al2O3	0.15%	0.20 % max	0.15 %	0.20 % max	0.15 %	0.20 % max
Fe2O3	0.65 %	0.80 % max	0.55 %	0.60 % max	0.50 %	0.55 % max
Loss on Ignition	0.15 %	0.20 % max	0.15 %	0.20 % max	0.15 %	0.20 % max
Bulk Density	3.50 g/cm3	3.48 g/cm3	3.50 g/cm3	3.48 g/cm3	3.52 g/cm3	3.50 g/cm3
C/S	2-2.5	2 min	2.2-2.5	2 min	2.2-2.5	2 min
Grain Distribution	200#, 0-1/1-3/3-6/0-40 mm					

Spinel	FUSED		SINTERED	
	Typical	Limits	Typical	Limits
MgO	32.0 %	30.0-35.0 %	30.0 %	28.0-32.0 %
Al2O3	64.0 %	63.0 % min	60.0 %	58.0-62.0 %
SiO2	0.55 %	0.60 % max	2.80 %	3.00 % max
CaO	0.70 %	0.80 % max	1.40 %	1.50 % max
Fe2O3	0.25 %	0.30 % max	1.90 %	2.00 % max
Bulk Density	3.42 g/cm3	3.40 g/cm3	3.14 g/cm3	3.10 g/cm3
Grain Distribution	0-1/1-3/3-6/0-30 mm			

Shaft Kiln Bauxite	75-78		82		85	
	Typical	Limits	Typical	Limits	Typical	Limits
Al2O3	78.0 % min	75.0 % min	86.3 %	82.0 % min	85.5 %	85.0 % min
SiO2	–	–	11.5 %	12.0 % max	7.80 %	8.00 % max
TiO2	3.20 % max	3.50 % max	4.35 %	4.50 % max	4.35 %	4.50 % max
Fe2O3	1.90 % max	2.00 % max	1.80 %	2.00 % max	2.25 %	2.50 % max
CaO+MgO	0.65 % max	0.80 % max	0.65 %	0.80 % max	0.65 %	0.70 % max
Na2O+K2O	0.45 % max	0.60 % max	0.45 %	0.60 % max	0.45 %	0.50 % max
Moisture	0.20 % max	0.30 % max	0.35 %	0.50 % max	0.45 %	0.50 % max
Loss on Ignition	0.15 % max	0.20 % max	0.20 %	0.30 % max	0.25 %	0.30 % max
Bulk Density	2.85 g/cm3	2.80 g/cm3	2.76 g/cm3	2.70 g/cm3	2.83 g/cm3	2.80 g/cm3
Grain Distribution	325#, 0-1/1-3/3-5/0-40 mm					

Rotary Kiln Bauxite	85		86		87		88	
	Typical	Limits	Typical	Limits	Typical	Limits	Typical	Limits
Al2O3	85.5 %	85.0 % min	86.3 %	86.0 % min	87.2 %	87.0 % min	88.1 %	88.0 % min
SiO2	7.30 %	7.50 % max	7.20 %	7.50 % max	6.80 %	7.00 % max	5.80 %	6.00 % max
TiO2	4.30 %	4.50 % max	4.15 %	4.50 % max	3.80 %	4.00 % max	3.80 %	4.00 % max
Fe2O3	1.90 %	2.00 % max	1.80 %	2.00 % max	1.70 %	1.80 % max	1.70 %	1.80 % max
CaO+MgO	0.65 %	0.70 % max	0.60 %	0.70 % max	0.60 %	0.70 % max	0.42 %	0.50 % max
Na2O+K2O	0.40 %	0.50 % max	0.38 %	0.40 % max	0.38 %	0.40 % max	0.35 %	0.40 % max
Moisture	0.40 %	0.50 % max	0.25 %	0.30 % max	0.25 %	0.30 % max	0.23 %	0.30 % max
Loss on Ignition	0.15 %	0.20 % max	0.15 %	0.20 % max	0.10 %	0.15 % max	0.10 %	0.15 % max
Bulk Density	3.17 g/cm3	3.15 g/cm3	3.23 g/cm3	3.20 g/cm3	3.27 g/cm3	3.25 g/cm3	3.28 g/cm3	3.27 g/cm3
Grain Distribution	325#, 0-1/1-3/3-5/0-40 mm							

Brown Fused Alumina	Fixed Furnace		Tilting Furnce	
	Typical	Limits	Typical	Limits
Al2O3	95.3 %	95.0 % min	95.3 %	95.0 % min
Fe2O3	0.27 %	0.30 % max	0.27 %	0.30 % max
SiO2	1.42 %	1.50 % max	0.92 %	1.00 % max
TiO2	2.86 %	3.00 % max	2.86 %	3.00 % max
Bulk Density	3.82 g/cm3	3.80 g/cm3	3.82 g/cm3	3.80 g/cm3
Grain Distribution	0-1/1-3/3-5 mm			

White Fused Alumina	Fixed Furnace		Tilting Furnce	
	Typical	Limits	Typical	Limits
Al2O3	99.2 %	99.0 % min	99.2 %	99.0 % min
Fe2O3	0.07 %	0.10 % max	0.07 %	0.10 % max
SiO2	0.16 %	0.20 % max	0.16 %	0.20 % max
Na2O	0.34 %	0.40 % max	0.26 %	0.30 % max
Bulk Density	3.52 g/cm3	3.50 g/cm3	3.52 g/cm3	3.50 g/cm3
Grain Distribution	0-0.1/0-0.5/0-1/1-3/3-5 mm			

Tabular Alumina	Typical	Limits
Al2O3	99.2 %	99.2 % min
SiO2	0.07 %	0.12 % max
Fe2O3	0.16 %	0.15 % max
Fe metal	0.34 %	0.30 % max
Bulk Density	3.52 g/cm3	3.50 g/cm3
Grain Distribution	325#, 0-1/1-3/3-6/6-12 mm	

Calcined Alumina	Typical	Limits
Al2O3	99.2 %	99.5 % min
Fe2O3	0.02 % max	0.05 % max
Na2O	0.20 % max	0.40 % max
SiO2	0.05 % max	0.15 % max
Bulk Density	3.96 g/cm3	3.93 g/cm3
Grain Distribution	325#, 500#, 800#	

Mullite	55-58		58-62		68-72	
	Typical	Limits	Typical	Limits	Typical	Limits
Al2O3	57 %	55.0-58.0 %	60.0 %	58.0-62.0 %	70.0 %	68-72.0 %
SiO2	0.65 % max	0.75 % max	1.10 %	1.20 % max	1.10 %	1.20 % max
TiO2	0.10 % max	0.15 % max	0.32 %	0.40 % max	0.28 %	0.35 % max
Bulk Density	2.58 g/cm3	2.55 g/cm3	2.68 g/cm3	2.65 g/cm3	2.77 g/cm3	2.75 g/cm3
Grain Distribution	120#, 200#, 325#, 0-1/1-3/3-5 mm					

Chamotte	Typical	Limits
Al2O3	40.0 %	40.0-42.0 %
Fe2O3	1.45 %	1.50 % max
SiO2	56.0 %	55.0-57.0 %
TiO2	2.62 %	2.70 % max
CaO	0.25 %	0.30 % max
Na2O	0.12 %	0.15 % max
MgO	0.12 %	0.15 % max
Grain Distribution	230#, 325#, 0-1/1-3/3-5 mm	

Silicon Carbide	SIC90		SIC95		SIC97	
	Typical	Limits	Typical	Limits	Typical	Limits
SiC	91.5 %	90.0 % min	96.0 %	95.0 % min	97.4 %	97.0 % min
Free C.	1.55 %	2.00 % max	0.45 %	0.80 % max	0.65 %	0.80 % max
Fe2O3	2.45 %	2.80 % max	0.75 %	1.50 % max	0.35 %	0.60 % max
SiO2	3.15 %	3.50 % max	2.00 %	2.50 % max	0.90 %	1.50 % max
Al2O3	1.75 %	2.00 % max	1.10 %	1.50 % max	0.70 %	1.00 % max
Grain Distribution	325#, 200#, 0-1/1-3/3-5/5-50 mm					

Flake Graphite	+195	+895
	Limits	Limits
C	95.0 % min	95.0 % min
Ash	5.00 % max	5.00 % max
Moisture	0.50 % max	0.50 % max
Grain Distribution	100#	800#

Amorphous Graphite	67		80	
	Typical	Limits	Typical	Limits
S	0.42 %	0.45 % max	–	–
Fixed C	69.5 %	67.0 % min	87.0 %	85.0 % min
Moisture	1.50 %	2.00 % max	0.76 %	1.00 % max
Ash	14.5 %	17.0 % max	–	–
Volatile Materials	4.5 %	6.00 % max	–	–
Grain Distribution	170#, 200#, 230#, 325#			

Expandable Graphite	90	
	Limits	Limits
Fixed C	92.0 %	90.0 % min
Ash	9.10 %	10.0 % max
Moisture	0.89 %	1.00 % max
Expansion Rate (cm3/g)	122	120
Starting Temp. (°C)	254	250
Grain Distribution	50-180 microns	

Calcium Silicate	Limits
Si	60.0 % min
Ca	30.0 % min
Fe	7.00 % max
Al	1.50 % max
Carbon	1.00 % max
Moisture	0.50 % max
Grain Distribution	0.1-1 mm

Calcium Aluminate	CaAl35-50	CaAl45-50	CaAl49-41	CaAl60-30
	Limits	Limits	Limits	Limits
Al2O3	51.0 – 55.0 %	45.0 – 50.0 %	41.0 – 45.0 %	60.0 % min
CaO	33.0 – 35.0 %	40.0 – 42.0 %	49.0 – 54.0 %	30.0 %
SiO2	7.00 % max	5.00 % max	3.80 % max	0.80 % max
MgO	4.00 % max	2.00 % max	2.00 % max	8.00 – 13.0 %
TiO2	3.00 % max	2.00 % max	2.80 % max	0.15 % max
Fe2O3	2.50 % max	2.00 % max	1.80 % max	0.40 % max
Bulk Density	–	1.70-2.90 g/cm3	–	1.50 g/cm3 min
Grain Distribution	1-6/5-25/			

Fluorspar	Limits
CaF2	97.0 % min
CaO	0.50 % max
Fe2O3	0.50 % max
SiO2	2.00 % max
S Total	0.20 % max
C Total	0.50 % max
H2O	0.50 % max
Loss on Ignition	1.00 % max
Bulk Density	1.60 – 1.90 g/cm3
Grain Distribution	200#

Wollastonite	44-009		46-0044	
	Typical	Limits	Typical	Limits
SiO2	51.2 %	49.0 % min	50.5 %	49.0 % min
CaO	44.8 %	44.0 % min	46.0 %	43.0 % min
MgO	1.60 %	2.00 % max	1.00 %	1.50 % max
Al2O3	0.60 %	1.50 % max	0.50 %	0.80 % max
Fe2O3	0.30 %	1.00 % max	0.20 %	0.30 % max
Loss on Ignition	1.15 %	2.00 % max	1.50 %	2.00 % max
Bulk Density	0.85 – 1.00 g/cm3		0.85 – 1.00 g/cm3	
Grain Distribution	170#, 200#, 325#, 1250#, 2000#			

Chromite Sand	Typical
Cr2O3	46.9 %
SiO2	0.53 %
FeO	26.0 %
Cr/Fe	1.56 %
MgO	10.2 %
Al2O3	14.7 %
P	0.003 %
MnO	0.0028 %
CaO	0.26 %
AFS	40-45, 40-50, 45-50, 45-55

Trasteel International SA
Via F. Pelli, 12 | 6900 Lugano | Switzerland
T +41 (0)91 910 5300 | F +41 (0)91 910 5353
www.trasteel.com