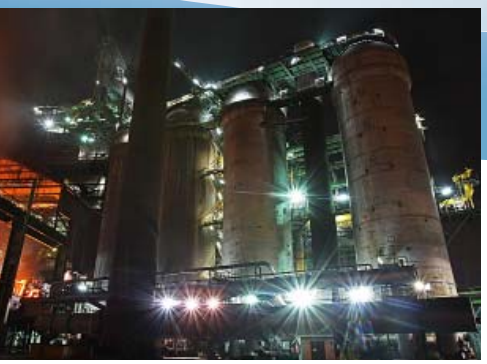
Refractories for Stoves



The chemical physical properties of the products

The tables hereinafter show the main average properties of the products. These properties, verified by internal testings, are merely indicative and should not be used as guaranteed values for tender technical specifications.

In case of special requirements, technical specifications containing the guaranteed values and those detailing the various properties may be agreed with the Customer during sales negotiations.

The individual properties are determined according to ISO Recommendations and Standards Pre Recommendations (Pre Recommendations - Revision June 1990).

In default of recommendations from the two above Bodies or should special tests be required, special rules or company methods may be adopted. Such rules and methods shall be specified and agreed upon with the Customer.

Brick dimensions (shapes)

The refractory bricks are produced in the great many shapes required for the correct lining of each plant in which they are to be installed.

SANAC is able to produce both the shapes envisaged by the main international standardization rules and the special shapes for specific uses.

The Design Service is at the Customer's disposal to provide him with the most profitable solutions.

Dimensional Tolerances

The dimensional tolerances of bricks generally conform with the PRE/R23 Recommendation (“Dimensional tolerances of dense and insulating refractory products”).

Particular tolerances, if any, should be indicated at the time of the en-quiry and be the subject of tender technical specifications.

Sorting and checkig

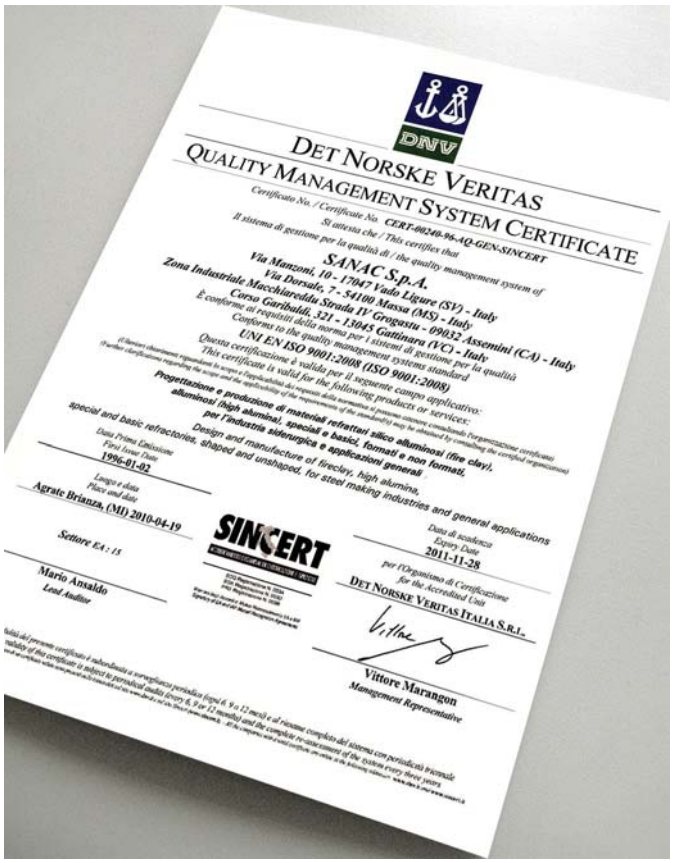
The bricks, removed from the furnaces, after heat treatment, are classified and checked (“Inspection by attributes”) with respect to their dimensional characteristics and their outward appearance (fissures, cracks, chipped edges, stains, etc.).
Furthermore, on a statistical basis, controls are carried out on the chemical-physical properties, such as mainly:

- Chemical analysis
- Refractoriness
- Bulk density
- Porosity
- Cold crushing strength
- Modulus of rupture
- Refractoriness under load (R.U.L.)
- Linear thermal expansion
- Permanent linear change
- Thermal shock
- Permeability to gases.

These tests are made on a routine basis in the Quality Control laboratory of each works.

Special test are carried out by the Central Laboratory of Research.
The production control is effected in accordance with Assurance Quality System.

Quality



The qualitative standard of a refractory material has reached such a determinant influence level as to condition the operational results.
It is therefore evident the absolute necessity to carry into effect a severe policy of quality in manufacturing.

This policy is imposed by the ever-increasing stresses to which the material is subjected during the operation as well as by the level of high specialization and differentiation reached by refractory products.

In the manufacturing process, therefore all those measures are adopted which are necessary to attain the right quality level and to keep it constant, namely:
- precise processing instructions for each phase of the production process and detailed quality manuals from the raw material control up to the finished products;
- provision of a structure able to produce according to the criteria of the “Quality Assurance”.

All our works, as well as all our laboratories, are conform to Assurance Quality System in accordance with UNI EN ISO 9001, certified by DNV as shown at side.

Services

RESEARCH AND DEVELOPMENT

Industrial progress, greatly advances in the latest years, imposes more and more severe conditions to refractory linings and demands materials of more and more sophisticated qualities in order to meet the requirements of better performances under every technical and economical aspect.

In order to take active part in this quick developing process, in addition to the individual Works Laboratories charged with the production control and testing (from raw materials to finished products), SANAC owns a Central Laboratory of Research which employs several highly-qualified specialists.

This unit is fitted with all the most modem equipments necessary to the most advanced technological requirements in the sector, it carries out its activity in applied research, in the production and development of new products, in the improvement of the existing products and relevant manufacturing processes.
The Central Laboratory of Research is in Vado Ligure.

DESIGN ENGINEERING AND TECHNICAL ASSISTANCE

The Design Engineering and Technical Assistance Service constitutes an integrated system set up in order to cover all stages from design engineering up to construction and installation. Design engineering is carried out with the C.A.D. system.
The Service is in fact a company sector whose function is to find out and solve all problems connected with refractory materials.
It operates on site in dose touch with the user and studies the most valid solutions under the technical and economical aspect, thus reaching a precise detailed design engineering of the individual components of a lining.

Know-how

Sanac technology is active all over the world. In fact, SANAC puts its own experience at the disposal of other producers of refractory materials.

Many are the know-how agreements stipulated with foreign countries. The collaboration supplied by the Company mainly consists of:

- setting out of the most up-to-date production cycles;
- supervision of plant final design engineering;
- supervision of plant erection and start-up;
- supply of complete know-how;
- training of the Customer's technical personnel in order to hit the production targets.

From Company's profile it is possible to identify the principles which are at the base of its activity and which explain its constant progress in a world-wide refractory industry.

EXPERIENCE

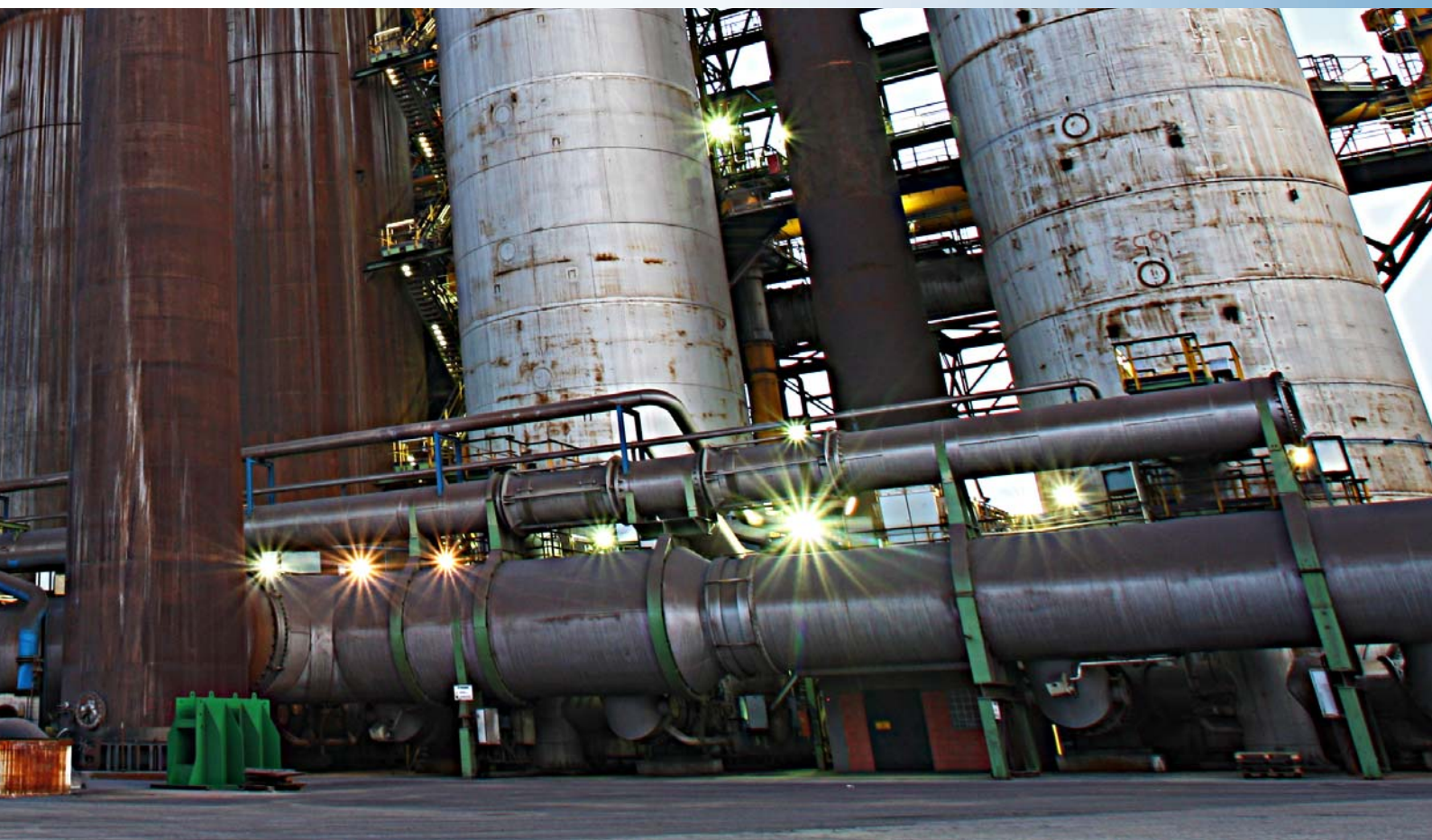
More than seventy years of determinant activity on the market means that not only a production technology but also and above all an application technology has been required.

INNOVATION

The Research Centre, which is the link between production and utilization, constitutes a fundamental propulsive factor in the improvement of materials.

ASSISTANCE

SANAC's technical services constantly design new solutions and test their technical and economical validity by verifying every operating condition with the Customer and actively co-operating to the correct management of linings, thus achieving a close integration between design, construction and operation of same.

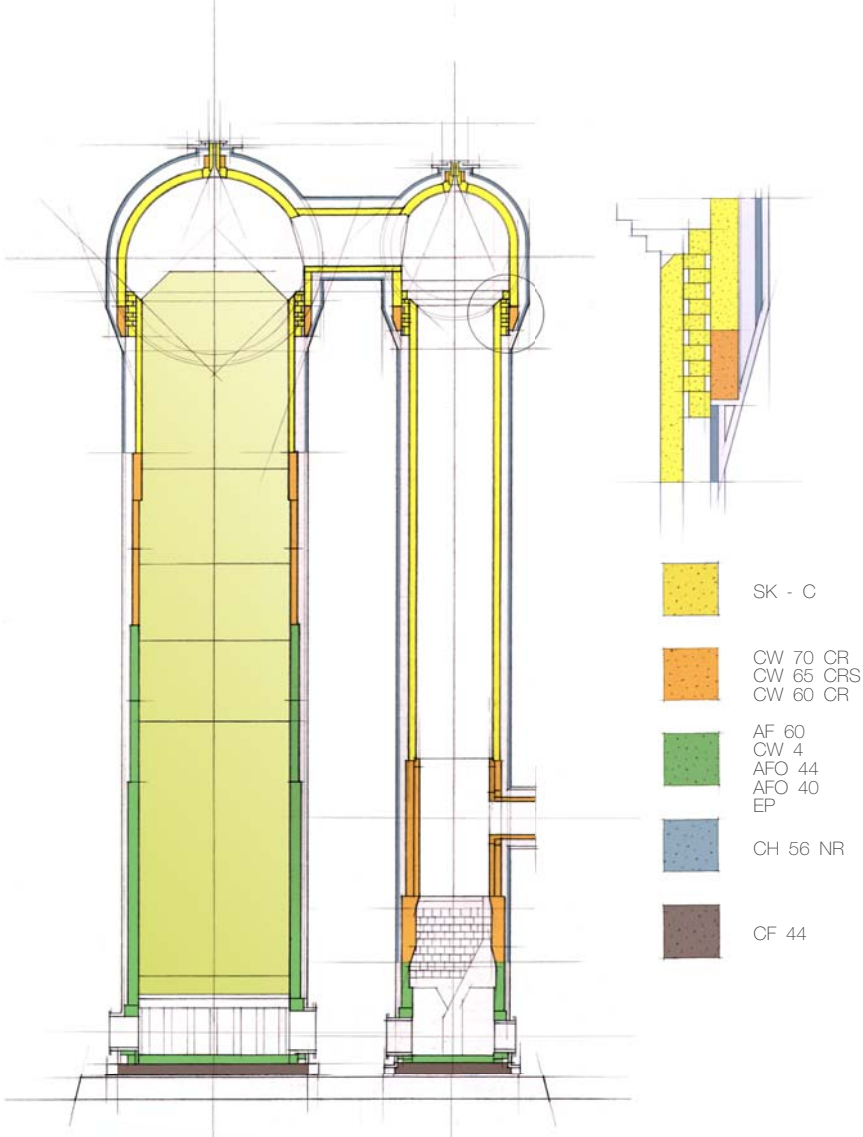


Stove types

For more that 50 years SANAC has been producing refractories for hot blast stoves and has constantly participated in their technical evolution. Depending on the requirements of the blast furnace, hot blast stoves at present reach dome temperature of 1.550 °C, with blast temperatures of 1.250 ÷ 1.350 °C and pressures of 3 to 5 kg/ square cm.

We can distinguish between three types of hot blast stoves:

1. high temperature stove (1.550 °C dome) with outside combustion chambers;



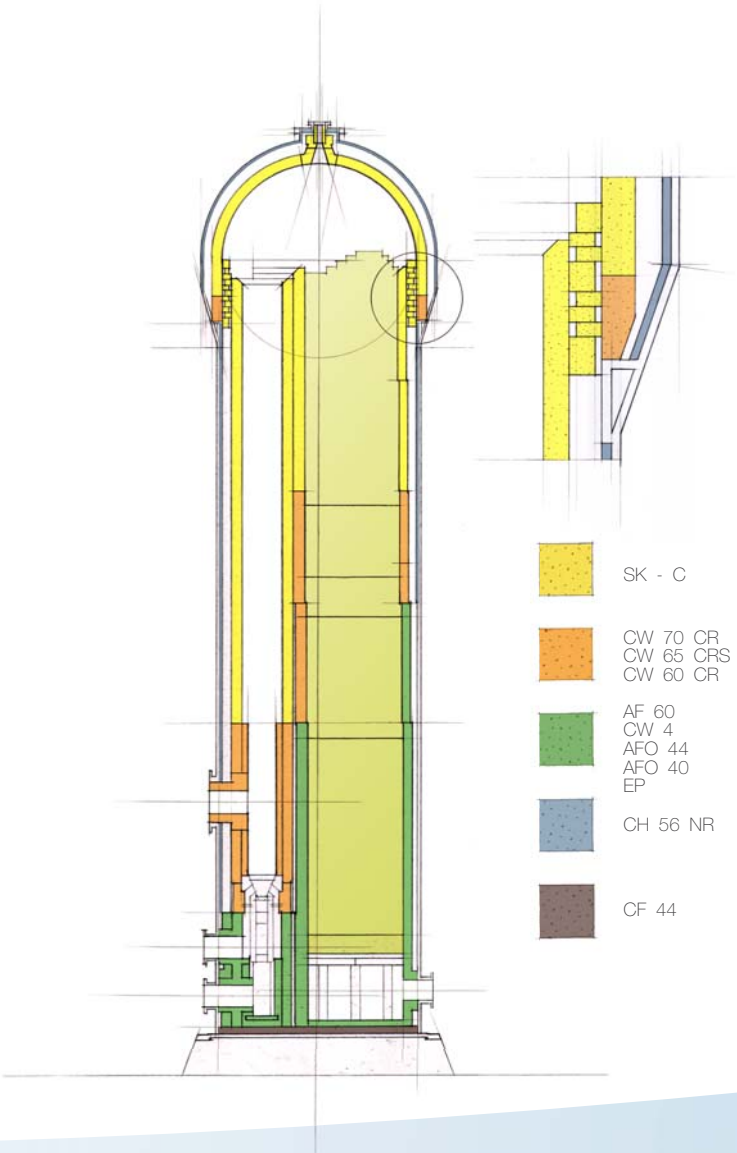
High temperature stove with outside combustion chambers.

2. high temperature stove (1.550 °C dome) with inside combustion chambers.

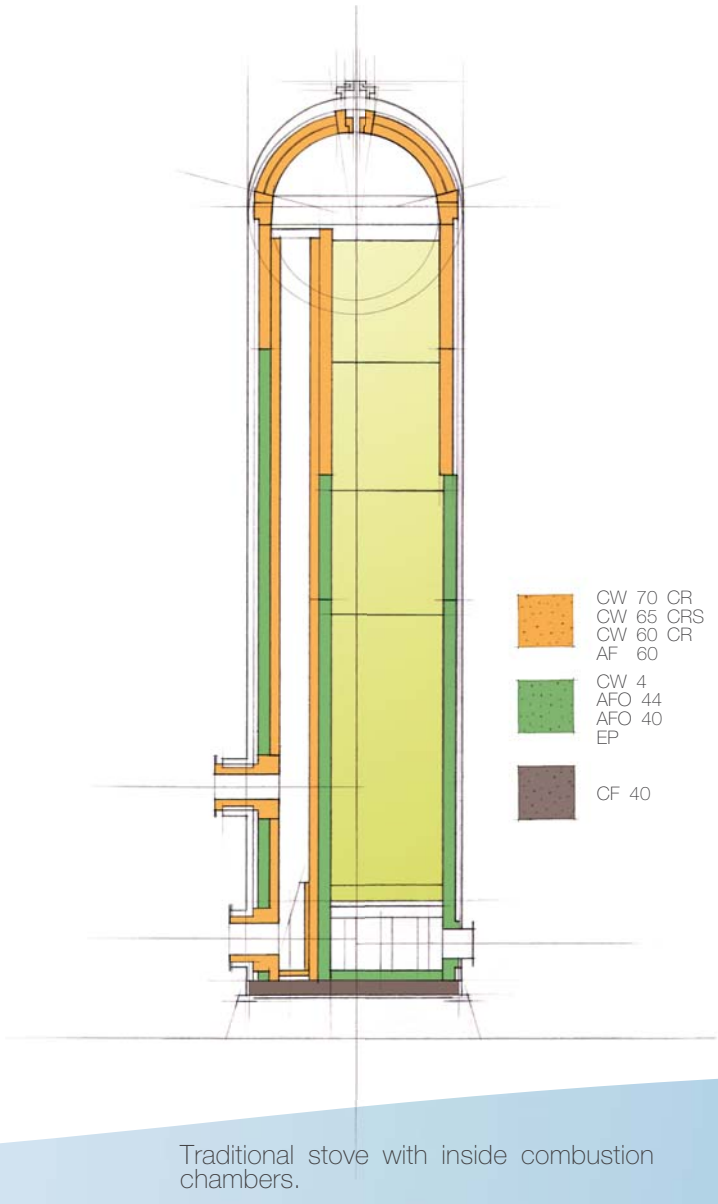
Both these plants require the use of special silica in the very high temperature zones, while in the remaining zones are used highalumina bricks with high creep and thermal shock resistance.

3. traditional stoves in high-alumina and fireclay materials with inside combustion chambers and dome temperature at 1.400 °C.

SANAC carries out the lining design in cooperation with the technical users and the best known engineering companies.



High temperature stove with inside combustion chambers.



Traditional stove with inside combustion chambers.

Sanac's works

1. 13045 GATTINARA (VC)
   Corso Garibaldi, 321
   Phone +39 0163 824711
   Fax +39 0163 89321

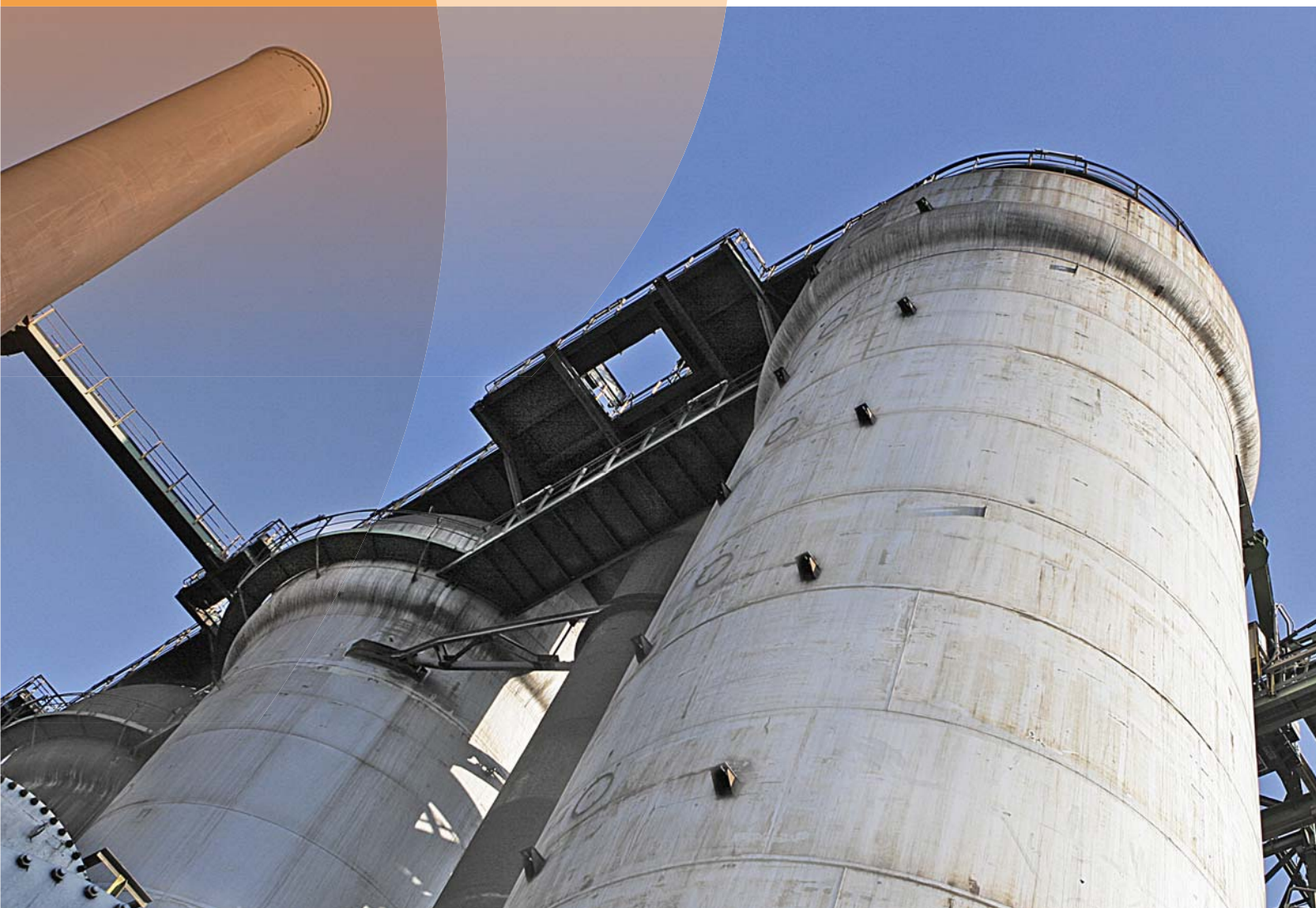
2. 17047 VADO LIGURE (SV)
   Via Manzoni, 10
   Phone +39 019 28951
   Fax +39 019 882555

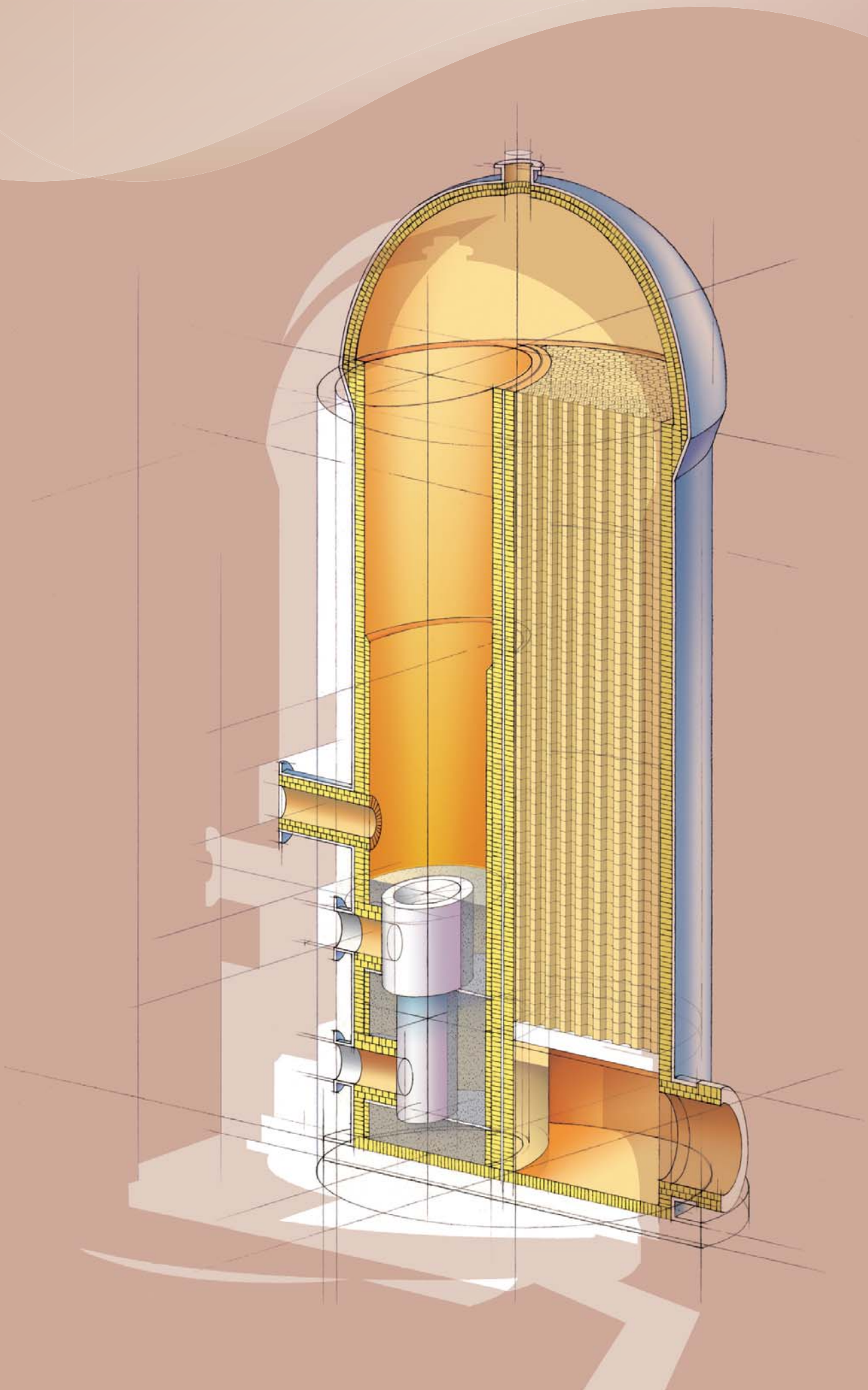
3. 54100 MASSA
   Via Dorsale, 7
   Zona Industriale
   Phone +39 0585 799001
   Fax +39 0585 799031

4. 09032 ASSEMINI (CA)
   Loc. Grogastu
   Zona Ind. Macchiareddu
   Phone +39 070 24651
   Fax +39 070 247058

Products

Refractories for Stoves





Stove shapes

SIDE ARCHES

Code	Description	Dimensions (mm)	Volume (dm^3)	Pieces per pallet
WC12-M	Side arch	100 / 88 x 230 x 345	7,46	-
WC24-M	Side arch	100 / 76 x 230 x 345	6,98	-
WC12-MC	Side arch	85 / 73 x 230 x 345	6,27	-
CMK2/100	Side arch	100 / 88 x 172 x 230	3,72	132
CMK1/100	Side arch	100 / 75 x 172 x 230	3,46	132
CMKL2/100	Side arch	100 / 88 x 172 x 345	5,58	132

END ARCHES

Code	Description	Dimensions (mm)	Volume (dm^3)	Pieces per pallet
VG	end arch	88 / 76 x 230 x 115	2,17	280
VM	end arch	100 / 88 x 230 x 115	2,49	280
76V-3	end arch	76 / 70 x 230 x 115	1,93	280
76V-2	end arch	76 / 64 x 230 x 115	1,85	280
76V-1	end arch	76 / 51 x 230 x 115	1,68	280
HV-3	end arch	76 / 70 x 230 x 152	2,55	192
HV-2	end arch	76 / 64 x 230 x 152	2,45	192
HV-1	end arch	76 / 51 x 230 x 152	2,22	192
76KV-3	end arch	76 / 70 x 230 x 172	2,89	176
76KV-2	end arch	76 / 64 x 230 x 172	2,77	176
76KV-1	end arch	76 / 51 x 230 x 172	2,51	176
76DV-3	end arch	76 / 70 x 230 x 230	3,86	120
76DV-2	end arch	76 / 64 x 230 x 230	3,70	120
76DV-1	end arch	76 / 51 x 230 x 230	3,36	120
NV-3	end arch	76 / 70 x 300 x 150	3,29	160
NV-2	end arch	76 / 64 x 300 x 150	3,15	160
NV-1	end arch	76 / 51 x 300 x 150	2,86	160
VD12/M	end arch	100 / 88 x 230 x 230	4,97	90
VD24/M	end arch	100 / 76 x 230 x 230	4,65	90
VD12/MC	end arch	85 / 73 x 230 x 230	4,18	90

KEY-SIDE ARCHES

Code	Description	Dimensions (mm)	Volume (dm^3)	Pieces per pallet
CX-4	key-side arch	76 / 70 x 230 x 115 / 89	1,71	-
CX-3	key-side arch	76 / 64 x 230 x 115 / 89	1,64	-
CX-2	key-side arch	76 / 51 x 230 x 115 / 89	1,49	-
CX-1	key-side arch	76 / 25 x 230 x 115 / 89	1,18	-
CX-8	key-side arch	76 / 70 x 230 x 115 / 102	1,82	-
CX-7	key-side arch	76 / 64 x 230 x 115 / 102	1,75	-
CX-6	key-side arch	76 / 51 x 230 x 115 / 102	1,58	-
CX-5	key-side arch	76 / 25 x 230 x 115 /102	1,26	-
CX-11	key-side arch	76 / 70 x 300 x 150 / 127	3,03	-
CX-10	key-side arch	76 / 64 x 300 x 150 / 127	2,91	-
CX-9	key-side arch	76 / 51 x 300 x 150 / 127	2,64	-
VX-4	key-side arch	76 / 70 x 230 x 115 / 89	1,71	-
VX-3	key-side arch	76 / 64 x 230 x 115 / 89	1,64	-
VX-2	key-side arch	76 / 51 x 230 x 115 / 89	1,49	-
VX-1	key-side arch	76 / 25 x 230 x 115 / 89	1,18	-
VX-8	key-side arch	76 / 70 x 230 x 115 / 102	1,82	-
VX-7	key-side arch	76 / 64 x 230 x 115 / 102	1,75	-
VX-6	key-side arch	76 / 51 x 230 x 115 / 102	1,58	-
VX-5	key-side arch	76 / 25 x 230 x 115 / 102	1,26	-
VX-11	key-side arch	76 / 70 x 300 x 150 / 127	3,03	190
VX-10	key-side arch	76 / 64 x 300 x 150 / 127	2,91	-
VX-9	key-side arch	76 / 51 x 300 x 150 / 127	2,64	-

CHECKERS

Code	Description	Dimensions (mm)	Volume (dm^3)	Pieces per pallet
POS. A	rectangular checker	-	6,75	-
POS. B	rectangular checker	-	5,66	-

STRAIGHTS

Code	Description	Dimensions (mm)	Volume (dm^3)	Pieces per pallet
Q/76	straight	172 x 115 x 76	1,50	352
R/76	straight	230 x 115 x 76	2,01	280
H	straight	230 x 152 x 76	2,66	192
K/76	straight	230 x 172 x 76	3,01	176
3/76	straight	300 x 150 x 76	3,42	160
RL/76	straight	345 x 115 x 76	3,01	165
RR	straight	345 x 152 x 76	3,99	136

END ARCH

Code	Description	Dimensions (mm)	Volume (dm^3)	Pieces per pallet
XT	key	152 / 130 x 172 x 76	1,84	-
76X-2	key	115 / 76 x 230 x 76	1,67	-
76X-3	key	115 / 89 x 230 x 76	1,78	-
76X-4	key	115 / 102 x 23 0x 76	1,90	-
HX-3	key	152 / 122 x 230 x 76	2,39	208
HX-5	key	152 / 136 x 230 x 76	2,52	208
X-42	key	152 / 110 x 300 x 76	2,99	-
X-23	key	150 / 127 x 300 x 76	3,16	160
X-10	key	150 / 140 x 300 x 76	3,31	-
RX-49	key	129 / 80 x 345 x 76	2,74	184
RX-2	key	152 / 111 x 345 x 76	3,45	152
RX-3	key	152 / 127 x 345 x 76	3,66	120

SIDE ARCHES

Code	Description	Dimensions (mm)	Volume (dm^3)	Pieces per pallet
76C-4	side arch	76 / 70 x 115 x 230	1,93	280
76C-3	side arch	76 / 64 x 115 x 230	1,85	280
76C-2	side arch	76 / 51 x 115 x 230	1,68	280
76C-1	side arch	76 / 25 x 115 x 230	1,34	350
76LC-4	side arch	76 / 70 x 115 x 345	2,90	330
76LC-3	side arch	76 / 64 x 115 x 345	2,78	330
76LC-2	side arch	76 / 51 x 115 x 345	2,52	396
76LC-1	side arch	76 / 25 x 115 x 345	2,00	396
NC-4	side arch	76 / 70 x 150 x 300	3,29	160
NC-3	side arch	76 / 64 x 150 x 300	3,15	160
NC-2	side arch	76 / 51 x 150 x 300	2,86	160
HC-4	side arch	76 / 70 x 152 x 230	2,55	192
HC-3	side arch	76 / 64 x 152 x 230	2,45	192
HC-2	side arch	76 / 51 x 152 x 230	2,22	192
RC-4	side arch	76 / 70 x 152 x 345	3,83	136
RC-3	side arch	76 / 64 x1 52 x 345	3,67	136
RC-2	side arch	76 / 51 x 152 x 345	3,33	136
KC-3	side arch	76 / 70 x 172 x 230	2,89	176
KC-2	side arch	76 / 64 x 172 x 230	2,77	176
KC-1	side arch	76 / 51 x 172 x 230	2,51	176
KCL-3	side arch	76 / 70 x172 x 345	4,33	96
KCL-2	side arch	76 / 64 x 172 x 345	4,15	96
KCL-1	side arch	76 / 51 x 172 x 345	3,77	96
WC-4	side arch	76 / 70 x 230 x 345	5,79	-
WC-3	side arch	76 / 64 x 230 x 345	5,55	-
WC-2	side arch	76 / 51 x 230 x 345	5,04	-

Stove quality bricks

PRODUCT		EP I	AFO 44	CW4	AF 4 I	AF 23 I	AF 26	AF 26 LI
Main component		Fireclay						
CHEMICAL ANALYSIS (on raw materials oxides)								
Al_2O_3		43,5	46,0	47,0	45,0	45,0	45,0	46,5
SiO_2		52,0	50,0	49,0	51,0	51,0	50,5	50,0
Fe_2O_3	%	1,20	1,40	01,03	1,20	1,20	1,10	0,90
TiO_2		1,50	1,50	1,07	1,07	1,60	1,07	1,9
PHYSICAL PROPERTIES								
Refractoriness	SK	34	35	34	34	34	35	35
Density	Kg/dm^3	2,33	2,35	2,32	2,40	2,39	2,40	2,40
Apparent Porosity	%	19,0	15,0	15,5	13,5	13,0	13,0	14,0
C.C. Strength	Kg/cm^2	> 450	650	500	> 500	> 500	> 550	> 550
Refractoriness under load t 0,5	at °C	1.400	1.420	1.420	1.460	1.460	1.470	1.480
Creep Deformation under 2 Kg/cm^2, 25 hours	at °C	1.150	-	-	1.300	1.300	1.300	1.300
	%	< 1	-	-	< 1	< 1	< 1	< 1
Reversible Expansion at 1.000°C	%	0,55	0,58	0,60	0,65	0,64	0,67	0,68
Permanent linear change, 5 hours	at °C	1.300	1.500	1.500	1.600	1.600	1.600	1.600
	%	± 0	< ± 0,5	< ± 0,5	< ± 1	< ± 1	< ± 1	< ± 1
Thermal conductivity at 500°C	W/mK	1,14	1,41	1,30	1,40	1,41	01,39	1,45
Thermal conductivity at 1.000°C	W/mK	1,36	1,50	1,40	1,53	1,52	1,52	1,53
Characteristics		-	-	-	Abrasion Resistance	-	High mechanical and meccanica abrasion resistance	CO Resistance

PRODUCT		AF 60 C	AF 60	AF 60 T	AF 70 CR	CW 60 CR	CW 65 CRS	CW 67 CRS	AF 80	SM1	MUL SINT5	MUL SINT5LI
Main component		High alumina Fireclay		Mullite	Mullite Alumina	Andalu-site	Andalu-site Alumina	Mullite Alumina	Alumina Andalu-site	Sillimaite Andalu-site	Mullite Alumina	
CHEMICAL ANALYSIS (on raw materials oxides)												
Al_2O_3		53	56	65	72	57	62	65	80	61	72	72
SiO_2		40,0	40,0	32,0	27,0	41,0	36,0	33,0	18,5	37,0	27,0	27,0
Fe_2O_3	%	1,1	1,1	0,6	0,3	0,9	0,8	0,7	0,5	1,0	0,2	0,3
TiO_2		2,1	2,1	0,5	0,3	0,4	0,2	0,4	0,2	0,7	0,2	0,2
PHYSICAL PROPERTIES												
Refractoriness	SK	36	37	> 37	> 37	> 37	> 37	> 37	> 37	> 37	> 37	> 37
Density	Kg/dm^3	2,48	2,50	2,47	2,55	2,55	2,58	2,55	2,85	2,63	2,62	2,55
Apparent Porosity	%	14,5	16,0	14,5	15,5	13,0	13,5	13,5	13,5	15,5	15,5	15,0
C.C. Strength	Kg/cm^2	800	> 650	> 800	> 750	800	> 1.000	> 800	800	> 850	> 800	850
Refractoriness under load t 0,5	at °C	1.450	1.470	1.510	1.600	1.600	1.650	1.650	1.700	1.620	1.600	1.600
Creep Deformation under 2 Kg/cm^2, 25 hours	at °C	-	1.350	1.400	1.450	1.400	1.450	1.450	1.500	1.450	1.450	1.450
	%	-	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Reversible Expansion at 1.000°C	%	0,50	0,75	0,76	0,62	0,76	0,77	0,75	0,65	0,48	0,56	0,56
Permanent linear change, 5 hours	at °C	1.500	1.600	1.600	1.600	1.500	1.500	1.500	1.500	1.500	1.500	1.500
	%	< ± 1,0	< ± 1,0	< ± 1,0	< ± 0,5	< ± 0,5	< ± 0,5	< 0,5	< 0,5	< ± 0,8	< ± 0,8	± 0,8
Thermal conductivity at 500°C	W/mK	1,57	1,47	1,59	1,59	1,37	1,44	1,93	2,20	1,47	1,39	1,38
Thermal conductivity at 1.000°C	W/mK	1,62	1,59	1,69	1,69	1,46	1,54	1,53	2,20	1,50	1,75	1,75
Characteristics		Abrasion Resistance	Alkali resistance	-	Creep resistance				-	Mechanical and thermal shock resistance	Chemical and creep resistance	

Stove cements

PRODUCT		Chemical bonded ready			Chemical bonded dry				Air setting dry		Heat setting dry	
		BONDLOK			SINTBOND				MF		CEM	
		AF	KB	Z	80	ZD	A100D	A100B	40	52	40	72
Main component		Chamotte	Corindone	Corindone	Bauxite	Corindone	Corindone	Corindone	Chamotte	Chamotte	Chamotte	Mullite
				Chrome oxide	Corundum	Chrome oxide				Bauxite		
CHEMICAL ANALYSIS (on raw materials oxides)												
Al_2O_3	%	46,5	79,5	78,5	70,5	76,0	87,0	98,0	41,0	52,0	45,0	73,0
SiO_2	%	48,0	15,0	12,0	20,0	14,2	8,5	1,3	53,0	42,5	51,0	26,0
P_2O_5	%	3,0	3,2	3,5	1,4	3,0	3,3	-	-	0,2	-	-
Cr_2O_3	%	-	-	5	-	5	-	-	-	-	-	-
Alkali	%	-	-	-	-	-	-	-	3,5	1,5	-	-
PHYSICAL PROPERTIES												
Grain size max	mm	0,2	0,2	0,2	0,5	0,2	0,2	0,2	0,5	0,5	0,2	0,5
Fraction < 0,063 mm min.	%	65	65	60	65	60	60	50	65	65	65	65
Refractoriness	Seger cone	35	> 37	> 37	35	> 37	> 37	> 37	26	29	33	37
24h at 450°C (*)	kg/cm²	50	80	40	30	40	40	(110) 30	(110) 50	(110) 10	(110) 5	(110) 10
5h at 1.000°C (*)	kg/cm²	80	90	100	10	-	60	15	60	10	-	-
5h at 1.400°C (*)	kg/cm²	160	200	220	60	150	145	230	90	60	23	150
Water required	%	-	-	-	18	18	17	16	38	25	33	25
Retentive time	min.	> 2,00	> 1,00	> 2,00	1,05	> 2,00	> 2,00	1,05	1,00	1,00	> 2,00	> 2,00
Characteristics		Heat setting						air setting			heat setting	

(*) Internal method

Stove castables

PRODUCT		ALOCAST								
		CF 44	F44L1	44LIW	CH48	CH56	CH57N	CH98S	LX 50	LX 48
Main component		Chamotte	Chamotte	Chamotte	Chamotte	Chamotte	Chamotte	Tabular alumina	Chamotte	Chamotte
CHEMICAL ANALYSIS (on raw materials oxides)										
Al_2O_3	%	45,0	51,0	48,0	53,0	57,0	55,5	94,5	48,3	51,5
SiO_2	%	40,0	38,0	39,5	41,0	33,5	37,5	0,4	48,0	44,0
Fe_2O_3	%	3,4	1,7	-	0,8	0,9	0,6	0,1	0,8	0,8
CaO	%	10,0	7,5	-	4,0	6,6	4,5	4,5	2,3	1,4
PHYSICAL PROPERTIES										
Max. service temp.	°C	1.350	1.500	1.350	1.600	1.450	1.500	1.800	1.500	1.500
Volumetric efficiency	t/m^3	2,10	2,17	2,15	2,20	2,25	2,17	2,72	2,35	2,45
Water required	%	14,0	12,0	13,0	11,0	11,0	11,0	10,0	5,5	5,5
P.L.C. AFTER HEATING										
24h at 110°C	%	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05	0,00	0,00	0,00
5h at 1.000°C	%	0,00	- 0,30	- 0,30	- 0,20	- 0,50	- 0,20	0,00	0,45	- 0,20
5h at Max. service temp.	%	0,5	1,5	2,1	0,8	- 2,0	- 0,8	- 0,5	± 0,2	0,2
BULK DENSITY AFTER HEATING										
24h at 110°C	kg/dm^3	2,17	2,24	2,23	2,25	2,30	2,25	2,78	2,38	2,48
5h at 1.000°C	kg/dm^3	2,10	2,09	2,08	2,15	2,25	2,10	2,73	2,38	2,46
5h at Max. service temp.	kg/dm^3	2,05	1,89	1,81	2,00	2,35	2,15	2,76	2,37	2,45
COLD CRUSHING STRENGTH AFTER HEATING										
24h a 110°C	kg/cm^2	450	650	700	500	900	450	800	1.000	1.000
5h a 1.000°C	kg/cm^2	350	400	400	350	700	300	500	1.100	1.000
5h at Max. service temp.	kg/cm^2	300	300	250	600	1.000	700	900	900	1.300
MODULUS OF RUPTURE AFTER HEATING										
24h at 110°C	kg/cm^2	50	60	75	70	100	60	90	80	120
5h at 1.000°C	kg/cm^2	25	20	40	40	30	30	70	80	170
5h at Max. service temp.	kg/cm^2	80	60	50	100	75	150	130	100	120
THERMAL CONDUCTIVITY										
at 500°C	W/mK	0,72	0,71	0,73	0,74	0,83	0,88	1,10	1,56	1,54
at 1.000°C	W/mK	0,77	0,78	0,81	0,79	0,85	1,00	1,20	1,67	1,48
Characteristics		-		(*)	-		NOx resistance	-	-	-
APPLICATION METHOD										
		Casting								

(*) ALOCAST F44LI reinforced with metallic needles

Stoves self-flowing mass

PRODUCT		ALOFLOW	
		LX 48	60 AF
Main component		Chamotte	Andalusite
CHEMICAL ANALYSIS (on raw materials oxides)			
Al_2O_3	%	53,0	64,0
SiO_2	%	43,0	33,0
Fe_2O_3	%	0,65	0,60
CaO	%	1,5	1,5
PHYSICAL PROPERTIES			
Max. service temp.	°C	1.500	1.650
Volumetric efficiency	t/m^3	2,40	2,65
Water required	%	7,5	6,7
P.L.C. AFTER HEATING			
24h at 110°C	%	0	0
5h at 1.000°C	%	0,20	0,10
5h at Max. service temp.	%	- 0,20	0,60
BULK DENSITY AFTER HEATING			
24h a 110°C	kg/dm^3	2,45	2,70
5h a 1.000°C	kg/dm^3	2,42	2,65
5h at Max. service temp.	kg/dm^3	2,41	2,62
COLD CRUSHING STRENGTH AFTER HEATING			
24h a 110°C	kg/cm^2	1.250	500
5h a 1.000°C	kg/cm^2	1.000	1.100
5h at Max. service temp.	kg/cm^2	1.350	1.100
MODULUS OF RUPTURE AFTER HEATING			
24h at 110°C	kg/cm^2	120	-
5h at 1.000°C	kg/cm^2	165	-
5h at Max. service temp.	kg/cm^2	145	-
THERMAL CONDUCTIVITY			
at 500°C	W/mK	1,51	-
at 1.000°C	W/mK	1,45	-
Characteristics		Low cement - CO resistance	low cement
APPLICATION METHOD			
		-	-

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