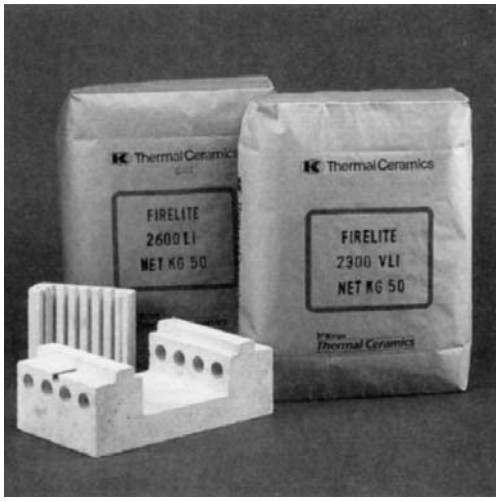
Product Information



The two charts below summarize Thermal Ceramics range of low iron insulating concretes.

The aim is to aid a quick selection of the appropriate concrete.

The chart in the back page provides full details of the product physical properties as determined by our laboratory test results.

Characteristics	Type of Firelite						
	95	2800 LI	2700 LI	2600 LI	2600 LI-G	2300 VLI	2300 VLI-G
Low thermal conductivity	X	X	X	X	X	XX	XX
Classification temperature °C	1760	1540	1480	1430	1430	1260	1260
Low density		X	X	X	X	XX	XX
Stability under H_2	XX	X	X	X	X	X	X
Low % Fe_2O_3	XX	XX	X	X	X	XX	XX
Low % CaO	X	X	X	X	X		
Cast installation	X	X	X	X		X	
Gun installation					X		X

Note: on the Firelite 2300 VLI and VLI G the high CaO content comes from the anorthite mineral in the insulating aggregate.

Applications	95	2800 LI	2700 LI	2600 LI	2600 LI-G	2300 VLI	2300 VLI-G
Ammonia production processes where hydrogen atmospheres are encountered	X	❍	❍	❍	❍	❍	❍
Transfer line in the ammonia production process			❍	❍	❍	❍	
Secondary reformers in the ammonia production process			❍	❍			
Controlled atmosphere applications	X	X	X	X	X	X	X
Lining monolithic shapes		X	X	X			
Lining formed shapes		X	X	X			

❍ = Back up insulation
X = Good
XX = Very good

MAIN PROPERTIES

Product		95	2800 LI	2700 LI	2600 LI	2600 LI-G	2300 VLI	2300 VLI-G
Method of application		Cast	Cast	Cast	Cast	Gun	Cast	Gun
Temperature limit	°C	1760	1540	1480	1430	1430	1260	1260
ASTM-C-401 Class			Q, R, S	S	Q, R	Q, R	P, Q	P, Q
Basic raw material		Bubble & tabular Alumina	Bubble Alumina	Insulating Aggregate	Insulating Aggregate	Insulating Aggregate	Insulating Aggregate	Insulating Aggregate
Maximum grain size (mm)		5	6	6	6	6	8	6
Properties								
• Density (kg/m^3)								
As placed		1690	1820	1760	1720	1760	1480	1660
Oven dried at	105°C	1730	1430	1330	1230	1320	930	1080
After 5h firing at	815°C	1690	1340	1210	1140	1200	860	1020
• Cold crushing strength (MPa)**								
Oven dried at	105°C	17.6	10.0	9.3	6.3	9.8	3.7	6.9
After 5hr firing at	815°C	9.8	6.0	6.3	4.5	6.4	2.1	4.9
	1000°C	10.8	4.2	-	4.3	6.0	1.9	4.4
	1200°C	11.8	3.6	4.9	3.9	5.5	1.7	-
	1400°C	17.6	3.6	5.9	5.3	7.0	-	-
	1500°C	25.5	7.2	-	-	-	-	-
	1600°C	34.3	-	-	-	-	-	-
High Temperature Performance								
• Permanent linear change (%)								
After 5hr firing at	815°C	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-0.2
	1000°C	-0.1	-0.2	-	-	-	-	-
	1200°C	-0.2	-0.2	-0.6	-0.8	-0.7	-0.3	-0.4
	1400°C	-0.2	-0.6	-1.2	-	-	-	-
	1500°C	+0.6	-1.0	-	-	-	-	-
	1600°C	-0.3	-	-	-	-	-	-
• Thermal Conductivity (W/m.K)* ASTM-C-417-84								
At mean temperature of	200°C	0.42	0.35	0.29	0.28	0.29	0.16	0.17
	400°C	0.49	0.40	0.32	0.31	0.32	0.19	0.20
	600°C	0.52	0.44	0.35	0.34	0.35	0.21	0.23
	800°C	0.57	0.48	0.37	0.36	0.37	-	-
	1000°C	0.63	0.53	0.42	0.40	0.42	-	-
	1200°C	0.67	-	-	-	-	-	-
Estimated weight (kg) of dry material required per m^3 of construction (no allowance for waste)		1690	1350	1220	1140	1230	860	1050
Estimated weight (kg) of water required per 100kg dry material		16	35	44	49	43	70	58
Chemical composition								
Al_2O_3		94.5	79.7	60.8	58.0	58.7	47.4	47.4
SiO_2		0.2	11.7	28.2	31.4	30.0	31.7	31.8
Fe_2O_3		0.1	0.3	0.7	0.7	0.7	0.5	0.5
TiO_2		-	-	0.3	0.5	0.1	0.7	0.7
CaO		4.3	6.5	7.7	6.8	7.0	17.6	16.9
MgO + K_2O + Na_2O		0.2	0.9	1.1	1.4	1.6	1.0	0.8
Ig. Loss (Tr = Trace)		Tr	0.2	1.1	1.8	1.0	1.0	1.6
Packaging								
• In bags	kg	25/50	25/50	25/50	25/50	25/50	40	40

* To convert W/m.K to Btu in/ft$_2$/h/°F, multiply by 6.93 to kcal/m.h. °C, multiply by 0.86 ** To convert MPa to kg/cm^2, multiply by 10.2
Apart from 2300 VLI and 2300 VLI-G, these materials can also be considered in the Low Lime category

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The values given herein are typical average values obtained in accordance with accepted internal test methods and are subject to normal manufacturing variations. The "G" gunning version data are obtained by ramming. They are supplied as a technical service and are subject to change without notice. Therefore, the data contained herein should not be used for specification purposes. Check with your Thermal Ceramics office to obtain current information. Before using these materials, it is strongly recommended that the installer consults Thermal Ceramics manual "storage and installation manual" copies of which are obtainable from Thermal Ceramics offices or distributors.

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