J+C
REFRACTORIES

JuRA²

The alkali- and abrasion-resistant refractory brick for extreme applications

JuRA² stands for [Ju]enger+Gräter [R]esitent to [A]lkali and [A]brasion

In many high temperature processes one notices increasing damage to the refractory lining due to chemical-mechanical attack. Due to increased use of substitute and alternative fuels, such as biomass, old wood or prepared plastic fractions taken from waste separation, alkalis enter the incineration process. This leads to a higher negative impact on the furnace atmosphere and the slags due to alkalis and inert materials. The positive ecological and economic benefits of substitute fuels do, however, also cause several problems. For example, the refractory material is attacked so intensely by alkalis that one frequently notices premature wear often resulting in the need to install a new refractory lining.

J+G has focused on this topic and developed a completely new generation of alkali-resistant refractory bricks. With JuRA² J+G has succeeded in creating extremely alkali-resistant, high-alumina refractory bricks that close the gap between acidic fireclay bricks and high-grade chrome-corundum bricks. Acidic fireclay bricks have good alkali resistance. However, their disadvantage is a low service limit temperature even if the salt load is low (< 1,100 °C). Chrome-corundum bricks are an option for higher service temperatures. However, their disadvantage is the relatively high price and a possible chromium or chromate load in the product, slag or ash.

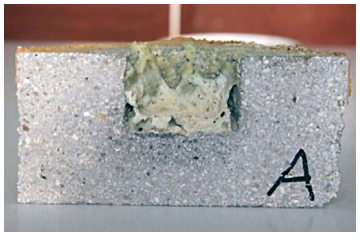
With JuRA² J+G has developed the refractory brick series that also possesses superb resistance to alkalis above 1,100 °C without having to use chromium oxide. Furthermore, this brick has excellent abrasion resistance and cold crushing strength along with further superb thermo-mechanical properties. Its high resistance is based on a low porosity which reduces the penetration of salts to such an extent that the service life is greatly extended and plant availability much higher.

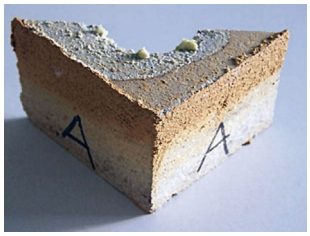
Consequently, this brick is specifically suited for installation in areas subjected to high stress by alkalis and erosion, for example in the sectors of

- Biomass and wood incineration
- Special refuse incineration
- Incineration of salt-containing residues in the chemical industry
- Cement industry
- Power plants operating with substitute fuels
- CFB plants subjected to extreme wear and problematical, alkalis-loaded fuels
- Alkaline decompositions in the chemical and metal-chemical industries
- Chlorination processes in the production of titanium dioxide

conventional andalusite brick

JuRA² TE200Z





corrosion test (alkali corrosion) in a pot with melt of sodium carbonate
test temperature 1,000 °C, duration of test 24 hours

	JuRA² TE200Z	JuRA² SC400Z
Remarks:	Fired brick, with infiltration protection	Fired brick, with infiltration protection
Raw material base:	Andalusite	Fireclay
Type of setting:	ceramic	ceramic
Bulk density [g/cm³]:	2,65	2,45
Max. service temperature:	1.500 °C	1.350 °C
Softening under load DIN 51053:	1.580 °C	1.530 °C
Porosity apparent [%]:	9,0	11,0
Abrasion resistance ASTM C704:	6,5 cm³	12,0 cm³
Thermal shock resistance:	> 50 (Water)	> 30 (Water)
CO resistance ASTM C288:	A	A
Chemical Analysis:		
Al_2O_3	58,00 %	51,00 %
SiO_2	40,00 %	45,00 %
Fe_2O_3	1,00 %	1,00 %
Cold Crushing Strength 110°C [MPa]:	120	70
Thermal Conductivity 400°C [W/mK]:	1,500	1,400
Thermal Conductivity 700°C [W/mK]:	1,600	1,450
Thermal Conductivity 1,000°C [W/mK]:	1,700	1,500
Rev. therm. expansion 1,000°C [%]:	0,55	0,60

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