



## Material Highlight : LP 50 S

### Aluminium Industry

Gouda Refractories delivers complete refractory solutions for anode baking furnaces, pot lines, transfer ladles, melting furnaces and holding furnaces used in the production of aluminium and aluminium alloys.

The LP 50 S brick is a high density, low porosity, high strength 50% aluminium oxide brick. The combination of these improved characteristics, depending on furnace design and operational maintenance, result in operational advantages in anode baking furnaces, such as:

- Increased refractory life.
- Reduction in fire cycle time and hence increased anode output.
- Reduction in flue wall maintenance costs.
- Reduction in fuel costs and hence CO<sub>2</sub> emissions.
- Possibility to make bigger anodes by reducing wall thickness.

The LP 50 S has been developed to satisfy clients' needs better – now and in the future – and, like Gouda Refractories had done before with AK 46 S, sets once again a new standard in refractory materials for flue walls in the anode baking industry.





## Technical Background

The LP 50 S is the result of selecting higher quality raw materials, further improving the production process and using higher fire temperatures in the manufacturing process.

The low porosity, improved mineral composition and low alkali content have the following advantages:

- Higher refractoriness.
- Higher strength at process temperature.
- Higher thermal conductivity.

This means that the LP 50 S has a higher resistance to chemical attack mechanisms (alkali infiltration, SiO<sub>2</sub> depletion) and thermal attack mechanisms than the previous generation flue wall bricks.

The LP 50 S has been tested independently by Orton (USA), the Technical University of Sao Paulo (Brazil) and ICAR (France) and is approved by Riedhammer, RTA and Alcoa.

## References

Emirates Global Aluminium  
Dubai furnace 1,2,3 & 4

## Industrial Testing

Alcoa Lauralco	Bell Bay Aluminium	Hydro Ardal	Trimet
Alouette	BHP Hillside	Hydro Kurri Kurri	
Aluchemie	Century Aluminium	Hydro Sunndal	

## Materials

		Quality		Improvement
		LP 50 S	AK 46 S	
<b>Material Properties</b>				
Maximum Service Temperature	°C	1.575	1.550	
Bulk Density	kg/m <sup>3</sup>	2.500	2.400	4%
Apparent Porosity	%	11	< 15	36%
<b>Physical Properties</b>				
Cold Crushing Strength	MPa	70	50	40%
Thermal Shock Resistance		25	15	67%
Thermal Conductivity (1.100 °C)	W/mK	2,55	1,5	70%
<b>Chemical Analysis</b>				
Al <sub>2</sub> O <sub>3</sub>	%	50	49	
SiO <sub>2</sub>	%	46	47	
Fe <sub>2</sub> O <sub>3</sub>	%	< 1	< 1	
Na <sub>2</sub> O + K <sub>2</sub> O	%	< 0,3	< 0,5	

Values are typical but not guaranteed, unless agreed otherwise.  
Datasheets are available upon request.