

# KANTHAL® Super RA

## High Temperature Element for Protective Atmospheres and Reactive Environments

KANTHAL Super RA is specially designed to work in nitrogen at temperatures above 1250°C (2280°F). Other KANTHAL Super elements have an excellent lifetime in oxidizing atmospheres but, when operating in nitrogen, nitration occurs. At temperatures above 1250°C (2280°F), the protective glaze is consumed and the silicon in the silicide of the elements may react with nitrogen forming silicon nitride, which can cause scaling. The speed of the process depends on the dew point and the time in the atmosphere. The solution to these problems has been to run the elements in air at high temperature for a couple of hours to restore the glaze.



KANTHAL Super RA withstands nitration at high temperatures better than any other type of KANTHAL Super element. The nitration process still occurs, but to a 50% lower rate than for KANTHAL Super 1800. The temperature, at which the weight reduction starts, is about 75°C (167°F) higher. The element has also a substantially longer lifetime in all reducing and oxygen deficient atmospheres and possesses a higher tolerance to other aggressive environments.



### Special Features

- Longer life at high temperatures in reactive atmospheres
- Long life in all reducing and oxygen deficient atmospheres
- Can be used in nitrogen up to 1700°C (3090°F) at a 40°C (104°F) dew point
- Standard and specially designed elements

### Applications

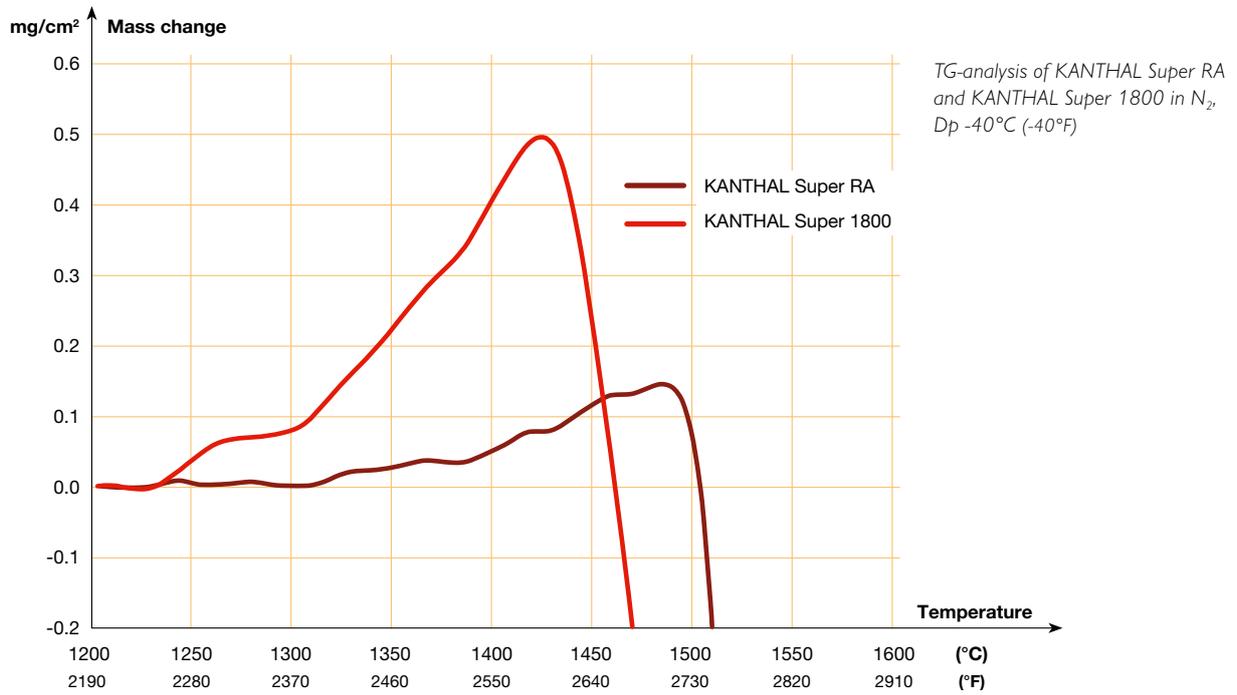
KANTHAL Super RA is used in different types of sintering-, forging- and heat treatment furnaces.

### Product Range

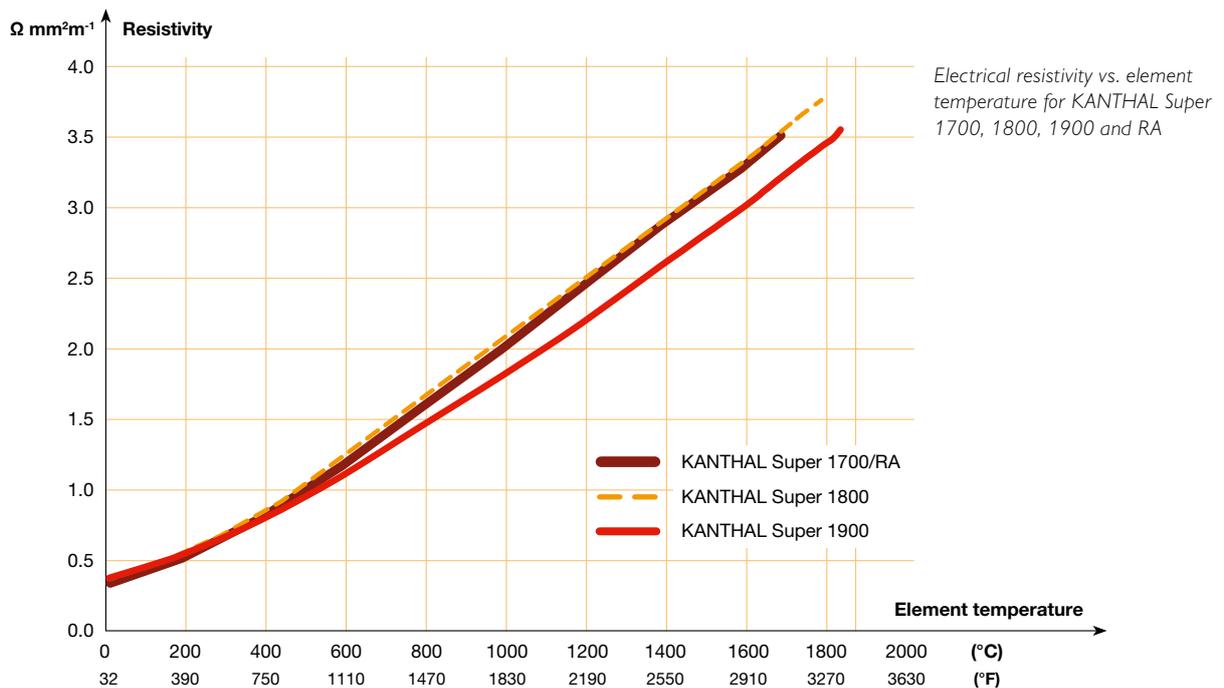
KANTHAL Super RA is delivered as 2- and 4-shank elements with fixed terminals as an option for safe and reliable electrical connections. Special designs are available on request.

KANTHAL Super RA	Heating zone diam. Le, mm (in.)	Terminal diam. Lu, mm (in.)
	6 (0.24)	12 (0.47)
	9 (0.35)	18 (0.71)
	12 (0.47)	24 (0.94)

## Rate of Nitration

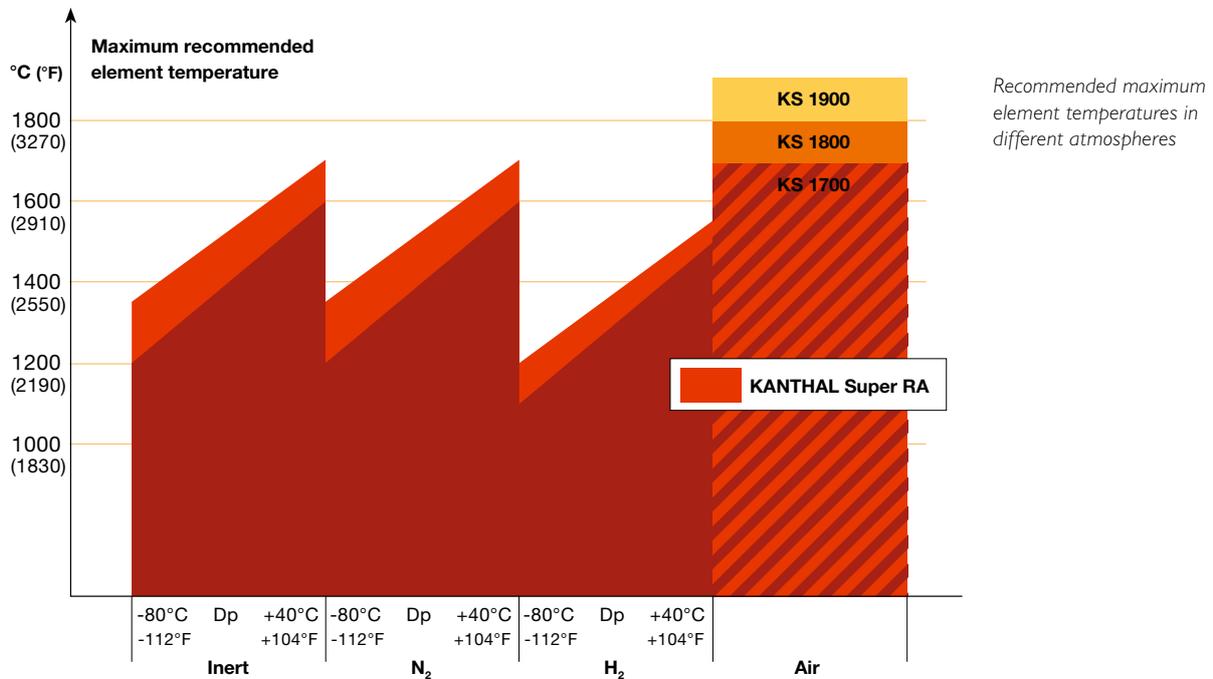


## Resistivity



## Maximum Recommended Element Temperatures

The diagram below is a guide to maximum temperatures in different atmospheres depending on dew point. For details regarding specific applications, please contact Kanthal.



### Properties

Maximum operating temperature	1700°C (3090°F)
Composition	Mainly MoSi <sub>2</sub> + aluminosilicate
Tensile strength at 1550°C (2820°F)	100 Mpa ± 25 %
Bending strength at 20°C (68°F)	350–400 Mpa ± 10 %
Compression strength at 20°C (68°F)	1400–1500 Mpa
Density	5.6 g/cm <sup>3</sup> (0.2 lb/in <sup>3</sup> )
Fracture toughness, K <sub>1c</sub>	3–4 MPa√m
Hardness, Hv	9 Gpa
Thermal conductivity	
20–600°C (68–1110°F)	30 Wm <sup>-1</sup> K <sup>-1</sup>
600–1200°C (1110–2190°F)	15 Wm <sup>-1</sup> K <sup>-1</sup>
Coefficient of linear expansion	7–8 10 <sup>-6</sup> K <sup>-1</sup>
Specific heat capacity at 20°C (68°F)	0.42 kJ kg <sup>-1</sup> K <sup>-1</sup>
Emissivity	0.70–0.80

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**KANTHAL**

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