

Heating elements

Basic values:

Parameter	Value
Dimensions	58 x 21.5 x 6.0 mm
Heated area	21.5 x 8.5 x 6.0 mm
T _{max}	1 000 °C
Remark	Heatet knife

Details of Standard:

Description

Full-ceramic heating elements from silicon nitride are particularly well suited for use in packaging machines, for example for sealing or foil welding processes. Due to the high-power density, the processes can be designed very dynamically, the cycle times are shortened and the productivity improves. The close-to-contour generation of process heat also significantly reduces the heat loss: The energy savings that can be achieved are considerable, especially with 24/7 production machines. Compared to conventional heating technology, the full-ceramic heating elements by Bach RC have already been able to achieve more than 90% energy savings in individual applications. Heating elements with integrated cutting edge make possible the simultaneous welding and cutting of plastic films.

* The actual power depends on resistance, temperature and voltage.

Parameter	Value
Article no.	FLE 100 086
Resistance @ 20 °C	3,8 Ω ±25 %
Nominal voltage	24 V
Nominal power @ 20 °C	150 W*

Basic Material

Parameter	Scale unit	Si ₃ N ₄
max. temperature (T _{max})	°C	1 000
thermal conductivity (l)	W/mK	40
temperature shock resistance (ΔT)	K	500
emissivity (1 100 °C) (ε)	-	0.96
Young's modulus (E)	GPa	320
bending strength (δ _{BB})	MPa	400
compressive strength (δ _D)	MPa	2 000
coefficient of thermal expansion (α)	10 ⁻⁶ K ⁻¹	3
density (g)	g/cm ³	3.21
specific heat (c _p)	J/kgK	750
porosity (100 - % t.D.)	%	0
critical stress intensity factor (K _{IC})	MPa m ^{1/2}	6
Weibull - modulus (m)	-	7.9

The thermal shock resistance depends on the geometric shape of the heater.

Electrical parameters

Parameter	Scale unit	Si ₃ N ₄
resistivity	Ω cm	5 · 10 ⁻³ - 5 · 10 ⁻¹
isolation resistivity	Ω mm (20 °C)	10 ¹³
dielectric strength	kV/mm	25

Emission spectrum

Fully ceramic heating elements are long-wave infrared heaters with a maximum emission of 5 to 10 μm and a radiation coefficient of ε > 0.9.



