

Heating elements

Basic values:

Parameter	Value
Dimensions	Ø 28.5 x Ø 10 x 5.0 mm
Heated area	Ø 28.5 x Ø 10 x 5.0 mm
T _{max}	500 °C
Remark	Ring heater

Details of Standard:

Description

Heating rings made of silicon nitride are mainly used for sealing processes in packaging machines. The heating rings are available in standard sizes, but we are also pleased to be able to implement geometry that fits exactly with your requirements. The ceramic heating rings from Bach RC have the advantage of providing the required heating capacity close to the final contour and close to the sealing site in a manner that is precise and dynamically adjustable. Thus, cycle times can be accelerated, energy consumption and waste heat reduced, and so the thermal distortion in the construction setup of the packaging machine is minimised.

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

Parameter	Value
Article no.	FLR 100 175
Resistance @ 20 °C	9 Ω ±25 %
Nominal voltage	48 V
Nominal power @ 20 °C	256 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.



