

Hot plates

Basic values:

Parameter	Value
Dimensions	160 x 100 x 4.5 mm
Heated area	100 x 100 x 4.5 mm
T _{max}	800 °C

Details of Standard:

Description

The heated zone of the heating element of the SCB type can be operated at up to 800 °C. With the very low thermal expansion of silicon nitride, thermal distortion in the heating plate hardly occurs even at this high temperature – especially important for the processes in which pressure is to be exerted on the heating plate or the material to be heated that is located on it, and so for press heating. It is therefore ensured that the force can be transmitted evenly over the entire surface of the heating element. The outwardly guided "legs" for the brazed electrical contacts are designed to ensure that even at maximum temperature in the heating element, the braze joints are not heated beyond their maximum permissible temperature of 500 °C. However, it is important in the process to ensure open convection and radiation at the "contact legs" for cooling.

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

Parameter	Value
Article no.	FLE 101 332
Resistance @ 20 °C	26 Ω ±25 %
Nominal voltage	230 V
Nominal power @ 20 °C	2 034 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.



