

Heating cutters

Basic values:

Parameter	Value
Dimensions	114.8 x 12.2 x 5.0 mm
Heated area	114.8 x 6.5 x 5.0 mm
T _{max}	500 °C

Details of Standard:

Description

The ceramic used for the heating elements (silicon nitride) is very durable and resistant to wear. Hence, it is obvious to produce required tool geometries directly from the ceramic material: The heating knives have a cutting edge from silicon nitride with which, for example, foils can be cut and welded together at the same time.

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

Parameter	Value
Article no.	FLE 100 276
Resistance @ 20 °C	115 Ω ±25 %
Nominal voltage	230 V
Nominal power @ 20 °C	460 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.



