

SYALON 101 – THE ALLROUNDER

This **Syalon** is member of the Si-AL-O-N family, the first group of man-made ceramic alloys produced. It has been specifically developed for high loads under difficult circumstances. **Syalon 101** is a general purpose engineering grade ceramic. Our standard material is a dense, gas pressure sintered material which can be used wherever a combination of strength, toughness, excellent thermal shock resistance and high wear resistance are required.

Material:		Syalon 101		
Properties			Unit	Value
density	P	[1]	[g/cm ³]	3,21
porosity			[%]	0
microstructure			[μm]	1-10
Mechanical Properties			Unit	Value
hardness (Vickers)		[2]	[Gpa]	16
compressive strength			[MPa]	3.000
bending strength	σ	[3]	[MPa]	760
Weibull-module	m			25
fracture toughness	K _{1c}		[MPam ^{1/2}]	8
Young's modulus	E		[GPa]	320
Poisson ratio	ν			0,28
Thermal Properties			Unit	Value
max. use temperature				
	- inert gas	[4]	[°C]	1.300
	- air		[°C]	1.200
thermal conductivity	λ (20° C)		[W/mK]	30
thermal expansion coeff. α (-1000°C)			[10 ⁻⁶ K ⁻¹]	3,2
thermal shock parameter R1 [5]		[K]	534	
thermal shock parameter R2 [6]		[W/m]	16.031	
Chemical Components			Unit	Value
	-Si ₃ N ₄		[%]	90
	- Al ₂ O ₃		[%]	6
	- Y ₂ O ₃		[%]	4

The given values are only valid for the tested samples and therefore only to be used as indication values.

- [1] Density and porosity according to DIN 51918 (Archimedes principal)
- [2] Hardness according to ENV 843-4
- [3] At room temperature according to EN 843
- [4] Long-term temperature in continuous use
- [5] Critical temperature difference with rapid temperature change (quenching)
- [6] Thermal shock coefficient at constant temperature rise (annealing)

