

Roughness of Sealing Surfaces

The Right Surface Finish

“What is the ‘right’ surface roughness for the optimum sealing connection” is a question that arises time and time again. Fortunately, soft gaskets in the FlatSeal™ portfolio are very tolerant of surface finish and can compensate for a wide range of flange roughness values.

In principle, a certain amount of roughness is considered favorable as it improves the connection between the sealing surface and the gasket. However, too much roughness must be avoided at all costs, because the gasket material may not be able to sufficiently adapt for excessive unevenness. FlatSeal™ gaskets from the HMF30 Series are particularly tolerant to roughness due to an above-average compensation ability. Similarly, HMF17 and HMF18 offer above-average adaptability.

Generally, the recommendations given in the European Flange Standard EN 1092-1 for the surface properties of sealing surfaces should be followed. The data range given in the tables below can be used for all surfaces to be designed. Here is an excerpt of these data:

Shape of sealing surface acc. EN 1092-1*	R _A		R _Z	
	[μm]	[μin]	[μm]	[μin]
A – full face	3.2 – 12.5	125 – 500	12.5 – 50	500 – 2000
B ₁ – raised face	3.2 – 12.5	125 – 500	12.5 – 50	500 – 2000
E, F – male and female	3.2 – 12.5	125 – 500	12.5 – 50	500 – 2000
B ₂ – raised face	0.8 – 3.2	32 – 125	3.2 – 12.5	125 – 500
C, D – tongue and groove	0.8 – 3.2	32 – 125	3.2 – 12.5	125 – 500



Low roughness values are preferred for milled sealing surfaces. Concentrically-turned surfaces tend to benefit from greater roughness.

Additional information:

Formerly used figures “N” from replaced ISO 1302:1992	N 6	N 7	N 8	N 9	N 10
R _A [μm]	0.8	1.6	3.2	6.3	12.5
R _A [μin]	32	63	125	250	500



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*** Shape of sealing surface acc. EN 1092-1**

A	– full face	
B ₁	– raised face	
E, F	– male and female	
B ₂	– raised face	
C, D	– tongue and groove	

Further Information

Other FlatSeal™ Guides deal with the following basic topics:

- FlatSeal™ Guide 1 – Fundamentals of Flat Gasket Technology
- FlatSeal™ Guide 2 – Choice of Sealing Material
- FlatSeal™ Guide 3 – Installation Instructions
- FlatSeal™ Guide 4 – Optimized Gasket Geometry
- FlatSeal™ Guide 5 – Lubrication of Bolts
- FlatSeal™ Guide 6 – Roughness of Sealing Surfaces
- FlatSeal™ Guide 7 – Service Life of Sealing Systems
- FlatSeal™ Guide 8 – Shelf Life of Sealing Materials
- FlatSeal™ Guide 9 – Tolerances Cut Parts
- FlatSeal™ Guide 10 – Temperature Test

