



Methods of indicating surface textures on drawings per ISO & DIN 1302

SYMBOLS	✓	Symbol without additional indicator Basic symbol. The meaning must be explained by additional indications
	3.2 ✓	Symbol with additional indications. Any production method, with specified roughness
	✓	Symbol without additional indications Removal of material by machining, without specified roughness.
	3.2 ✓	Symbol with additional indications. Removal of material by machining, with specified roughness.
	✓	Symbol without additional indications. Removal of material is not permitted (surface remains in state as supplied).
	3.2 ✓	Symbol with additional indications. Made without removal of material (non-cutting), with specified roughness.



Position of the specifications of surface texture in the symbol

POSITION	a =	Roughness value Ra in micro-meters or micro-inches or roughness grade number N1 to N12
	b =	Production method, surface treatment or coating.
	c =	Sampling length
	d =	Direction of lay
	e =	Machining allowance.
	f =	Other roughness values, e.g. Rz

SURFACE FINISH	Micrometer μm	Micro-inch μin	Grade Numbers	Grade Symbols
	50	2000	N12	
	25	1000	N11	▽
	12.5	500	N10	
	6.3	250	N9	
	3.2	125	N8	▽▽
	1.6	63	N7	
	0.8	32	N6	
	0.4	16	N5	▽▽▽
	0.2	8	N4	
	0.1	4	N3	
0.05	2	N2	▽▽▽▽	
0.025	1	N1		

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Ra or Roughness average was once called AA or CLA is the most common surface finish parameter across most industries and is typically measured over five cutoffs of data.

Rq was once called RMS is roughly 11% higher than Ra

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