

Surface Finish Comparison Chart

Comparison of N-Grades, Ra, RMS, and Typical Machining Processes.

Grade	Ra (um)	Ra (uin)	RMS (uin)	Typical Processes
N1	0.025	1	1.1	Superfinishing, Lapping, Polishing
N2	0.05	2	2.2	Lapping, Honing, Superfinishing
N3	0.1	4	4.4	Lapping, Honing, Polishing
N4	0.2	8	8.8	Fine Grinding, Lapping, Honing
N5	0.4	16	17.6	Grinding, Reaming, Fine Turning
N6	0.8	32	35.2	Grinding, Boring, Milling, Turning
N7	1.6	63	69.3	Turning, Milling, Drilling, Boring
N8	3.2	125	137.5	Rough Turning, Milling, Drilling
N9	6.3	250	275	Rough Machining, Shaping, Planing
N10	12.5	500	550	Rough Turning, Forging, Casting
N11	25.0	1000	1100	Casting, Flame Cutting, Sawing
N12	50.0	2000	2200	Rough Casting, Flame Cutting

Important Notes:

- Ra (Roughness Average): Arithmetic average of profile height deviations.
- RMS (Root Mean Square): Root mean square of profile height deviations.
- RMS is approximately 1.1 times Ra.
- N-Grades are ISO 1302 standard roughness classes.
- Actual finish depends on material, tool condition, and cutting parameters.