

Surface Finish

Mechanical Engineering

Typical roughness by process, and why each finer step costs more.

Ra is the average roughness, in micrometres.

Process	Ra in micrometres	Feel
Flame cut, sand cast	12 to 25	Rough
Rough milling, turning	3.2 to 6.3	Machined
Finish turning	0.8 to 1.6	Smooth
Grinding	0.2 to 0.8	Fine
Lapping, honing	0.02 to 0.1	Mirror

Specify the roughest finish that works. Each step finer roughly doubles the cost of that surface.