

When determining a surface finish for a component one must use function, cost, and aesthetics for criteria. Out of these three components function has the greatest significance followed by both cost and appearance equally contributing. By evaluating the component one can weight the contribution of each and apply this logic to determine the finish for each surface.

Did you know that surface finish is measured in micro-inches, that's in²? In other words when someone uses the lingo of a 32 surface finish that means 32 micro-inches is the max allowable distance between the varying surface finish.



Dr. Doom



Sad Student

Got the surface finish blues? Follow the flow chart.

The surface finish availability for the University of Idaho Machine Shop is 250 micro-inches to 4 micro-inches.

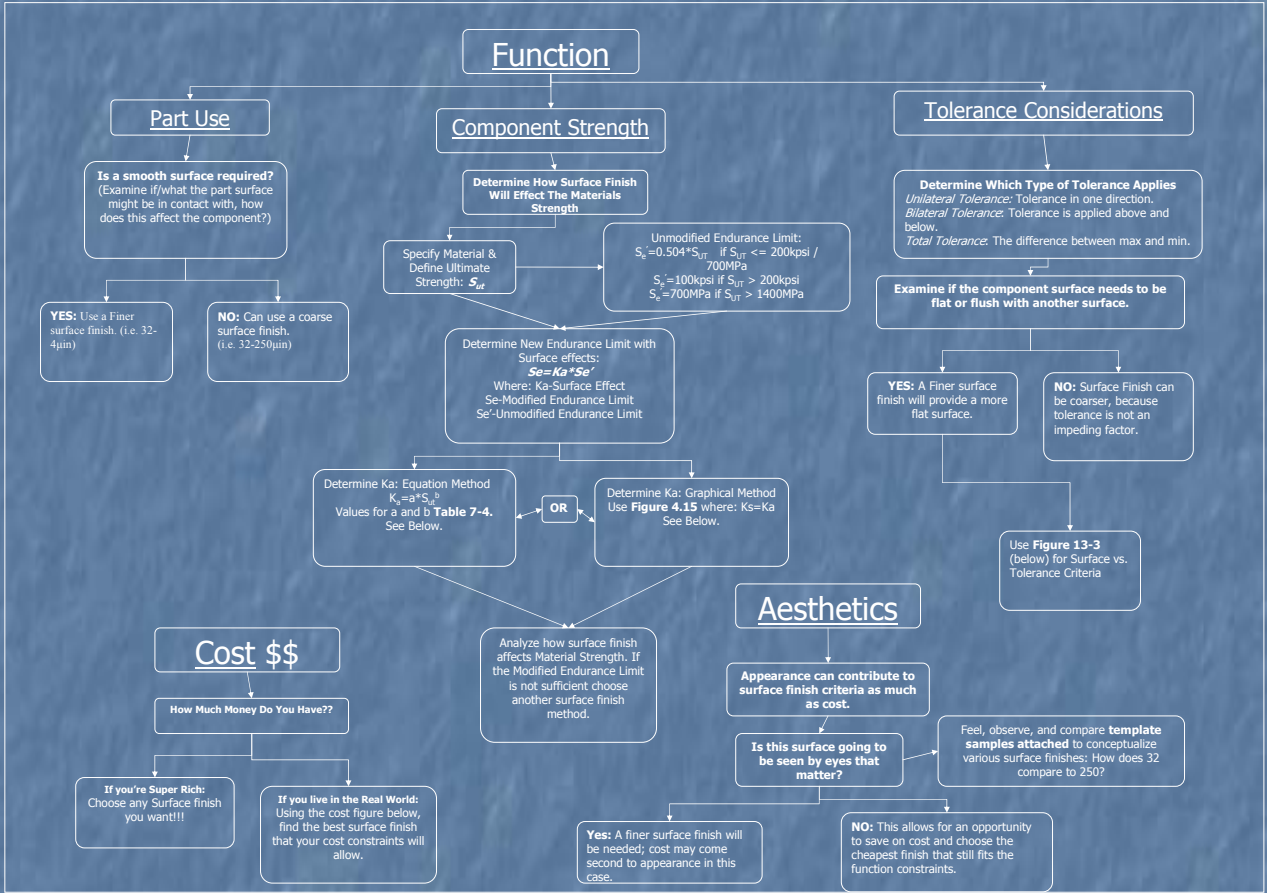


TABLE 7-4 Surface Finish Factors

SURFACE FINISH	FACTOR a	EXPONENT b
Ground	1.34	1.58
Machined or cold-chamber	2.70	4.51
Hot rolled	14.4	37.7
As forged	50.9	272.

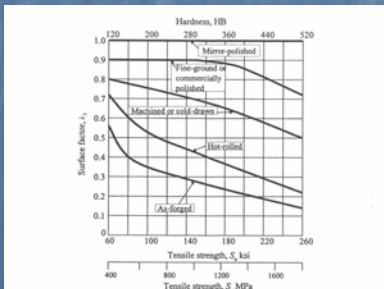


Figure 4.15 Effects of surface finish on the fatigue limit of steel [6] (reprinted by permission of John Wiley & Sons, Inc.)

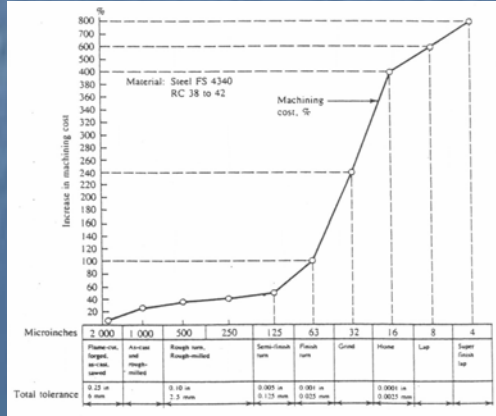


FIGURE 13-3 Finishes produced by various techniques (roughness average, R_a)

TABLE 13-1 Tolerance grades

Application	Tolerance grades										
	01	0	1	2	3	4	5	6	7	8	9
Measuring tools											
Fits of machined parts	4	5	6	7	8	9	10	11			
Material, as supplied	6	9	10	11	12	13	14				
Rough forms (casting, sawing, forging, etc.)	12	13	14	15	16						

TABLE 13-1 Tolerance grades

References:

Mischke, Charles R., Joseph Edward Shigley. Mechanical Engineering Design. McGraw Hill. p. 278, 283, 2002.