

# Metal

## Machinability Ratings

The tables here show the American Iron and Steel Institute (AISI) machinability ratings. Each one is shown as a percentage compared to 160 Brinell B1112 steel.

### Carbon Steels

	Machinability
1015	72%
1018	78%
1020	72%
1022	78%
1030	70%
1040	64%
1042	64%
1050	54%
1095	42%
1117	91%
1137	72%
1141	70%
1141 annealed	81%
1144	76%
1144 annealed	85%
1144 stressproof	83%
1212	100%
1213	136%
12L14	170%
1215	136%

### Tool Steels

	Machinability
A-2	42%
A-6	33%
D-2	27%
D-3	27%
M-2	39%
O-1	42%
O-2	42%

### Alloy Steels

	Machinability
2355 annealed	70%
4130 annealed	72%
4140 annealed	66%
4142 annealed	66%
41L42 annealed	77%
4150 annealed	60%
4340 annealed	57%
4620	66%
4820 annealed	49%
52100 annealed	40%
6150 annealed	60%
8620	66%
86L20	77%
9310 annealed	51%

## Nodular Iron

	Machinability
60-40-18 annealed	61%
65-45-12 annealed	61%
80-55-06	39%

## Aluminum & Magnesium Alloys

	Machinability
Aluminum, cold drawn	360%
Aluminum, cast	450%
Aluminum, die cast	76%
Magnesium, cold drawn	480%
Magnesium, cast	480%

## Gray Cast Iron

	Machinability
ASTM class 20 annealed	73%
ASTM class 25	55%
ASTM class 30	48%
ASTM class 35	48%
ASTM class 40	48%
ASTM class 45	36%
ASTM class 50	36%

## Uncertain About What Material to Choose?

**Aluminum 6061** is the most cost-effective material and Quickparts preferred default material for CNC projects.

## Stainless Steels & Super Alloys

	Machinability
302 annealed	45%
303 annealed	78%
304 annealed	45%
316 annealed	45%
321 annealed	36%
347 annealed	36%
410 annealed	54%
416 annealed	110%
420 annealed	45%
430 annealed	54%
431 annealed	45%
440A	45%
15-5PH condition A	48%
17-4PH condition A	48%
A286 aged	33%
HastelloyX	19%