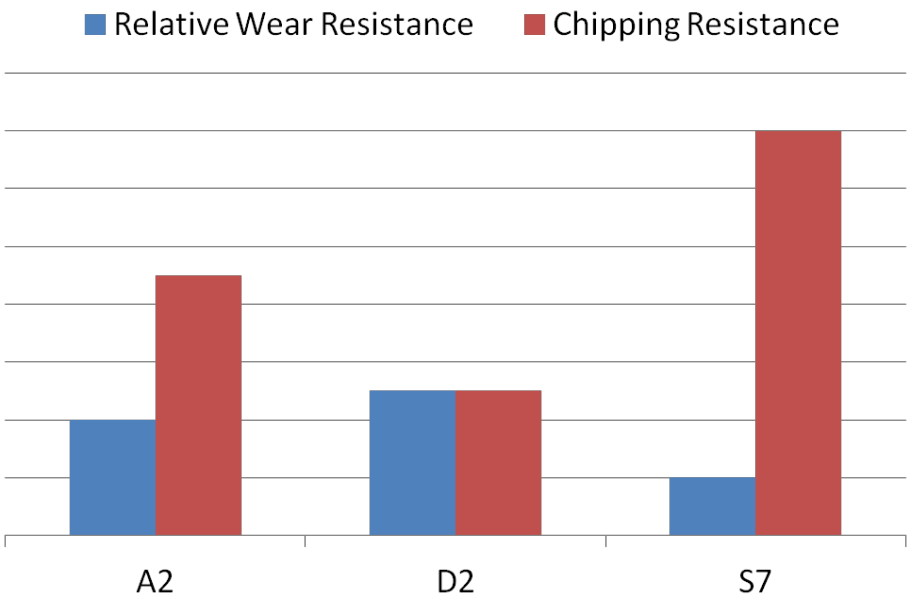
Métaux Solutions

Technical Information: A2

A2 is an air hardening cold work tool steel
A2 is characterized by moderate wear resistance combined with good toughness
A2 is used in a variety of general purpose cold work applications

Typical Chemical Composition			
Carbon	1.00%	Chromium	5.25%
Molybdenum	1.10%	Silicon	0.35%
Vanadium	0.25%	Manganese	0.85%

Tool Steel Properties Comparison



Physical Properties

Modulus of Elasticity. . . . . 30 psi x 10^6 . . . . . (207 GPa)
Density. . . . . 0.283 lb/in^3
Annealed Hardness. . . . . 210-225 Brinell Hardness (BHN)

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Heat Treatment

Annealing

Heat to 1600°F, hold two hours
Slow cool 20°F/hour to 900°F
Then air or furnace cool to room temperature

Stress Relieving

Performed prior or after machining to minimize distortion in heat treating
1100/1200°F, hold two hours
then air cool to room temperature

Hardening

Salt bath, protective atmosphere, or vacuum furnace equipment preferred.

High Heat (Austenitizing)

1775°F for 30 minutes at heat.

Quench

Salt bath quench to 1000-1100°F, equalize, then air cool to 150°F .
Vacuum or atmosphere quench rate of a minimum 50 degrees F per minute down to 900°F is critical to achieve best heat treat response.
Temper immediately following quench when material reaches 150°F or below.

Tempering

Minimum 400°F tempering temperature required.
Double tempering is required, triple tempering recommended.
Air cool to room temperature between tempers.

Typical Heat Treat Response

Tempering Temp °F	Tempering Temp °C	Hardening Temp 1775°F 970°C
As Quenched		63 HRC
400	205	61 HRC
500	260	60 HRC
600	315	59 HRC
700	371	58 HRC
800	427	57 HRC
900	480	56 HRC
1000	538	56 HRC
1100	552	50 HRC