Gateway Metals Inc.

DATA SHEET

GATEWAY A-2

Cold Work Tool Steel

Gateway A-2 is a air hardening alloy tool steel which provides a good combination of wear resistance, toughness, ease of heat treatment and minimum distortion. Special melting and refining practices are utilized to produce a uniform product with high cleanliness and minimum segregation. The material is tested to rigorous tool steel standards to ensure uniformity of structure and freedom from defects. Meets ASTM A-681.

Typical Chemistry

Carbon	.95/1.05		Silicon	.10/.50
Manganese	.40/1.00		Chromium	4.75/5.50
Phosphurus	.030 max		Vanadium	.15/.50
Sulfur	.030 max		Molybdenum	.90/1.40

Applications

Gateway A-2 is suitable for use in cold work tooling applications requiring a combination of wear resistance and toughness such as thread roll dies, punches, blanking dies, shears and forming dies. The grade is also used for plastic molds requiring high wear resistance.

Annealing

Heat slowly and uniformly to 1500/1600 F and hold two hours. Cool slowly (50 F per hour max) to 1400 F, hold six hours and air cool. Hardness 235 BHN maximum.

Heat Treating

Gateway A-2 is subject to decarburization during heat treatment, so a protective atmosphere furnace or vacuum furnace should be used.

After preheating to 1500 F for one half to one hour, heat to 1750/1800 F and soak one half hour when material is up to temperature. Air cool to hand warm (approximately 150 F) and temper immediately.

Tempering

Double temper one hour per inch of section thickness to desired hardness. Representative hardness levels after tempering are tabulated below.

Air cooled from 1750 degrees F - Tempered 4 hours		
Tempering Temperature (F)		Hardness (HRC)
400		60/62
500		59/61
600		58/60
700		57/59
800		56/58
900		56/58
1000		54/56
1100		48/50

GATEWAY A-2

Tempering (continued)

Note: Variations in section size, heating rate, soak time, quench rate and tempering will cause deviations from the above values. Gateway Metals should be consulted for specific applications.

EDM

Electro-discharge machining is widely used in the production of plastic molds and other tooling. However, this operation produces recast, rehardened, and retempered layers on the die surface. It is recommended that Gateway A-2 be stress relieved at 50 F below the final tool tempering temperature after electro-discharge machining to temper the rehardened layer produced by EDM.