Gateway Metals Inc.

DATA SHEET

GATEWAY A-6

Cold Work Tool Steel

Gateway A-6 is a air hardening alloy tool steel which provides a good combination of wear resistance, toughness, and strength. This grade is noted for ease of heat treatment and minimum distortion, due to it's ability to be air hardened from a low hardening temperature. Special melting 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	.65/.75		Silicon	.10/.70
Manganese	1.80/2.50		Chromium	.90/1.40
Phosphurus	.030 max		Molybdenum	.90/1.40
Sulfur	.030 max			

Applications

Gateway A-6 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 1350/1375 F and hold two hours. Cool slowly (20 F per hour max) to 950 F or below, then air cool to room temperature. Hardness 250 BHN maximum.

Heat Treating

Gateway A-6 is subject to decarburization during heat treatment, so a protective atmosphere furnace or vacuum furnace should be used. Preheat to 1250 F for one half to one hour; then heat to 1525/1600 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, two hours minimum per temper. Representative hardness levels after tempering are tabulated below.

Air cooled from 1550 degrees F - Tempered 4 hours		
(Section Size - 4" X 4")		
Tempering Temperature (F)		Hardness (HRC)
300		60/61
400		58/59
500		56/57
600		55/56
700		54/55
800		52/53
900		50/51
1000		48/49

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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-6 be stress relieved at 50 F below the final tool tempering temperature after electro-discharge machining to temper the rehardened layer produced by EDM.