



INTERNATIONAL TOOL STEEL

The World's Finest Tool Steel

ITS SPECIAL EXTRA VANADIUM

PRODUCT INFORMATION

ITS is a superior semi-high speed steel used extensively for solid machine knife application and cold working applications in place of established high speed grades.

ITS provides extra toughness and wear resistance at a reduced cost when compared to AISI M-2. Providing greater wear than D-2 and also as a substitute for high speed steels in cold working application.

TYPICAL PARTS

Blanking dies, compacting dies, HD dies, HD punches, planer knives, granulator knives, recycling knives, shear blades, slitter knives, stamping dies, thread roll dies, trim dies and recycling knives for the tire industry.

FORGING/ROLLING

Preheat to 1550° F -1600° F and soak thoroughly. Then raise to 1900° F-2100°F. Do not forge or roll below 1850° F, cool slowly from the forging and rolling temperature. Do not normalize.

ANNEALING

Slowly heat to 1550° F-1600° F, and hold for consistency. Furnace cool at 20° F per hour to 1000° F, then air cool. Brinell hardness expected range about 201/241.

HARDENING

Preheat to 1500°F-1550°F, soak until evenly heated and transfer or raise furnace temperature to 1850°F-1950°F, holding for no more than 20 minutes at heat regardless of cross section. Then cool in still air.

TEMPERING

Temper immediately following quenching, prior to the part cooling to below 150°F. Hold parts a minimum of 2 hours per inch of thickness. Triple tempering is recommended. A deep cryogenic treatment may be substituted for the middle of second temper. The adjacent tempering table may be used as a guide. However, since the 1/2" diameter specimens were used for this test, it may be found that heavier sections are several points lower.

Chemical Analysis %	
Carbon	1.10-1.20
Manganese	.30/.50
Phosphorus	.030 Max.
Sulfur	.030 Max.
Silicon	.80-1.00
Chromium	8.00/9.00
Vanadium	2.4-2.6
Tungsten	1.40-1.60
Molybdenum	1.40-1.60
Cobalt	—

Tempering Temperature °F	
As-quenched	63.5
300	62.5
400	61.0
59.0	59.0
600	58.0
700	59.0

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