# **O1 OIL HARDENING TOOL STEEL**

# ANNEALING

Heat slowly and uniformly to 1140°F; soak thoroughly and then allow to cool slowly in the furnace to below 1000°F.

# STRESS RELIEVING

When heavy machining cuts are employed the resultant stresses may be relieved by heating the material to 1200 -1250°F for one hour and cooling in still air. Finish machine after stress relieving.

# HARDENING

Preheat thoroughly to 1200-1250°F and then raise temperature to 1450°F - 1500°F depending on section size. Hold until uniformly heated through. Use high side of hardening range for thicker sections.

# QUENCHING

Quench in warm thin quenching oil to about 125°F. To prevent soft spots the tools should be rapidly agitated in the oil when a circulating oil bath is not available. The material should be tempered as soon as it has cooled to 125°F.

#### TEMPERING

Temper immediately to desired hardness. For most applications a tempering temperature of 400-450°F is employed. However, for cutting tools requiring high hardness, low temperatures of 300-375°F are suitable. Temper a minimum of two hours for sections under two inches and a minimum of one hour per inch of thickness over two inches.

#### APPLICATIONS

Gauges, shims, stamps, jigs, cutters, templates, cams, guides, levers, saws, knives, straight edges, fixtures, machine parts, punches, blanking dies, draw dies, forming dies, lamination dies, molding dies, swaging dies, screw dies and trim dies.

Tempering Temperature	ROCKWELL HARDNESS
As hardened	C 63-65
300°F	C 63-64
400°F	C 61-62
500°F	C 58-60
600°F	C 54-56
800°F	C 48-50
1000°F	C 39-41

The tempering table shows the hardness values obtained at various tempering temperatures on a two inch cube of steel hardened from 1475°F and tempered two hours.

NOMINAL ANALYSIS				
с	Mn	W	Cr	v
0.90	1.0	0.50	0.50	0.15

NOTE: This information is intended to server only as a guide. Variations in analysis, size, heat treatment, etc., may result in slight deviations from this data.

# INDUSTRIAL METAL SUPPLY CO.

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