

WM SCK COLD WORK DIE STEEL

WM SCK represents a chemical balance which provides an optimum combination of toughness, wear resistance, and minimum distortion during heat treatment. It is recognized that the addition of nickel, with this carbon content, greatly enhances the impact strength, while air hardening characteristics are readily achieved with this composition.

While lacking some of the extreme abrasion resistance of the high carbon-high chromium die steels, **WM SCK** provides equivalent freedom from distortion, and vastly increased toughness.

Carbon	.70
Manganese	.35
Silicon	1.00
Chromium	8.50
Vanadium	1.00
Molybdenum	1.40
Nickel	1.50

TYPICAL APPLICATIONS

Shear blades, slitter knives, chipper knives, trimming dies, cold forming dies, forming rolls.

THERMAL PRACTICE

FORGING-Heating for forging must be done slowly and uniformly. Soak through at 1900-2000°F, and reheat as often as necessary, stopping work when the temperature drops below 1700°F. After forging cool slowly in lime, mica, dry ashes, or furnace. **SCK** should always be annealed after forgings.

ANNEALING-Heat slowly to 1600-1650°F, hold until the entire mass is heated through, and cool slowly in the furnace (25°F per hour) to about 1000°F, after which the cooling rate may be increased. Suitable precautions must be taken to prevent excessive carburization or decarburization.

STRAIN RELIEVING-When desirable to relieve the strains of machining, heat slowly to 1050-1250°F, allow to equalize, and then cool in still air.

PREHEAT FOR HARDENING-Warm slightly before charging into the preheat furnace, which should be operating at about 1400-1500°F.

HARDENING-After thorough preheating, transfer to the hardening furnace, operating from 1900-2050°F, depending on the degree of hardening desired for the

application, and the size of the tool.

QUENCHING-SCK is an air hardening steel, and will develop full hardness on cooling in still air. If the scaled surface resulting from air cooling is objectionable, the part may be quenched in oil until it has lost its color(1000-1200°F), and then allowed to cool in still air. Parts should be allowed to cool to 150°F, or to where they can be held in the bare hand, and then tempered immediately.

TEMPERING-For the optimum combination of hardness and mechanical properties, it is recommended that **SCK** be tempered at or beyond its maximum secondary hardness, or in the range of 900-1000°F. Double tempering is recommended. The following chart may be used as a guide to the hardness which may be expected after air cooling and tempering at the indicated temperatures.

Hardening Temperature	Air Cooled From		
	1900°F	2000°F	2050°F
As Quenched	59.3RC	60.3RC	61.0RC

Doubled temp.

500°F	56.0	56.7	55.2
600°F	56.0	56.6	54.7
700°F	57.0	56.9	54.5
800°F	57.7	58.3	56.9
900°F	59.8	59.8	59.0
1000°F	57.8	59.4	61.0
1100°F	43.9	46.0	47.7
1200°F	36.0	37.7	37.7

Walter Metals Corporation
P.O. Box 207 - 793 Seasons Rd..
Hudson, Ohio 44236
(800)621-1228
FAX: (330)656-5970