

DATA SHEET

SPECTRUM METAL SOLUTIONS

GREENSBURG, PENNSYLVANIA 15601 U.S.A.

SPECTRUMWEAR ESR

KNIFE AND COLD WORK DIE STEEL

TYPICAL ANALYSIS	C	Si	Mn	Cr	W	V	Mo
	1.15	0.90	0.40	8.50	1.50	1.95	1.50

Spectrumwear ESR knife and cold work die steel is a versatile, medium chromium, air-hardening tool steel that is characterized by an excellent combination of toughness and wear resistance. These properties are further enhanced through **Electro-Slag Remelting (ESR)** and special thermo-mechanical processing, which produce an ultra-high microcleanliness, and a uniform, fine grained microstructure.

Typical applications for **Spectrumwear ESR** knife and cold work tool steel are industrial knives, sporting knives, shear knives, and dies for forming, stamping, and blanking.

PHYSICAL PROPERTIES:

Density: .278 lbs/in³ (7695 kg/m³)
Modulus of Elasticity: 30 x 10⁶

ANNEALING: Heat at a rate not to exceed 400 °F (222 °C) per hour to 1550-1600 °F (843-871 °C), hold for one hour per inch of thickness, two hours minimum. Furnace cool at a rate not exceeding 25 °F (11°C) per hour to 1000 °F (538 °C). Continue cooling in furnace or air. Annealed hardness should be a maximum of 241 HBW.

HARDENING:

Preheat at a rate not to exceed 400 °F (222 °C) per hour to 1150-1250 °F (621-677 °C) and equalize, then heat to 1500-1550 °F (816-843 °C).

Austenitizing: Heat rapidly from the preheat to 1850-1950 °F (1010-1066 °C). Equalize and soak for 20 minutes.

For max wear resistance, austenitize at 1950 °F (1066 °C).

For max toughness, austenitize at 1850 °F (1010 °C).

For optimum combination of wear and toughness, austenitize at 1900 °F (1038 °C)

Temper immediately after quenching.

Heat to the desired temperature and hold for a period of 1 hour per inch of thickness, two hours minimum. Air cool to ambient temperature. Double or triple tempers are suggested.

