

COMPARABLE STANDARD

UNI	EURONORM	W Nr	DIN	AFNOR	AISI/SAE	BS
X40CrMoV511KU	X40CrMoV511	1.2344	X40CrMoV51	Z40CDV5-1	H13	BH13

COMPOSITION

C	Si	Mn	Cr	Mo	V
0,40	1,0	0,4	5,2	1,4	1,0

CHARACTERISTICS OF THE PRODUCT

This steel grade can be obtained by the conventional process as well as electroslag remelting (ESR). The forging and thermal treatment practices produce a fine and homogeneous structure which guarantees characteristics of good machinability and good polishability during the manufacture of the die. After the thermal treatment, thanks to a more homogeneous distribution of Cr, Mo, V carbides, high levels of mechanical properties are reached, such as:

- *high temperature mechanical strength* (abrasion and compression)
- *shock and thermal fatigue strength* during the operation of the die.

This steel is characterized by good dimensional stability on thermal treatment, and is suitable for surface-hardening by nitriding.

PRODUCT APPLICATIONS

This steel, in view of its excellent range of characteristics, is particularly suitable for the manufacture of: – dies for die-casting of aluminium alloys, magnesium, etc. – dies and mandrels for the hot extrusion of aluminium alloys and steels – punches, dies, inserts for press-moulding, trimming tools, trimming shears, hot-shearing blades - moulds for plastic materials.

MECHANICAL CHARACTERISTICS

TEMP °C	180	200	300	400	500	600
DUREZZA HRC	55	55	54	54	56	48

DELIVERY CONDITION

Annealed to HB ≤ 220.

HEAT TREATMENT

The steel is supplied in the annealed condition for optimum machinability, and after the rough-machining (+possible stress relieving) operations it is hardened and tempered to achieve the characteristics required by its applications.

Soft annealing: heating to 820 ÷ 860°C, holding at temperature, furnace cooling to 650°C (10°C hour), then cooling in stationary air.

Stress relieving: after rough-machining, heating to 600 ÷ 650°C, holding at temperature furnace cooling to 550°C, then cooling in stationary air.

Hardening: preheating to 700 ÷ 800°C, austenitization at 1000 ÷ 1030°C, air/oil-quenching or in thermal bath at 500 ÷ 550°C.

Tempering: heating to 540 ÷ 620°C, holding at temperature. Make at least 2 tempering treatments.

