

# HOT WORK TOOL STEELS

## Available Product Shapes

Open Die Forgings

## Product Description

Tool steel that has proved highly satisfactory for hot and cold work and long-time service up to approx. 450°C (842°F) in various fields of application. Tools for hydrostatic presses, cold extrusion tools, cold heading and embossing tools, molds for the plastics industry, die casting tools for aluminium and zinc alloys, hot pressing tools, cold pilger mandrels.

## Properties

Ultra-high-strength maraging steel. In contrast to heat treatable steels its outstanding tensile properties are not due to a hardened structure with relatively high carbon content, but to precipitation of intermetallic phases from a ductile nickel bearing matrix containing almost no carbon. This results in the following advantages: High tensile strength and excellent yield point ratio, satisfactory toughness (reduction of area, elongation, impact strength, fracture toughness) even at low temperatures, superior notched tensile strength and heat checking resistance, practically no size change in heat treatment, no decarburization, no cracking, full hardening even in sizes above average. Convenient machinability in the solution annealed condition (machining is also possible in the precipitation-hardened condition). Good cold forming properties owing to reduced susceptibility to work hardening, eminent weldability, simple heat treatment at low temperatures.

Material designation	
1.6358	SEL
~1.2709	
K93120	UNS

## Chemical composition

C	Si	Mn	Mo	Ni	Co	Ti	Al
≤ 0,030	≤ 0,10	≤ 0,10	5.00	18.50	9.00	0.70	0.10

## Physical Properties at 20°C / 68°F

### Thermal Expansions

Temperature (°C / °F)	100 / 212	200 / 392	300 / 572	400 / 752	500 / 932	600 / 1112
Thermal expansion (10 <sup>-6</sup> m/(m.K) / 10 <sup>-6</sup> inch/(inch.F))	10.2 / 5.667	10.8 / 6	11 / 6.111	11.4 / 6.333	11.8 / 6.556	11.8 / 6.556

For more information see [www.voestalpine.com/boehler-edelstahl](http://www.voestalpine.com/boehler-edelstahl)

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ONE STEP AHEAD.