

31CrMoV9 All

General Information

31CrMoV9 is a steel which in general is intended for the fabrication of quenched and tempered parts, which are generally machined and subsequently nitrided.

For additional Heat Treatment Data, please visit the Heat Treatment Guide.

Similar designations

30CrMoV9, 1.8519

Chemical composition

Variant	Cast	Di		C%	Si %	Mn %	P %	S %	Cr%	Mo %	V %
6140	CC	8.26	Min	0.27	0.10	0.40	-	0.010	2.30	0.15	0.100
			Max	0.34	0.40	0.70	0.025	0.035	2.70	0.25	0.200
EN 10085	Std		Min	0.27	-	0.40	-	-	2.30	0.15	0.100
			Max	0.34	0.40	0.70	0.025	0.035	2.70	0.25	0.200

Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Elongation A ₅ [%]	Hardness	Impact (ISO-V) strength _{min}
6140	+AR	Round bar	25 < 150	-	-	-	< 420 HB	-
	+QT	Round bar	25 < 40	900*	1100-1300	9	-	20 °C 25 J (long)
		Round bar	40 < 100	800*	1000-1200	10	-	20 °C 30 J (long)
		Round bar	100 < 150	700*	900-1100	11	-	20 °C 35 J (long)

*R_{p0.2} * R_{eh}, ** R_{el}*

Transformation temperatures

	Temperature °C
MS	341
AC1	755
AC3	815

Other properties (typical values)

Youngs module (GPa)	Poisson´s ratio (-)	Shear module (GPa)	Density (kg/m3)
210	0.3	80	7800
Average CTE 20-300°C (µm/m°K)	Specific heat capacity 50/100°C (J/kg°K)	Thermal conductivity Ambient temperature (W/m°K)	Electrical resistivity Ambient temperature (µΩm)
12	460 - 480	40 - 45	0.20 - 0.25

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