Technical Datasheet

13MnSiCr7 XTP

General product description:

Xtreme Performance Technology enables the properties of 13MnSiCr7 steel to be modified to meet customer-specific processing or component requirements. In addition to its suitability for machining operations, 13MnSiCr7 XTP can also be cold-formed to produce components that are ideal for lightweight construction applications. 13MnSiCr7 XTP can be supplied with a high offset yield strength, making it particularly well suited for the fabrication of components that have to meet stringent strength requirements. The combination of a high offset yield strength and a very high material strength makes 13MnSiCr7 XTP particularly relevant for parts used in safety engineering applications. It is also well suited for components that are exposed to extremely low temperatures.

Mechanical-technological properties

Variant	$R_{p0.2}$ [MPa]	R_m [MPa]	A_5 [%]	A_g [%]	Z [%]	KV_{RT} [J]	T_{27} [°C]
moderate strength, extreme toughness	580	885	23	13	52	190	-101
high strength, extreme toughness	750	980	19	6	60	220	-101
very high strength, very high toughness	840	1200	15	6	45	100	-80

Typical mechanical-technological values

$R_{p0.2}$ = yield strength (at 0.2% offset), R_m = tensile strength, A_5 = elongation after fracture, A_g = uniform elongation, Z = reduction of area at fracture, KV = notch impact energy as per DIN EN ISO 148-1:2017-05, RT = room temperature, T = temperature, T_{27} = transition temperature at 27 J

Chemical composition (cast analysis by mass-%)

Variant	C	Si	Mn	P	S	Cr + Mo	V
min.	-	-	-	-	-	-	-
max.	0.18	0.80	2.20	0.080	0.015	1.00	0.20

The chemical analysis corresponds to 13MnSiCr7 (1.0956).

Maximum carbon equivalent:

Max. CET (CEV) 0.46 (0.80)

Typ. CET (CEV) 0.36 (0.60)

$$CET = C + \frac{Mn + Mo}{10} + \frac{Cr + Cu}{20} + \frac{Ni}{40}$$

$$CEV = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Cu + Ni}{15}$$

Surface properties:

Bars are 100 % eddy current tested acc. to surface quality class 3 of EN 10277-1. Bar ends untested on both sides with a length of 50 mm if not otherwise requested by customer.

Miscellaneous:

Other agreements acc. to order.

Condition of delivery:

Bars, XTP-treated

Diameter range 18 – 40 mm, tolerance h11

Bar straightness 0.5 mm/m

Fabrication and other recommendations:

Moderately good machinability, good weldability, good cold workability.

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