

Technical Datasheet

Micro-alloyed Steel 7MnB8 XTP

General product description:

Using our Xtreme Performance Technology the properties of the micro-alloyed steel 7MnB8 can be modified to meet customer-specific processing or component requirements. The combination of high strength and extreme toughness enables high-strength parts to be manufactured by cold forming without the need for additional heat treatment. For fasteners and connectors and for parts with complex geometries the higher strength steels are used, which exhibit excellent ductility even at very 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	425	700	22	10	64	≥ 150	-101
high strength, extreme toughness	625	800	20	8	65	≥ 150	-101
very high strength, high toughness	825	1000	13	4	65	≥ 100	-50

Typical mechanical-technological values

R_{p0.2} = yield strength (at 0.2% offset), R_m = tensile strength, A₅ = 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, T₂₇ = transition temperature at 27 J

Chemical composition (cast analysis by mass-%)

Variant	C	Si	Mn	P	S	Al	B	V	Ti
min.	0.06	0.15	1.85	-	-	0.02	0.0015	0.03	0.06
max.	0.09	0.25	1.95	0.015	0.015	0.04	0.0030	0.05	0.10

The chemical analysis corresponds to 7MnB8 (1.5519).

Maximum carbon equivalent:

Max. CET (CEV) 0.29 (0.43)

Typ. CET (CEV) 0.27 (0.40)

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

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

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:

Excellent weldability, comparatively good machinability, excellent cold workability.