

Technical Datasheet

Unalloyed Steel C15 XTP

General product description:

The unalloyed steel C15 can be optimised using Xtreme Performance Technology to produce a material with very high toughness for construction and mechanical components. The combined features of good elasticity and very high toughness makes this steel well suited to processing in advanced cold-shaping and cold-forming procedures.

Mechanical-technological properties

Variant	R _{p0.2} [MPa]	R _m [MPa]	A ₅ [%]	A _g [%]	Z [%]	KV _{RT} [J]	T ₂₇ [°C]
moderate strength, very high toughness	400	500	26	13	65	≥ 150	-70

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
min.	0.12	-	0.30	-	-
max.	0.18	0.40	0.80	0.045	0.045

The chemical analysis corresponds to C15 (1.0401).

Maximum carbon equivalent:

Max. CET (CEV) 0.28 (0.36)

Typ. CET (CEV) 0.22 (0.28)

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

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

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:

Moderately good weldability, moderately good machinability, excellent cold workability.