Technical Datasheet

Unalloyed Steel C35 XTP®

30.06.23 Rev. N°1

General product description

The unalloyed steel C35 can be optimized for construction and machine parts with high toughness requirements using Xtreme Performance Technology. In addition to machining manufacturing, the combination of good uniform elongation and high toughness enables production using demanding cold forming.

International description

Steel number	EU/DE	ASTM	JIS	AFNOR	B.S.	SS
1.0501	C35	1035	S34C/CM	C35	C35 40 CS/HS 080M30	C35

Chemical composition (cast analysis by mass-%)

Variant	C	Si	Mn	P	S	Cr	Mo	Ni	Cu
min.	0,32	0,10	0,50	–	–	–	–	–	–
max.	0,39	0,40	0,80	0,045	0,045	0,40	0,10	0,40	0,30

The analysis corresponds to C35 (1.0501) according to DIN EN ISO 683-1.
Customized chemical analyses are possible upon consultation.

Mechanical-technological properties

Variant	$R_{p0,2}$ [MPa]	R_m [MPa]	A_5 [%]	A_g [%]	Z [%]	KV_{RT} [J]	T_{27} [°C]
very good strength, very good toughness	500	660	23	12	55	≥110	-20
high strength, very good toughness	600	800	17	8	50	≥110	-20

Typical mechanical-technological properties:
$R_{p0.2}$ = 0.2% yield strength, R_m = tensile strength, A_5 = elongation at fracture,
A_g = uniform elongation, Z = reduction of area,
KV = Charpy impact strength according to DIN EN ISO 148-1:2017-05, RT = room temperature,
T = temperature, T_{27} = transition temperature of the Charpy impact strength at 27 J.

Customized mechanical properties are possible after consultation.

Dynamic properties

C35 XTP®	Bending fatigue strength [MPa]	Tensile strength [MPa]
Ø 22,3 mm	305	642

Smooth samples from the core

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Carbon equivalent

Max. CET (CEV)	0,52 (0,67)
Typ. CET (CEV)	0,46 (0,55)

$$CET = C + \frac{Mn + Mo}{10} + \frac{Cr + Cu}{20} + \frac{Ni}{40} \qquad CEV = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Cu + Ni}{15}$$

Microstructure

The microstructure and the microscopic oxide purity grade according to DIN 50602 can be agreed upon. The grain size according to ASTM E 112 is ≥ 10.

Surface properties

The surface condition complies with the requirements of SN EN 10277. The bars are crack-tested according to surface quality class 3 as standard. In the standard version, the ends of the bars up to 50 mm are not tested.

Miscellaneous

Other agreements according to order.

Condition of delivery

- Bar steel, XTP® treated
- Dimension range 18 - 40 mm
- Delivery length up to 8,000 mm
- Tolerance h11 and bar straightness 0.5 mm/m according to DIN EN 10278

Fabrication and other recommendations

Comparatively good machinability, very good cold formability.

Your benefits at a glance

Cold toughness

- Component safety even at low temperature

Cold formability despite increased strength

- Higher load capacity and component safety
- Longer service life and lower maintenance costs

Highest quality and productivity

- Optimized diameter tolerances and straightness
- Low decarburization and scaling
- State-of-the-art process control

Homogeneous properties during semi-hot forming

- Fine-grained structure throughout the entire component

For further info on our product range of tool steel, stainless steel and Engineering steel please visit www.swisssteelgroup.com

Discover our Green Steel portfolio on www.swissgreensteel.com

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