

High-strength special steel HSX[®] Z10

Chemical composition

(cast analysis in percentage by mass)

Element	C	Si	Mn	P	S	N	Cr	Mo	V
min	0,26	0,15	1,20	-	0,007	0,010	-	-	0,08
max.	0,33	0,80	1,60	0,025	0,020	0,020	0,30	0,08	0,20

The analysis corresponds to 30MnVS6 steel (EN steel number: 1.1302)

Sulfur range outside that specified for 30MnVS6 steel, but admissible according to EN 10267:1998

Deviations in the product analysis from the limits specified in the cast analysis are in accordance with EN 10267:1998

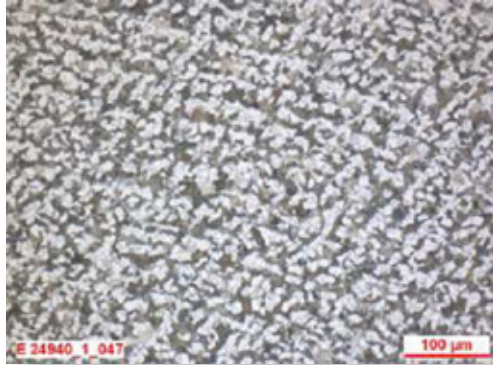
Physical and mechanical properties

Property	Yield point $R_{p0.2}$ MPa	Tensile strength R_m MPa	Elongation after fracture A_5 %
min	850	900	10
max	-	1100	-

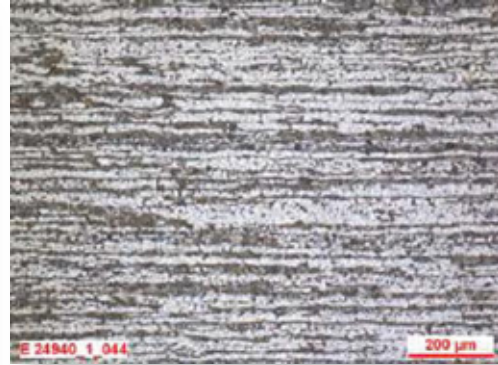
Careful control of production process parameters allows the physical and mechanical properties to be tailored to the needs of specific applications

Microstructure

HSX® Z10 has a ferrite-pearlite microstructure. The average grain size is ≥ 6 (grain size number determined on the basis of ASTM E112).

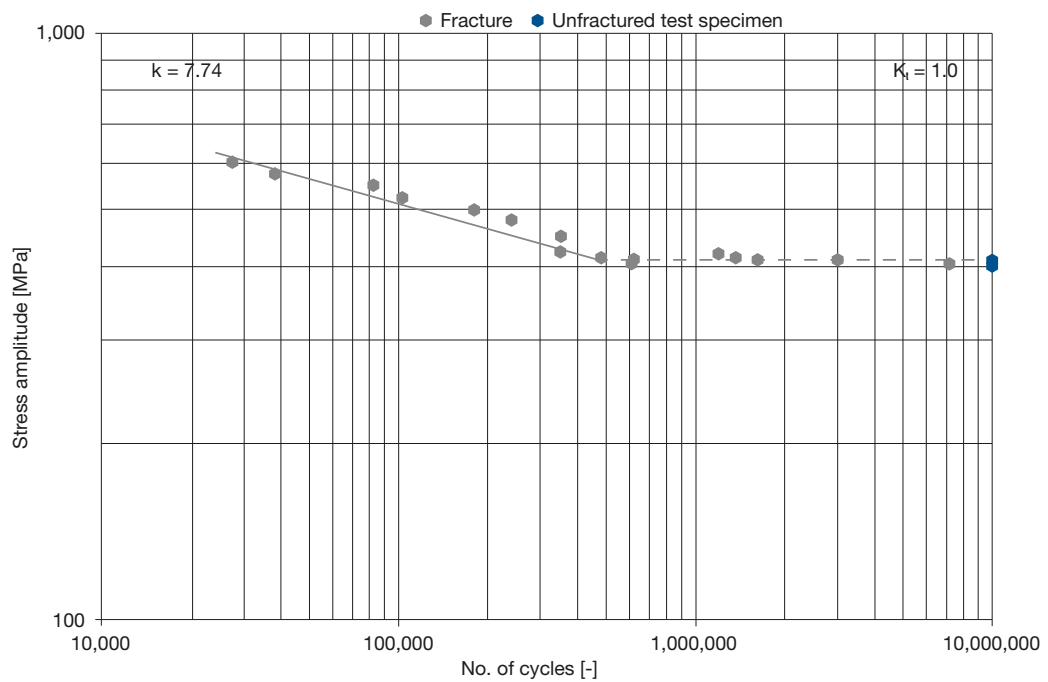


Transverse section, drawn 19.0 mm,
Location of specimen: $\frac{1}{2}$ radius,
Etchant: 2 % HNO₃



Longitudinal section, drawn 19.0 mm,
Location of specimen: $\frac{1}{2}$ radius,
Etchant: 2 % HNO₃

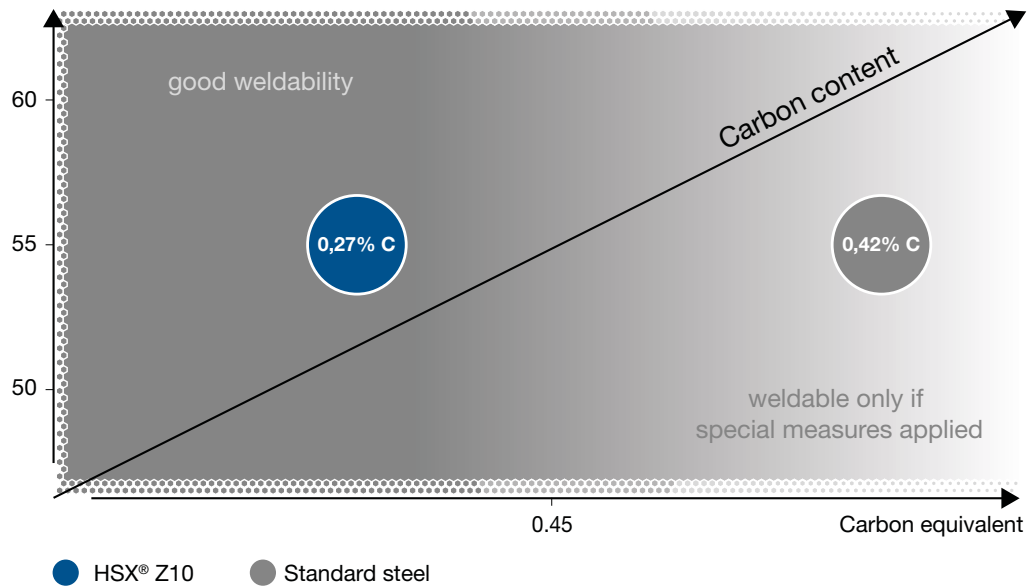
Fatigue strength under alternating tension-compression loading



S-N curve ($R = -1$) in the low-cycle and high-cycle regions for $P_S = 50\%$ and $\gamma = 50\%$
[P_S : probability of survival; γ : confidence level]

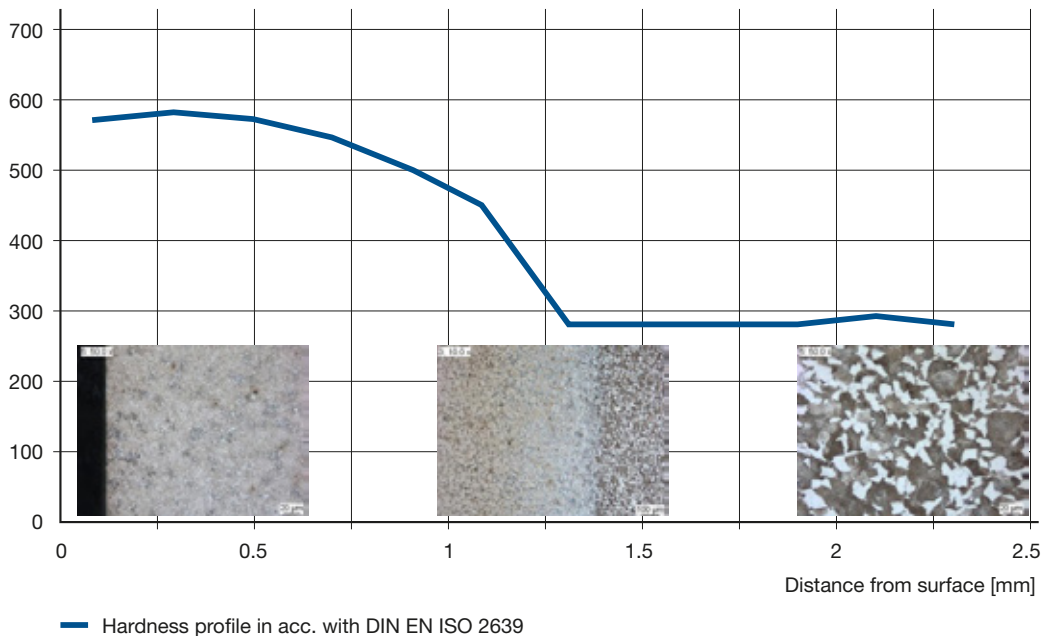
Joining processes – Welding

Surface hardness in HRC after induction hardening



High-frequency induction hardening

Hardness [HV/10]



The maximum achievable surface hardness is approximately ~ 55 HRC.

Surface condition

The quality of the surface meets the specifications in EN 10277-1.

Round bars are subjected to crack detection testing to verify conformity with surface quality class 3.

However, no testing is carried out on the final 50 mm at the ends of standard issue rods.

Miscellaneous

Other agreements may be specified in the order documents.

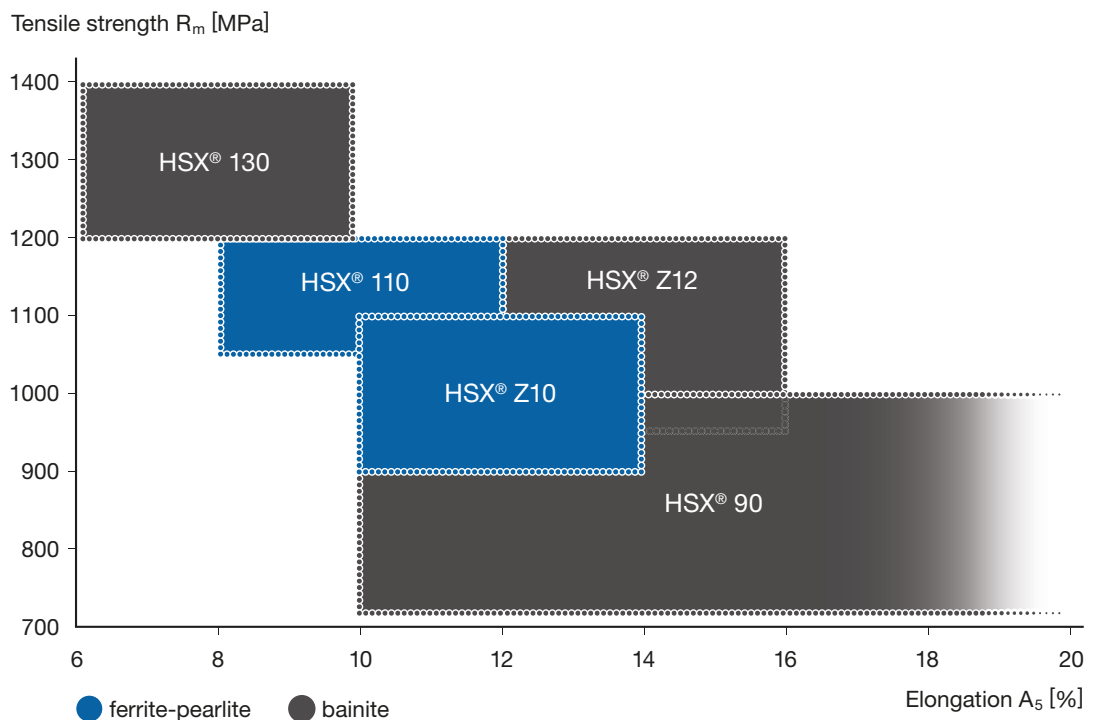
Delivery condition

Bright steel, drawn bars

Dimensional range: 4.15 mm to 55 mm

ISO tolerance: h11

HSX® Z10 Comparison with other products



This document is subject to modification without notice. Errors and omissions excepted. Only those material properties agreed at the time the contract was concluded shall be considered binding.