



Induction Hardened and Ground Stainless Steel Linear Shafts

DIAMETER 6 - 100 mm

STEEL GRADES

Steel Grade	DIN	B.S	UNI	JIS	GOST	ASI/SAE/ASTM	Werkstoff
X46Cr13	X46Cr13	(420S45)	X40Cr14	–	40Ch13	420C	1,4034

CHEMICAL COMPOSITION - IN % BY WEIGHT

Steel Grade	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	N
X46Cr13	0.43-0.50	≤1.00	≤1.00	≤0.040	≤0.030	12.5-14.5		–	–	–	–

MECHANICAL PROPERTIES

Steel Grade	Diameter	Tensile Strength N/mm ²	Yield Strength N/mm ²	Elongation A%	Hardness Brinell N/mm ²	Norm	Tristar Steel Product Code
X46Cr13	5 ≤ Ø ≤ 100	Max.800		–	Max.245	EN 10088-3	STAR WRB

STRAIGHTNESS

5 ≤ Ø ≤ 10mm: max. 0.3 mm/1000 mm
 12 ≤ Ø ≤ 18mm: max. 0.25 mm/1000 mm
 20 ≤ Ø ≤ 50mm: max. 0.20 mm/1000 mm
 50 < Ø ≤ 120mm: max. 0.15 mm/1000 mm

ROUNDNESS

5 ≤ Ø ≤ 10mm: max. 4 μm
 12 ≤ Ø ≤ 18mm: max. 5 μm
 20 ≤ Ø ≤ 30mm: max. 6 μm
 30 < Ø ≤ 50mm: max. 7 μm
 50 < Ø ≤ 80mm: max. 8 μm
 80 < Ø ≤ 120mm: max. 10 μm

SURFACE HARDNESS

Surface hardness beneath
the chrome layer
X46Cr13 min. 52 HRC

TOLERANCE

h6, other on request

SURFACE ROUGHNESS

Ra: max. 0.15 μm

STANDARD LENGTH

5800- 7500 mm, other on request

Diameter (mm)	Hardening Depth (mm)
6 - 10	min. 0.4
12 - 18	min. 0.6
20 - 30	min. 0.9
32 - 50	min. 1.5
60 - 90	min. 2.2
100	min. 3.2