

Chemical analysis

C%	Si%	Mn%	P%	S%	Cr%
0.43 - 0.50	max 1.0	max 1.0	max 0.040	max 0.015	12.5 - 14.5

Mechanical Properties

HB max. 245

Corresponding standards

A-LINE	EN 10088	Werkstoff-Nr.	UNI	AFNOR	GOST	ASTM
A-LINE WRBZ	X46Cr13	1.4034	X40Cr14	Z44Cr13	40Ch13	420C

Surface Roughness

The surface roughness (Ra) is maximum 0.20 µm.

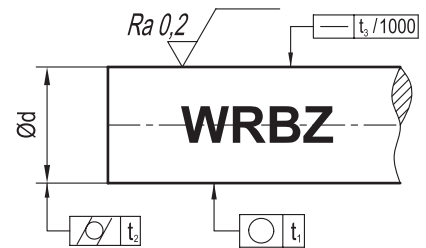
Diameter tolerance

Class "L" is standard; other tolerances can be supplied upon request.

Tolerance Range according to ISO 286-2

Table for Class "L" (inch)

Size (inch)	Size (mm)	upper (inch)	lower (inch)
1/4"	6.35	-0.0005	-0.001
3/8"	9.525	-0.0005	-0.001
1/2"	12.7	-0.0005	-0.001
5/8"	15.875	-0.0005	-0.001
3/4"	19.05	-0.0005	-0.001
1"	25.4	-0.0005	-0.001
1" ¼	31.75	-0.0005	-0.001
1" ½	38.1	-0.0006	-0.0011
2"	50.8	-0.0006	-0.0013
2" ¼	57.15	-0.0007	-0.0015



Hardness depth, roundness, parallelism, straightness

Shaft Diameter d	Shaft Diameter d	Weigh per metre	Shaft part number	Standard length	Hardening depth Rht DIN 50190	Standard tolerance Class "L"	Roundness (circular) t1	Parallelism (cylindric) t2	Straightness t3
inch	mm	kg		inch	inch	inch	inch	inch	inch/m
1/4	6.35	0.25	WRBZ 6	237	0.019 - 0.031	-0.0005/-0.001	0.0002	0.0002	0.008
3/8	9.525	0.56	WRBZ 9	237	0.027 - 0.039	-0.0005/-0.001	0.0002	0.0002	0.008
1/2	12.7	0.99	WRBZ 12	237	0.031 - 0.047	-0.0005/-0.001	0.0002	0.0003	0.008
5/8	15.875	1.55	WRBZ 15	237	0.043 - 0.059	-0.0005/-0.001	0.0002	0.0003	0.008
3/4	19.05	2.24	WRBZ 19	237	0.047 - 0.059	-0.0005/-0.001	0.0002	0.0004	0.004
1	25.4	3.97	WRBZ 25	237	0.059 - 0.066	-0.0005/-0.001	0.0002	0.0004	0.004
1¼	31.75	6.22	WRBZ 31	237	0.059 - 0.074	-0.0005/-0.001	0.0002	0.0004	0.004
1½	38.1	8.95	WRBZ 38	237	0.094 - 0.114	-0.0006/-0.0011	0.0003	0.0004	0.004
2	50.8	15.91	WRBZ 50	237	0.106 - 0.125	-0.0006/-0.0013	0.0003	0.0005	0.004
2¼	57.15	20.13	WRBZ 57	237	0.114 - 0.129	-0.0007/-0.0015	0.0003	0.0005	0.004

Surface Hardness

Steel grade X46Cr13: 55±3 HRC

Packaging

Bars are degreased and oiled, placed in bundles that are wrapped in wax paper and raffia.

On request with additional cost

- Wooden boxes



Our products packaging
is recyclable

Marking

Each batch has a label showing: manufacturing date, product name, diameter, tolerance range, number of bars, heat No. to facilitate full traceability.

Certifications

ISO 9001

ISO 14001

OHSAS 18001