NIMET

WRB

# Induction hardened and ground stainless steel linear shafts

## Ni-WRB

X46Cr13 (W1.4034)

**Dimensions**
Ø6 - 50 mm

**Surface hardness**
56±2 HRC

**Surface roughness**
Ra max. 0.20 µm

**Standard indicative length**
6400 (-0/+200) mm
other, on request

**Surface hardening depth, SHD**
according to EN ISO 15787

**On request**
special lengths, tolerances and dimensions

### Chemical composition - in % by weight

| Steel grade | C | Si | Mn | P | S | Cr | Ni | Mo | V |
|---|---|---|---|---|---|---|---|---|---|
| X46Cr13 | 0.43 ÷ 0.50 | max. 1.0 | max. 1.0 | max. 0.040 | max. 0.030 | 12.5 ÷ 14.5 | - | - | - |

### Mechanical properties

| Steel grade | Diameter Ø mm | Tensile strength $R_m$ N/mm² | Yield strength $R_{p0.2}$ N/mm² | Elongation $A_5$ % | Hardness Brinell HB |
|---|---|---|---|---|---|
| X46Cr13+A | 6 < Ø ≤ 50 | max. 800 | - | - | max. 245 |

A=annealed

### Steel grades correspondences

| EN | Werkstoff | DIN | B.S. | UNI | JIS | GOST | AISI / SAE / ASTM |
|---|---|---|---|---|---|---|---|
| X46Cr13 | 1.4034 | X46Cr13 | (420S45) | X40Cr14 | - | 40Ch13 | 420C |

### Ni-WRB / Metric

| Series | Shaft diameter Ø mm | Surface hardening depth SHD (min. + tol.) mm | Roundness $t_1$ max. µm | Parallelism $t_2$ max. µm | Straightness $t_3$ max. mm/m | Standard tolerance ISO h6 µm |
|---|---|---|---|---|---|---|
| **NI-WRB 6** | 6 | 0.4 + 0.9 | 4 | 6 | 0.25 | 0 / -8 |
| **NI-WRB 8** | 8 | 0.4 + 0.9 | 4 | 6 | 0.20 | 0 / -9 |
| **NI-WRB 10** | 10 | 0.4 + 0.9 | 4 | 6 | 0.20 | 0 / -9 |
| **NI-WRB 12** | 12 | 0.6 + 0.9 | 5 | 8 | 0.20 | 0 / -11 |
| **NI-WRB 14** | 14 | 0.6 + 0.9 | 5 | 8 | 0.20 | 0 / -11 |
| **NI-WRB 15** | 15 | 0.6 + 0.9 | 5 | 8 | 0.20 | 0 / -11 |
| **NI-WRB 16** | 16 | 0.6 + 0.9 | 5 | 8 | 0.20 | 0 / -11 |
| **NI-WRB 20** | 20 | 0.8 + 0.8 | 6 | 9 | 0.20 | 0 / -13 |
| **NI-WRB 25** | 25 | 0.9 + 0.8 | 6 | 9 | 0.15 | 0 / -13 |
| **NI-WRB 30** | 30 | 0.9 + 0.8 | 6 | 9 | 0.15 | 0 / -13 |
| **NI-WRB 35** | 35 | 1.5 + 1.3 | 7 | 11 | 0.15 | 0 / -16 |
| **NI-WRB 40** | 40 | 1.5 + 1.3 | 7 | 11 | 0.15 | 0 / -16 |
| **NI-WRB 50** | 50 | 1.5 + 1.3 | 7 | 11 | 0.15 | 0 / -16 |



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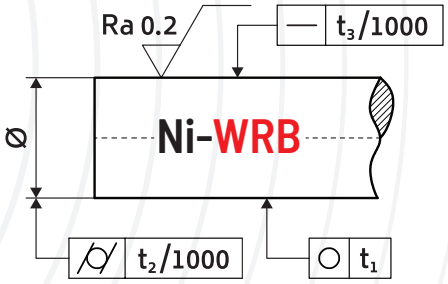


**Dimensions**
Ø1/4" - 2"

**Surface hardness**
56±2 HRC

**Surface roughness**
Ra max. 0.20 µm

**Standard indicative length**
6400 (-0/+200) mm / 251.96 (-0/+8)"
other, on request

**Surface hardening depth, SHD**
according to EN ISO 15787

**On request**
special lengths, tolerances and dimensions

## Chemical composition - in % by weight

| Steel grade | C | Si | Mn | P | S | Cr | Ni | Mo | V |
|---|---|---|---|---|---|---|---|---|---|
| X46Cr13 | 0.43 ÷ 0.50 | max. 1.0 | max. 1.0 | max. 0.040 | max. 0.030 | 12.5 ÷ 14.5 | - | - | - |

## Mechanical properties

| Steel grade | Diameter Ø inch | Tensile strength $R_m$ N/mm² | Yield strength $R_{p0.2}$ N/mm² | Elongation $A_5$ % | Hardness Brinell HB |
|---|---|---|---|---|---|
| X46Cr13+A | 0.25 < Ø ≤ 2 | max. 800 | - | - | max. 245 |

A=annealed

## Steel grades correspondences

| EN | Werkstoff | DIN | B.S. | UNI | JIS | GOST | AISI / SAE / ASTM |
|---|---|---|---|---|---|---|---|
| X46Cr13 | 1.4034 | X46Cr13 | (420S45) | X40Cr14 | - | 40Ch13 | 420C |

## Ni-WRB / Imperial

| Series | Shaft diameter Ø mm | Shaft diameter Ø inch | Surface hardening depth SHD (min. + tol.) inch | Roundness $t_1$ max. inch | Parallelism $t_2$ max. inch | Straightness $t_3$ max. inch/ft | Standard tolerance Class "L" inch |
|---|---|---|---|---|---|---|---|
| **NI-WRB 6.35** | 6.35 | 0.25 | 0.016 + 0.035 | 0.00016 | 0.00024 | 0.00308 | -0.0005 / -0.001 |
| **NI-WRB 9.525** | 9.525 | 0.375 | 0.016 + 0.035 | 0.00016 | 0.00024 | 0.00246 | -0.0005 / -0.001 |
| **NI-WRB 12.7** | 12.7 | 0.5 | 0.024 + 0.035 | 0.00020 | 0.00031 | 0.00246 | -0.0005 / -0.001 |
| **NI-WRB 15.875** | 15.875 | 0.625 | 0.024 + 0.035 | 0.00020 | 0.00031 | 0.00246 | -0.0005 / -0.001 |
| **NI-WRB 19.05** | 19.05 | 0.75 | 0.032 + 0.032 | 0.00024 | 0.00035 | 0.00246 | -0.0005 / -0.001 |
| **NI-WRB 25.4** | 25.4 | 1 | 0.032 + 0.032 | 0.00024 | 0.00035 | 0.00185 | -0.0005 / -0.001 |
| **NI-WRB 31.75** | 31.75 | 1.25 | 0.059 + 0.051 | 0.00028 | 0.00043 | 0.00185 | -0.0005 / -0.001 |
| **NI-WRB 38.1** | 38.1 | 1.5 | 0.059 + 0.051 | 0.00028 | 0.00043 | 0.00185 | -0.0006 / -0.0011 |
| **NI-WRB 50.8** | 50.8 | 2 | 0.087 + 0.063 | 0.00028 | 0.00043 | 0.00185 | -0.0006 / -0.0013 |



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