# BÖHLER FOX CN 13/4

Basic stick electrode, high-alloyed, stainless

## Classifications

| EN ISO 3581-A | EN ISO 3581-B | AWS A5.4 |
|---|---|---|
| E 13 4 B 6 2 | ES410NiMo-15 | E410NiMo-15 |

## Characteristics and typical fields of application

Basic electrode, low-hydrogen, suited for similar soft martensitic and martensitic-ferritic rolled, forged, and cast steels. Mainly used in the construction of hydro turbines, compressors. Resistant to corrosion from water, steam, and sea water atmosphere. Thanks to an optimum balance of alloying components the weld deposit yields very good ductility and toughness & cracking resistance despite of its high strength. Excellent operating characteristics, easy slag removal smooth bead appearance and low hydrogen weld metal (HD ≤ 5 ml/100 g). Metal recovery approx. 130 %. Positional weld ability is offered up to ø 3.2 mm electrodes. BÖHLER FOX CN 13/4 as well as the GTAW-rod BÖHLER CN 13/4-IG and the analogous GMAW wire are very popular in the construction of hydro turbines.

## Base materials

1.4317 GX4CrNi13-4, 1.4313 X3CrNiMo13-4, 1.4407 GX5CrNiMo13-4, 1.4414 GX4CrNiMo13-4
ACI Gr. CA 6 NM, S41500

## Typical analysis of all-weld metal (wt.-%)

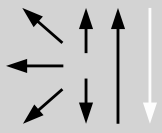
| | C | Si | Mn | Cr | Ni | Mo |
|---|---|---|---|---|---|---|
| wt-% | 0.035 | 0.3 | 0.5 | 12.2 | 4.5 | 0.5 |

## Mechanical properties of all-weld metal

| Condition | Yield strength $R_{p0,2}$ | Tensile strength $R_m$ | Elongation A ($L_0$=5$d_0$) | Impact work ISO-V KV J | | |
|---|---|---|---|---|---|---|
| | MPa | MPa | % | +20 °C | –20 °C | –60 °C |
| u | **890** | **1090** | **12** | **32** | | |
| a | **680** (≥ 500) | **910** (≥ 760) | **17** (≥ 15) | **66** | **55** | **50** |
| q | **670** (≥ 500) | **850** (≥ 760) | **18** (≥ 15) | **95** | | |

u untreated, as welded
a annealed, 600 °C/2 h / air
q quenched/tempered, 950 °C/0.5 h / air + 600 °C/2 h / air

## Operating data



| Polarity: | Redrying: | Electrode identification: | ø (mm) | L mm | Amps A |
|---|---|---|---|---|---|
| DC ( + ) | 300 – 350 °C, min. 2 h | FOX CN 13/4 410NiMo-15 E 13 4 B | 2.5 | 350 | 60 – 90 |
| | | | 3.2 | 450 | 90 – 130 |
| | | | 4.0 | 450 | 120 – 170 |
| | | | 5.0 | 450 | 160 – 220 |

Preheating and interpass temperatures of heavy-wall components 100 – 160 °C.
Maximum heat input 15 kJ/cm. Post weld heat treatment at 580 – 620 °C.

## Approvals

TÜV (3232.), LTSS, SEPROZ, CE