

**AFROX NIMROD 59KS**



Afrox Nimrod 59KS is MMA electrode with special basic flux covering on high purity NiCrMo core wire to give clean homogenous weld metal. Very low levels of C and Si minimise the occurrence of deleterious precipitates in the as-welded condition. The special flux coating provides exceptional operability, optimised for DC+ welding in all positions including fixed pipework in the ASME 5G/6G positions. The electrode is equally suitable for general fabrication welds. Recovery is about 110% with respect to core wire, 65% with respect to whole electrode.

The weld deposit composition of 59% Ni-23% Cr-16% Mo is designed to match the nickel base corrosion resistant alloy commonly known as alloy 59. The high level of Mo is similar to alloys C276 and C4 but performance in a wide range of more

oxidising media is significantly enhanced by increasing Cr to 23% in alloy 59. Total alloying exceeds the level typically present in alloy C22; it is therefore considered suitable for welding this group of alloys.

Alloy 59 consumables also provide strong, tough Nb-free weld metal for **dissimilar** welds in superaustenitic and superduplex stainless steels or combinations of these with nickel base alloys. Some authorities do not allow or have discontinued use of 625 type consumables for such applications, where deleterious Nb-rich precipitates may form in diluted or partially mixed regions around the fusion boundary. Alloy C276 is possibly a more economic alternative depending on the required properties in this situation.

**APPLICATIONS**

Applications of alloy 59 in aggressively corrosive media include **scrubbers for flue gas desulphurisation (FGD), digesters and papermaking equipment, chemical process plants, corrosion resistant overlays** and in severe **offshore and petrochemical** environments.

**MATERIALS TO BE WELDED**

**Alloy 59 and similar:**

**ASTM/UNS** N06059  
**DIN** 2.4605 (NiCr23Mo16Al)  
**Proprietary** Nicrofer 5923hMo (Krupp VDM)  
 Inconel Alloy 686 (Special Metals) +W  
 Hastelloy Alloy C2000 (Haynes) +Cu

**Superaustenitics including:**

**ASTM/UNS** S32654, S31254, S34565  
**Proprietary** 654SMO (Avesta Polarit)  
 Uranus B66 (Usinor Industrieel)

**Alloy C22 and similar:**

**ASTM/UNS** N06022  
 A494 Grade CX2MW (cast)  
**DIN** 2.4602 (NiCr21Mo14W)  
 2.4811, 2.4836 (NiCr20Mo15)  
 2.4697 (G-NiCr20Mo15)(cast)  
**Proprietary** Hastelloy Alloy C22 (Haynes)  
 Nicrofer 5621hMoW (Krupp VDM)

Also dissimilar joints between any combination of the above and dissimilar joints between them and superduplex stainless steels.

**CLASSIFICATIONS**

|     |               |                        |
|-----|---------------|------------------------|
| AWS | A5.11         | ENiCrMo-13             |
| BS  | EN (proposed) | E Ni 6059              |
| DIN | 1736          | EL-NiCr22Mo16 (2.4609) |

**CHEMICAL ANALYSIS  
(ALL WELD METAL)**

|                     |           |                     |           |
|---------------------|-----------|---------------------|-----------|
| <b>% Carbon</b>     | 0.02 max  | <b>% Chrome</b>     | 0.015 max |
| <b>% Manganese</b>  | 1.0 max   | <b>% Nickel</b>     | 57,0 min  |
| <b>% Silicon</b>    | 0.2 max   | <b>% Molybdenum</b> | 15.0-16.5 |
| <b>% Sulphur</b>    | 0.010 max | <b>% Iron</b>       | 4.0-7.0   |
| <b>% Phosphorus</b> | 0.03 max  |                     |           |

The information contained or otherwise referenced herein is presented only as typical without guarantee or warranty, and Aprox expressly disclaims any liability incurred from any reliance thereon. No data is to be construed as recommended for any welding condition or technique not controlled by Aprox.

For more information contact the **Aprox Customer Service Centre**,  
 tel: **0860 020202** or e-mail: [customer.service@afrox.boc.com](mailto:customer.service@afrox.boc.com)  
 Website: [www.afrox.com](http://www.afrox.com)

## AFROX NIMROD 59KS

## TYPICAL MECHANICAL PROPERTIES (ALL WELD METAL IN THE AS WELDED CONDITION)

|                        |         |
|------------------------|---------|
| 0.2% Proof Stress      | 520 MPa |
| Tensile Strength       | 750 MPa |
| % Elongation on 4d     | 32      |
| % Elongation on 5d     | 30      |
| % Reduction of area    | 30      |
| Impact energy at -50°C | 50J     |

## PACKING DATA AND OPERATING CURRENT

(DC+)

| Diameter<br>mm | Electrode Length<br>mm | Current Amps | Item Number | Pack Mass<br>Kg |
|----------------|------------------------|--------------|-------------|-----------------|
| 3,2            | 300                    | 75-120       | 077/659     | 4,5             |

## STORAGE AND RE-BAKING

**Hermetically sealed ring-pull metal tin** with unlimited shelf life. Direct use from tin is satisfactory for longer than a working shift of 8h. Excessive exposure of electrodes to humid conditions will cause some moisture pick-up and increase the risk of porosity.

For electrodes that have been exposed:

**Redry** 250 – 300°C/1-2h to restore to as-packed condition. Maximum 350° C, 3 cycles, 10h total.

**Storage** of redried electrodes at 50 – 200°C in holding oven or heated quiver: no limit, but maximum 6 weeks recommended. Recommended ambient storage conditions for opened tins (using plastic lid): < 60% RH, > 18°C.

The information contained or otherwise referenced herein is presented only as typical without guarantee or warranty, and Afrox expressly disclaims any liability incurred from any reliance thereon. No data is to be construed as recommended for any welding condition or technique not controlled by Afrox.

For more information contact the Afrox Customer Service Centre,  
tel: 0860 020202 or e-mail: [customer.service@afrox.boc.com](mailto:customer.service@afrox.boc.com)  
Website: [www.afrox.com](http://www.afrox.com)

 **AFROX**  
THE PROFESSIONAL'S CHOICE