

NiCrMo 59 (alloy 59)

CATEGORY GMAW-GTAW Solid wires

TYPE Nickel-Chromium-Molybdenum based alloy for gas metal arc welding

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.

PROPERTIES 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.

CLASSIFICATION

| | |
|------------|----------------------------------|
| AWS | A5.14M : ER NiCrMo-13 |
| EN ISO | 18274: S Ni 6059 (NiCr23Mo16) |
| DIN: W.Nr. | 2.4607 |
| DIN | 1736: |

SUITABLE FOR duplex, super-duplex and super-austenitic stainless steels, nickel alloys such as UNS N06059 and N06022, INCONEL alloy C4, C-276, and INCONEL alloys 622, C22, 625, and 686 CPT, Alloy 31, Alloy 59, 1.4562, 2.4605, 2.4602, 2.4610, 2.4819, NiCr21Mo14W, NiCr23Mo16Al, NiMo16Cr15Ti, NiMo16Cr15W

APPROVALS CE approved

WELDING POSITIONS:



ALL-WELD METAL ANALYSES % (TYPICAL)

| C | Ni | Cr | Mo | Fe |
|-------|-----|----|----|----|
| <0.01 | rem | 23 | 16 | 1 |

MECHANICAL PROPERTIES

| Heat Treatment | R _{p0.2} (N/mm ²) | R _m (N/mm ²) | A ₅ (%) | Impact Energy (J) ISO-V | | | Hardness HRc / HV |
|----------------|---|--|-----------------------|-------------------------|-------|-------|----------------------|
| | | | | 20°C | -40°C | -60°C | |
| AW | >450 | >720 | >35 | >90 | | | |

AW: as welded

WELDING PARAMETERS / PACKING

| D (mm) | Welding Parameters | | | Packing | |
|--------|--------------------|-------------|------------|------------|-------------|
| | Voltage (V) | Current (A) | spool type | kg / spool | kg / pallet |
| 0.8 | 19-25 | 90-130 | S-300 | 15 | 1080 |
| 1.0 | 23-27 | 130-150 | S-300 | 15 | 1080 |
| 1.2 | 24-29 | 150-220 | S-300 | 15 | 1080 |

REDRYING TEMPERATURE not required

GAS ACC. EN ISO 14175: I1, I3 (Ar-He/70-30%)