

AFROX FILMAX NICU-7
AFROX TIG NICU-7

Afrox NiCu-7 solid wires for TIG and MIG welding are designed to deposit 65% Ni-30% Cu weld metal based on Monel alloy 400 with raised levels of manganese and titanium to suppress hot cracking and porosity. It is optimised to give the highest as-welded ductility and strength attainable in weld metal of this type.

For welding alloy 400 and similar parent material to itself and to others in the Ni-Cu alloy system, such as pure nickel and cupronickel. Welds in alloy K500 are satisfactory, but cannot match the strength of this precipitation-hardened alloy. Castings of alloy 400 with up to about 1.5% Si are welded with Nimrod 190, but higher silicon grades such as BS3071 NA2 and ASTM A743 M35-2 are virtually unweldable because of HAZ cracking.

For **dissimilar** joints between alloy 400 and other alloys or steels, sensitivity to dilution by Fe (20-30%) or Cr (3-6%) can lead to low ductility (or bend-test fissuring) in weld metal close to the fusion boundary. Direct welds to mild or low alloy steels are satisfactory with dilution control, although ENiCrFe-X (ERNiCr-3 wire) is preferable and necessary for stainless and higher chromium alloys. Alternatively, the steel or alloy can be buttered with pure nickel and this procedure is also useful when **surfacing** with alloy 400 consumables.

Alloy 400 has a useful combination of strength, thermal conductivity and resistance to corrosion by seawater, inorganic salts, sulphuric and hydrofluoric acids, hydrogen fluoride and alkalis.

APPLICATIONS

Applications include **heat exchangers, piping, vessels and evaporators** in the **offshore, marine, chemical, petrochemical** and **power engineering** industries.

MATERIALS TO BE WELDED

ASTM-ASME	BS	DIN	Proprietary
UNS N04400	NA13	2.4360	Monel alloy 400, R405, K500 (Special Metals) Nicrocorros (VDM)
UNS N04405	NA1 (cast)	2.4361	
UNS N05500	2.4365 (cast)		
A494 M-35-1 (cast)			
A494 M-35-2 (cast)			

CLASSIFICATIONS

AWS	A5.14	ERNiCu-7	DIN	1736	SG-NiCu30MnTi (2.4377)
BS	EN (proposed) Ni 4060		BS2901	PT5	NA33

**CHEMICAL ANALYSIS
(WIRE ANALYSIS)**

% Carbon	0.15 max	% Nickel	62.0-69.0
% Manganese	3.0-4.0	% Copper	28.0-34.0
% Silicon	1.0 max	% Titanium	1.5-3.0
% Sulphur	0.015 max	% Iron	2.5 max
% Phosphorus	0.02 max	% Aluminium	1.25 max

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

0.2% Proof Stress	280 MPa	% Elongation on 5d	38
Tensile Strength	525 MPa	% Impact Energy -30°C	120J
% Elongation on 4d	41		

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PACKING DATA

MIG			TIG			
Diameter mm	Item Number	Pack Mass Kg	Diameter mm	Item Number	Consumable Length mm	Pack Mass Kg
1,2	077/688	15	1,6	077/682	1000	5,0
1,6	077/689	15	2,0	077/683	1000	5,0
-	-	-	2,4	077/684	1000	5,0

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