

Product description

Basic agglomerated flux for submerged arc welding and strip cladding using 65NiCu wire (AWS ERNiCu-7).

Basicity Index (according to Boniszewski) is 0.6. Particle size is 0.4 – 1.4mm. Nominal composition of the flux is:

50%(SiO₂) + 30%(CaO+MgO+MnO+K₂O) + 12%(CaF₂) + 8%(Al₂O₃).

Specifications

BS EN 760 S A CS 2

ASME IX Qualification

QW432 F-No -, QW442 A-No -.

Materials to be welded

ASTM-ASME	BS	DIN
UNS N04400	NA13	2.4360
UNS N04405	NA1 (cast)	2.4361
UNS N05500		2.4365 (cast)
A494 M-35-1 (cast)		
A494 M-35-2 (cast)		

Proprietary

Monel alloy 400, R405, K500 (Special Metals)
Nitorros (VDM)

Applications

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 ERNiCr-3 wire is preferable and necessary for stainless and higher chromium alloys (see data sheets D-10 and D-11). Alternatively, the steel or alloy can be buttered with pure nickel (see data sheet D-50) 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 include **heat exchangers, piping, vessels and evaporators** in the **offshore, marine, chemical, petrochemical and power engineering** industries.

Microstructure

Solid solution, single phase alloy, slightly ferromagnetic near room temperature.

Welding guidelines

No preheat required, maximum interpass temperature 150°C and no PWHT required.

Typical composition (weld metal wt %)

	C	Mn	Si	Cu	Fe	Ti	Ni
Wire	0.07	3.8	0.4	29	0.15	2.0	bal
deposit	0.02	3.6	1.3	29	2.5	0.6	bal

All-weld mechanical properties

As welded	typical	
Tensile strength	MPa	490
0.2% Proof stress	MPa	260
Elongation on 5d	%	45
Impact energy	+ 20°C J	100

Typical parameters

Current: DC+, DC- or AC. 800A maximum.

Packaging data

Metrode NiCu flux is supplied in sealed moisture resistant 20kg metal drums.

Storage

Preferred storage conditions for open drums: <60%RH, >18°C.

If flux has become damp or has been stored for a long period, it should be redried in the range 300-400°C for 1-2 hours.

Fume data

SAW fume is negligible.