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**PRODUCT DATA
SHEET**

**INCO-WELD 686CPT
Welding Consumable
UNS N06686**

**Nickel Alloy
Welding
Consumable**

Chemical Composition (deposited weld metal)

Element	%	Element	%
Nickel	Remainder (~55%)	Silicon	0.25 max
Chromium	19.00 - 23.00	Sulphur	0.020 max
Molybdenum	15.00 - 17.00	Copper	0.50 max
Tungsten	3.00 - 4.40	Iron	5.00 max
Carbon	0.02 max	Phosphorus	0.020 max
Manganese	1.00 max	Titanium	0.25 max

INCO-WELD 686CPT is used to join duplex, super-duplex and super-austenitic stainless steels, as well as nickel alloys such as UNS No N06059 and N06022, INCO alloy C-276, and Inconel alloys 622, 625 and 686. It is also used for corrosion resistant overlaying on carbon steel.

INCO-WELD 686CPT offers a level of corrosion resistance attractive for welding operations in pollution control engineering as well as chemical processing and marine industries. The high level of (Cr + Mo + W) gives higher resistance to pitting, crevice and general corrosion than other filler metals such as N10276 (C-276) and N06022 (Inconel 622, C-22).

The deposited weld metal is extremely strong and ductile and corrosion resistant, with a very high content of molybdenum and sufficient nickel to give immunity from stress corrosion cracking.

INCO-WELD Welding Electrode 686CPT is an all position SMAW electrode, used DC, electrode +ve. INCO-WELD Filler Metal 686CPT is used for GMAW (MIG) and GTAW (TIG) welding.

Typical Mechanical Properties (All weld metal, as welded)

	Tensile Strength MPa	Elongation %	Hardness HRB
Welding Electrode	760	35	95
Filler Metal	760	40	95

Comparative Corrosion Resistance

Alloy	Fe	Ni	Cr	Mo	W + Nb	Total Cr + Mo + W + Nb	Pitting Corrosion Resistance *
Inconel 625	3	62	22	8.8	3.6	34.4	51
INCO alloy C-276	6	57	15.5	16	3.9	35.4	74
UNS N06022	4	56.5	21.4	13.4	3.1	37.9	73
Inconel 622	2	59.4	20.5	14.2	3.2	37.9	73
Inconel 686	1	57	20.5	16.3	3.9	40.7	80
INCO-WELD 686CPT	1	57	20.5	16.3	3.9	40.7	81

* = Pitting Corrosion Resistance = Cr + 3.3Mo + 1.62W + 30N

Manual Welding Electrodes - Available Sizes and Welding Current

Diameter, mm	2.4	3.2	4.0	4.8
Length, mm	230	356	356	356
Current, amps	30 – 65	60 – 90	90 – 130	120 - 160

Supplied in 4.54 kg hermetically sealed containers.

Filler Metal, GMAW / MIG - Available Sizes and Welding Current

Diameter, mm	0.9	1.2	1.6
Wire feed, m/min	12 – 15	6 – 9	3 – 6
Voltage	26 – 32	26 – 32	27 – 33
Current, amps	180 – 245	225 – 330	250 - 345

Supplied as 0.7 to 15 kg spools, usually 13.6 kg.

Filler Metal, GTAW / TIG - Available Sizes and Welding Current

Diameter, mm	1.6	2.4	3.2
Amps, DCEN	90 – 160	100 – 190	110 – 210
Electrode diameter, mm	1.6 – 2.4	1.6 – 2.4	2.4 – 3.2

Supplied as 914 mm lengths in 4.54 kg packs.

Specifications

	AWS	DIN 1736	BS2901
Welding Electrode	A5.11 ENiCrMo-14	–	–
Filler Metal	A5.14 ERNiCrMo-14	–	–