

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
LDX 2101®	1.4162	S32101	-	-	-

\* Obsolete national standards, replaced by EN 10088.

### Characteristics

AVESTA LDX 2101 is designed for welding the ferritic-austenitic (duplex) stainless steel Outokumpu LDX 2101. LDX 2101 is a "lean duplex" steel with excellent strength and medium corrosion resistance. The steel is mainly intended for applications such as civil engineering, storage tanks, containers etc.

AVESTA LDX 2101 provides a ferritic-austenitic weldment that combines many of the good properties of both ferritic and austenitic stainless steels. The duplex microstructure gives high tensile strength and hereby also good resistance to stress corrosion cracking.

AVESTA LDX 2101 is over-alloyed with respect to nickel to ensure the right ferrite balance in the weld metal.

### Welding directions

The weldability of LDX 2101 is excellent and welding can be performed using short, spray or pulsed arc. Welding using pulsed arc provides good results in both horizontal and vertical-up positions. The best flexibility is achieved by using pulsed arc and Ø0.045" (1.20 mm) wire.

However, duplex steel is somewhat more difficult to weld compared to austenitic steels such as 316L, mainly with respect to fluidity and penetration into the parent metals.

To utilise the good properties of a duplex steel it is of utmost importance to obtain a good ferrite content in the weld. This is best achieved by welding with sufficient root gap 0.08-0.1" (2 – 2.5 mm), by using the right amount of filler metal and by welding with a controlled heat input.

### WELDING DATA

	Ø (inch)	Ø (mm)	Current (A)	Voltage (V)
Spray arc	0.039"	1.00	160–220	25–29
	0.047"	1.20	200–270	26–30
	1/16"	1.60	250–330	29–32
Pulsed arc	0.047"	1.20	I <sub>peak</sub> = 350–450 A I <sub>bk</sub> = 50–150 A Freq = 80–120 Hz	

For further recommendations, please contact Avesta Welding.

### Standard designations

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### Shielding gas recommendations

1. Ar + 30 % He + 2.5 % CO<sub>2</sub>
2. Ar + 2 % CO<sub>2</sub>
3. Ar + 2 % O<sub>2</sub>

MIG welding is best performed using pure argon with addition of approx. 30 % He and 2–3 % CO<sub>2</sub>. The addition of helium (He), will increase the energy of the arc. The fluidity is hereby improved and the weld is generally wider. The welding speed can therefore be increased. Addition of He will increase the blackening slightly.

### Chemical composition - Typical values, %

C	0.02	Ni	7.7
Si	0.6	Mo	<0.5
Mn	0.5	N	0.14
Cr	23.5		
Ferrite: 40 FN WRC-92			

### Mechanical properties – Typical values, IIW

	Typ. values	Typ. values
Yield strength, R <sub>p0.2</sub>	520 N/mm <sup>2</sup>	75 ksi
Tensile strength, R <sub>m</sub>	710 N/mm <sup>2</sup>	103 ksi
Elongation, A <sub>5</sub>	30 %	30 %
Impact strength, KV	+20°C	111 ft·lb
	-40°C	81 ft·lb

**Interpass temperature:** Max. 300°F (150°C)

**Heat input:** 12.7-50.8 kJ/in (0.5–2.0 kJ/mm)

**Heat treatment:** Generally none. In special cases quench annealing at 1868-1976°F (1020–1080°C).

**Structure:** Austenite with 35–65 % ferrite.

**Scaling temperature:** Approx. 1562°F (850°C) (air).

**Corrosion resistance:** Good resistance to general corrosion. Corrosion resistance on a level with, or better than AISI 304.

**Approvals:** -