

Inweld 80S-D2

Alloy ER80S-D2

AWS A5.28

ASME SFA5.28

Formerly ER70S-1B (AWS A5.18)



Description and Applications:

Inweld 80S-D2 is designed to give high strength welds on high sulfur bearing (free-machining) steels or medium carbon steels. This wire contains additional amounts of manganese and silicon which, when alloyed with 0.50% molybdenum, produces weld deposits which have high ductility, excellent impact values and tensile strengths of approximately 80,000 psi (Inweld 80S-D2 can be specified to 90S-D2 (90,000 tensile) if a Ar/1-5 O₂ gas mix is used).

Inweld 80S-D2 is commonly used on low carbon and low alloy steels such as AISI 4130 where tensile strengths provided by plain carbon steel wires are inadequate. Well balanced, the silicon content gives this wire superior arc stability, a low spatter level and a flat bead with excellent appearance. Inweld 80S-D2 produces X-ray quality, porosity free welds even over dirt, rust or mill scale.

Inweld 80S-D2 exhibits excellent out of position characteristics with the short circuiting and pulsed arc processes.

Chemical Composition of 80S-D2

Fe	C	Mn	Si	P	S	Ni	Mo	Cu	Total Other
Balance	0.07-0.12	1.60-2.10	0.50-0.80	0.025	0.025	0.15	0.40-0.60	0.50	0.50

Single values are maximum unless otherwise specified.

Welding specs

Shielding gas^b: CO₂

Tensile strength^b: 80 (ksi), 550 (mpa)

Yield strength (at 0.2% offset min)^b: 68 (ksi), 470 (mpa)

Elongation^b: (in 2") %: 17

Impact Energy: (20 ft-lb @ -20° F^{a,b} (27 J @ -29° C)^{a,b}

** Shielding gas: Ar/1-5 O₂

Tensile strength: 96 (ksi)

Yield strength (at 0.2% offset min): 81 (ksi)

Elongation: (in 2") %: 22

Impact Energy (-29°C – (J)): 86



Preheat, interpass and postweld heat treatment temperatures

Preheat & interpass temp °F: 300 ± 25

Preheat & interpass temp °C: 150 ± 15

- The lowest and highest values obtained shall be disregarded for this test. Two of the three remaining values shall be greater than the specified 20 ft-lb (27 J) energy level; one of the three may be lower but shall not be less than 15 ft-lb (20 J). The computed average value of the three values shall be equal to or greater than the 20 ft-lb (20 J) energy level.
- As-welded properties