

UltraCore® 91K2C-H Plus

Low Alloy, All Positions • AWS E91T1-K2C-JH4

Key Features

- ▶ Innovative design capable of superior toughness at -60°F
- ▶ Designed to meet AWS strength and toughness requirements in both the as-welded and stress-relieved conditions
- ▶ Designed for welding with 100% CO₂ shielding gas
- ▶ H4 diffusible hydrogen levels
- ▶ Q2 Lot® - Certificate showing actual deposit chemistry and mechanical properties per lot available online
- ▶ ProTech® foil bag packaging

Welding Positions

All

Conformances

AWS A5.29:	E91T1-K2C-JH4
AWS A5.36:	E91T1-C1A6-K2-H4
AWS A5.36:	E91T1-C1P4-K2-H4
ABS:	4YQ500SAH5
DNV Grade:	IVY50MSH5

Shielding Gas

100% CO₂
Flow Rate: 40-50 CFH

Typical Applications

- ▶ Offshore drilling rigs
- ▶ Ship building
- ▶ Low temperature storage tanks
- ▶ Construction

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15kg) Plastic Spool
0.045 (1.1)	ED035381
0.052 (1.3)	ED035382
1/16 (1.6)	ED035383

MECHANICAL PROPERTIES⁽¹⁾

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	
				-40°C (-40°F)	-51°C (-60°F)
Requirements					
AWS A5.29 E91T1-K2C-JH4 As-Welded with 100% CO ₂	540 (78) min	620-760 (90-110)	17 min	27 (20) min	-
AWS A5.36 E91T1-C1A6-K2-H4 As-Welded with 100% CO ₂	540 (78) min	620-760 (90-110)	17 min	-	27 (20) min
AWS A5.36 E91T1-C1P4-K2-H4 Stress Relieved with 100% CO ₂ for 1 hr. @ 620°C (1150°F)	540 (78) min	620-760 (90-110)	17 min	27 (20) min	-
Typical Results⁽³⁾					
As-Welded with 100% CO ₂	600-620 (87-90)	665-680 (96-99)	23-25	85-93 (63-69)	75-80 (55-59)
Stress Relieved with 100% CO ₂ for 1 hr. @ 620°C (1150°F)	580-610 (84-88)	650-675 (94-98)	23-29	52-59 (38-43)	-

⁽¹⁾ Typical all weld metal. ⁽²⁾ Measure with 0.2% offset. ⁽³⁾ See test results disclaimer below.

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(AWS E91T1-K2C-JH4)

DEPOSIT COMPOSITION⁽¹⁾

	%C	%Mn	%Si	%S	%P
Requirements AWS A5.29 E91T1-K2C-JH4 AWS A5.36 E91T1-C1A6-K2-H4, E91T1-C1P4-K2-H4	0.15 max	0.50-1.75	0.80 max	0.030 max	0.030 max
Typical Performance⁽³⁾ As-Welded with 100% CO ₂	0.04-0.07	1.39-1.73	0.25-0.35	0.006-0.012	0.009-0.011
	%Ni	%Cr	%Mo	%V	Diffusible Hydrogen (mL/100g weld deposit)
Requirements AWS A5.29 E91T1-K2C-JH4 AWS A5.36 E91T1-C1A6-K2-H4, E91T1-C1P4-K2-H4	1.00-2.00	0.15 max	0.35 max	0.05 max	4.0 max
Typical Performance⁽³⁾ As-Welded with 100% CO ₂	1.33-1.66	0.04-0.05	0.22-0.29	0.00	4 max
					1-3

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD ⁽⁴⁾ mm (in)	Wire Feed Speed m/min (in/min)	Voltage (Volts)	Approx. Current (amps)	Melt-Off Rate kg/hr (lb/hr)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
0.045 in (1.1 mm), DC+ 100% CO ₂	Optimal Settings	19 (3/4)	8.9 (350)	29	220	1.9-5.2 (4.1-11.5)	1.7-4.6 (3.7-10.2)	85-88
	Min - Max	19-25 (3/4-1)	4.4-12.7 (175-500)	25-33	127-280			
0.052 in (1.3 mm), DC+ 100% CO ₂	Optimal Settings	19 (3/4)	7.0 (275)	28	235	2.1-5.6 (4.6-12.4)	1.7-4.7 (3.8-10.4)	85-88
	Min - Max	19-25 (3/4-1)	3.8-10.2 (150-400)	24-33	150-300			
1/16 in (1.6 mm), DC+ 100% CO ₂	Optimal Settings	19 (3/4)	7.0 (275)	28	255	2.9-6.8 (6.3-15.0)	2.4-5.7 (5.2-12.6)	85-88
	Min - Max	19-25 (3/4-1)	3.8-8.9 (150-350)	26-32	142-300			

⁽¹⁾ Typical all weld metal. ⁽²⁾ See test results disclaimer below. ⁽³⁾ To estimate ESO, subtract 1/4 in (6.0 mm) from CTWD.

TEST RESULTS

Test results for mechanical properties, deposit or electrode composition and diffusible hydrogen levels were obtained from a weld produced and tested according to prescribed standards, and should not be assumed to be the expected results in a particular application or weldment. Actual results will vary depending on many factors, including, but not limited to, weld procedure, plate chemistry and temperature, weldment design and fabrication methods. Users are cautioned to confirm by qualification testing, or other appropriate means, the suitability of any welding consumable and procedure before use in the intended application.

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