

AWS ER70S-6

QCL-6**DESCRIPTION:**

QCL-6 is a *premium* copperless, mild steel solid wire, formulated to provide high quality welds and trouble-free performance, in heavy duty, high speed, spray transfer applications to light duty, low speed, short-arc applications. QCL-6 is designed for use with 100% CO₂ or argon rich/CO₂ shielding gases including 75/25, 90/10, and 95/5 mixtures. Even in the most difficult applications QCL-6 produces a smooth, stable arc, with low spatter, producing a weld bead that ties in evenly with the sides and has a smooth finished appearance. Because QCL-6 has a higher deoxidizer content, it can be used to weld light to moderately scaled or lightly rusted plate without pre-cleaning and still produce high quality welds.

APPLICATIONS:

Frame fabrication, automotive structures, farm implements, construction equipment, pressure vessels, pipe fabrication, railcar construction and repair, general fabrication. Widely used in high-speed robotic and automatic welding applications and semi-automatic applications.

FEATURES:

- Smooth, stable arc in high to low wire feed speeds
- Low spatter levels in all processes
- Bead ties in smoothly to the weld joint
- Dependable feedability in all processes
- No copper flaking

BENEFITS:

- Increased productivity, consistent feeding
- Repeatable weld parameters
- Increased productivity, reduced clean-up time
- Smooth weld beads, with uniform tie in
- Increased flexibility with only one wire to inventory

SHIELDING GAS: 100% CO₂, 75% Ar/25% CO₂, 90% Ar/10% CO₂, 92% Ar/8% CO₂ and other commercially available shielding gases.

TYPICAL CHEMISTRIES:*

	Wire		Weld Deposit		
	AWS Wire Spec	Wire (Melt Button)	100% CO ₂	75%Ar/25% CO ₂	90%Ar/10% CO ₂
Carbon (C)	.06 - .15	0.088	0.09	0.028	0.83
Manganese (Mn)	1.40 - 1.85	1.60	1.01	1.06	1.22
Silicon (Si)	.80 - 1.15	0.88	0.56	0.61	0.69
Phosphorus (P)	.025 max	0.013	0.015	0.015	0.018
Sulphur (S)	.025 max	0.011	0.014	0.012	0.013
Copper (Cu)	.50*	0.04	0.06	0.06	0.05

*Copper content of wire and copper shall not exceed .5% max.

TYPICAL MECHANICAL PROPERTIES:(AW)

	AWS SPEC (CO ₂)	100% CO ₂	75%Ar/25% CO ₂	90%Ar/10% CO ₂
Tensile Strength	70,000 psi (min)	84,000 psi	87,900 psi	91,400 psi
Yield Strength	58,000 psi (min)	67,300 psi	72,700 psi	76,400 psi
Elongation % in 2"	22%	28%	27%	24%
Reduction in Area	not specified	69%	69%	49%

TYPICAL CHARPY V-NOTCH IMPACT*VALUES(AW):**

	AWS SPEC (CO ₂)	100% CO ₂	75%Ar/25% CO ₂	90%Ar/10% CO ₂
Avg. at room temperature	not specified	90 ft•lbs	118 ft•lbs	114 ft•lbs
Avg. at 0°F	not specified	57 ft•lbs	84 ft•lbs	78 ft•lbs
Avg. at -20°F	20 ft•lbs (min)	56 ft•lbs	53 ft•lbs	83 ft•lbs
Avg. at -40°F	not specified	48 ft•lbs	41 ft•lbs	68 ft•lbs
Avg. at -60°F	not specified	26 ft•lbs	38 ft•lbs	67 ft•lbs

CONFORMANCES AND APPROVALS:

- AWS A5.28, ER70S-6 ASME SFA5.18,A-1
- CWB

*The information contained or otherwise referenced herein is presented only as "typical" without guarantee or warranty, and Hobart Brothers Company expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS 5.18 specification. Other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by Hobart Brothers Company.

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SHORT-CIRCUIT TRANSFER WELDING PARAMETERS*:

Material Thickness ¹ size in. (decimal) mm			Electrode Diameter in. mm		Welding Current (DC) amps	Arc Voltage (electrode positive)	Wire Feed Speed ipm	Travel Speed ipm	Deposition Rate lbs/hr
20 ga.	0.037	0.9	.035	0.9	55-85	16-18	70-120	15-25	1.0-1.6
18 ga.	0.050	1.3	.035	0.9	70-100	17-20	100-160	20-35	1.3-2.1
1/16"	0.063	1.6	.035	0.9	80-120	17-20	120-180	20-35	1.6-2.4
5/64"	0.078	2.0	.035	0.9	100-130	18-21	160-220	20-35	2.1-2.9
1/8"	0.125	3.2	.035	0.9	120-175	19-22	210-290	20-30	2.7-3.8
1/8"	0.125	3.2	.045	1.1	140-160	18-21	120-160	15-25	3.1-4.2
3/16"	0.187	4.7	.035	0.9	140-175	19-22	240-290	14-19	3.1-3.8
3/16"	0.187	4.7	.045	1.1	160-200	19-22	150-225	15-22	3.9-5.9
1/4"	0.250	6.4	.035	0.9	140-160	19-22	240-290	9-13	3.1-3.8
1/4"	0.250	6.4	.045	1.1	180-225	20-23	190-240	12-18	5.0-6.3

*Shielding gas is 100% CO₂ or 75% Ar/25% CO₂; 20-35 cfh.

¹For fillet and groove welds - for fillet welds, size equals metal thickness; for square groove welds, the root opening should equal 1/2 the metal thickness.

NOTE: Single-pass flat and horizontal fillet positions. Reduce current 10 to 15% for vertical and overhead welding.

SPRAY TRANSFER WELDING PARAMETERS*:

Material Thickness ¹ size in. (decimal) mm			Electrode Diameter in. mm		Welding Current (DC) amps	Arc Voltage (electrode positive)	Wire Feed Speed ipm	Travel Speed ipm	Deposition Rate lbs/hr
1/8"	0.125	3.2	.035	0.9	160-170	23-24	320-340	17-22	5.1-5.4
1/8"	0.125	3.2	.045	1.1	170-180	23-24	170-185	16-21	4.5-4.8
3/16"	0.187	4.7	.035	0.9	180-190	24-25	360-380	15-20	5.7-6.0
3/16"	0.187	4.7	.045	1.1	190-200	24-25	195-210	14-19	5.1-5.5
1/4"	0.250	6.4	.035	0.9	200-210	24-25	400-420	12-18	6.3-6.6
1/4"	0.250	6.4	.045	1.1	210-220	25-26	220-240	11-17	5.8-6.3
1/4"	0.025	6.4	.052	1.3	250-275	26-27	235-275	11-18	8.2-9.6
5/16"	0.313	7.9	.035	0.9	220-300	25-26	420-510	11-16	6.6-8.0
5/16"	0.313	7.9	.045	1.1	220-300	26-28	240-375	11-18	6.3-9.8
5/16"	0.313	7.9	.052	1.3	250-325	26-28	235-325	11-17	8.2-11.4
5/16"	0.313	7.9	1/16	1.6	275-350	26-28	185-250	11-19	9.4-12.8
3/8"	0.375	9.5	.045	1.1	300-350	26-28	375-475	11-19	9.8-12.4
3/8"	0.375	9.5	.052	1.3	300-350	26-28	300-360	11-19	10.5-12.6
3/8"	0.375	9.5	1/16	1.6	325-375	26-28	240-280	10-18	12.2-14.3
1/2"	0.500	12.7	.045	1.1	325-375	27-29	400-550	12-18	10.5-14.4
1/2"	0.500	12.7	.052	1.3	350-425	28-30	360-485	10-15	12.6-17.0
1/2"	0.500	12.7	1/16	1.6	350-450	28-30	250-350	9-15	12.8-17.9

Diameter In mm		30-lb Spool	45-lb Spool	60-lb Spool	600-lb Robopak	950-lb Recyclable Robopak
0.035	0.9	S303808-026	S303808-085		S303808-011	
0.045	1.2		S303812-085	S303812-028	S303812-011	S303812-070
0.052	1.3				S303815-011	

*Shielding gas: 90% Ar/10% CO₂ at 35-50 cfh with electrode stick-out, 3/4" ± 1/8". (Voltage adjustments likely if other spray arc gases are used—85% Ar min.)

¹Fillet and groove welds (backing may be required on groove welds).

Material Safety Data Sheets on any Hobart Brothers Company product may be obtained from Hobart Customer Service.

Because Hobart Brothers Company is constantly improving products, Hobart reserves the right to change design and/or specifications without notice.

