

AWS ER70S-6

HB-28**DESCRIPTON:**

HB-28 is a copper coated, mild steel solid welding wire that is formulated with a high deoxidizer content to provide excellent welding performance with CO₂ and argon rich shielding gases. Ideal for short circuit transfer general fabrication welding. HB-28 produces an exceptionally smooth and stable arc with minimal spatter and offers good wetting characteristics that allow for uniform tie-in. It is a great choice for welding light to moderately scaled, oily or rusty plates. It can also be recommended for spray transfer arc welding applications.

APPLICATIONS:

Pressure vessels, pipe, shaft build-up, tanks, farm implements, steel castings, auto body, collision repair and very thin sheet metal. Excellent choice when welding with wire feed speeds ranging from very slow to moderately fast.

FEATURES:

- High in deoxidizers
- High welder appeal
- Excellent wetting characteristics
- Lower spatter

BENEFITS:

- Best choice for rusty and oily plates, preferred over ER70S-3 wire
- Arc is very smooth and stable
- Smoother weld beads with uniform tie-in
- Minimal after weld clean-up

SHIELDING GAS:

100% CO₂, 75% Ar/25% CO₂, 90% Ar/10% CO₂, 92% Ar/8% CO₂ and other commercially available shielding gas mixtures.

TYPICAL CHEMISTRIES*:

	Wire		Weld Deposit		
	AWS Wire Spec	Wire (Melt Button)	100% CO₂	75% Ar/25% CO₂	90% Ar/10% CO₂
Carbon (C)	.06-0.15	0.08	0.09	0.09	0.09
Manganese (Mn)	1.40—1.85	1.48	1.18	1.21	1.28
Silicon (Si)	0.80—1.15	0.95	0.62	0.67	0.76
Phosphorus (P)	0.025 max	0.011	0.009	0.009	0.009
Sulphur (S)	0.025 max	0.011	0.010	0.010	0.010
Copper (Cu)	0.50 [†]	0.20	0.12	0.12	0.12

[†] Copper content of wire and copper coating shall not exceed .5% max.

TYPICAL MECHANICAL PROPERTIES* (AW):

	AWS Spec (CO₂)	100% CO₂	75% Ar/25% CO₂	90% Ar/10% CO₂
Tensile Strength	70,000 psi (min)	85,000 psi (587 MPa)	87,500 psi (604 MPa)	88,500 psi (611 MPa)
Yield Strength	58,000 psi (min)	70,000 psi (483 MPa)	72,500 psi (500 MPa)	74,000 psi (511 MPa)
Elongation % in 2"	22.0%	29.0%	29.5%	30.0%
Reduction in Area	not specified	67.0%	68.0%	71.0%

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

	AWS Spec (CO₂)	100% CO₂	75% Ar/25% CO₂	90% Ar/10% CO₂
Avg. at room temperature	not specified	102 ft-lbs (138 J)	135 ft-lbs (183 J)	147 ft-lbs (199 J)
Avg. at 0°F (-18°C)	not specified	68 ft-lbs (92 J)	95 ft-lbs (129 J)	112 ft-lbs (152 J)
Avg. at -20°F (-29°C)	20 ft-lbs (min)	52 ft-lbs (71 J)	82 ft-lbs (111 J)	104 ft-lbs (141 J)
Avg. at -40°F (-40°C)	not specified	47 ft-lbs (64 J)	72 ft-lbs (98 J)	92 ft-lbs (125 J)
Avg. at -60°F (-51°C)	not specified	41 ft-lbs (56 J)	48 ft-lbs (65 J)	68 ft-lbs (92 J)

CONFORMANCES AND APPROVALS:

AWS A5.18, ER70S-6 • ASME SFA 5.18, F-6, A-1

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SHORT-CIRCUIT TRANSFER WELDING PARAMETERS*:

Material Thickness ¹ size	in. (decimal) mm		Electrode Diameter		Welding Current (DC) amps	Arc Voltage (electrode positive)	Wire Feed Speed ipm	Travel Speed ipm	Deposition Rate lbs/hr
	in.	mm	in.	mm					
24 ga.	0.025	0.6	.024	0.6	30-50	13-15	130-160	10-20	1.0-1.3
24 ga.	0.025	0.6	.030	0.8	30-50	15-17	75-100	10-20	1.4-1.8
22 ga.	0.031	0.6	.024	0.6	30-55	13-15	30-200	15-20	1.0-1.6
22 ga.	0.031	0.8	.030	0.8	40-60	15-17	90-130	15-22	1.6-2.3
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

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

¹ For 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.

² Shielding gas is 100% CO₂ or 75% Ar/25% CO₂; 20-35 cfh.

SPRAY TRANSFER WELDING PARAMETERS*:

Material Thickness ¹ size	in. (decimal) mm		Electrode Diameter		Welding Current (DC) amps	Arc Voltage (electrode positive)	Wire Feed Speed ipm	Travel Speed ipm	Deposition Rate lbs/hr
	in.	mm	in.	mm					
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
5/16"	0.313	7.9	.035	0.9	220-250	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
3/8"	0.375	9.5	.045	1.1	300-350	26-28	375-475	11-19	9.8-12.4
1/2"	0.500	12.7	.045	1.1	325-375	27-29	400-550	12-18	10.5-14.4

*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).

AVAILABLE DIAMETERS AND PACKAGES:

Diameter	2-lb. Spool	10-lb. Spool	33-lb. Spool	45-lb. Spool
in mm				
.024 0.6	S305401-019	S305401-022	S305401-033	--
.030 0.8	S305406-019	S305406-022	S305406-033	--
.035 0.9	S305408-019	S305408-022	S305408-033	S305408-045
.045 1.2	--	--	S305412-033	S305412-045

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

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