Wire and Welding products

HAYNES Wire Company

HASTELLOY® G-30® Welding Data

Typical Welding Parameters - Flat Position:

SMAW

ELECTRODE DIAMETER, in. (mm)	ARC VOLTAGE, volts	WELDING CURRENT, amps
3/32 (2.4)	22-24	55-75
1/8 (3.2)	22-24	80-100
5/32 (4.0)	22-25	125-150
3/16 (4.8)	24-26	150-180

POLARITY: SMAW - DCRP - Electrode Positive

GTAW

JOINT THICKNESS, in. (mm)	TUNGSTEN ELECTRODE* DIAMETER,in. (mm)	FILLER WIRE DIAMETER	WELDING CURRENT, amps	ARC VOLTAGE, volts
1/32-1/16 (0.8-1.6)	1/16 (1.6)	1/16"	15-60	9-12
1/16-1/8 (1.6-3.2)	1/16 or 3/32 (1.6 or 2.4)	1/16" or 3/32"	50-95	9-12
1/8-1/4 (3.2-6.4)	3/32 or 1/8 (2.4 or 3.2)	3/32" or 1/8"	75-150	10-13
>1/4 (6.4)	3/32 or 1/8 (2.4 or 3.2)	3/32" or 1/8"	95-200	10-13

*2% Thoriated tungsten
Shielding gas 100% argon, flow rate ~ 25 ft^3/hr (12 L/min)

POLARITY: GTAW - DCSP - Electrode Negative

GMAW

	WIRE DIAMETER, in (mm)	SHIELDING* GAS	WELDING CURRENT, amps	ARC VOLTAGE,volts	TRAVEL SPEED in. / min (mm/s)
SHORT ARC	0.035 (0.9)	2,3,4,5	70-90	18-20	8-10 (3.4-4.2)
	0.045 (1.1)	2,3,4,5	75-160	19-22	8-10 (3.4-4.2)
FIXED PULSE	0.045 (1.1)	2,3,4	120-150 Peak 250-300	18-20	10-15 (4.2-6.3)
VARIABLE PULSE (synergic)	0.035 (0.9)	2,3,4	50-125	-	10-15 (4.2-6.3)
	0.045 (1.1)	2,3,4	100-175	-	10-15 (4.2-6.3)
SPRAY	0.045 (1.1)	1,3	190-250	30-32	10-15 (4.2-6.3)

*Not necessarily in order of preference
Flow Rate ~ 35 ft^3/hr (16 L/min)

POLARITY: GMAW - DCRP - Electrode Positive

***ACCEPTABLE GMAW SHIELDING GASES**

#	*Composition*	*Tradename*
1	100% argon	
2	75% argon + 25% helium	
3	89% argon + 10.5% helium + 0.5% CO_2	NiCoBRITE™
4	66.1% argon + 33% helium + 0.9% CO_2	Helistar™ SS
5	90% helium + 7.5% argon + 2.5% CO_2	Helistar A-1025

*Not necessarily in order of preference

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Typical All Weld Metal Tensile Data*:

Welding Process	Test Temperature ºF (ºC)	Ultimate Tensile Strength Ksi (MPa)	Yield Strength at 0.2% Offset, Ksi (MPa)	Elongation %
GTAW	Room	102 (703)	68 (469)	36
GMAW**	Room	104 (717)	67 (462)	43
SMAW	Room	108 (744)	68 (469)	41
GTAW	500 (260)	82 (565)	52 (359)	34
GTAW	1000 (538)	72 (496)	48 (331)	37

*1/2 in. (12.7 mm) thick, **Short arc mode

Typical Weld Metal V-Notch Impact Strength (Room Temperature):

Typical Weld Metal V-Notch Impact Strength (Room Temperature)	
GTAW	106 ft-lb (144joules)
SMAW	45 ft-lb (61 joules)
Density (Room Temperature)	0.297 lb/in^3 (8.22 gm/cm$^{3)}$

Suggested Practice:

•Establish safe working conditions prior to the start of welding. Areas to consider should includeprotection of personnel, ventilation, and welding in confined spaces. The recommendations ofthe American National Standard ANSI/ASC Z49.1, "Safety in Welding and Cutting", should befollowed.
▪The welding surface and adjacent area on each side of the joint should be thoroughly cleanedand degreased prior to welding.
▪Oxy-acetylene welding and cutting are not recommended.
▪Covered electrodes used from an unopened can require no further drying. Unused electrodes should be stored in a temperature controlled oven held in the range 250-400°F (121-200°C).
▪Backing gas (100% argon) should always be used for the root pass when welding by either GTAW or GMAW. For SMAW, grinding of the back side of the root pass is necessary.▪For optimum corrosion resistance of the finished weldment, excessive heat input should beavoided by:

- minimizing weave bead techniques (i.e. use 'stringer' beads with some manipulation).
- avoiding slow travel speeds, especially on thin parts.
- controlling interpass temperatures, generally 200°F (93°C) or less.

▪For GTAW, a constant-current power supply equipped with a high frequency start anddownslope control is recommended. Torches with gas diffuser lenses provide the optimum gascoverage.
▪Postweld stress relieving in the 1200°F (650°C) range is not recommended for HASTELLOYC-276 alloy. If required, solution heat-treatment of this material is accomplished at 2050°F(1121°C) for an appropriate time followed by a water quench or rapid air cool (depending onsection thickness)
.▪If shielding gases containing CO2 are used during GMAW welding, grinding of the weld beadbetween each pass is recommended.
▪Water cooled torches are recommended for GMAW spray transfer and synergic transfer (above120 amps) modes.

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