

Dissimilar Welding (SMAW)
(coated electrode) AWS spec. classification

Carbon and Low-Alloy Steel

Base Material Note 1,2,4	Carbon Steel	Carbon - Molybdenum Steel	1 & 1/4Cr - 1/2Mo Steel	2/4Cr - 1Mo Steel	5Cr - 1/2Mo Steel	9Cr - 1Mo Steel	2 1/4 Nickel Steel	3 1/2 Nickel Steel	9% Nickel Steel
Carbon Steel	AB³	AC	AD	AE	AF	AG	AJ	AK	*
Carbon - Molybdenum Steel		C	CD	CE	CF	CH	*	*	*
1 & 1/4Cr - 1/2Mo Steel			D	DE	DF	DH	*	*	*
2/4Cr - 1Mo Steel				E	EF	EH	*	*	*
5Cr - 1/2Mo Steel					F	FH	*	*	*
9Cr - 1Mo Steel						H	*	*	*
2 1/4 Nickel Steel							J	JK	LM
3 1/2 Nickel Steel								K	LM
9% Nickel Steel									LM

- A AWS A5.1 classification E70XX low hydrogen⁵
- B AWS A5.1 classification E6010 for root pass⁵
- C AWS A5.5 classification E70XX-A1, low hydrogen
- D AWS A5.5 classification E70XX-B2L or E80XX-B2, low hydrogen
- E AWS A5.5 classification E80XX-B3L or E80XX-B3, low hydrogen
- F AWS A5.5 classification E80XX-B6 or E80XX-B6L, low hydrogen
- G AWS A5.5 classification E80XX-B7 or E80XX-B7L, low hydrogen
- H AWS A5.5 classification E80XX-B8 or E80XX-B8L, low hydrogen
- J AWS A5.5 classification E80XX-C1 or E70XX-C1L, low hydrogen
- K AWS A5.5 classification E80XX-C2 or E70XX-C2L, low hydrogen
- L AWS A5.11 classification ENiCrMo-3
- M AWS A5.11 classification ENiCrMo-6
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1. TIG(GTAW), MIG(GMAW) Wire classification
 (AWS A5.14, 17, 18, 20, 23, 28)
2. Higher alloy electrode tensile strength toughness
 , lower alloy electrode weld metal hardness

3. E60XX E70XX 가 .
4. Cr-Mo Alloy .
5. E7018-G "G" classification PQR Brand type .
"G" General brand 가 .

Stainless Steel Alloys

Base Material Note 1,2,3	Type 405 Stainless Steel	Type 410S Stainless Steel	Type 410 Stainless Steel	Type 304 Stainless Steel	Type 304L Stainless Steel	Type 304H Stainless Steel	Type 310 Stainless Steel	Type 316 Stainless Steel	Type 316L Stainless Steel	Type 317L Stainless Steel	Type 321 Stainless Steel	Type 347 Stainless Steel
Carbon and Low - Alloy Steel	AB	AB	AB	AB	AB	AB	AB	AB	AB	AB	AB	AB
Type 405 Stainless Steel	ABC	ABC	ABC	AB	AB	AB	AB	AB	AB	AB	AB	AB
Type 410S Stainless Steel		ABC	ABC	AB	AB	AB	AB	AB	AB	AB	AB	AB
Type 410 Stainless Steel			ABC	AB	AB	AB	AB	AB	AB	AB	AB	AB
Type 304 Stainless Steel				D	DH	DJ	A	DF	DGH	DI	DE	DE
Type 304L Stainless Steel					H	DHJ	A	DF	GH	HI	DE	DE
Type 304H Stainless Steel						J	A	DFJ	DGHJ	DIJ	DEJ	EJ
Type 310 Stainless Steel							K	AK	A	A	A	A
Type 316 Stainless Steel								F	FG	FI	EF	EF
Type 316L Stainless Steel									G	GI	EG	EG
Type 317L Stainless Steel										I	EI	EI
Type 321 Stainless Steel											E	E
Type 347 Stainless Steel												E

- A AWS A5.4 classification E309-XX
- B AWS A5.11 classification ENiCrFe-2 ³
- C AWS A5.4 classification E410-XX (0.05% C max. 760 (1400)
가)
- D AWS A5.4 classification E308-XX
- E AWS A5.4 classification E347-XX
- F AWS A5.4 classification E316-XX
- G AWS A5.4 classification E316L-XX
- H AWS A5.4 classification E308L-XX
- I AWS A5.4 classification E317L-XX
- J AWS A5.4 classification E308H-XX
- K AWS A5.4 classification E310-XX

1. TIG(GTAW), MIG(GMAW) Wire classification .
(AWS A5.9, 14)
2. higher alloy electrode가 .
3. Austenitic Stainless Steel 가
weld metal Ferrite No.(FN)가 11 FN .

Filler metal FN 3FN type 347 5FN,
 No.가 .
 ASME Section Part D Table 6-360 475 (885)
 Guideline .

% Ferrite	Temperature, °F							1100 and higher
	500	600	700	800	900	1000		
0	...	...	...	...	...	...	C
5	...	...	...	...	...	...	C
10	...	...	...	...	C	C	C
15	...	...	...	C	C	C	C
20	...	...	C	C	C	C	C
25	...	C	C	C	C	C	C	
30	...	C	C	C	C	C	C	
35	C	C	C	C	C	C	C	
40	C	C	C	C	C	C	C	

4. 가 315 (600) type309 type309L .
 Type 309Cb Weld Overlay 가 가 .
 Nickel-Based Alloy filler Sulfur . (API
 RP582 Table 6-1)

AWS filler Material Designation	Non-Sulfur Environment Max. Design Temperature	Sulfur Environment Max. Design Temperature
ENiCrFe-3	1000 (540)	700 (370)
ENiCrFe-2	1400 (760)	750 (400)

Copper-Nickel and Nickel-Based Alloys

Base Material Note ¹	70-30 & 90-10 Cu-Ni	Alloy 400 (N04400)	Nickel 200(N02200)	Alloy 800 (N08800), 800H (N08810), 800HT(N08811)	Alloy 600 (N06600)	Alloy 625 (N06625)	Alloy 825 (N08825)	Alloy C-22 (N06022)	Alloy C-276 (N10276)	Alloy B-2 (N10665)	Alloy G-3 (N06985)	Alloy G-30 (N06030)
Carbon and Low-Alloy Steel	BC	BC	C	A	A	A	A	D	E	F	G	H
300-Series Stainless Steel	BC	AC	AC	A	A	A	A	D	E	F	G	H
400-Series Stainless Steel	B	B	AC	A	A	A	A	D	E	F	G	H
70-30 & 90-10 Cu-Ni	B	B	C	C	C	C	C	*	*	*	*	*
Alloy 400 (N04400)		B	BC	A	A	A	A	A	A	F	A	A
Nickel 200(N02200)			C	AC	AC	AC	AC	CD	CE	CF	CG	CH
Alloy 800 (N08800), 800H (N08810), 800HT(N08811)				KJ	A	A	A	DJ	EJ	FJ	GJ	HJ
Alloy 600 (N06600)					A	AJ	A	DJ	EJ	FJ	GJ	HJ
Alloy 625 (N06625)						J	J	DJ	EJ	FJ	GJ	HJ
Alloy 825 (N08825)							J	DJ	EJ	FJ	GJ	HJ
Alloy C-22 (N06022)								D	EJ	FJ	GJ	HJ
Alloy C-276 (N10276)									E	FJ	GJ	HJ
Alloy B-2 (N10665)										F	GJ	HJ
Alloy G-3 (N06985)											G	HJ
Alloy G-30 (N06030)												H

- A AWS A5.11 classification ENiCrFe-2 3
- B AWS A5.11 classification ENiCu-7
- C AWS A5.11 classification ENi-1
- D AWS A5.11 classification ENiCrMo-10
- E AWS A5.11 classification ENiCrMo-4
- F AWS A5.11 classification ENiMo-7
- G AWS A5.11 classification ENiCrMo-9
- H AWS A5.11 classification ENiCrMo-11
- J AWS A5.11 classification ENiCrMo-3
- K AWS A5.11 classification ENiCrCoMo-1
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1. TIG(GTAW), MIG(GMAW)
(AWS A5.14)

Wire

classification