

Classification Of Hardfacing Electrodes As Per AWS A5.13-2000

E Fe 10

Production Type	
G	Wire Electrodes
O	Oxy-Acetylene
E	Electric Arc Welding
S	Submerged Arc
T	Flux-Cored Wires
W	TIG Rods
F	Submerged Arc

Alloy Symbol	Chemical Composition %									
	C	Cr	Ni	Mn	Mo	W	V	Nb	Other	Rest
Fe1	≤0.4	≤3.5	—	0.5-3	≤1	≤1	≤1	—	—	Fe
Fe2	0.4-1.2	≤7	≤1	0.5-3	≤1	≤1	≤1	—	—	Fe
Fe3	0.2-0.5	1-8	≤5	≤3	≤4.5	≤10	≤1.5	—	Co, Si	Fe
Fe4	0.2-1.5	2-6	≤4	≤3	≤10	≤19	≤4	—	Co, Si	Fe
Fe5	≤0.5	≤0.1	17-22	≤1	3-5	—	—	—	Co, Ti	Fe
Fe6	≤2.5	≤10	—	≤3	≤3	—	—	≤10	Ti	Fe
Fe7	<0.2	4-30	≤6	≤3	≤2	—	≤1	≤1	Si	Fe
Fe8	<0.2-2	5-18	—	0.3-3	≤4.5	≤2	≤2	≤10	Si, Ti	Fe
Fe9	0.3-1.2	≤19	≤3	11-18	≤2	—	≤1	—	Ti	Fe
Fe10	≤0.25	17-22	7-11	3-8	≤1.5	—	—	≤1.5	Si	Fe
Fe11	≤0.3	18-31	8-20	≤3	≤4	—	—	≤1.5	Cu	Fe
Fe12	≤0.08	17-26	9-26	0.5-3	≤4	—	—	≤1.5	—	Fe
Fe13	≤1.5	≤6.5	≤4	0.5-3	≤4	—	—	—	B, Ti	Fe
Fe14	1.5-4.5	25-40	≤4	0.5-3	≤4	—	—	—	—	Fe
Fe15	4.5-5.5	20-40	≤4	0.5-3	≤2	—	—	≤10	B	Fe
Fe16	4.0-7.5	10-40	—	≤3	≤9	≤8	≤10	≤10	B, Co	Fe
Fe20	Hardfacing Mat	—	—	—	—	—	—	—	—	Fe
Ni1	≤1	15-30	Rest	0.3-1	≤6	≤2	≤1	—	Si, Fe, B	Ni
Ni2	<0.1	15-30	Rest	≤1.5	≤28	≤8	≤1	≤4	Co, Si, Ti	Ni
Ni3	<1	1-15	Rest	0.3-1	≤6	≤2	≤1	—	Si, Fe, B	Ni
Ni4	<0.1	1-15	Rest	≤1.5	≤28	≤8	≤1	≤4	Co, Si, Ti	Ni
Ni20	Hardfacing Mat	—	—	—	—	—	—	—	—	Ni
Co1	≤0.6	≤0.6	20-30	≤10	≤10	≤15	—	—	Fe	Co
Co2	0.6-3	20-35	≤4	0.1-2	—	6-14	—	—	Fe	Co
Co3	1-3	20-35	≤4	≤2	≤1	6-14	—	—	Fe	Co
Cu1	—	—	≤6	≤15	—	—	—	—	Al, Fe, Sn	Cu
Al1	—	—	—	10-35	≤0.5	—	—	—	Cu, Si	Al
Cr1	1-5	Rest	—	≤1	—	—	15-30	—	Fe, B, Si, Zr	Cr

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