Guide to the choice of filler metal for general purpose welding

Base Metal	201.0 206.0 224.0	319.0 333.0 354.0 355.0 C355.0	356.0, A356.0 357.0, A357.0 413.0, 443.0 A444.0	511.0 512.0 513.0 514.0 535.0	7004, 7005 7039, 710.0 712.0	6009 6010 6070	6005, 6061 6063, 6101 6151, 6201 6351, 6951	5456	5454	5154 5254[j]	5086	5083	5052 5652[j]	5005 5050	3004 Alc 3004	2219	2014 2036	110 3003 Alc 3003	1060 1070 1080 1350
1060, 1070, 1080, 1350	ER4145	ER4145	ER4043[a,b]	ER5356[c,d]	ER5356[c,d]	ER4043[a,b]	ER4043[b]	ER5356[d]	ER4043[b,d]	ER5356[c,d]	ER5356[d]	ER5356[d]	ER4043[b,d]	ER1100[b,c]	ER4043[b,d]	ER4145[b,c]	ER4145	ER1100[b,c]	ER1188[b,c,h,j]
1100, 3003, Alc 3003	ER4145	ER4145	ER4043[a,b]	ER5356[c,d]	ER5356[c,d]	ER4043[a,b]	ER4043[b]	ER5356[d]	ER4043[b,d]	ER5356[c,d]	ER5356[d]	ER5356[d]	ER4043[b,d]	ER1100[b,c]	ER4043[b,d]	ER4145[b,c]	ER4145	ER1100[b,c]	
2014, 2036	ER4145[e]	ER4145[e]	ER4145			ER4145	ER4145							ER4145	ER4145	ER4145[e]	ER4145[e]		
2219	ER2319[a]	ER4145[e]	ER4145[b,c]	ER4043	ER4043	ER4043[a,b]	ER4043[a,b]		ER4043[b]	ER4043			ER4043[b]	ER4043[a,b]	ER4043[a,b]	ER2319[a]			
3004, Alc 3004		ER4043[b]	ER4043[b]	ER5356[f]	ER5356[f]	ER4043[b]	ER4043[b,f]	ER5356[d]	ER5356[f]	ER5356[f]	ER5356[d]	ER5356[d]	ER5356[c,f]	ER5356[c,f]	ER5356[c,f]				
5005, 5050		ER4043[b]	ER4043[b]	ER5356[f]	ER5356[f]	ER4043[b]	ER4043[b,f]	ER5356[d]	ER5356[f]	ER5356[f]	ER5356[d]	ER5356[d]	ER5356[c,d]	ER5356[c,f]					
5052, 5652[i]		ER4043[b]	ER4043[f]	ER5356[f]	ER5356[f]	ER4043[b]	ER5356[c,f]	ER5356[f]	ER5356[f]	ER5356[f]	ER5356[d]	ER5356[d]	ER5654[c,f,i]						
5083			ER5356[c,d]	ER5356[d]	ER5183[d]		ER5356[d]	ER5183[d]	ER5356[d]	ER5356[d]	ER5356[d]	ER5183[d]							
5086			ER5356[c,d]	ER5356[d]	ER5356[d]		ER5356[d]	ER5356[d]	ER5356[d]	ER5356[d]	ER5356[d]								
5154, 5254[j]			ER4043[f]	ER5356[f]	ER5356[f]		ER5356[f]	ER5356[f]	ER5356[f]	ER5654[f,i]									
5454		ER4043[b]	ER4043[f]	ER5356[f]	ER5356[f]	ER4043[b]	ER5356[c,f]	ER5356[f]	ER5554[c,f]										
5456			ER5356[c,d]	ER5356[d]	ER5556[d]		ER5356[d]	ER5556[d]											
6005, 6061, 6063 6101, 6151, 6201 6351, 6951	ER4145	ER4145[b,c]	ER4043[b,f,g]	ER5356[f]	ER5356[c,f]	ER4043[a,b,g]	ER4043[b,f,g]												
6009, 6010, 6070	ER4145	ER4145[b,c]	ER4043[a,b,g]	ER4043	ER4043	ER4043[a,b,g]													
7004, 7005, 7039		ER4043[b]	ER4043[b,f]	ER5356[f]	ER5356[d]														
710.0, 712.0																			
511.0, 512.0, 513.0			ER4043[f]	ER5356[f]															
514.0, 535.0																			
356.0, A356.0, 357.0 A357.0, 413.0 443.0, A444.0	ER4145	ER4145[b,c]	ER4043[b,h]																
319.0, 333.0, 354.0, 355.0, C355.0	ER4145[e]	ER4145[b,c,h]																	
201.0, 206.0, 224.0	ER2319[a,h]																		

NOTES:

1. Service conditions such as immersion in fresh or salt water, exposure to specific chemicals, or a sustained high tempurature (over 150° F (66° C)) may limit the choice of filler metals. Filler metals ER5183, ER5356, ER5556 and ER5654 are not recommended for sustained elevated tempurature service.
2. Recommendations in this table apply to gas shielded arc welding processes. For oxyfuel gas welding, only ER1188, ER1100, ER4043. ER4047 and ER4145 filler metals are ordinarily used.
3. Where no filler metal is listed, the base metal combination is not recommended for welding.

a. ER4145 may be used for some applications
b. ER4047 may be used for some applications
c. ER4043 may be used for some applications
d. ER5183, ER5356 or ER5556 may be used
e. ER2319 may be used for some applications. It can supply high strength when the weldment is postweld solution heat treated and aged.
f. ER5183, ER5356, ER5554, ER5556 and ER5654 may be used. In some cases, they provide: (1) improved color match after anodizing. (2) highest weld ductility. (3) higher weld strengh. ER5554 is suitable for sustained elevated tempurature service.
g. ER4643 will provide high strength in 1/2 in. (12mm) and thicker groove welds in 6XXX base alloys when postweld solution heat treated and aged.
h. Filler metal with the same analysis as the base metal is sometimes used. The following wrought filler metals possess the same chemical composition limits as cast filler alloys: ER4009 and R4009 as R-C355.0; ER4010 and R4010 as R-A356.0; and R4011 as R-A357.0.
i. Base metal alloys 5254 and 5652 are used for hydrogen peroxide service. ER5654 filler metal is used for welding both alloys for service tempuratures below 150° F (66°).
j. ER1100 may be used for some applications.

Courtesy: American Welding Society, Inc. ANSI/AWS A5.10-92

Other available filler metals

Inweld 2319	AWS/SFA5.10 ER2319
Inweld 5554	AWS/SFA5.10 ER5554
Inweld 5654	AWS/SFA5.10 ER5654
Inweld 4145 (716)	AWS/SFA5.10 ER4145 (716)
Inweld 4643	AWS/SFA5.10 ER4643
Inweld A356.0	AWS/SFA5.10 R-A356.0
Inweld A357.0	AWS/SFA5.10 R-A357.0
Inweld C355.0	AWS/SFA5.10 R-C355.0

Available Packaging and Diameters

1 Lb. Spool: 0.023, 0.030, 0.035, 0.045, 3/64, 1/16
5 Lb. Spool: 0.023, 0.030, 0.035, 0.045, 3/64, 1/16, 3/32
16 Lb. Spool: 0.023, 0.030, 0.035, 0.040, 0.045, 3/64, 1/16, 3/32
2 Lb. Tube: 1/16, 3/32, 1/8
10 Lb. Box: 0.030, 0.035, 0.040, 0.045, 3/64, 1/16, 5/64, 3/32, 1/8, 5/32, 3/16, 1/4