ELECTRODE ALLOY CHART

Recommended Alloys for Spot Welding Similar and Dissimilar Metals, Using Conventional Spot Welding Methods

	Tungsten Molybdenum	Magnesium	Zinc	Nickel Alloys	Nickel	Tin	Lead	Stainless Steel	Chrome Plate	Cadmium Plate	Galvanized Iron Zn. Plate	Terne Plate	Tin Plate	Scaly Steel	C. R. Steel	Phosphor Bronze	Silicon Bronze	Nickel Silver	Cupro Nickel	Brass Yellow	Brass Red	Copper	Aluminum Alloys	Aluminum
Aluminum		C I I 1 5	D I (II) I 5 6	E II I 5	E II I 3	E I (II) I 5	H I II 5	H III (II) I 3 4	H II I 3 8	E I I 3 4 9	D I I 3 4 9	D I I 3 4 9	D I I 3 4 9		E II I 3 4	D II I 5	D II I 5				D II I 5	E V I 2	H V I 2	C I I 1	C I I 1
Aluminum Alloys Duralumin		C I I 1 5	D I (II) I 5 6	E II I	E II I 3	E II I 5	E I II 5	H III (II) I 3 4	H II I 3 8	E I (II) I 3 4 9	D I I 3 4 9	D I I 3 4 9	D I I 3 4 9		E II I 3 4	D II I 5	D II I 5				D II I 6	E V I 2	E V I 2	D I I 1	
Copper—Pure	H II V 3	H I V 5	H I V 5 6	E II V	E II V 3 6	H I V 5	H I V 5	H III (II) V 3 4	H II V 3 4	H I (II) V 3 9	H I V 3 4 9	H I V 3 4 9	H I V 3 4 9		H II V 3 4	D II V 5 6	D II V 5 6	D II V 6	D II V 6	D II V 6	E II V 6	K V V 2			
Brass—Red 5-25% Zinc		H I V		D II V 6	D II V 6	H I V		H III (II) II	H II II	H I (II) II	H I II 6	H I (II) II 6	H I II 6		H II II 3 4	D II II 6	D II II 6	D II II 6	D II II	D II II	E II II 5 6			
Brass—Yellow 25-40% Zinc		E I II 5	D I II 3 5 6	D II IV 6	D II IV 6	D I IV		H III (II) II	H II II	E I (II) II 6	E I II 6	E I (II) II 6	E I II 6		E II IV 3 4	C II II 1	C II II 1	C II II 1	C II II 1	C II II 1				
Cupro-Nickel		D I II 5		C II II	C II II	D I II 6	H I II 6 5	E II (I) II	E II II 8	E I (II) II	E I II	E I (II) II	E I II	H I (II) II 7	E II II 3	C II II 1	C II II 1	C II II	B II II 1					
Nickel-Silver		D I II 5		C II II	C II II	D I II 6	H I II 6	E II (I) II	E II II 8	E I (II) II	E I II	E I (II) II	E I II	H I (II) II 7	E II II 3	C II II 1	C II II 1	B II II 1						
Silicon Bronze		D I II 5	D I II 3 5	C II II	D II II	D I II 6	H I II 6	E II (I) II	E II II 8	E I (II) II	E I II	E I (II) II	E I II	H I (II) II 7	D II II 3	C II II 1	B II II 1							
Phosphor Bronze Grades A, C, & D		E I II 5	E I II 3 5	D II II	D II II	E I II 6	H I II 6	E II (I) II	E II II 8	E I (II) II	E I II	E I (II) II	E I II	H I (II) II 7	D II II 3	C II II 1								
C. R. Steel H. R. Steel—Clean	D II II 3			D II II 3	D II II 3	H I II 6 5	H I II 4 6 3	B II (I) II	B II II 8	C II II	C I II	B I (II) II 6	C I II	E I (II) II 7	A II II 1									
Scaly H. R. Steel	H II I (II) 7 3							D II (I) I (II) 7	D II I (II) 7 8	D II I (II) 7	D I I (II) 7 6	D I (II) I (II) 7 6	D I I (II) 7 6	E I (II) I (II) 7										
Tin Plate	E II I 9	E I I 5 9	D I II 3 4 5	D II I 3 9	D II I 9	D I I 6 4 9	D I I 6 4 9	C II (I) I	C II I 6	D I (II) I 6	C I I 6 9	D I (II) I 6 9	D I I 6 9											
Terne Plate	E II I (II) 9	E I I 5 9	D I I 3 4 5 9	D II I 3	D II I 9	E I I 6 3 9	E I I 6 4 9	C II I	C II I 8	C I (II) I	C I I 6	C I I 6												
Galvanized Iron Zinc-Plate	E II I 9	E I I (II) 6 9	D I I 3 4 5	D II I (II) 3	D II II 9	E I I 6 3 9	E I I 4 6 9	C II I	C II I 9 8	C I I 9	C I (II) I (II) 9													
Cadmium Plate	E II I 9	E I I 5	D I I 3 4 5	D II I 3	D II I 9	E I I 6 3 9	E I I 3 6 4 9	C II I	C II I 8	C I I 9														
Chrome Plate	D II II 8			D II II 8	D II II 8		H I II 8 3 4	B II (I) II 8	B II II 8															
Stainless Steel 18-8 Type	D II III 5			D II III (II) 1	D II II (I)			A III (II) III (II) 1																
Lead		E I I 5 6	D II I 5 6	H II I 3 5 6	H II I 5 6	H I I 5 6 9	D I I 6 5																	
Tin		E I I 5 6	D II I 5 6	H II I 3 5 6	H II I	D I I 5 6																		
Nickel	D II II			C II II 1	B II II 1																			
Nickel Alloys Monel-Nichrome (High Res.)	C II II 5			B II II 1																				
Zinc		E I I 5 6	D I I 5 6																					
Magnesium Alloys		B I I 1 5																						
Molybdenum Tungsten	D II II 10																							

BLOCK INTERPRETATION

Weldability	Electrode Against
Electrode Against	Special Information

ELECTRODE ALLOYS

I	TIPALOY #100
II	TIPALOY #130
III	TIPALOY #200 & #240
IV	COPPER TUNGSTEN T-10W
V	COPPER TUNGSTEN T-100W

- Electrode materials in circles are second choice

* TIPALOY Tungsten T-100W may be substituted

WELDABILITY

A	Excellent
B	Very Good
C	Good
D	Fair
E	Poor
H	Very Poor
K	Impractical

SPECIAL INFORMATION

1. Good weld strength
2. May be welded under special conditions
3. Low weld strength
4. No actual weld nugget occurs, a "stick" is obtained
5. Welding conditions must be accurately controlled
6. Keep electrodes clean to prevent sticking to the work
7. Good practice recommends cleaning steel before welding
8. Use one flat tip to minimize distortion or discoloration
9. Coating may dissolve in other metals, or burn away
10. Should be projection welded