

**Electromotive force of metals and alloys**  
measured in 3.5% NaCl with respect to a calomel electrode.

NAME OF ALLOY	COMPOSITION	REMARK	EMK (V) measured
Platinum	100Pt	-	0.17
Carbon P5N	100C	-	0.15
Gold	100Au	-	0.15
Silcoro 60	60Au, 20Cu, 20Ag	braze	0.1
Rhenium	100Re	-	0.08
Carbon P692	100C	-	0.06
Palniro 7	70Au, 8Pd, 25Ni	braze	0.05
Rhodium	100Rh	-	0.05
Tantalum	100Ta	-	0.04
Nioro	82Au, 18Ni	braze	0.04
Palniro 1	50Au, 25Pd, 25Ni	braze	0.01
Nicoro	35Au, 62Cu, 3Ni	braze	0
Silver	100Ag	-	-0.03
Premabraze	Ag, Cu, In	braze	-0.05
Premabr. 90-10	Ag, Cu	braze	-0.06
AM350	17Cr, 4.2Ni, 2.7Mo, rem Fe	passive	-0.06
A286	15Cr, 25Ni, Mo, Ti, V, rem Fe	passive	-0.07
AM355	15.5Cr, 4.3Ni, 2.7Mo, rem Fe	passive	-0.07
Carpenter 20	20Cr, 28.5Ni, 2.25Mo, 3.25Cu, rem Fe	passive	-0.07
AISI 201	8.7Mn, 18Cr, 5Ni, rem Fe	passive	-0.07
16-15-6	16Cr, 14Ni, 7.5Mn, 6Mo, N, rem Fe	passive	-0.07
AISI 316	18Cr, 13Ni, 2Mo, rem Fe	passive	-0.07
AISI 321	18Cr, 10Ni, 0.4Ti, rem Fe	passive	-0.08
AISI 347	18Cr, 12Ni, +Nb, rem Fe	passive	-0.08
AISI 303	18Cr, 9Ni, S, rem Fe	passive	-0.08
AISI 301	17Cr, 7Ni, rem Fe	passive	-0.09
AISI 302	18Cr, 8Ni, rem Fe	passive	-0.09
AISI 304	19Cr, 10Ni, rem Fe	passive	-0.1
AISI 308 ELC	20Cr, 11Ni, rem Fe	passive	-0.1
Hastelloy C	17Mo, 15Cr, 5W, 6Fe, rem Ni	passive	-0.1
Nichrome	80Ni, 20Cr	passive	-0.1
Monel 60	65Ni, 0.2Fe, 3.5Mn, 2Ti, 27Cu	-	-0.1
RA330	25Ni, 19Cr, 1.25Si, rem Fe	passive	-0.1
Inconel 92	71Ni, 16Cr, 7Fe, 3Ti, 2Mn	passive	-0.11
Braze 250	25Ag, 52.5Cu, 22.5Zn	-	-0.11
CDA 655	3.5Si, rem Cu	-	-0.11
17-7 PH st.st.	17Cr, 7Ni, 1.1Al	passive	-0.11
17-4 PH st.st	17Cr, 4Ni, 4Cu	passive	-0.11
AISI 309	23Cr, 13Ni	passive	-0.11
Titanium	100Ti	-	-0.12
Monel 400	32Cu, 2.5Fe, 2Mn, rem Ni	-	-0.12
CDA 442	71Cu, 1Sn, 38Zn	-	-0.12
CDA 715	70Cu, 30Ni	-	-0.12
Molybdenum	100Mo	-	-0.12
Sterling Silver	10Cu, rem Ag	-	-0.15
Mp35N	Ni, 35Co, 20Cr, 10Mo	passive	-0.15
NARloy A	3Ag, rem Cu	braze	-0.16
Incusil 10	63Ag, 27Cu, 10In	braze	-0.16
CDA 510	96Cu, 4Sn, P	-	-0.16
AISI 410	0.15C, 12Cr, rem Fe	passive	-0.17
AISI 416	0.15C, 13Cr, rem Fe	passive	-0.17
AISI 420	0.35C, 13Cr, rem Fe	passive	-0.17
AISI 430	0.12C, 17Cr, rem Fe	passive	-0.17
AISI 430F	0.12C, 17Cr, P, S, rem Fe	passive	-0.17
AISI 431	0.2C, 16Cr, 2Ni, rem Fe	passive	-0.17
AISI 434	0.12C, 17Cr, 1Mo, rem Fe	passive	-0.17
Waspaloy	59Ni, 19.5Cr, 13.5Co, 4.2Mo, Ti, Al	passive	-0.17
Bismuth	100Bi	-	-0.17
Incusil 15	61.5Ag, 24Cu, 14.5In	-	-0.18
Nickel	100Ni	passive	-0.18
Monel 67	67.5Cu, 31Ni, 0.3Ti, 0.5Fe	-	-0.18
Copper Phosph.	4.5P, rem Cu	-	-0.18
Copper Phosph.	8.5P, rem Cu	-	-0.19
Copper Phosph.	10.5P, rem Cu	-	-0.2
Copper	100Cu	-	-0.2
CDA 110	100Cu	etp	-0.2
CDA 172	2Be, rem Cu	-	-0.2
Gold Germanium	12Ge, rem Au	solder	-0.2
Copper Gold	25Au, rem Cu	-	-0.2
AISI 440C	7Cr, 0.5Mo, rem Fe	passive	-0.2
Nispan C	42Ni, 48.5Fe, 2.4Ti, rem Cr	passive	-0.22
AISI 440B	7Cr, 0.5Mo, rem Fe	passive	-0.23
Ti 13V-11Cr-3Al	13V, 11Cr, 3Al, rem Ti	-	-0.23
Ti-8Mn	8Mn, rem Ti	-	-0.23
Ti-5Al-2.5Sn	5Al, 2.5Sn, rem Ti	-	-0.23
Ti-6Al-6V-6Sn	6Al, 6V, 6Sn, rem Ti	-	-0.24
Ti6Al4V	6Al, 4V, rem Ti	-	-0.24
Silicon	100Si	-	-0.24
MAR-M-246 D.S.	19Cr, 10Co, 10W, 5.5Al, Mo, Ta	-	-0.24

Tungsten carb.	94WC, 6Co	-	-0.25
Braze 630	63Ag, 28.5Cu, 6Sn, 2.5Ni	braze	-0.25
CDA 240	80Cu, 20Zn	-	-0.25
CDA 220	90Cu, 10Zn	-	-0.25
CDA 752	65Cu, 18Ni, 17Zn	-	-0.25
CDA 280	60Cu, 40Zn	-	-0.26
CDA 464	60Cu, 1Sn, 39Zn	-	-0.26
K-Monel K-500	66.5Ni, 1Fe, 3Al, 29.5Cu	-	-0.26
Haynes 25	20Cr, 15W, 10Ni, 1Fe, rem Co	-	-0.26
Uranium	8Mo, 92U	-	-0.26
Bearium B10	70Cu, 20Pb, rem Sn	casting	-0.26
CDA 270	63Cu, 37Zn	-	-0.26
CDA 298	52Cu, 48Zn	-	-0.27
Haynes 188	22Cr, 22Ni, 15W, rem Co	-	-0.27
Nichrome 80/20	80Ni, 20Cr	active	-0.27
CDA 521	7Sn, rem Cu	-	-0.27
CuAl10Fe	10Al, 3Fe, rem Cu	-	-0.27
ARMCO 21-6-9	22Cr, 12Ni, rem Fe	Nitronic 50	-0.27
Hastelloy C	17Cr, 17Mo, 6Fe, 5W, rem Ni	active	-0.27
Inconel 600	76Ni, 8Fe, 15.5Cr	active	-0.27
Inconel 92	71Ni, 16Cr, 7Fe, 3Ti, 2Mn, rem Ni	active	-0.28
Elgiloy	40Co, 20Cr, 15Ni, 7Mo, 15Fe	-	-0.28
Incoloy 800	32Ni, 44.5Fe, 20.5Cr	-	-0.28
HastelloyC-276	2Co, 15Cr, 16Mo, 4W, 5Fe	active	-0.28
Hastelloy W	5Cr, 5Fe, 24Mo, rem Ni	active	-0.28
Inconel 718	52.5Ni, 18.5Fe, 19Cr, 3Mo, Nb	active	-0.28
Inconel 625	61Ni, 2.5Fe, 21.5Cr, 9Mo, Nb, T	active	-0.29
CuAl12	12Al, rem Cu	-	-0.29
Inconel 717C	12Cr, 4Mo, 8Co, 8Al, rem Ni	active	-0.29
Niobium	1Zr, rem Nb	-	-0.3
Tungsten	100W	-	-0.3
Nickel	100Ni	active	-0.3
Rodar (Kovar)	29Ni, 17Co, rem Fe	-	-0.3
Hastelloy B	28Mo, 5Fe, 62Ni	active	-0.3
Inco Weld A	70Ni, 2Mn, 9Fe, 15Cr, Nb, Mo	active	-0.3
Rene 41	19Cr, 11Co, 10Mo, 3Ti, rem Ni	active	-0.3
Stellite 21	25Co, 27Cr, 5.5Mo, 2.8Ni, rem Co	powder	-0.31
18Ni Mar.250	7.5Co, 18Ni, 5Mo, rem Fe	heat treated	-0.31
Chromium	100Cr	active	-0.31
Cobalt	100Co	-	-0.32
Inconel X-750	73Ni, 7Fe, 15.5Cr, Ti, Nb, Ta	active	-0.32
Astroloy	15Cr, 5Mo, 3.5Ti, 4Al, rem Ni	-	-0.33
Nitritinol	45Ti, 55Ni	-	-0.33
RA330	19Cr, 35Ni, 5Mn, rem Fe	-	-0.33
18Ni Mar.250	7.5Co, 18Ni, 5Mo, rem Fe	annealed	-0.34
Udimet D 979	15Cr, 45Ni, 27Fe, 4Mo, 4W, Ti, Al	active	-0.36
Bearium B4	70Cu, 26Pb, rem Sn	casting	-0.37
Invar 36	36Ni, rem Fe	-	-0.38
Cerrottric	42Sn, rem Bi	-	-0.39
SnAg4C3.5	4Ag, 3.5C, rem Sn	solder	-0.42
Sn95Ag4.9In0.1	4.9Ag, 0.1In, 95Sn	solder	-0.43
Incoloy 903	38Ni, 15Co, 3Nb, 41Fe	-	-0.44
SnAg4	4Ag, 96Sn	solder	-0.46
SnAg5	5Ag, 95Sn	solder	-0.46
Tin	100Sn	-	-0.46
Sn10Sb	10Sb, 90Sn	solder	-0.47
Indalloy no.10	75Pb, 25In	solder	-0.48
Indalloy no.7	50Pb, 50In	solder	-0.49
AISI 316	18Cr, 13Ni, 2Mo, rem Fe	active	-0.49
Steel 9310	0.1C, 1.2Cr, 3.2Ni, 0.1V, rem Fe	annealed	-0.49
Lead	100Pb	-	-0.5
Vascojet 1000	0.4C, 5Cr, Mo, V	heat treated	-0.51
Vascojet 1000	0.4C, 5Cr, Mo, V	annealed	-0.51
AISI 347	18Cr, 12Ni, Nb, rem Fe	active	-0.51
Sn63	63Sn, 37Pb	solder	-0.51
Sn60	60Sn, 40Pb	solder	-0.51
Sn62Ag2	62Sn, 36Pb, 2Ag	solder	-0.51
Sn59Sb2	59Sn, 39Pb, 2Sb	solder	-0.51
Sn60Sb5	60Sn, 35Pb, 5Sb	solder	-0.51
Sn60Sb10	60Sn, 30Pb, 10Sb	solder	-0.51
Sn60Pb39.5	39.5Pb, 60Sn	solder	-0.51
PbSn5Ag1.5	5Sn, 1.5Ag, rem Pb	solder	-0.51
Nitralloy135Mod	1.6Cr, 1.1Al, 10.6Mn, rem Fe	-	-0.52
Steel 4130	0.3C, 0.82Cr, 1.8Ni, 0.41Mo, 0.07V, rem Fe	heat treated	-0.52
AISI 304	19Cr, 10Ni, rem Fe	active	-0.53
Steel 4135	0.35C, 1Cr, 0.2Mo, rem Fe	heat treated	-0.53
Steel 4340	0.4C, 0.8Cr, 1.8Ni, 0.25Mo, rem Fe	annealed	-0.53
Steel 4340	0.4C, 0.8Cr, 1.8Ni, 0.25Mo, rem Fe	heat treated	-0.54
Steel 1095	0.95C, 0.4Mn, 0.04P, 0.05S, rem Fe	annealed	-0.55
Steel 4130	0.3C, 0.82Cr, 1.8Ni, 0.41Mo, 0.07V, rem Fe	annealed	-0.55
Steel 4135	0.35C, 1Cr, 0.2Mo, rem Fe	annealed	-0.55
Steel 4140	0.4C, 1Cr, 0.2Mo, rem Fe	annealed	-0.55
AISI 420	0.35C, 13Cr, rem Fe	active	-0.56
AISI 434	0.12C, 17Cr, 1Mo, rem Fe	active	-0.56

AA 2219-T3,T4	6.3Cu,0.3Mn,0.18Zr,0.1V,0.06Ti,rem Al	-	-0.56
Steel 1010	0.1C, 0.4Mn, 0.04P, 0.05S, rem Fe	annealed	-0.57
Steel 1018	0.18C, 0.8Mn, 0.04P, 0.05S, rem Fe	annealed	-0.57
Steel 1020	0.2C, 0.4Mn, 0.04P, 0.05S, rem Fe	annealed	-0.57
Steel Hy Tuf	0.25C, 1.3Mn, 1.5Si,0.3Cr,1.8Ni,rem Fe	-	-0.59
ATSI 440B	17Cr, 0.5Mo, rem Fe	active	-0.59
AA 2014-T4	4.5Cu,1Fe,1Si,0.15Ti, rem Al	-	-0.61
AA 2017-T4	4Cu,1Fe,1Mg,0.1Cr, rem Al	-	-0.61
AA 2024-T3,T4	4.5Cu,1.5Mg, 0.6Mn, rem Al	-	-0.62
AA B295.0-T6	2.5Si,1.2Fe, 4.5Cu, rem Al	casting	-0.63
AA 295.0-T6	1Si,1Fe, 4.5Cu, rem Al	casting	-0.64
In75Pb25	75In, 25Pb	solder	-0.64
Indalloy no.1	50In, 50Sn	solder	-0.65
Cadmium	100Cd	chromate conversion coating	-0.65
AA 380.0-F	8.5Si, 2Fe, 3.5Cu, rem Al	casting	-0.66
AA 319.0-F	6Si,1Fe, 3.5Cu, rem Al	casting	-0.66
AA 333.0-F	9Si,1Fe, 3.5Cu, rem Al	casting	-0.66
Indium	100In	-	-0.67
AA 208.0-F	3Si,1.2Fe,4Cu, rem Al	casting	-0.68
AA 850.0-T4	0.7Si, 0.7Fe,1Cu,1Ni, rem Al	casting	-0.69
AA 2014-T6	4.5Cu,1Fe,1Si, 0.15Ti, rem Al	-	-0.69
Cadmium	100Cd	-	-0.7
AA 355.0-T6	5Si, 0.6Fe,1.3Cu, rem Al	casting	-0.71
AA 2024-T81	4.5Cu,1.5Mg, 0.6Mn, rem Al	-	-0.71
AA 2219-T6,T8	6.3Cu,0.3Mn,0.18Zr,0.1V,0.06Ti,rem Al	-	-0.72
AA 6061-T4	1Mg, 0.6Si, 0.25Cu, 0.2Cr, rem Al	-	-0.72
AA 413.0	12Si, 2Fe,1Cu, rem Al	casting	-0.73
AA B443.0	5Si, 0.8Fe, rem Al	casting	-0.73
AA 356.0-T6	7Si, 0.6Fe, rem Al	casting	-0.73
AA 360.0	9.5Si, 2Fe, 0.6Cu, rem Al	casting	-0.73
Tens-50	Si, Mg, Be, N, rem Al	cast sheet	-0.74
AA 4043	12Si,1Cu,1Mg, rem Al	-	-0.74
AA 6151	1Mg,1Fe, 0.25Zn, 0.15Ti, rem Al	-	-0.74
AA 7075-T6	5.6Zn, 2.5Mg,1.6Cu, 0.3Cr, rem Al	-	-0.74
AA 7178-T6	6.8Zn, 3Mg, 2Cu, 0.2Ti, rem Al	-	-0.74
AA 1160	98.4Al	-	-0.75
Aluminium	100Al	-	-0.75
AA 5356	5Zn, 0.1Ti, 0.1Cr, rem Al	-	-0.75
AA 5554	5Mg,1Mn, 0.25Zn, 0.2Cr, rem Al	-	-0.75
AA 1050	99.5Al	-	-0.75
Al 3Li	3Li, rem Al	-	-0.75
AA 1100	99.0Al	-	-0.75
AA 3003	1.2Mn, rem Al	-	-0.75
AA 6151	1Mg,1Fe, 0.8Mn, 0.25Zn, 0.15Ti, rem Al	-	-0.75
AA 6053	1.3Mg, 0.5Si, 0.35Cr, rem Al	-	-0.75
AA 6061-T6	1Mg, 0.6Si, 0.25Cu, 0.2Cr, rem Al	-	-0.75
AA 6063	0.7Mg, 0.4Si, rem Al	-	-0.75
Alclad 2014	4.5Cu,1Fe,1Si, 0.15Ti, rem Al	Alclad	-0.75
Alclad 2024	4.5Cu,1.5Mg , 0.1Cr, rem Al	Alclad	-0.75
AA 3004	1.5Mn,1Mg, rem Al	-	-0.76
AA 1060	99.6Al	-	-0.76
AA 5050	1.5Mg, rem Al	-	-0.76
AA 7075-T73	5.6Zn, 2.5Mg,1.6Cu, 0.3Cr, rem Al	-	-0.76
AA 5052-H38	2.5Mg, 0.25Cr, rem Al	-	-0.77
AA 5086	4Mg, 0.5Mn, rem Al	-	-0.77
AA 5154	3.5Mg, 0.25Cr, rem Al	-	-0.78
AA 5454	2.8Mg,1Mn, 0.2Ti, 0.1Cu, 0.2Cr, rem Al	-	-0.78
AA 4047	12Si, rem Al	-	-0.78
Al-C	Al, C	-	-0.78
Uranium	100U	-	-0.78
AA 5056	5.2Mg, 0.1Mn, 0.1Cr, rem Al	-	-0.79
AA 7079-T6	4.3Zn, 3.3Mg, 0.6Cu, 0.2Mn, 0.2Cr, rem Al	-	-0.79
AA 5456	5Mg, 0.7Mn, 0.15Cu, 0.15Cr, rem Al	-	-0.79
AA 5083	4.5Mg, 0.7Mn, rem Al	-	-0.79
AA 514	4Mg, rem Al	casting	-0.79
AA 518	8Mg, 0.8Fe, 0.05Ni, 0.05Sn, rem Al	casting	-0.79
AA 520.0-T4	10Mg, 0.2Cu, 0.2Ti, rem Al	casting	-0.84
X7005-T6,T63	4.8Zn,1.5Mg, 0.2Cr, rem Al	-	-0.85
AA 7039-T6,T63	4Zn, 3Mg, 0.2Cr, rem Al	-	-0.85
AA 7072	1Zn, 0.5Si, 0.3Cr, rem Al	-	-0.87
AA A712	6.5Zn, 0.8Mg, rem Al	casting	-0.9
Beryllium	100Be	-	-0.97
Zinc	100Zn	-	-1.03
Manganese	100Mn	-	-1.21
Erbium	100Er	-	-1.34
Electron	4Zn, 0.7Zr, rem Mg	-	-1.55
ZW3	3Zn, 0.5Zr, rem Mg	-	-1.57
AZ61	6Al,1Zn, 0.3Mn, rem Mg	-	-1.58
AZ31B	3Al,1Zn, rem Mg	-	-1.6
Magnesium	100Mg	-	-1.6
HK31A	0.7Zr, 3Th, rem Mg	-	-1.61