

Electrochemical couples between aluminum alloys

(Names highlighted in yellow or blue) and other base metals, in a 2% saline solution.
There is no appearance of significant corrosion when the galvanic couple value is less than 300mV

	Pt (Platinum/ Platine)	Au (Gold/ Or)	Ti (Titanium / Titane)	AlSi 316L (passive/passif)	Ag (Silver/ Argent)	Ni (Nickel/ Nickel)	Ni Cu 30 (Monel 400)	NiCr15 Fe8 (Inconel 600)	Cu55 Zn23 Ni22 (Arcap)	Cu (Copper/ Cuivre)	Al10 Sn66 Pb34	Cu Zn34 (Brass/ Laiton)	Cu88 Sn12 (Bronze)	Sn (Tin/ Etain)	Pb (Lead / Plomb)	Al Cu Mg1 (Duralumin)	Mild steel / Acier doux	Al Si 10Mg (Alpax H)	Al 99.5 (Aluminum)	Hard steel/ Acier dur	Al Mg5 (Duralinox)	ADC12 (Aluminum alloy)	Cd (Cadmium/ Cadmium)	Fe (Steel / Fer)	Cr (Chromium/ Chrome)	Al Mg Si0.7 (Almasilium)	Sn75 Zn25	Zn (Zinc/ Zinc)	Al PVD (Physical vapor deposition)	Mg (Magnesium)
Pt (Platinum/ Platine)	0	130	250	250	350	430	430	430	450	570	600	650	770	800	840	940	1000	1085	1090	1085	1100	1100	1100	1200	1200	1320	1400	1400	1900	
Au (Gold/ Or)	130	0	110	110	220	300	300	300	320	410	470	520	610	670	710	810	870	930	960	965	970	870	970	975	1070	1070	1230	1270	1620	
Ti (Titanium / Titane)	250	110	0	0	110	180	180	180	200	320	350	400	520	580	590	890	750	810	840	845	850	850	850	355	950	950	1100	1150	1700	
AlSi 316L (passive/passif)	250	110	0	0	110	180	180	180	200	320	350	400	520	580	590	890	750	810	840	845	850	850	850	355	950	950	1100	1150	1700	
Ag (Silver/ Argent)	350	220	100	100	0	80	80	80	100	220	250	300	420	450	490	590	650	715	740	745	750	750	755	850	850	1010	1050	1650		
Ni (Nickel/ Nickel)	430	300	180	180	80	0	0	0	20	110	170	220	340	370	410	510	570	635	660	665	670	670	670	675	770	770	830	970	1520	
Ni Cu 30 (Monel 400)	430	300	180	180	80	0	0	0	20	110	170	220	340	370	410	510	570	635	660	665	670	670	670	675	770	770	830	970	1520	
NiCr15 Fe8 (Inconel 600)	430	300	180	180	80	0	0	0	20	110	170	220	340	370	410	510	570	635	660	665	670	670	670	675	770	770	830	970	1520	
Cu55 Zn23 Ni22 (Arcap)	450	320	200	200	100	20	20	20	0	120	150	200	320	350	380	490	550	615	640	645	650	650	655	750	750	910	950	1500		
Cu (Copper/ Cuivre)	570	440	320	320	220	140	140	140	120	0	30	80	200	230	270	370	430	495	520	525	530	530	535	630	630	780	830	1380		
Al10 Sn66 Pb34	600	470	350	350	250	170	170	170	150	30	0	50	170	200	210	310	400	465	490	495	500	500	505	600	600	760	800	1350		
Cu Zn34 (Brass/ Laiton)	650	520	400	400	300	220	220	220	200	80	50	0	120	150	190	290	350	415	410	445	450	450	455	550	550	710	750	1300		
Cu88 Sn12 (Bronze)	770	640	520	520	420	340	340	340	320	200	170	120	0	30	70	170	230	295	320	325	330	330	335	430	430	590	630	1180		
Sn (Tin/ Etain)	800	670	550	550	450	370	370	370	350	230	200	150	30	0	40	140	200	265	290	295	300	300	305	400	400	560	600	1150		
Pb (Lead / Plomb)	840	710	590	590	490	410	410	410	380	270	240	190	70	40	0	100	160	225	250	255	260	260	265	360	360	520	560	1110		
Al Cu Mg1 (Duralumin)	940	810	690	690	590	510	510	510	490	370	340	290	170	140	100	0	60	125	150	155	160	160	165	260	260	420	560	1010		
Mild steel / Acier doux	1000	870	750	750	650	570	570	570	550	430	400	350	230	200	160	60	0	65	90	95	100	100	105	200	200	360	400	900		
Al Si 10Mg (Alpax H)	1065	935	815	815	715	635	635	635	615	495	465	415	295	265	225	125	65	0	25	30	35	35	40	135	135	295	355	885		
Al 99.5 (Aluminum)	1090	960	840	840	740	660	660	660	640	520	490	440	320	290	250	150	90	25	0	5	10	10	15	110	110	270	310	860		
Hard steel/ Acier dur	1095	965	845	845	745	665	665	665	645	525	495	445	325	295	255	155	95	30	5	0	5	5	10	105	105	265	305	855		
Al Mg5 (Duralinox)	1100	970	850	850	750	670	670	670	650	530	500	450	330	300	260	160	100	35	10	5	0	0	5	100	100	260	300	850		
ADC12 (Aluminum alloy)	1100	970	850	850	750	670	670	670	650	530	500	450	330	300	260	160	100	35	10	5	0	0	5	100	100	260	300	850		
Cd (Cadmium/ Cadmium)	1100	970	850	850	750	670	670	670	650	530	500	450	330	300	260	160	100	35	10	5	0	0	5	100	100	260	300	850		
Fe (Steel / Fer)	1105	975	855	855	755	675	675	675	655	535	505	455	335	305	265	165	105	40	15	10	5	5	5	105	105	265	295	845		
Cr (Chromium/ Chrome)	1200	1070	950	950	850	770	770	770	750	630	600	550	430	400	380	280	200	135	110	105	100	100	100	95	0	160	200	750		
Al Mg Si0.7 (Almasilium)	1200	1070	950	950	850	770	770	770	750	630	600	550	430	400	380	280	200	135	110	105	100	100	100	95	0	160	200	750		
Sn75 Zn25	1350	1230	1110	1110	1010	930	930	930	910	790	760	710	590	560	520	420	360	295	270	265	260	260	225	160	160	0	40	590		
Zn (Zinc/ Zinc)	1400	1270	1150	1150	1050	970	970	970	950	830	800	750	630	600	560	460	400	335	310	305	300	300	295	200	200	40	0	550		
Zn Al4 (Zamak3/Zamac 3)	1400	1270	1150	1150	1050	970	970	970	950	830	800	750	630	600	560	460	400	335	310	305	300	300	295	200	200	40	0	550		
Al PVD (Physical vapor deposition)	1400	1270	1150	1150	1050	970	970	970	950	830	800	750	630	600	560	460	400	335	310	305	300	300	295	200	200	40	0	550		
Mg (Magnesium)	1900	1820	1700	1700	1600	1600	1600	1600	1520	1500	1390	1300	1180	1180	1110	1010	950	889	880	880	880	880	880	845	845	845	590	560	560	0



Other limitations in the use of aluminum alloys

To avoid ignition hazards due to impact or friction, standards for explosion-proof equipment (IEC 60079-0) restrict the use of aluminum.

Enclosures for group I:

The total weight of aluminum + magnesium + titanium should not exceed 15% of the total weight (or 6% of the total weight of magnesium + titanium alloys having no aluminum), which eliminates, for that group, most alloys containing aluminum

Enclosures for Group II:

- For zone 0: the total weight of aluminum + magnesium + titanium + zirconium should not exceed 10% of the total weight (or 7.5% of the total weight of magnesium + titanium + zirconium alloys for not containing aluminum), which eliminates, for this group and this zone most alloys containing aluminum

For zone 1: the weight of magnesium should not exceed 7.5% of the total weight

For zone 2: no specifications



Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice