

TECHNICAL INFORMATION

Galvanic couples

Corrosion phenomena depend on a number of factors such as temperature, ambient humidity, galvanic couple, the nature of the materials, etc.

The main cause of corrosion is related to an exchange of electrolytic between 2 materials through an electrolyte (humidity, liquid, etc.). The electrolysis which is produced generates a current that attacks the least resistant material (anode).

It is necessary to reduce the difference in potential (DDP) between the different materials.

The difference in potential between 2 metals is measured in an aqueous solution with 2% sodium chloride (NaCl). It is expressed in volts.

Electrolyte : Water +2% sea salt at 21°C after 24 hours		GALVANIC COUPLES BETWEEN SOME MATALS (V)													
		Potential (V) relative to saturated calomel @25°C - MIL STD 171F	Platinum, Graphite, Gold	Silver	Titane (Ti)	Nickel, Monel, Copper, Maillechort (Cu-Ni-Zn)	Brass, chromium steel	Bronze, Tin, Stainless steel 18% chromium	Stainless steel 13% chromium	Fer (Fe)	Aluminium	Galvanized steel	Zinc	Magnesium	
Cathodic ↑ Direction of the electro-chemical reaction ↓ Anodic	Designation														
		Platinum, Graphite, Gold	+0.25	0	0.25	0,40	0.55	0.60	0.75	0,80	0,95	1.00	1,30	1.35	1.85
		Silver	0.00	0.25	0.00	0,15	0.30	0.35	0.50	0.55	0.70	0.75	1.05	1.10	1.60
		Titane (Ti)	-0.15	0,40	0,15	0.00	0,15	0,20	0,35	0.40	0,55	0,60	0,90	0,95	1,45
		Nickel, Monel, Copper, Maillechort (Cu-Ni-Zn)	-0.30	0.55	0.30	0,15	0.00	0.05	0.20	0.25	0.40	0.45	0,75	0.80	1.30
		Brass, Chromium steel	-0.35	0.60	0.35	0,20	0.05	0.00	0.15	0.20	0.35	0.40	0,70	0.75	1.25
		Bronze, Tin, Stainless steel 18% chromium	-0.50	0.75	0.50	0,35	0.20	0.15	0.00	0.05	0.20	0.25	0,55	0.60	1.10
		Stainless steel 13% chromium	-0.55	0.80	0.55	0.40	0.25	0.20	0.05	0.00	0.15	0.20	0,50	0.55	1.05
		Fer (Fe)	-0.70	0.95	0.70	0,55	0.40	0.35	0.20	0.15	0.00	0.05	0,35	0.40	0.90
		Aluminium	-0.75	1.00	0.75	0,60	0.45	0.40	0.25	0.20	0.05	0.00	0,30	0.35	0.85
		Galvanized steel	-1.05	1,30	1.05	0,90	0,75	0,70	0,55	0,50	0,35	0,30	0,00	0,05	0,55
		Zinc	-1.10	1.35	1.10	0,95	0.80	0.75	0.60	0.55	0.40	0.35	0,05	0.00	0.50
		Magnesium	-1.60	1.85	1.60	1,45	1.30	1.25	1.10	1.05	0.90	0.85	0,55	0.50	0.00

Fillers	DDP (V)													
56TB and 67DTB (Al/ Ag)	-0.25	0.50	0.25	0.10	0.05	0.10	0.25	0.30	0.45	0.50	0.8	0.85	1.35	
56TK and 67DTK (Cu/ Ag)	-0.13	0.38	0.13	0.02	0.17	0.22	0.37	0.42	0.57	0.62	0.92	0.97	1.47	
55TN and 66DTN (Ni/ C)	-0.15	0.40	0.15	0,00	0.15	0.20	0.35	0.40	0.55	0.60	0.90	0.95	1.45	
57TP and 55TP (carbon)	+0.05	0.20	0.05	0,20	0.35	0.40	0.55	0.60	0.75	0.80	1.10	1.15	1.65	

In red : use in a dry environment
In white : Use in the presence of humidity (DDP ≤0.5V)
In green : Use in the presence of salt mist (DDP ≤0,25V)