

Bi-Metallic Corrosion

Because of the number of variables that contribute towards electrolytic or bi-metal corrosion, it is not practical to illustrate all possible situations and therefore the following data should be used for guidance only. If more definitive evidence is required, then we suggest that a test be conducted, employing the materials to be used and analysing the results. As a general rule the less noble metal corrodes leaving the more noble metal intact, for example, if aluminium and silver are in contact in the presence of a suitable electrolyte a current will flow, resulting in severe corrosion of the aluminium.

It should, however, be remembered that many metals are protected from corrosion by natural oxide or passive films and unless these are broken down then they will behave as if they are more noble than their electro potential would suggest. Furthermore the geometry and the relative surface areas of the contacting metals can have a marked reaction on the overall corrosion reaction.

Environmental Conditions

- A. Internal equipment housed in a room protected from the outside environment.
- B. External equipment housed outside in a marine atmosphere.
- C. Equipment immersed in seawater.

Corrosion Effect

1. Severe corrosion may occur between contact material and gasket.
2. Fairly severe corrosion may occur between contact material and gasket.
3. Slight corrosion may occur between material and gasket.
4. Very slight or no corrosion may occur between contact material and gasket.

Gasket Type	Monel	Silver	Beryllium Copper	Stainless Steel	TCS	Aluminium
Environmental Condition	ABC	ABC	ABC	ABC	ABC	ABC
Contact Metal						
Aluminium	311	311	311	421	311	444
Brass	432	432	443	433	443	311
Cadmium	321	321	321	332	432	444
Carbon	432	321	431	443	422	311
Iron	321	321	321	321	432	421
Chromium	443		444	422	321	
Copper	432	432	444	421	422	311
Phosphor Bronze	432	432	444	442	433	311
Nickel	422	321	432	432	422	311
Silver	432	444	322	444	422	311
Stainless Steel	432	444	443	444	422	421
Tin	422	422	433	422	444	311
Zinc	321	321	321	312	432	433