

BASICS OF CORROSION – BIMETALLIC CORROSION

What is bimetallic corrosion?

Bimetallic corrosion is the accelerated corrosion of one metal placed in contact with a different more noble (less corroding) metal.

Why is it a problem?

Because, it is usually localised and if the area of the corroding metal is small compared to the metal it is in contact with can occur very rapidly.

Where does it occur typically?

Around fixings such as nuts and bolts, rivets or welds but generally in situations where different metals are in contact and can become wet.

Does it happen with all combinations of metals?

No. The metals have to be significantly different in terms of their nobility in the specific environment that they are exposed to. This can be looked up in a table.

Ranking in sea water (top of table is most noble)

Noble

Platinum

Gold

Titanium

Stainless Steel 316 (passive state)

Brasses

Tin

Lead

Stainless steel 316 (active state)

Carbon steel

Aluminium alloys

Zinc

Magnesium

Corrosive

How can bimetallic corrosion be prevented?

By isolating the metals electrically using insulators

By isolating the metals from the environment using a coating

By choosing metals that are close together in the table or coating one of them to achieve this.