

Consequences (Effects) Of Corrosion

The economic and social consequences of corrosion include

- I. Due to formation of corrosion product over the machinery, the efficiency of the machine gets failure leads to plant shut down.
- II. The products contamination or loss of products due to corrosion.
- III. The corroded equipment must be replaced.
- IV. Preventive maintenance like metallic coating or organic coating is required.
- V. Corrosion releases the toxic products.
- VI. Health (e.g. from pollution due to a corrosion product or due to the escaping chemical from a corroded equipment).



Corrosion Types

- ✓ General Attack Corrosion
- ✓ Localized Corrosion
- ✓ Galvanic Corrosion
- ✓ Environmental Cracking
- ✓ Flow-Assisted Corrosion (FAC)
- ✓ Intergranular corrosion
- ✓ De-Alloying
- ✓ Fretting corrosion
- ✓ High-Temperature Corrosion



How Corrosion Happens

Types of Dry or Chemical Corrosion:

1. Corrosion by Oxygen or Oxidation corrosion

2. Corrosion by Hydrogen

3. Metal Corrosion



Types of Wet or Electrochemical Corrosion

I. Galvanic (or Bimetallic) Corrosion

II. Differential aeration or concentration cell corrosion

E-pH Diagram Of Water

- The equilibrium between hydrogen ions and hydrogen gas in an aqueous environment



- Adding sufficient OH^- to both sides of reaction results in the following equation in neutral or alkaline solutions



- At higher pH than neutral, this equation is a more appropriate representation of the situation. However, since the concentrations of $[\text{H}^+]$ and $[\text{OH}^-]$ ions are related by the dissociation constant of water, these equations can be summarized in a Nernst equation.