

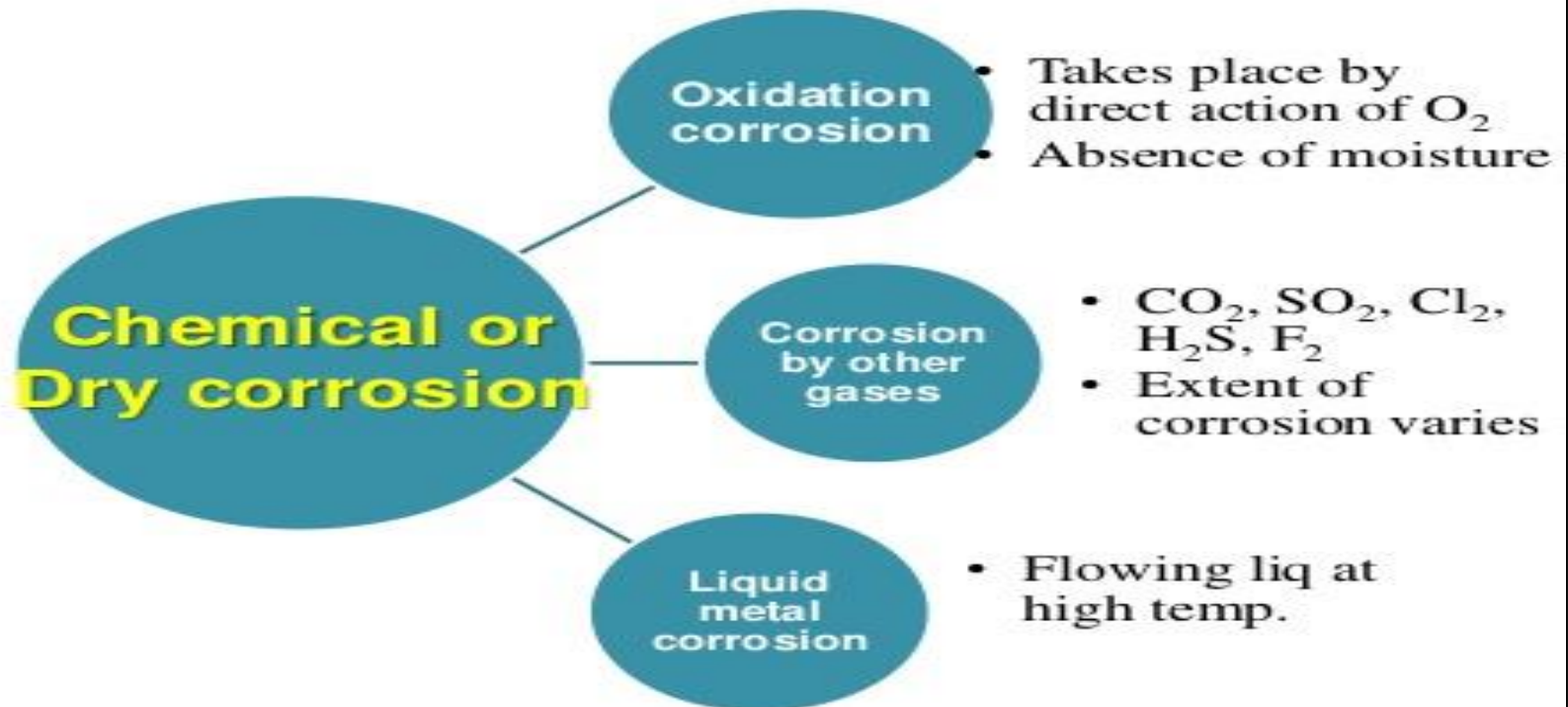


DRY (OR) CHEMICAL CORROSION



- **DIRECT CHEMICAL REACTION ON METALS BY ATMOSPHERIC GASES** like O_2 , H_2S , SO_2 etc.,

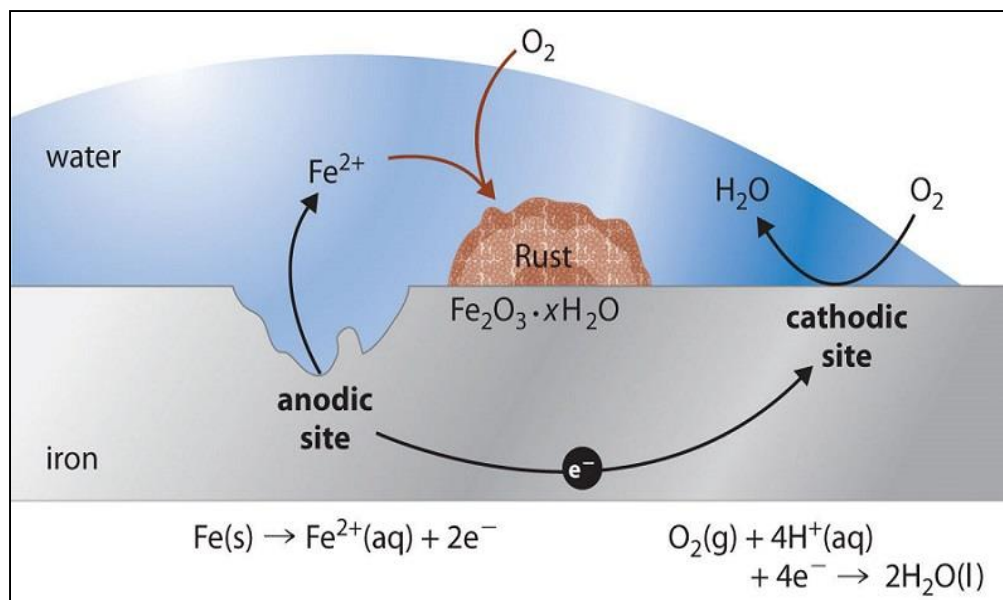
Classification





1.OXIDATION CORROSION

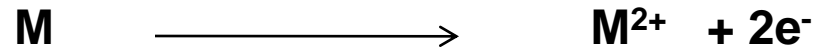
- At low temp (Alkali and Alkaline earth metals Rapidly oxidized.)
- At high temp (Almost all metals Except native metals)



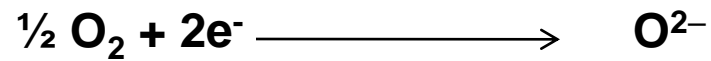


The mechanism of oxidation corrosion

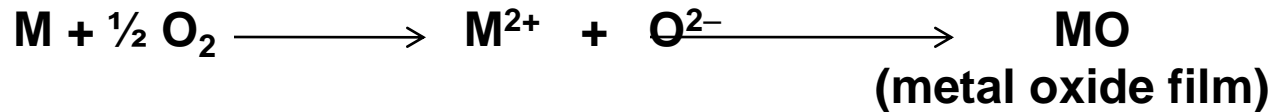
At Anode



At Cathode



Net Reaction





NATURE OF OXIDE LAYERS/ FILMS



1. Stable Oxide Layer:

Fine grained structure, Get adsorbed tightly, impervious in nature

Ex. Oxides of heavy metals

2. Unstable Oxide Layer

Decomposes back into the M and O₂

Ex. Oxides of noble metals

3. Volatile Oxide layer

volatilizes as soon as it is formed, leaving the metal surface

Ex. MoO₃



PILLING BED-WORTH RULE



- ❖ If volume of Oxide layer formed < the volume of metal (Porous and **Non-protective**).
- ✓ **Eg. Oxides of alkali & alkaline earth Metals**
- ❖ If volume of metal (Non-Porous and **protective**).
- ✓ **Eg. Oxides of heavy Metals**

• PILLING BED-WORTH RATIO

PB= Volume of metal oxide/ Volume of metal consumed