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Heterogeneous

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Present

Condition of presence of rusting homogenous iron

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Electrodes at rusting of iron

- Cathode
- Anode

Electrode exhibited by iron in rusting

Anode

Cause of exhibition of anode by iron in rusting

High electropositivity than impurities

Electrode exhibited by impurites in rusting of iron

Cathode

Cause of exhibition of cathode by imputities in rusting of iron

Low electropositivity than iron

Electrolytes in rusting of iron

Gases dissolved in water as

- Carbon dioxide
- Oxygen
- Sulphur dioxide

Process of formation of rusting of iron

- Formation of ferrous ions
- Formation of hydroxyl ions
- Formation of ferrous hydroxide
- Formation of ferric hydroxide
- Dissassociation of ferric hydroxide
- Formation of rust

Expression of initial reaction at anode in rusting of iron

$$\mathrm{Fe} \longrightarrow \mathrm{Fe}^{++} + 2\,\mathrm{e}^{-}$$

Reactants in initial reaction at anode in rusting of iron

- Iron

Products in initial reaction at anode in rusting of iron

- Ferrous ion
- 2 electron

Expression of initial reaction at cathode in rusting of iron

$$H_2O + O_2 + 2\,e^- \longrightarrow OH^-$$

Reactants in initial reaction at cathode in rusting of iron

- Water
- Oxygen
- 2 Electrons

Products in initial reaction at cathode in rusting of iron

- Hydroxyl ions

Expression of reaction of formation of ferrous hydroxide in rusting of iron

$$Fe^{++} + OH^- \longrightarrow Fe(OH)_2$$

Reactants of reaction of formation of ferrous hydroxide in rusting of iron

- Ferrous ions
- Hydroxyl ions

Reactants in formation of ferric hydroxide in rusting of iron

- Ferrous hydroxide
- Water

Expression of reaction of formation of ferric hydroxide in rusting of iron

$$Fe(OH)_2 + H_2O \longrightarrow Fe(OH)_3$$

Expression of reaction of dissassociation of ferric hydroxide in rusting of iron

$Fe(OH)_3 \longrightarrow Fe_2O_3 + H_2O$

Products in dissassociation of ferric hydroxide in rusting of iron

- Ferric oxide

Expression of reaction of rust in rusting of iron

$Fe_2O_3 + H_2O \longrightarrow Fe_2O_3 \cdot XH_2O$

Reactants in formation of rust in rusting of iron

- Ferric oxide
- Water

Products in formation of rust in rusting of iron

Rust

List of methods for prevention of rusting

- Enamel
- Oil
- Soap
- Antirust solution
- Sacrificial anode

Examples of antirust solutions

- Conc. Nitric acid
- Con. Phosphoric acid
- Potassium dichromate

Mechanism of working process of antirust solutions

- Covering of iron by insoluble ferrosoferric oxide

Term for sacrificial anode in prevention of rusting

- Cathode protection

Metals used at sacrificial anode in prevention of rusting

- Zn
- Al
- Mg

Type of metal used at sacrificial anode in prevention of rusting

Metals having high electropositivity than iron

Electrode exhibited by iron in sacrificial anode in prevention of rusting

Cathode

Electrode exhibited by metals other than iron in sacrificial anode in prevention of rusting

Anode

Mechanism of sacrificial anode in prevention of rusting

Absence of formation of ferrous ions

Scope of application of sacrificial anode in prevention of rusting

As long as metallic conduction is present