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## **Various coatings for protection by heat & electrical deposits**

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**Objectives :** At the end of this lesson you shall be able to

- **state the need for prevention of corrosion**
  - **name the different methods of metallic coatings used for preventing corrosion**
  - **state the different cementation processes**
  - **state the application of different metallic protective coatings**
  - **state the treatments to provide pleasing finish.**
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Most of the common non-ferrous metals and alloys form their own protective coating when exposed to the atmosphere. Corrosion prevention is largely relevant to iron and steel. For maximum life, accuracy and utility of a component, it is very essential that corrosion is controlled or prevented.

One method of corrosion-proofing is to protect the metallic material from the corroding influences by means of protective coats or deposits which prevent or limit corrosion to acceptable levels.

### **Protective treatment of metal surface**

The type of protective treatment used depends upon:

- the material from which the component is made
- the purpose for which it is used
- the environment in which it is to operate.

### **Non-metallic coatings**

Oil or grease is applied when parts must remain bright (vernier caliper). Grease and oil must be acid free; otherwise the parts will be corroded.

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## **Metallic coatings**

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### **Molten metal bath**

This is the coating of mild steel with zinc. There are two alternative processes, namely hot dip galvanising, in which the cleaned and fluxed work is dipped into a bath of molten zinc, and electrolytic galvanising where the zinc is deposited electrolytically on the sheet metal base.

### **Cladding**

In this process a composite billet is made up of the base metal and the coating is done by rolling or drawing the layers of metal on to base metal. (eg. coins) More expensive metals can be saved in this way.

### **Spraying or coating with paint**

Painting is widely used for the protection and decoration of metallic components and structures. Red lead forms an effective protective coat when used as a primer. High quality of paints (oil-bound paints or lacquers) are used according to the purpose.

### **Enamelling**

This is carried out by spraying or sprinkling enamel powder on the surface and baking at a suitable temperature (80 to 100C). The coating is heat-resistant and resistant to chemicals as well. The enamel consists of glass powder, a mixture of quartz, felspar, alumina and

### **Plastic coatings**

These are done for functional as well as for anti-corrosive and decorative purposes. These coatings are applied by immersion in molten plastic or by varnishing. The common oil paints are being replaced by synthetic resin paints, cellulose paints and chlorinated rubber paints.

### **Spraying**

Metal spraying is used for a variety of purposes. The process consists of spraying molten or heated particles of metal on a prepared surface with compressed air, Eg. surfaces of shafts is done by depositing wear-resistant alloy steel or plain carbon steels.