# CORROSION OF METALS AND NEW METHODS OF THEIR PREVENTION

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**Abstract:** *In this article, the effectiveness of the corrosion of metals and their prevention, the causes, problems, negative consequences of corrosion and the developed methods and solutions for their prevention are mentioned in detail.*

**Key word:** *Chemical corrosion; gas corrosion; corrosion; cathode coating; anode coating.*

**Introduction:**Most metals used in mechanical engineering are corroded by exposure to air, water, acid, alkali, and salt solutions. This phenomenon is called corrosion. The word corrosion comes from the Latin "corrodore" which means decay. Corrosion is of two types in terms of its physico-chemical nature: chemical and electrochemical corrosion [1-6]. The type of corrosion that occurs in metals depends on the environment surrounding the metal. Chemical corrosion occurs when metals are exposed to dry gases (oxygen, sulfide anhydride, hydrogen sulfide, halogens, carbon dioxide, etc.), non-electrolyte liquids. This is especially common in high-temperature conditions, so this type of decay is also called gas corrosion of metals. Gas corrosion is particularly damaging to metallurgy. To protect iron and steel products from gas corrosion, their surface is covered with aluminum. Corrosion caused by liquid fuels is also included in chemical corrosion. The main components of liquid fuel do not corrode metals, but corrosion occurs as a result of the action of sulfur, hydrogen sulfide and sulfur-containing organic substances contained in petroleum and lubricating oils on metals. This effect is manifested only in the absence of water. Converts to electrochemical corrosion in water. Corrosion caused by electrolytes is called electrochemical corrosion. Most metals corrode mainly due to electrochemical corrosion. Electrochemical corrosion occurs as a result of the formation of small galvanic elements in the metal.

**Literature analysis and methodology**

For example, suppose copper metal touches iron in humid air. In this case, a galvanic element is formed (iron acts as an anode, copper acts as a cathode). Iron oxidizes: When iron is in contact with tin, corrosion occurs more slowly than when iron is in contact with copper, iron is not corroded when it is in contact with zinc, because iron is a purer metal than zinc; in the galvanic element formed by zinc and iron in the presence of electrolytes, zinc acts as an anode, and iron acts as a cathode. Several measures are used to protect metals from corrosion: a) covering the metal surface with other metals; b) covering the metal surface with non-metallic substances; c) adding various additives to metals; g) covering the metal surface with chemical compounds.

**Discussion:** One of the methods of coating the metal surface with other metals is anode coating. The standard electrode potential of the metal used for this purpose should have a negative value compared to that of the metal to be protected from corrosion in the activity range of metals. For example, zinc coating (anodic coating) of iron is extremely beneficial, because the iron object does not corrode until all of the zinc coating its surface is depleted. When iron is coated with tin, a cathodic coating is obtained because the coating metal is more original than the metal to be coated. If any part of the cathode coating moves, the metal being protected, i.e. iron, corrodes very quickly.

**Conclusion:** Today, corrosion of metals has a significant impact on the surface cleanliness of parts. Therefore, metal surfaces are protected from corrosion with other metals, with non-metallic substances, by adding various additives to metals, and by coating the metal surface with chemical compounds. Corrosion of metals is prevented by such methods.

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