



Nickel Alloy Coatings

Why in News?

As per an autonomous Research and Development Centre of the [Department of Science and Technology \(DST\)](#), a new method of deposition of Nickel alloy coatings on engineering-grade materials can replace environmentally toxic chrome plating.

What is Chrome Plating?

- **About:**
 - Chrome plating is a **process by which a thin layer of chromium is deposited on a metal surface** using an electroplating process.
 - The process of depositing a layer of any desired metal on another material by means of electricity is called [electroplating](#).
- **Properties:**
 - The chromium layer is **highly reflective and provides a hard, durable surface** that is **resistant to corrosion**.
- **Significance:**
 - Chrome plating is **often used on automotive parts**, as well as on household fixtures such as door handles, and in **many industrial applications**.
- **Disadvantage:**
 - The process of chrome plating **involves the use of hexavalent chromium, which is a known human carcinogen**.
 - It **can cause respiratory problems**, skin irritation, and an increased risk of lung cancer when inhaled. It **can also cause skin irritation**, and allergic reactions and can be toxic **when ingested**.

What is Nickel Alloy Coating?

- **About:**
 - Nickel coating provides a unique combination of corrosion and wear resistance. It can add **brightness, luster and appeal**.
 - It also provides excellent adhesion properties for subsequent coating layers, which is why **nickel is often used as an 'undercoat' for other coatings, such as chromium**.
- **Applications:**
 - **Aerospace:** Nickel alloy coatings are used on aircraft and aerospace components to provide protection against corrosion and wear, as well as to improve the durability and lifespan of the parts.
 - **Automotive:** Nickel alloy coatings are used on automotive parts to protect against corrosion and wear, as well as to improve the durability and lifespan of the parts.
 - **Food Processing:** Used on food processing equipment to protect against corrosion and to provide a non-stick surface.

[Source: PIB](#)

