

## **Investigations on nickel coated ABS developed by FDM**

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**Abstract:**

The Present investigation on Copper and Nickel electroplated FDM based Poly Acrylonitrile Butadiene Styrene (ABS) models with the improvements of the mechanical properties and to enable them to be used as end products of aerospace, electrical and automotive applications.

The FDM-ABS test samples are initially coated with the layer thickness of 5 micron of copper, then plated with varying nickel coatings (10, 30, and 50 microns). The coating process of thin metal layers on ABS samples involves many steps like surface cleaning, etching, surface activation, electroless and electro plating. In this research the list of mechanical properties like tensile, impact, compression, flexural strength and hardness were considered on uncoated and coated FDM-ABS samples. The experimental results indicated that 55  $\mu\text{m}$  (5+50) samples exhibited better mechanical properties over the uncoated samples. Finally, the process is applied for developing prototype of automobile parts, with sufficient mechanical strength and stiffness.