



Copper's natural properties limit substitution

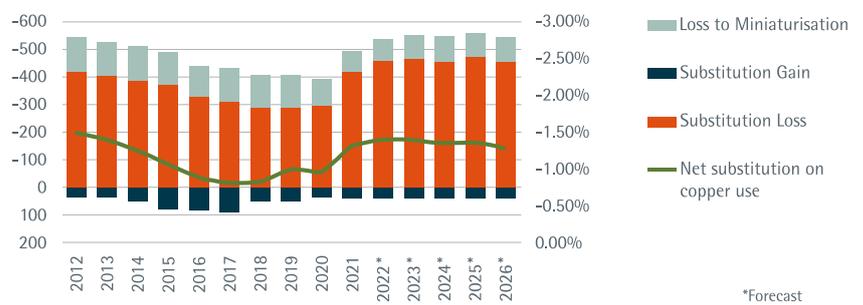
Study Name: Copper Substitution Survey 2022
Study Author: DMM Advisory Group
First Presented: March 2022

Copper substitution stood at 1.32 percent of total global copper usage in 2021. The overall net substitution is predicted to stabilize in 2023 following slight increases in 2021 and predicted increases in 2022.

Overview

New research, commissioned by the International Copper Association (ICA) and conducted by DMM Advisory Group, found copper substitution remains limited due to the material's ability to provide the best cost-performance combination for many applications, such as electrical plates sheet strips and foils (PSSF), building wires, equipment wires and critical alloy applications. Winding wires in electric motors experienced gains against aluminum due to stricter energy-efficiency requirements.

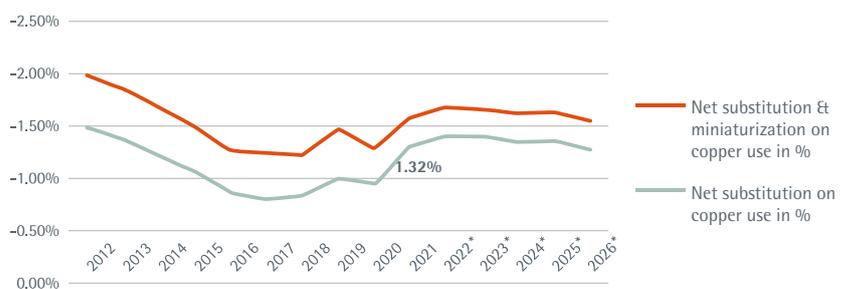
Copper Substitution and Miniaturization - in kt and % of Copper Use in 2016-2026



Key Findings

- The increase from 0.95 percent of total global copper use in 2020 to 1.32 percent in 2021 is mainly driven by relative and absolute material cost.
- The combination of strong demand and supply disruptions led to increasing copper material costs in 2021. Therefore, the overall net substitution of copper increased, but substitution still had only a limited impact on total usage globally.
- Net substitution is expected to further increase in 2022 before stabilizing after 2023.
- Copper use will continue to increase, as new green demand drivers will have an increasing impact in addition to the normal copper demand growth.
- These green demand drivers of copper use include electrification, e-mobility, energy efficiency and high tech.

Copper Substitution and Miniaturization - in Percent of Copper Use in 2012-2026



Copper Use Forecast In kt

