

Copper and Automotive Wire Harness

Name of Study: Substitution in Automotive Wire Harness

Research Conducted by: The Martec Group

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The automotive wire harness is a set of wires, terminals and connectors running throughout an entire vehicle and it plays a critical role in a vehicle's overall operation and reliability.

Throughout the wire harness, copper is widely used due to its high conductivity, ductility and reliability.

Key Findings:

- In 2020, 95% of automotive wire harnesses will remain copper.
- Demand for copper in automotive wire harnesses is expected to grow to 1.15 million tonnes globally by 2020 – up from 1 million tonnes globally in 2015.
- Continued downsizing of gauges supports use of copper.
- Greater numbers of electric and hybrid vehicles, which require relatively more copper use per vehicle, support overall demand growth.

Copper substitution in wire harnesses is limited

- Smaller-gauge wires are increasing in order to support technological developments.
- OEMs globally are working to reduce gauge size in order to combat vehicle weight.
- Copper is the preferred material to handle these items vs. aluminum.

Copper's role in the total automotive makeup continues to be strong

- The study reveals overall global vehicle production is expected to increase from about 92,500,000 total vehicles in 2016 to almost 102,000,000 by 2020.
- Current market demand for copper in automotive wire harnesses was ~1 million tonnes globally in 2015 and is expected to grow to ~1.15 million tonnes by 2020.

Copper's Advantages over aluminum

- Due to its inherent properties, copper can be used more easily in thinner gauge applications compared with aluminum.
- Copper is easier to manufacture and assemble into packaged wire harnesses than aluminum.
- Copper has smaller bundle-sizing capabilities.
- Malfunctioning aluminum wires can generate significant heat.
- Corrosion and termination issues impact aluminum wires. They are not a concern for copper.

Methodology

The Martec Group, a research firm providing strategic intelligence and market research solutions, conducted a global study demonstrating the overall impact of substitution in the automotive wire harness industry. Over the course of the research, 79 interviews were completed with various key global OEMs or global wire harness suppliers.

For additional information about copper or International Copper Association please visit www.copperalliance.org or www.sustainablecopper.org.

For enquiries, email colin.bennett@copperalliance.org.uk or bryony.samuel@copperalliance.org.uk.

