

CCC® Series

Engineered Copper Composite Conductor Technology

A New Class of Copper-Based Conductors

PAGE 1 — TECHNOLOGY PLATFORM

Overview

CCC® is an advanced copper composite conductor technology developed as a high-performance metallic platform for modern electrical energy systems.

Rather than being limited to a single product format, CCC® is engineered as a conductor material architecture capable of integration into cables, busbars, stranded conductors, laminated profiles, and custom current-carrying components.

The technology combines a continuous copper interface with a structurally optimized internal architecture to deliver controlled electrical performance, mechanical stability, and material efficiency.

Positioning

CCC® represents a new class of engineered copper-based conductors designed to expand electrical design possibilities beyond traditional material constraints.

Technology Architecture (Conceptual Representation)

Continuous Copper Interface
Engineered Cohesion Zone
Structural Core Architecture

This layered concept ensures:

- Copper-compatible electrical interface
- Stable structural integrity
- Optimized performance-to-weight balance
- Industrial-scale reproducibility

No proprietary structural or processing details are disclosed.

CCC® Variants

CCC® Standard

Balanced performance platform optimized for:

- Electrical stability
- Mechanical reliability
- Material efficiency
- General energy distribution systems

CCC® HC (High Conductivity)

Enhanced conductivity platform optimized for:

- Reduced voltage drop
- Higher current density applications
- Performance-sensitive electrical systems
- Extended conductor lengths

Both variants maintain full copper-interface compatibility.

PAGE 2 — MATERIAL PROPERTIES & PERFORMANCE

Electrical Properties (Material Level – 20°C)

| Property | CCC® Standard | CCC® HC | Notes |
|--|-----------------------------|-----------------------------|----------------------------|
| Conductivity (% IACS) | 68 – 72 % | 72 – 78 % | Engineered composite range |
| DC Resistivity ($\Omega \cdot \text{mm}^2 / \text{m}$) | 0.024 – 0.026 | 0.022 – 0.024 | At 20°C |
| Temperature Coefficient | 0.0038 – 0.0039 /°C | Copper-dominant behavior | Stable thermal response |
| Surface Conductivity | Continuous copper interface | Continuous copper interface | Termination compatible |
| Current Carrying Capability | Application dependent | Application dependent | System defined |

Mechanical & Structural Characteristics

| Property | Typical Performance | Notes |
|---------------------------|--|--|
| Surface Integrity | Continuous copper layer | Stable under bending |
| Structural Stability | High cohesion | No delamination under normal mechanical stress |
| Flexibility | Configurable | Rigid to fine stranded constructions |
| Formability | Suitable for drawing, stranding, rolling | Geometry adaptable |
| Termination Compatibility | Standard copper lugs & clamps | No special hardware required |

Thermal Characteristics

| Property | Typical Behavior |
|-----------------------|--|
| Thermal Conductivity | Copper-surface governed |
| Expansion Response | Stable within operational temperature ranges |
| Operating Temperature | Defined by system insulation or application |

Available Integration Formats

CCC® technology may be integrated into:

- Fine strands for flexible systems
- Multi-stranded conductors
- Solid conductors
- Rectangular or shaped profiles
- Laminated sections
- Busbar geometries
- Custom engineered cross sections

Dimensions and electrical performance envelopes are optimized according to application requirements.

Engineering Advantages

- Controlled composite conductivity
- Reduced weight compared to solid copper

- Predictable electrical performance envelope
 - Copper-compatible termination behavior
 - Adaptable geometry and architecture
 - Scalable industrial production capability
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Quality & Verification

Each CCC® production batch undergoes:

- Electrical resistance verification
- Dimensional monitoring
- Surface integrity inspection
- Mechanical performance validation
- Full traceable batch identification

Performance documentation available upon request.

CCC® is developed as a conductor material platform — enabling innovation across electrical energy transmission, distribution, and engineered conductor systems.