

**Guideline of mass balance  
credit model for copper products**

**Version 1.0**

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**Mitsubishi Materials Corporation**

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## **1. Foreword**

In the copper sector, there is increasing demand for closed-loop recycling such as vehicle-to-vehicle applications, and for the supply of products manufactured from materials with reduced greenhouse gas (GHG) emissions and from recycled materials. At the same time, many copper smelters and refineries domestically and internationally manufacture copper as a material by mixing copper concentrates with a wide variety of copper scrap inputs. Therefore, to supply copper products with the specified characteristics to customers, the application of a mass balance chain of custody (CoC) model (the mass balance model) is indispensable.

The mass balance model is one of the five CoC models defined in ISO 22095:2020. Requirements and guidelines for the mass balance model are provided in the newly issued ISO 22095-2:2026. These two ISO standards are intended to be applicable across sectors including food, agriculture, textiles, chemicals, metals and plastics. When applying a mass balance model within a specific industry, more detailed requirements reflecting that industry's value chain and manufacturing processes are needed and shall be set by a 'requirements setter'.

This document provides basic requirements to be defined by the requirements setter for the value chain of copper products (copper cathode; copper and copper alloys semi-fabricated products; parts and final products containing copper) and rules to be maintained by organizations along the value chain.

ISO 22095:2020 and ISO 22095-2:2026 define two approaches for applying the mass balance model — the rolling average percentage method and the credit method. This document addresses only the credit method, referred here to as the "mass balance credit model". A "mass balance credit system" is a mechanism whereby an organization attributes specified characteristics to copper products based on the mass balance credit model and supplies them together with mass balance information.

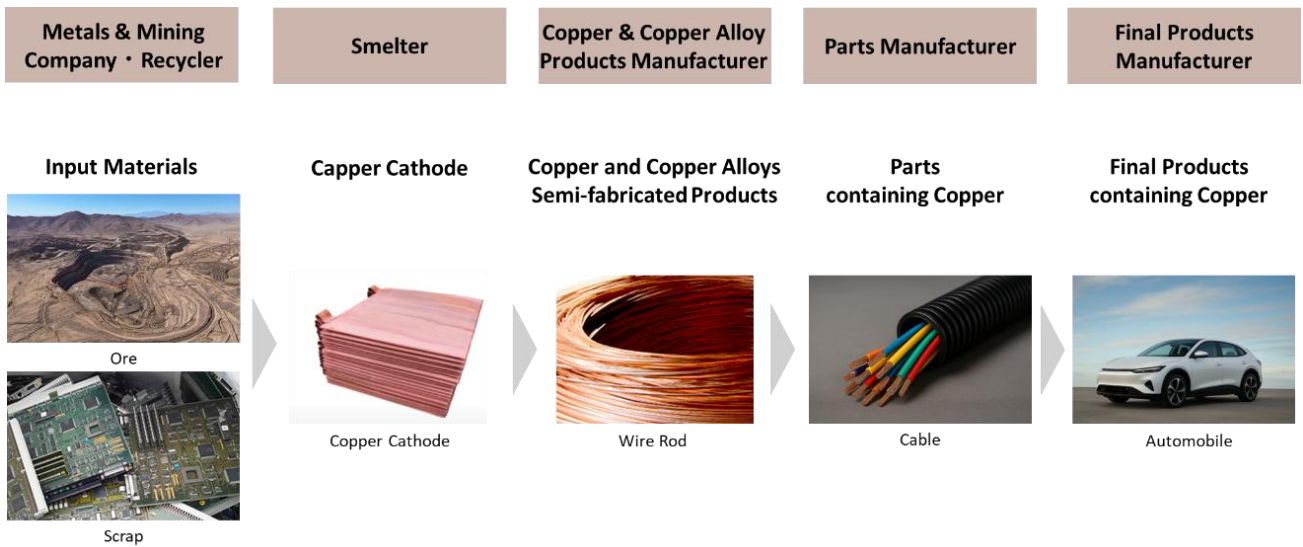


Fig.1 Example of the value chain for copper products

<Referenced International Standards>

This document has been prepared based on the following international standards:

- ISO 22095:2020, Chain of custody — General terminology and models
- ISO 22095-2:2026, Chain of custody — Part 2: Requirements and guidelines for mass balance

<Scope>

This document applies to the manufacturing and distribution processes of copper products (copper cathode; copper and copper alloys semi-fabricated products; parts and final products containing copper) and to the procedures in communicating and transferring mass balance credit model claims for outputs with specified characteristics.

<Requirements Setter>

Mitsubishi Materials Corporation is assumed here to be a requirements setter as the provider of this document.

However, other organizations in the value chain or third-party organization may conduct this role. Portions of the requirements setter’s role may be shared by multiple organizations.

## 2. Set-up of the Mass Balance Credit System

### 2.1 Specified Characteristics Tracked in the Mass Balance Credit System

The requirements setter shall define the specified characteristics to be tracked along the value chain.

Each organization in the value chain shall confirm not to increase associated risks by attributing

the specified characteristics to copper products.

#### <Specified Characteristics>

Specified characteristics of copper may include the following:

- recycled materials<sup>1</sup>;
- recycled materials procured provided by Company A;
- end-of-life electric vehicles;
- produced in region (origin) B;
- produced using renewable energy;
- obtained under fair wages or fair-trade conditions;
- manufactured using methods that reduce GHG emissions.

#### <Associated Risks>

Associated risks may include the following:

- child labour;
- forced labour;
- environmental destruction.

## **2.2 System Boundary**

The requirements setter shall define the geographical area and the starting/ending points for each organization within the value chain. An example of organizational system boundaries is provided in Annex B.

The requirements setter shall also define the physical links of processes and sites within the system boundary. Roles of the requirements setter in this subclause may be shared by multiple organizations.

#### <Geographical Area>

The geographical area of the system boundary can include:

- process;
- site;
- multiple sites;
- others, as applicable.

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<sup>1</sup> Recycled content shall apply ISO/DIS 14021.

Outsourced operations shall be included within the system boundary of the outsourcing organization. Tolling (e.g. smelting or processing on consignment) is not included in outsourcing.

To define a 'multiple sites' system boundary, a physical link between sites is not required; however, the multiple sites included in the system boundary shall be under the control, or under a common management system, of an organization.

#### <Starting/Ending Points>

In principle, the starting and ending points of the system boundary shall be defined as follows:

- Starting point: the point at which input materials from upstream organizations are received and the quantity of the specified characteristics is confirmed;
- Ending point: the point at which copper products are delivered to downstream organizations.

#### <Documentation>

Each organization in the value chain shall confirm and document the following:

- the geographical area and the starting/ending points;
- manufacturing processes involved within the system boundary;
- the possibility of physical presence of the specified characteristics within the system boundary.

## **2.3 Credit Management**

The requirements setter shall establish the following requirements for credit management.

#### <Unit>

Credits shall be issued in the unit of mass.

#### <Attribution Principle>

Attribution of credits to copper products shall be non-proportional.

Credits can be attributed to copper products within one year from the date of issuance.

Credits that exceed one year from the date of issuance shall be managed as expired and shall not be attributed to products.

#### <Consideration of Losses>

Each organization in the value chain shall consider losses of specified characteristics in the

manufacturing process and shall document the losses.

Where multiple copper products are manufactured within the system boundary, it is preferable to consider the losses of each product; however, multiple copper products which are “similar in nature” may be grouped. Based on the definition of “similar in nature” defined by the requirements setter, the organization shall determine and document the losses of copper products. The losses of a product group shall be considered based on the most representative product in the group or on the mass-weighted average copper content of products in the group.

#### <Credits for Specified Characteristics Generated within the System Boundary>

Specified characteristics generated within the system boundary shall be issued as new credits entering the system boundary.<sup>2</sup>

#### <Site-to-site Credit Transfer>

Each organization in the value chain may use site-to-site credit transfer approach only under the following conditions:

- There is no physical link between the site supplying credits and the site receiving credits, and credit management at each site is under the control, or under a common management system, of one organization;
- The copper products manufactured at the supplying site and at the receiving site are similar in nature.

#### <Balancing Period>

The balancing period, which is the timeframe for managing the input–output balance of specified characteristics within the system boundary, shall be one year corresponding to each organization’s fiscal year.

#### <Management of Credit Balances>

The amount of the credits within the system boundary shall be zero or greater at any point of the balancing period.

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<sup>2</sup> Copper scrap generated during manufacturing processes and returned for use in the same process (run-around scrap) shall not be treated as recycled material as defined in ISO/DIS 14021, and credits for specified characteristics relating to recycled material shall not be issued.

If credits issued in the balancing period remain greater than zero, such credits may be carried over and used in the next balancing period.

#### <Treatment of Returned Products>

Where copper products attributed specified characteristics and shipped are returned, the credits previously attributed to those products shall be treated as follows:

- Receiving organization of the return: all credits attributed to the returned copper products shall be cancelled;
- Returning organization: where credits of the returned products had been issued within their system boundary, such credits shall be cancelled.

#### <Avoidance of Double Counting>

Each organization in the value chain shall pay particular attention to avoid double counting and inappropriate attribution of specified characteristics or credits, including the following:

- Credits once attributed shall not be re-attributed;
- Even if it is evident that a product physically contains specified characteristics, the physical content of specified characteristics shall not be made claimed without the credits issued in the system boundary.

## **2.4 Communication of Mass Balance Information**

### **2.4.1 General Requirements**

When applying the mass balance credit model and making claims regarding specified characteristics, each organization in the value chain shall disclose and communicate the information specified in 3.2 of this document.

Each organization shall collect and manage evidence related to the specified characteristics to make claims.

#### <Evidence>

Evidence related to the specified characteristics may include the following:

- purchasing documents with specified characteristics;
- supplementary purchasing documents with specified characteristics (e.g. documents provided by the supplier claiming recovered copper from end-of-life electric vehicles);
- sales documents in which specified characteristics have been attributed.

Where the mass balance credit model is used, each organization in the value chain shall not make claims regarding the physical content of specified characteristics in copper products (since the claim may not reflect the actual physical content).

#### **2.4.2 Process for Communicating and Transferring Claims**

The requirements setter shall establish a process for communicating and transferring claims of copper products with specified characteristics to the final consumer.<sup>3</sup>

While communication is well undertaken currently between organizations that are directly connected in the value chain, the systems to deliver information to the final consumer are not yet sufficiently developed. It is necessary to establish a communication process that reconciles transparency of mass balance information with the confidentiality of value chain information.

It is also desirable, as the responsibility of organizations applying the mass balance credit model, to confirm that information is reliably communicated to the final consumer.

#### **2.5 Evaluation Period**

The requirements setter shall define the evaluation period, for each organization in the value chain to assess whether its own mass balance credit system has been appropriately operated, as one year corresponding to the organization's fiscal year.

### **3. Operation of the Mass Balance Credit System**

#### **3.1 Management, Monitoring and Operation of Credits**

Each organization in the value chain shall collect all inbound and outbound shipment data (including data on issuance and attribution of credits) necessary for the management of the mass balance credit system, and shall manage, monitor and operate credits to meet the requirements defined in 2.3. These data shall be retained as documented information.

Each organization shall review the method for calculating credit losses in each evaluation period specified in 2.5 and, if updated, shall retain the updated method as documented information.

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<sup>3</sup> The requirements setter can establish a communication process that ensures transparency of mass balance information while protecting the confidentiality of value-chain information by using the application for transferring information provided by Mitsubishi Materials Corporation. If the application for transferring information is not used, the requirements setter shall separately establish a process for communicating and transferring claims under the mass balance credit model to the final consumer and shall verify the effectiveness of that process.

## **3.2 Communication of Mass Balance Information**

### **3.2.1 Business-to-Business (B2B) Communication**

For B2B communication, when delivering copper products to a downstream organization, the upstream organization shall accurately and transparently communicate the following and clearly indicate that the mass balance credit model has been applied and specify the relevant specified characteristics:

- CoC model (mass balance model);
- implementation method (credit method);
- the manufacturer and manufacturing site;
- the recipient and receiving site;
- attributed specified characteristics;
- the quantity of copper products transferred;
- the quantity of specified characteristics transferred;
- geographical system boundary;
- possibility of physical presence;
- physical link of processes and sites;
- balancing period;
- specific rules of credit method related to attribution rules of specified characteristics (non-proportional);
- site-to-site credit transfer;
- the name of any certification used, if any;
- guideline referenced, if any.

### **3.2.2 Business-to-Consumer (B2C) Communication**

For B2C communication, when handing over final products to consumers, the organization at the most downstream stage of the value chain shall provide the following information and clearly disclose that the mass balance credit model has been applied and that credits and specified characteristics have been attributed to the product:

- type of specified characteristic that is attributed;
- whether the information concerns the product or a part or component thereof, or for example, packaging, or packaging components;
- the specified characteristics cannot be guaranteed in the end product.

## **4. Evaluation of the Mass Balance Credit System**

### **4.1 Governance**

Each organization in the value chain shall appoint responsible persons and establish a governance structure to ensure appropriate operation and evaluation of the mass balance credit system.

The personnel responsible and their roles are as follows:

- Top management: responsible for commitment to appropriate operation and evaluation of the mass balance credit system;
- Operation responsible person: a person or persons who are responsible within the organization for credit management and for executing communication under the mass balance credit system;
- Evaluation responsible person: a person or persons who are responsible within the organization for conformity assessment of the mass balance credit system.

### **4.2 Conformity Assessment of the Mass Balance Credit System**

Each organization in the value chain shall, for each evaluation period specified in 2.5, assess whether its mass balance credit system conforms to the requirements of this document.

### **4.3 Audit**

Each organization in the value chain shall conduct audits for conformity assessment of the mass balance credit system and, prior to conducting audits, shall document the risks related to the application of the mass balance credit system.

The audit frequency shall be at least annual, and any additional audits required shall be based on the documented risks. Audits shall cover all manufacturing processes and all sites within the system boundary. If annual assessment of all sites is not possible, the organization may prioritize particular sites based on documented risks.

Audits shall be appropriate to the documented risks.

Audits may be conducted as first-party (self-assessment), second-party (assessment by a business partner) or third-party (assessment by an independent body).

Each organization shall retain documented information of audit results.

### **4.4 Response to Non-conformities**

When the organization becomes aware of any non-conformities related to its mass balance credit system, it shall immediately and proactively inform the stakeholders across the value

chain.

The organization shall implement appropriate corrective actions within the timeframe defined in its procedures to handle non-conformities and shall document the non-conformities and the corrective actions taken.

The procedures to handle non-conformities may be integrated into other management systems already operated by the organization.

#### **4.5 Top Management Review**

Each organization in the value chain shall conduct a top management review of the mass balance credit system annually and the results shall be documented.

The top management review may be integrated into reviews of other management systems already operated by the organization.

#### **4.6 Documented Information**

Each organization in the value chain shall maintain complete and up-to-date documented information to demonstrate conformity to the requirements provided by this document.

Unless otherwise specified, the retention time for all documented information shall be seven years.

#### **4.7 Response when the conformity to this Guideline is questioned**

When an organization is challenged by other organizations in the value chain regarding conformity to this document, the documented information regarding conformity shall be disclosed.

The requirements setter shall consider the need and the opportunity for visits to production sites by other organizations in the value chain.

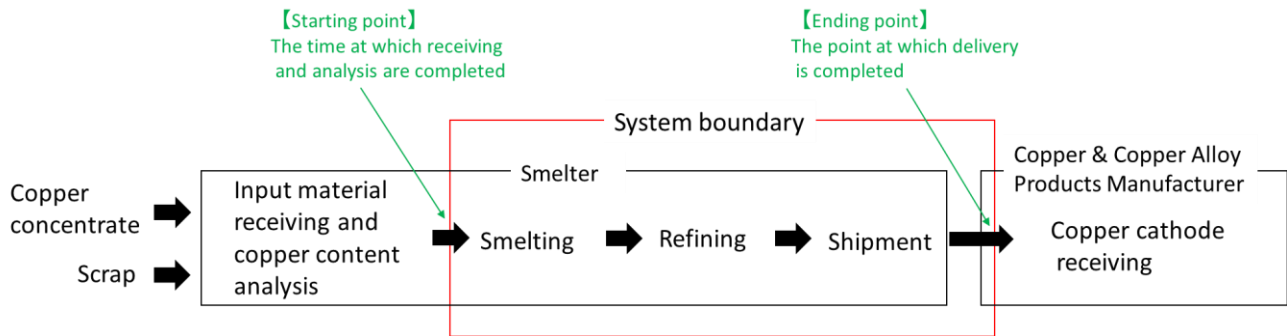
## Annex A Terms and Definitions

Terms and definitions not included in the following table shall refer to ISO 22095:2020 and/or ISO 22095-2:2026.

No.	Terms	Definitions
1	mass balance credit model	A mass balance model using the credit method.
2	mass balance credit system	A mechanism whereby an organization, based on the mass balance model, attributes specific characteristics to copper products using the credit method and supplies such information with the products.
3	outsourcing	An arrangement whereby an organization entrusts part of its business processes or functions to an external specialist; deliverables are the performance of the outsourced operations. Includes, for example, warehouse management and transportation.
4	tolling	An arrangement whereby an organization owning the inputs entrusts only processing or manufacturing to an external party; deliverables are the processed finished goods. Includes, for example, smelting or processing on consignment.

## Annex B Examples of System Boundaries

Example of a system boundary for a copper smelter



## Revision History

Version	Date of Issue / Description of Revision
Version 1.0	7 January 2026 / Initial issue in Japanese, 11 March 2026 / Initial issue in English