Environmental Product Declaration of Copper Cathode and Concentrates

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The importance of Copper

- Chile is the first producer of the World and also has the major copper reserves (mining GDP: 7-8%); world 34% production in 2011; 27% world reserves.
- Copper is an engineering metal
- Widely used due to its high electrical and thermal conductivity, malleability, ductility, resistance to corrosion, and anti-bacterial properties.
- Major application as electrical conductor
- Other industrial applications: building construction, plumbing, architecture, electronics, and health products.
The commodity market

- Companies compete through their operational costs and seriousness in delivering their mining and metal products, according to their commercial commitments.
- Upstream phase contributes to a significant part of the environmental impact in the life cycle of a product.

Could environmental attributes be an important factor to compete in a near future, even for commodities?
Reporting of LCA results

- Until now there has not been common rules on how to make the results of LCA studies comparable.
EPD as the reporting format
(ISO 14025:2006)

- Type III environmental declarations: for b2b operations.
- EPD is a multi-criteria claim: it gives the possibility to report impacts that are site-specific.
- EPD for raw materials and components in the upstream phase could become a vital tool for lowering the total environmental impact of products.
Product Category Rules (PCRs): An important topic for emerging countries

Establishing basic Product Category Rules (PCR) in order to ensure achieving the Green Economy in emerging regions: *disacoupling PCR from the economic and commercial interests of big companies and consortiums*

**INTRODUCTION**

During the last decade, corporate social responsibility (CSR) required companies to adopt measures and tools for cleaner production and sustainable development. This became an important driver for sustainability in the production sector, and was also an effective vehicle to introduce these new concepts to several countries. This also helped to raise awareness in society of the relevance of taking care of the environment as well as the value of the biological richness of the planet for future generations. At the same time, new relationships and collaboration between industry and society started to be developed; under a novel approach for economic-social growth and the improvement of the standard of living, through a framework of respect to the environment.

What is the Problem?

In the present phase of world development, i.e. towards life cycle thinking and a green economy society has already been deeply instilled with the concept of sustainability. As part of public agenda of developing countries, the initiatives of the private sector have an important influence on general society and also on governmental agencies. These initiatives have the potential to fulfil the expectations of society regarding these areas and can also indirectly help governmental agencies to accomplish their own goals in

highlight the necessity of developing mechanisms for auditing and controlling those initiatives, projects and programs oriented to establish models of LCA or implementing as well other life cycle thinking tools.

We think that a direct way for this, based on standardized tools that already exist, is the promotion of the use of the product category rules (PCR), according to the ISO14025.
Objective:
To involve stakeholders in the development of PCRs, following the requirement in ISO 14025

Stakeholders:
People from the public sector, private companies, trade associations, and LCA experts.

Outcomes:
- A series of proposed changes to the PCR documents for copper concentrate and copper cathodes with regards to product description, functional unit, system boundaries, allocation rules and environmental information.
- A change in the scope of the PCR for wire rods
Scope of the PCR for wire rods

- Initially, the PCR would aim to enable comparison of EPDs of electrical conductors made from different materials (copper, aluminium, etc).
  - A single PCR that covered different CPC codes that referred to wire rods:
    - CPC codes: 41513 - Wire of copper & 41533 - Wire of aluminium
    - function: electrical conductance
    - functional unit: one that included the conductance properties of each material
- However, these CPC codes refer to the wire rod (or drawing stock) which is drawn into different diameters and used for the manufacturing of electric wires and cables.
- Manufacturers recognized that aluminium is not always a substitute of copper here; it will depend on the application of the cable. Aluminium competes with copper in the wire & cable level rather than in the wire rod level
- Conclusion: The developed PCR only covers CPC codes 41513 - Wire of copper and should be used as an information module in a PCR for electrical wires and cables, which would cover aluminium, copper and any other metal conductor.
What is CIMM doing?

2011 National LCI
- Electricity generation
- Copper concentrate
- Copper cathodes: including the conventional and hydrometallurgical processes

2012 LCI
- Secondary copper
- Copper wire rods: the raw material used for the elaboration of electrical wires

PCR
- Copper concentrate CPC 1421
- Copper cathodes CPC 41413
- Copper wire CPC 41513
- PCRs for copper are not developed within any public program

EPD
Impact category indicators:
- Carbon footprint,
- Water footprint,
- Land use,
- Social & economic impacts
What is CIMM doing?

This PCR will be developed within a project running during 2012.

This project will also develop PCRs for:

- Copper, ores and concentrates
- Copper wire

**COPPER CATHODES**

**PCR INFORMATION**

This PCR will be developed within a project running during 2012.

This project will also develop PCRs for:

- Copper, ores and concentrates
- Copper wire

**DETAILED INFORMATION**

- **Name:** Copper cathodes
- **CPC Code:** 41110
- **CPC name:** Refined copper and copper alloys, unwrought, master alloys of copper
- **GPI version:** 0.1.1
- **Based on:** Basic metals
- **Prepared by:** Research Center for Mining and Metallurgy (CMM)
- **PCR moderator(s):** Claudia Pena (Research Center for Mining and Metallurgy (CMM))

**PCR DOCUMENTS**

- Chart PCR Copper Cathodes

**COMMENTS ON THIS PCR**

Be the first discussing this PCR.

- Start a discussion
PCRs for copper products

Declared unit: 1 metric ton of copper concentrate/cathode/wire

System boundaries: cradle-to-gate. Divided into core, upstream and downstream modules

Life Cycle Inventory: LCI model at unit process level for all stages from mineral extraction to production of copper cathode, including background processes for fuel, electricity generation and sulphuric acid production.

Environmental impacts & indicators: Generic models to calculate indicators associated to carbon footprint, water footprint, and land use.
Enable mining and metal companies to perform online-EPDs of their products

Based on the International EPD® System’s program instructions

Modular tool to differentiate copper production processes

Calculation based on developed PCR, process data, impact models

EPD format designed by the stakeholders
PCR of copper cathodes, concentrates, and copper wire rod: considering the most used mining and metallurgic production processes (primary and secondary copper cathode production)

Life Cycle Inventory: LCI model at unit process level for all stages from mineral extraction to production of copper cathode, including background processes for fuel, electricity generation and sulphuric acid production.

Impact indicators: generic models to calculate indicators associated to carbon footprint, water footprint, and land use of copper cathode and concentrates.

Online EPD platform

- Modular tool to differentiate copper production processes
- Calculation based on PCR, process data, impact models
- EPD format designed by the stakeholders
Dear Colleagues,

It is a pleasure to invite you to join us to the V CILCA that will take place in Mendoza, Argentina on 2013. The programme of this event is being planned with the aim of spreading the Life Cycle Thinking and promoting the use and development of Life Cycle Assessment as a media to achieve the sustainability of products, processes and activities. The National Technological University of Mendoza is proud to organize this conference and will be very pleased to count with your presence.

With kind regards,

Pablo Arena
Organizing Committee.

Thank you for your attention

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