



**DRAFT BUSINESS PLAN**  
**CEN/TC 133**  
**COPPER AND COPPER ALLOYS**

**EXECUTIVE SUMMARY**

**Business Environment**

The main activity of CEN/TC 133 "Copper and copper alloys" is standardization in the field of unwrought, wrought and cast products made from copper and copper alloys.

The following products are covered by the CEN/TC 133 standardization work:

- unwrought copper products;
- rolled flat products (sheet, strip, plate etc.);
- tubes and fittings;
- rod/bar, wire and profiles;
- forgings;
- master alloys, ingots and castings;
- secondary raw material.

The standardization covers:

- material and material condition designations;
- terminology;
- composition of copper and copper alloys;
- mechanical and physical properties;
- technical conditions of delivery;
- tolerances on dimensions and form;
- methods of testing peculiar to copper material.

Parties involved:

- smelters;
- refiners;
- transformers;
- founders;
- traders;
- end users.

**Benefits**

To prepare the necessary standards in correlation with the needs of the European copper market and the industry and the international market.

- since 1990 more than 100 standards were published;
- support of European Directives and Regulations [Pressure Equipment Directive (PED), Construction Products Regulation (CPR)].

**Priorities**

- completion of a full set of European Standards for the products mentioned above;
- maintenance of existing standards;
- preparation of harmonized supporting standards under the PED;
- preparation of harmonized standards under the CPR;
- preparation of standards related to testing and analysis.

## **1 BUSINESS ENVIRONMENT OF THE CEN/TC 133**

### **1.1 Description of the Business Environment**

The following political, economic, technical, regulatory, legal, societal and/or international dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of CEN/TC 133, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards:

#### **General**

The EU possesses very limited copper mining activities, but its copper refining and semis manufacturing capabilities have developed in line with the requirements of the market. It uses imported raw materials, plus domestic and imported scrap, to become a final net exporter of more than 10 % of its semis production.

Recycling is an important raw material for EU copper refining and manufacturing facilities. Copper can be recovered from the major part of its applications and returned to the production process without any loss of quality. Having very limited access to domestic primary sources of copper, the EU industry has traditionally given much attention to so called "urban mines", relying to a large extent on scrap feed to reduce the large deficit of its copper raw materials trade balance. Altogether, secondary raw materials account for about 35 % of the EU's copper use. In some cases, such as brass rod, the product is made entirely from recycled copper and brass, with only a small input of primary zinc. The EU copper industry has developed advanced technologies and made considerable investments so as to be able to process a wide range of copper scrap, including complex, low grade residues, and to comply at the same time with increasingly stringent environmental constraints.

#### **Industry Profile**

The core of the EU copper industry is in refining and semis manufacturing, in comparison with which EU mining capabilities are relatively small. The EU accounts for around 5% of worldwide mine output, with the key supply countries being Poland, Portugal, Spain and Sweden.

Sizeable refined copper production, where scrap is also used as a raw material, is located in Belgium, Bulgaria, Finland, Germany, Poland, Spain and Sweden.

Most refined copper comes from electrolytic processes, in the form of cathodes, that are melted and cast into "refinery shapes", such as billets, cakes and slabs. In 2009, a solvent extraction, electro-winning facility opened in Spain. The EU copper smelting and refining activity has been able to grow primarily by securing raw materials on the international market and recovering copper scrap and residue generated by the value chain, as well as from end of life products. Access to primary supplies has become increasingly difficult, over the past few years, as copper mining countries have developed smelting and refining facilities close to their mines. Furthermore, competition (sometimes distorted) from rapidly industrializing countries has increased, as these countries develop domestic refining capacities to satisfy their own market requirements.

Data from the International Copper Study Group indicate that EU net exports of scrap have grown to about 800000 tons per year versus a balanced situation only ten years ago.

Trade in secondary materials is increasingly impacted by environmental regulations, such as the Basel Convention, the EU Regulation 259/93 on trans-frontier shipments of hazardous materials and the 2013 End-of-Waste Directive for copper. Other regulatory developments

underway (in early 2014), e.g. to lower lead levels in products; will impact on current recycling practices.

In 2012 and 2013, the EU imported about 13 % of its copper demand in metal and about 22 % in the form of copper concentrates. While the potential to expand smelting capacities is limited due to energy and environmental protection costs being well above those in other regions, there has been some expansion in capacities to treat complex end-of life scrap.

As a result, the structural shortage of EU refined copper output, versus the manufacturing industry's requirements, is expected to continue.

The products of the refineries are the major feed materials for the copper semi-manufacturers. With an output which is two-three times that of EU refinery output, the EU copper semi-manufacturers also use a significant amount of scrap. They must therefore compete on the international market to secure their needs. Approximately 65 % of total feed comes from primary sources, with the remaining 35 % coming from the direct use of scrap.

In 2013, the EU semis production is in excess of demand. The EU copper semi-manufacturing industry is a net exporter of around 400000 tons per year. However, as a result of slow recovery from the 2008/2009 economic crisis, the industry has significant over-capacity, making it very sensitive to cyclical movements in demand.

The wire rod sector accounts for around half of the semis production. A significant part of this activity is attached to the wire & cable sector, as an integrated upstream input, whilst another part is attached to the refinery sector as integrated downstream output.

There are far more companies in the other semi-manufacturing industry, producing copper and copper alloy rod, bar, wires, sections, tubes, plates, sheet and strip, with applications in such diverse sectors as electrical engineering, automobiles, construction, machinery, shipbuilding, aircraft, precision instruments watches and clocks.

While there are about 80 companies operating throughout the EU, the industry is led by three large groups with major manufacturing activities in France, Germany and Italy. To facilitate the downstream semi-fabricating process, it is common for the commercial metal product (the cathode) to be converted into pre-formed shapes (billets, cakes and slabs). About 20 companies have integrated foundries, to perform this step, while the others purchase on the market.

There is also a significant copper alloy castings industry. The main EU producers are Italy and Germany with a considerable proportion of their output in the form of plumbing fittings, taps and valves. Other important outlets include engineering sectors, such as the marine and off-shore industries. Most castings companies are relatively small, although many foundries are tied to large engineering concerns.

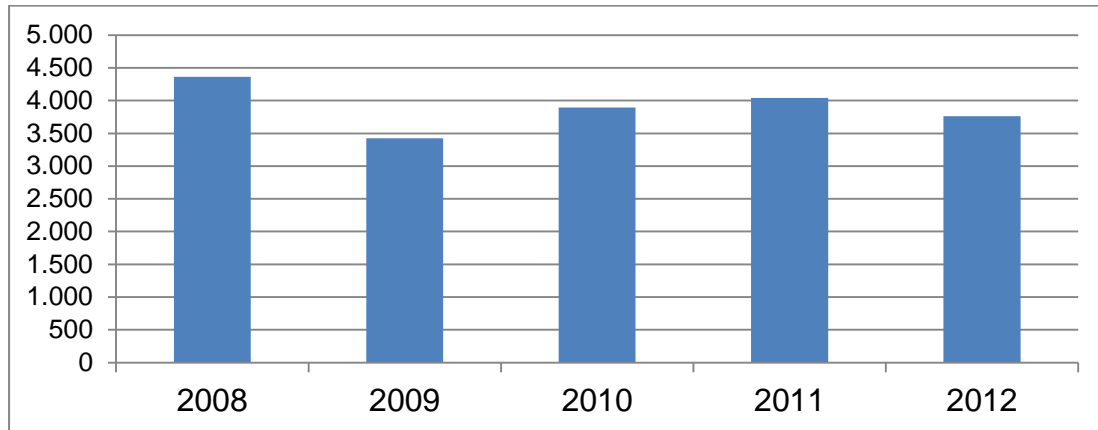
## **1.2 Quantitative Indicators of the Business Environment**

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the CEN /TC:

### **Market Demand**

Representing 17 % of the world's demand, Europe used 4,3 million tons of copper in 2012, equivalent to a per capita use of 9 kg. Usage in Central and Eastern Europe (excluding Russia) totaled 1,2 million tons.

Despite the recent, relatively poor economic conditions, demand in the EU has changed little in the past three years (2013 is expected to be similar to 2012). Figures are in thousands of metric tons copper content.



At a sub-sector level, demand for copper mainly comes from its use as a conductor in the electrical and electronic industries. Its other key properties, such as heat conductivity, mechanical resistance, surface quality, corrosion resistance, machinability and formability makes copper and copper alloys very suitable for sheet, strip, rod and profile products used in the construction, transportation and general engineering sectors. The end use data for 2012 is shown below.

European usage by end use in %	
Building Construction - plumbing systems, architecture, aircon, telecoms	24
Power Cable	20
Transportation	14
Building wire	11
General Engineering	11
Electrical equipment	10
Miscellaneous	10

### Industry Employment

Best estimates indicate that the European mining and refining industries, made up of eight major players, employ around 13000 people. The 20 wire-rod producers employ around 3000 people and the eighty companies involved in semi-finished products employ around 35000 people. However, given the very broad coverage of copper products, for example in electrical and data cables, in the construction and automotive industries, right through to precision instruments and watches, the value chain and end-user operations involve many hundreds of thousands of employees.

### Future Prospects

Copper applications in the EU are generally well developed and annual copper usage typically follow the cycle of overall industrial activity, as measured by GNP. However, in the last five years (2008 - 2012), increased rates of substitution, from aluminium alloys and plastics, as well as regulatory and sustainable development efforts to “get more from less” (miniaturisation), have more than offset the tonnage growth that has been achieved, for

example, in the renewable energy and transportation sectors (high speed trains and hybrid vehicles). Demand in Central and Eastern Europe is expected to be more robust as modern technology and materials are embodied in new investments, plus the higher levels of refurbishment.

## **2 BENEFITS EXPECTED FROM THE WORK OF CEN/TC 133**

- Removal of technical barriers to trade;
- Support of European legislation.

## **3 PARTICIPATION IN CEN/TC 133**

All the CEN national members are entitled to nominate delegates to CEN Technical Committees and experts to Working Groups, ensuring a balance of all interested parties. Participation as observers of recognized European or international organizations is also possible under certain conditions. To participate in the activities of CEN/TC 133, please contact the national standards organization in your country.

## **4 OBJECTIVES OF CEN/TC 133 AND STRATEGIES FOR THEIR ACHIEVEMENT**

### **4.1 Defined objectives of CEN/TC 133**

Political, economical, social, technical, legal and international factors that either directly require some or all of the standardization activities proposed by the CEN/TC, or significantly influence the way these activities are carried out are the following:

Elaboration of CEN deliverables (EN, EN/TS) in the field of copper and copper alloy products

Highest priority is given to those European Standards which are covered by mandates.

CEN/TC 133 will also review a number of published EN's which are identified as candidates for harmonization in the context of the Construction Products Regulation (CPR) or Pressure Equipment Directive (PED) in order to cover the essential characteristics of these provisions.

### **4.2 Identified strategies to achieve the CEN/TC's defined objectives**

The work is mainly carried out by the existing working groups and with the assistance of task groups. The work is - as in the past - whenever possible done by correspondence using the available electronic means.

The work is mainly based on existing national standards. International standards are used whenever possible.

### **4.3 Environmental aspects**

The working groups will consider the detailed guidance on how to address environmental issues in standards as given in the CEN Guide 4 "Guide for addressing environmental issues in product standards".

## **5 FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF CEN/TC 133 WORK PROGRAMME**

CEN/TC 133 is concerned by the loss of expertise in the standardization work due to individuals either retiring or leaving the industry or due to mergers and closures of companies. Economic pressures have tended to deter companies from committing new resources to the standardization effort, especially as the bulk of the initial work programme is complete. However, the maintenance up-to-date of published EN's and the harmonization work on candidate work items, to support legislative and regulatory requirements, does demand continuing effort and support to ensure that the industry's needs are accommodated and not disadvantaged. Moreover, timely production of standards is especially difficult as far as mandated work items are concerned. The development of harmonized European Standards requires extra knowledge since they follow a different and more complicated approach than "voluntary" European Standards.