

## Copper Wire Scrap 廢銅線產品介紹



### (1) Introduction 廢銅線產品介紹

Recycling of copper is based on a large variety of raw materials, ranging from low-grade copper scrap containing only a few percent Cu to very high-grade copper as well as pure copper close to 100% Cu. Thus, there are several options for recycling processes, within both primary plants and secondary plants treating only scrap material.

銅和銅基材料，不論處於裸露狀態或是包在最終產品裡，在產品周期的各階段都可回收再生。一般來說，新廢銅占廢銅原料一半以上，全部的廢銅經再加工，有大約 1/3 以精銅的形式返回市場，另 2/3 以非精煉銅或銅合金的形式重新使用。

### (2) Sources of copper scrap 來源分類

Copper scrap which is adequately clean can be directly recovered through remelting without further refining, whereas scrap of lower grade has to be refined in similar processes as primary copper. It is often classified according to its source: (1) Direct or "home scrap," which is the scrap

generated at the smelter/refinery and has the highest purity, usually recycled internally at the plant; (2) “new scrap” is generated at downstream metal fabricators, e.g. trimmings, boring and croppings, which also usually is recycled at the smelter/refinery. (3) Post-consumer scrap or old copper scrap can be divided into a number of different grades, which also may vary between different countries.

廢銅按產生階段，可分為工業生產過程產生的一次廢銅、加工過程產生的新廢銅以及消費者使用後產生的舊廢銅。

一次廢銅：一般指不合規格的陽極、陰極和坯料，還有陽極廢品，這些廢料不能進行深加工或出售，通常是將其返回上一步工序，不合規格的銅通常重新返回轉爐或陽極爐進行電（解）精煉；有缺陷的坯料則進行重熔和重鑄。一次廢銅一般不用「走出家門」就回收利用，基本不進入廢銅市場。

新廢銅：指新的邊角料或工廠內部產生的廢銅，這類廢銅在加工過程中產生，其與一次廢銅的差異在於合金化或加覆蓋物過程中可能已摻入雜質。新廢銅的處理方法取決於化學成分和與其他材料的結合程度，最簡單的方法是內部回收，也是鑄造過程中較普遍的做法，僅需重熔和重鑄；直接回收利用可維持原本添加的合金元素量，例如鋅或錫。

舊廢銅：指廢棄、使用過或生產企業外部產生的廢銅，來自已經達使用期限的產品。舊廢銅是可回收利用的巨大潛在資源，但是也較難處理，面臨的挑戰有：

（一）含銅量低，舊廢銅通常與其他材料混合，必須將其從廢料中分離出來，（二）不可預測性，材料的供應變化大，處理較為困難，（三）資源分散，舊廢銅分散在各處，不像原始礦石或新廢銅均集中於某一特定地點。如此一來，舊廢銅通常是當作垃圾掩埋而不是回收處理，然而，銅價居高不下正逐漸推動廢銅回收市場，目前，廢電纜和電線數量較多、且回收利用率較高，廢電器和報廢車輛的回收利用率較低。

### (3) Usages 產品用途

Copper scrap is used in: the electrical and electronics industry, the light industry, machinery, the building industry, the national defense industry, etc. It is an important source of raw materials. All kinds of Cu can be



recycled.

再生銅的應用領域包括建築施工、運輸、工業機械與設備、電氣與電子設備及國防建設等。

#### (4) Specification of copper wire scrap 產品規格

Copper wire scrap, (millberry) 99.99% at a purity of 99.98% min and 99.99% max

光亮銅 · 最低含銅量為 99%

Wire diameter: 0.20 mm, 0.25 mm, 0.30 mm

Weight: 3 kg, 5 kg, 7 kg, 15 kg, 20 kg

Tensile strength: 1,000 N/mm<sup>2</sup>, 900 N/mm<sup>2</sup>, 500 N/mm<sup>2</sup>, 450 N/mm<sup>2</sup>

直徑厚度 : 0.20 mm, 0.25 mm, 0.30 mm

重量 : 3 kg, 5 kg, 7 kg, 15 kg, 20 kg

強度測試 : 1,000 N/mm<sup>2</sup>, 900 N/mm<sup>2</sup>, 500 N/mm<sup>2</sup>, 450 N/mm<sup>2</sup>

#### (5) Chemical elements 化學成分

Copper: 99.9%	銅含量 : 99.9%
Coblet: < 0.001	鈷含量 : < 0.001
Carbon: 0.03%	碳含量 : 0.03%
Iron: 0.005%	鐵含量 : 0.005%
Phosphorus: < 0.01%	磷含量 : < 0.01%
Sulfur: < 0.01%	硫含量 : < 0.01%
Zinc: 0.003%	鋅含量 : 0.003%

Cu = 99.70 +	銅含量 : 99.70 +
Fe = < 0.00002	鐵含量 : < 0.00002
Ni = < 0.00002	鎳含量 : < 0.00002
Zn = < 0.000003	鋅含量 : < 0.000003
Ag = 19.29 ppm	銀含量 : 19.29 ppm
As = < 0.01 ppm	砷含量 : < 0.01 ppm
Ba = < 2.0 ppm	鋇含量 : < 2.0 ppm
Cd = < 0.03 ppm	鎘含量 : < 0.03 ppm



Cr = < 0.02 ppm

鉻含量 : < 0.02 ppm

Elements	Value	Results	化學元素	符號	分析結果
Copper	Cu	99.95% Min	銅	Cu	99.95% Min
Cobalt	Co	0.001% Max	鈷	Co	0.001% Max
Carbon	C	0.003% Max	碳	C	0.003% Max
Iron	Fe	0.005% Max	鐵	Fe	0.005% Max
Phosphorus	P	0.01% Max	磷	P	0.01% Max
Sulphur	S	0.01% Max	硫	S	0.01% Max
Znic	Z	0.03% Max	鋅	Z	0.03% Max

#### (6) Classification of copper scrap 分類標準

Light copper scrap contains between 88% and 92% copper. This type of copper scrap usually needs to be refined to obtain the quality required. Other types of copper-containing secondary material are, for example, shredder material, ashes and slags from foundries containing 20–25% copper. In addition, there are low-grade materials such as sludges and combustion ashes that have potential for recycling and recovery of copper.

Material	Cu (wt%)	物料名稱	銅含量
Bare bright copper	> 99%	光亮銅	> 99%
Pure #1 copper scrap	99%	1 號銅	97%
#2 copper scrap	94–98%	2 號銅	95–96%
Light copper scrap	88–92%	馬達銅	92–94%
Red brass scrap	75–85%	紫銅	79–81%
Shredder material	60–65%	冶煉級紫銅	90–92%
Electronic scrap	5–30%	紫銅磚	93%
Copper slag	1–8%	火燒線	95–97%





Material	Cu (wt%)	物料名稱	銅含量
Copper dust	1-50%	黃銅	以 H+ 表示

低銅：最低含銅量為 92%，主要成分為純銅及少量銅合金，純銅表面被油漆、塗層覆蓋或嚴重氧化，例如排水管、水口、鍋爐、茶壺

含銅廢品：包含所有含銅量低的原料，例如浮渣、污泥、爐渣、返料、粉料和其他廢料

#### (7) 產品包裝 Packaging

50 Kg per Bale, about 20 MT/20' FCL, 28 MT/40' FCL

1,000 Kg per Bundle, or Customer Specific Requirements

#### (8) 優良供應商 Reliable suppliers

- High quality with best price
- Well reputation
- Factory with strong supply ability
- Prompt shipment

#### (9) Global market of copper scrap 全球廢銅回收市場

According to the UN data, China imported \$48.3B in copper scrap from 2013 to 2017, becoming the 1st largest importer of copper scrap in the world. Germany was the 2nd largest importer, importing \$14B in copper scrap. The major importers included South Korea (\$8.2B), Belgium (\$6.4B), and Japan (\$4.8B).

根據聯合國數據統計中心資料，2013 至 2017 年，中國是全球最大的廢銅進口國，進口總額達 483.71 億美元，德國為第二進口國，進口總額為 140.04 億美元，韓國、比利時、日本進口總額依序為 82.95 億美元、64.05 億美元、48.73 億美元。

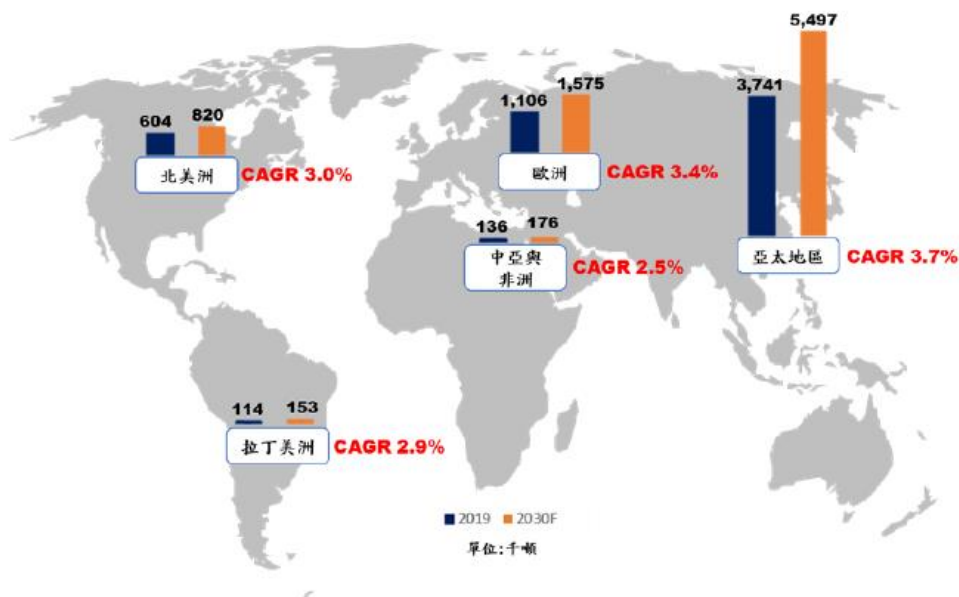
In contrast, the United States was the largest supplier of copper scrap in the world. It exported \$15.4B in copper scrap from 2013 to 2017. Germany

exported \$8.7B in copper scrap, making it the 2nd largest exporter. The major exporters were the United Kingdom (\$5.3B), France (\$5B), the Netherlands (\$4.6B).

出口方面，2013 至 2017 年，美國是全球最大的廢銅出口國，出口總額達 154.29 億美元，德國為第二出口國，出口總額為 87.14 億美元，英國、法國、荷蘭出口總額依序為 53.16 億美元、50.47 億美元、46.04 美元。

根據 MII-IT IS 團隊 2020 年研究顯示，2019 年全球廢銅回收前三大市場為亞太地區、歐洲及北美洲，亞太地區用量占全球 65.6%，中國與印度持續推動基礎設施和汽車產業，將帶動再生銅的市場需求；歐洲由於嚴格管制二氧化碳排放量，有利再生銅回收市場；美國對汽車、建築及工業機械的需求，加上法規限制逐漸提高，未來 CAGR 可達 3%。

圖 1 全球廢銅回收市場規模



資料來源：Transparency Market Research/金屬中心 MII-ITIS 研究團隊(2020/9)。

#### (10) China's copper scrap imports

In 2021, China imported \$8.79B in copper scrap, becoming the 1st largest importer of copper scrap in the world. China imports copper scrap primarily from: Japan (\$1.77B), the United States (\$1.49B), Hong



Kong (\$527M), Thailand (\$483M), and the United Kingdom (\$464M).

In 2022, the United States was the largest supplier of copper scrap to China. In fact, China imported a total of 321,100 mt of copper scrap from the United States, 18% of all imports. The imports from Japan stood at 245,600 mt, accounting for 14% of the total, followed by imports from Malaysia at 202,300 mt with a market share of 12%.

In August 2023, China imported copper scrap mostly from the United States (\$218M), Japan (\$159M), Malaysia (\$128M), Thailand (\$92.5M), and the United Kingdom (\$59.4M).