



# Aurubis Smelter Partner for Copper Mines

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#### **Company profile**















- » Founded in 1866 as Norddeutsche Affinerie AG in Hamburg
- » IPO in 1998
- » Renamed in 2009 after the acquisition of Cumerio

#### **Aurum + Rubrum = the red gold = Aurubis**

- » Production sites in European countries and North America with about 6,400 employees
- Second largest producer of copper cathodes in the world with an annual output of about 1.1 million t of copper cathodes
- » No. 1 copper recycler in the world
- » Largest rod producer in the world
- » One of the world's leading copper foil and flat rolled product manufacturers
- » Production capacities for approx. 1.3 million t of different copper products
- » Global leader in environmental protection

#### Aurubis, an integrated copper producer



Mines and recycling markets

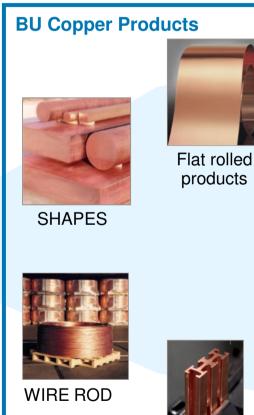
Copper production

Copper processing

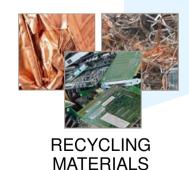
Processors and











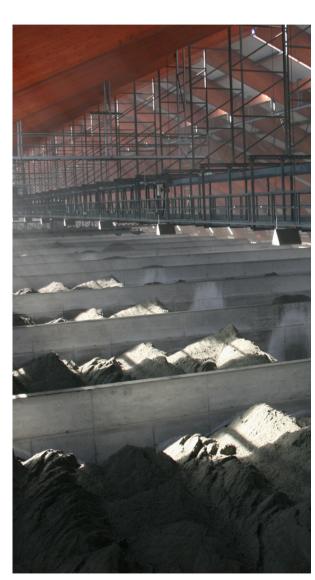




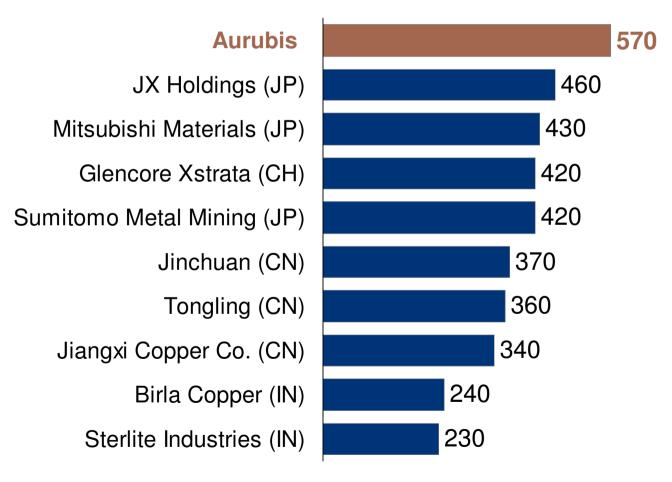


### Aurubis is the largest buyer on the free concentrate market





International custom smelter output (2013; in 1,000 t of Cu content; primary\*)

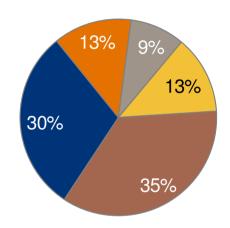


<sup>\*</sup> Copper production from concentrates from non-controlled mines

#### **Copper is part of daily life**



# Global copper demand by industries



- Industrial machines and plants
- Electrical and electronic applications
- Construction industry
- Traffic and transport
- Consumer goods

Source: Wood Macquenzie, Sep 2013

#### Copper content in various applications



~25 kg



up to ~115 kg



~200 kg



~4,000 kg



~7,300 kg



up to ~30 t

# New technologies result in more copper applications



#### Cable



- » Expansion of electricity grid continues
- » Underground cable use to become priority in Germany

#### Alternative energy



- » Expansion of decentralised energy supply proceeds
- » High copper demand for grid connections
- » High copper demand for wind turbines

#### Hybrid and electric cars



- » Increased popularity of hybrid cars worldwide
- » Electric drive is the technology of the future, China intends to become market leader within 3 years

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#### Copper concentrates - object of global demand





Copper concentrates:

- Copper ore with 0.5-5 % Cu, concentrated by grinding and flotation
- » Typical composition:
  - 30 % copper, 30 % iron and 30 % sulfur
  - » 10 % other elements (e.g. precious metals, other complex materials)

Top producers of copper concentrates:

» South America: 5.5 mill. t

» Asia: 3.3 mill. t

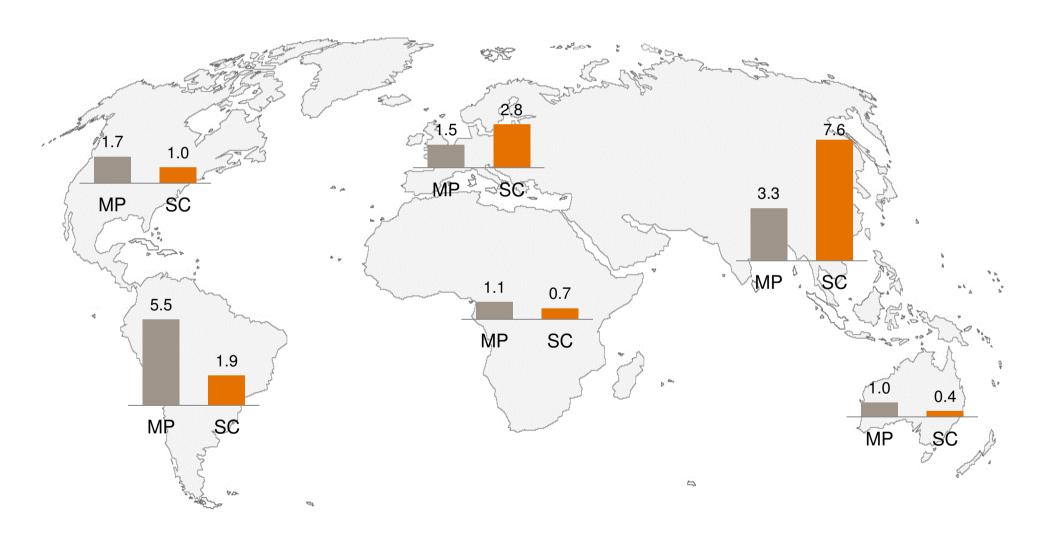
» North America: 1.7 mill. t

- » Mining operations in Africa face uncertainties regarding the political environment and infrastructure
- » Declining copper grades and increasing complexity of raw materials

#### Main production of copper concentrates in Latin America – Main consumption in Asia

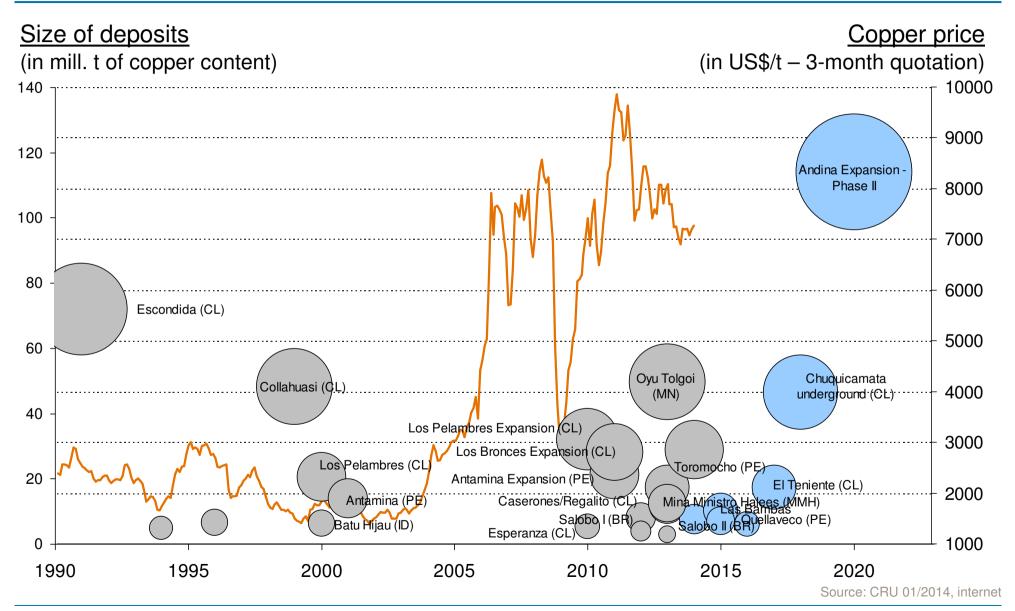


Mine production (MP) and smelter consumption (SC) 2013e (in mill. t)



# A number of new projects will start up production before 2020





### The market for copper concentrates has some special features



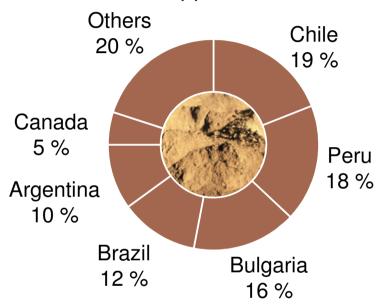


- » Supply dominated by large mining companies: BHPB, Rio Tinto, Glencore Xstrata, Freeport
- Custom smelters in the Far East are heavily subsidized in some cases: duty protections, general subsidies, state-owned investment funds
- Increasing EHS (Environment, Health and Safety) discussions against mining operations
- Volatile mine production due to technical problems, strikes, etc.
- Declining copper grades and increasing production of complex qualities

# Aurubis – an excellent and reliable partner for mining companies



Countries of origin of Aurubis' concentrate supplies 2012/13



Selection of Aurubis' long-term suppliers:

- » Teck
- » Vale
- » Anglo American
- » Antofagasta
- » Glencore Xstrata

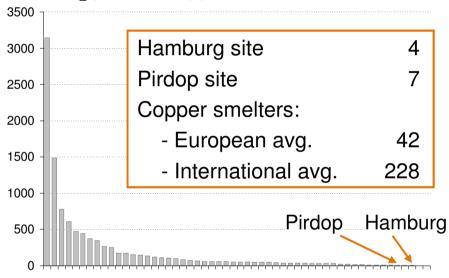
- » Highly qualified partner with more than 140 years of experience in copper
- Assistance in mine financing (Untied Loan Facility etc.)
- » Reliable offtake partner for concentrates production
- World class environmental reputation
- » High ability to treat complex materials
- High reputation in correct sampling and analysing

# Environmental compliance is one of Aurubis' key strengths and a competitive advantage



#### Primary copper

SO<sub>2</sub> emissions of copper smelters (in kg SO<sub>2</sub> per t of copper)



Source: Brook Hunt 2013, certified data, Aurubis

Aurubis has achieved outstanding success in environmental and climate protection and is one of the most environmentally friendly copper producers in the world today

#### Recycling



As the largest copper recycler in the world with the best available technology, Aurubis achieves high metal recovery rates while observing stringent environmental standards with its multi-metal recycling process





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