

# Environmental Profile of Aurubis ROD I RheinROD

## Copper's contribution to sustainable development

Copper is a key material to enable important technological developments, such as generating and transmitting renewable energy or advancing motors and transformers with regard to more energy efficiency. These developments are essential to reach the objectives of the European Green Deal, particularly for a clean energy transition.

With its uniform high electrical conductivity, the Aurubis ROD I RheinRod ensures the highest possible efficiency in converting and transmitting electrical power.

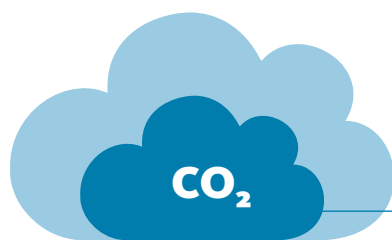
## The environmental footprint of Aurubis ROD I RheinROD

As the EU places more and more emphasis on green technologies needed to meet its climate targets, it is

increasingly important to understand the life cycles of the underlying products. Aurubis takes responsibility for the global challenges of climate change, environmental protection, and resource conservation. Improving the environmental performance of products, along with enhancing sustainability throughout the entire supply chain, is of great importance for Aurubis. To underline our commitment to stay best in class in all sustainability challenges, we introduced our label "Tomorrow Metals by Aurubis" in 2021 that encompasses the many measures we are taking to enhance our sustainability performance. Hence, Aurubis is at the forefront of industries committed to reducing the environmental impact of its operations: We have set the objective of achieving carbon-neutral production well before 2050.

## Carbon footprint of Aurubis ROD I RheinROD

in kg CO<sub>2</sub> equivalents per t of wire rod



**2,290**

Aurubis ROD I RheinROD (data reference 2021)

## Life cycle assessment for Aurubis ROD I RheinROD

Responding to requests from end-users, along with our own sustainability goals, Aurubis conducted a life cycle assessment (LCA) of our key product wire rod. In this holistic approach, we considered all steps involved in the production of wire rod - starting from the extraction of the copper ore (cradle) through the manufacturing of the copper cathode and its further processing into wire rod (gate). The assessment includes

impacts from all activities related to raw materials, direct emissions, transport, energy consumption and auxiliary materials. The study was conducted in conformance with the ISO standards 14040 and 14044 for life cycle assessment<sup>1</sup>. In the assessment, we included all wire rod operations in Avellino, Emmerich, Hamburg and Olen, and calculated the weighted average for Aurubis ROD I RheinROD across the Aurubis Group.

<sup>1</sup> ISO 14040:2021 Environmental management — Life cycle assessment — Principles and framework  
ISO 14044:2021 Environmental management — Life cycle assessment — Requirements and guidelines.

## The results

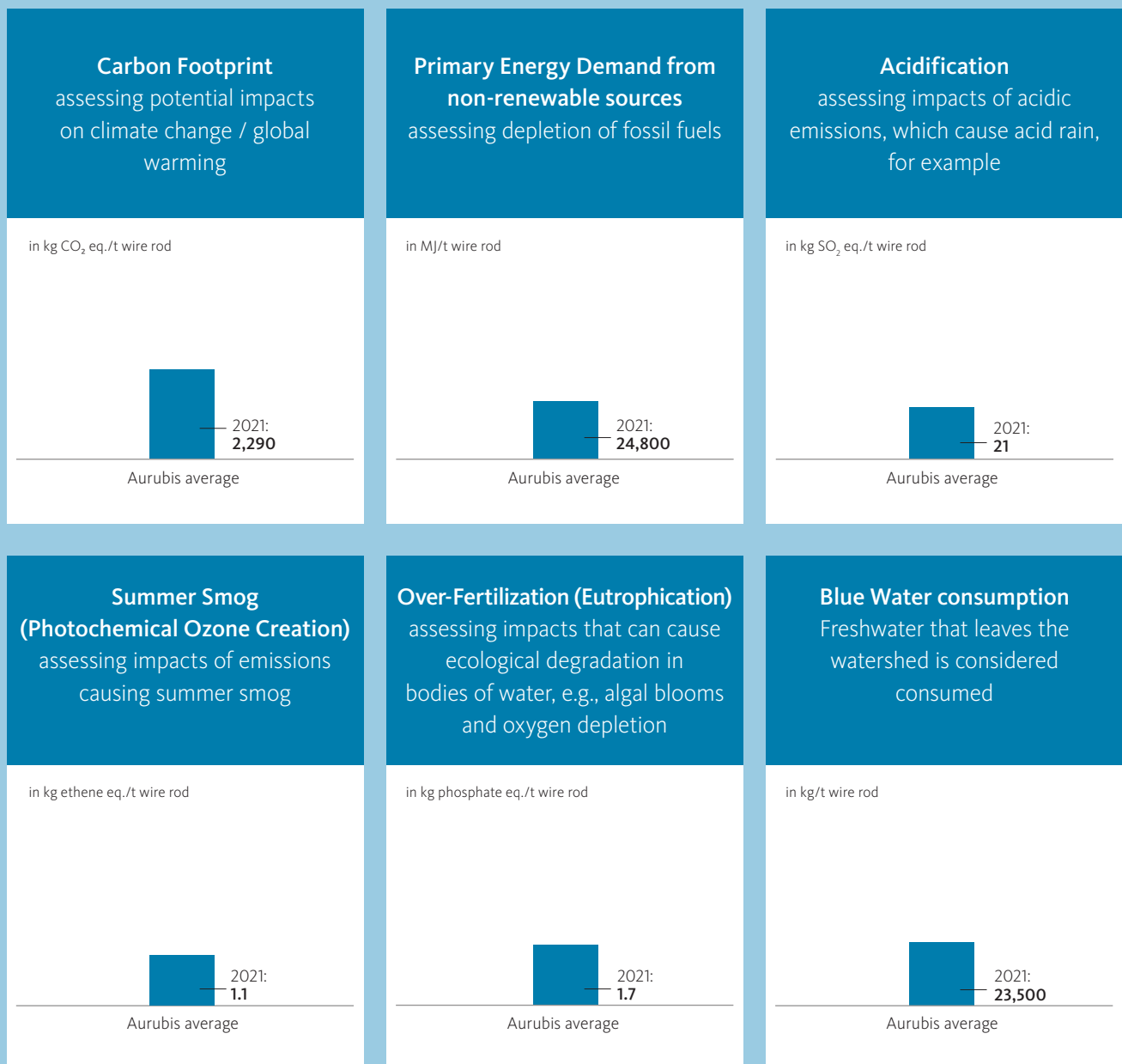
The results of the environmental footprint of the Aurubis ROD I RheinROD are directly related to the copper cathodes. The key environmental aspects were assessed along a set of impact categories.

These impact categories were selected because they represent a broad range of environmental impacts and are

each determined by a well-established scientific approach. The results below are based on the CML impact assessment methodology (CML 2001, update August 2016).

## Verification

The environmental profile of the Aurubis ROD I RheinROD has been verified by TUV Nord Cert in accordance with DIN EN ISO 14040:2021 and DIN EN ISO 14044:2021.



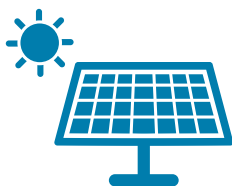
## How we got there: Improvements by constantly implementing environmental and climate measures

In the LCA, our goal was to evaluate the environmental profile of Aurubis ROD I RheinROD and allow tracking of the progress and further improvement. Aurubis produces its wire rod from its own cathodes as well as from raw materials from third parties. The LCA results for Aurubis ROD I RheinROD strongly depend on the environmental profile of the upstream copper cathode. The carbon footprint of the copper cathode has decreased by 35 % since 2013 and is 60 % below the global average for all copper smelters and refiners. The results achieved were only possible with major investments into measures that reach ambitious environmental standards.



### Emission reduction

The operations have taken continuous efforts for the reduction of direct emissions of pollutants such as dust as well as greenhouse gas emissions.



### Energy-efficient technologies

We invested in energy-efficient technologies for wire rod production at all sites across the Aurubis Group, implemented measures to save energy, facilitated the switch to renewable energies, and enabled decarbonization.



### Recycling

Wire products are primarily manufactured from cathodes because of the very high purity specifications needed to deliver high electrical conductivity. The extension of Aurubis' recycling capacities contributed to the improvements of our overall footprint on the environment. The recycled content of Aurubis ROD I RheinROD for Aurubis Group for the financial year 2020/21 was 36 %.

## The use of Aurubis ROD I RheinROD improves the efficiency and environmental performance of multiple applications

Copper has a good environmental profile compared to potentially competing materials. Copper is the best conductor of electricity and heat, after silver, and improves the efficiency and performance of relevant applications. Using more copper saves energy and reduces CO<sub>2</sub> emissions. Copper also improves the operating efficiency of all forms of renewable energies, such as wind turbines, photovoltaic panels, tidal generation, and solar thermal systems.

### Environmental Footprint Impact assessment method (EF 3.0)

The environmental profile of Aurubis ROD I RheinROD (reference year 2021) was recalculated based on **the Environmental Footprint Impact assessment method (EF 3.0)**.

The Environmental Footprint Impact assessment method is considered the most appropriate therefore the results obtained with this method will be used in the future.

| Aurubis ROD I RheinROD EF 3.0     |                                       | 2021  |
|-----------------------------------|---------------------------------------|-------|
| Carbon Footprint (Climate change) | kg CO <sub>2</sub> eq./t wire rod     | 2,400 |
| Resource use, fossils             | GJ/t wire rod                         | 26.9  |
| Acidification                     | Mole of H <sup>+</sup> eq./t wire rod | 25    |
| Eutrophication, freshwater        | kg P eq./t wire rod                   | 0.02  |
| Eutrophication, marine            | Mole of N eq./t wire rod              | 4.1   |
| Eutrophication, terrestrial       | Mole of N eq./t wire rod              | 44    |
| Summer smog                       | kg NMVOC eq./t wire rod               | 12    |
| Water use                         | m <sup>3</sup> world eq./t wire rod   | 1,200 |

## Aurubis AG

Corporate Environmental Protection

### Dr. Jörn Mühlenfeld

Environmental Manager  
Corporate Environmental Protection  
j.muehlenfeld@aurubis.com

### Daniela Cholakova

Environmental Manager  
Corporate Environmental Protection  
d.cholakova@aurubis.com