

# Environmental Profile of Aurubis Tin

## The contribution of Tin to sustainable development

Tin is used in many ways in today's everyday life and can be found back in electronics, food products, energy, and transport applications. Tin has excellent properties for electrical conductivity and is an essential element in solder products. Solders are needed for 5G-based electronics technologies as well as for interconnection in electric vehicles and other climate change-related infrastructures. Refined tin is also used in chemicals, glass, copper alloys, plating and energy storage devices.

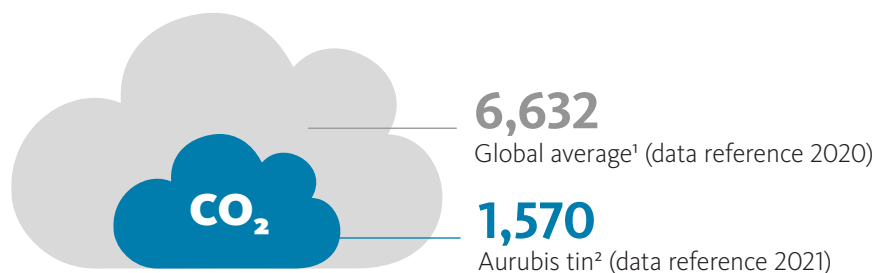
## The environmental footprint of Aurubis tin

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 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" 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. And the results of our life cycle assessment confirm that our efforts bear fruit: The carbon footprint of tin is more than 70 % below the global average.

## Carbon footprint of Aurubis tin

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



## Life cycle assessment for Aurubis tin

Responding to requests from end-users, along with our own sustainability goals, Aurubis conducted a life cycle assessment (LCA) of our Tin ingot. In this holistic approach, we considered all steps involved in the production of tin from the extraction of the raw materials to the production of Tin ingot. Tin ingot is

produced in Aurubis Beerse completely from secondary raw materials. 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>3</sup>.

<sup>1</sup> International Tin Association, Life cycle assessment of average tin production, reference year 2020.

<sup>2</sup> Aurubis, supported by Sphera, Report: Life Cycle Assessment of Tin, Oct. 2022; results according to CML impact assessment methodology (CML 2001, update August 2016), reference year 2021.

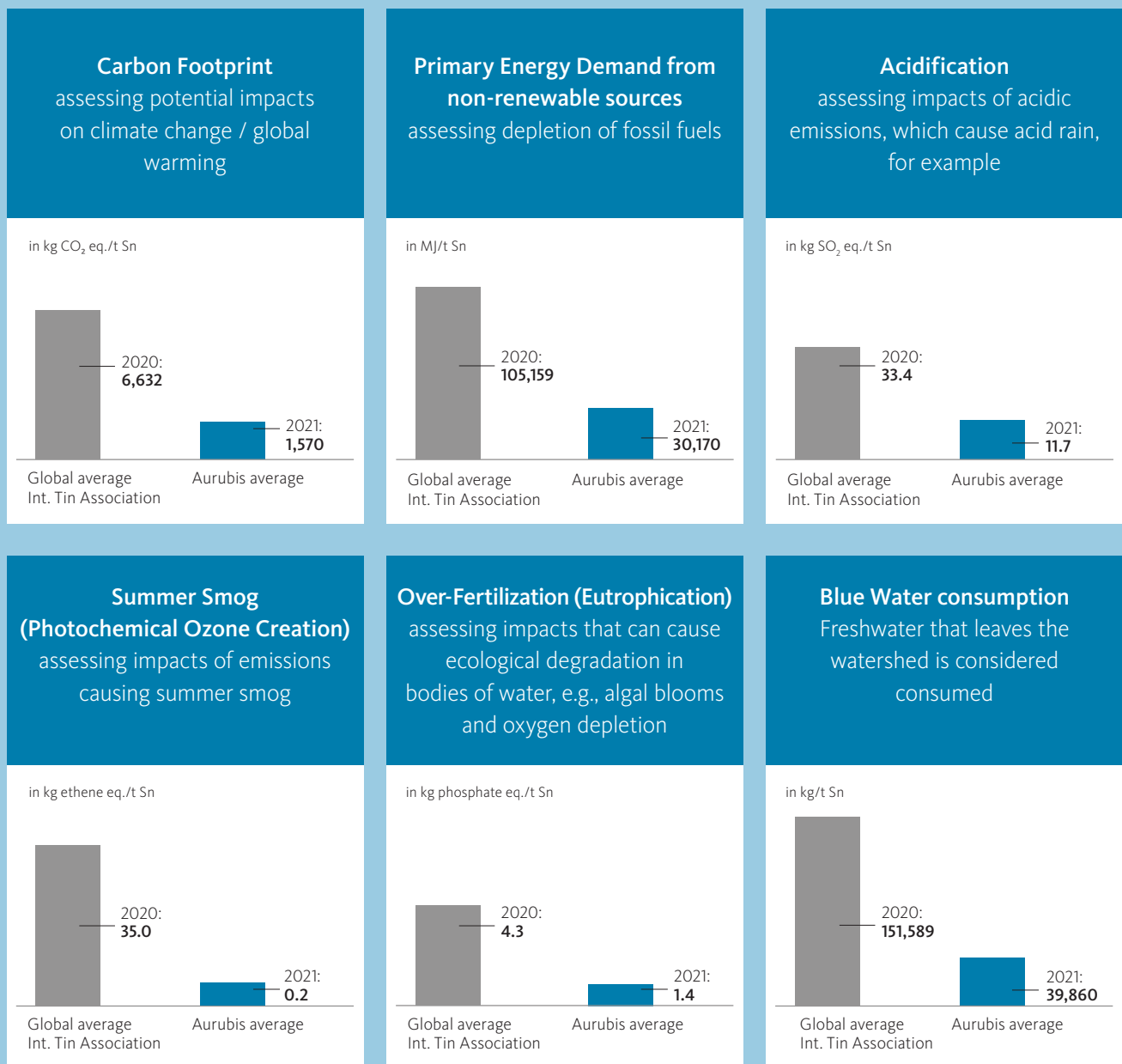
<sup>3</sup> ISO 14040:2021 Environmental management — Life cycle assessment — Principles and framework  
ISO 14044:2021 Environmental management — Life cycle assessment — Requirements and guidelines.

### The results:

The 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 Tin from Aurubis has been verified by TÜV 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

The recycling process of the Aurubis plant in Beerse enabled it to valorize complex non-ferrous materials by returning tin and other metals back into the value chain. We combined innovative technology and know-how to minimize the impact of our activities on the environment and climate, and preserve natural resources.

We invested in energy-efficient and low-carbon technologies and implemented measures to save energy, facilitated the switch to renewable energy. The operations have taken continuous efforts for the reduction of direct emissions of pollutants such as dust, SO<sub>2</sub> as well as greenhouse gas emissions.

At the same time, our recycling as well as the efficiency of metal recovery has an important role in the results of our life cycle assessment. The recycled content of tin produced by Aurubis Beerse is 100 %.

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

The environmental profile of Aurubis tin (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 tin EF 3.0		2021
Carbon Footprint (Climate change)	kg CO <sub>2</sub> eq./t Sn	1,620
Resource use, fossils	GJ/t Sn	44
Acidification	Mole of H <sup>+</sup> eq./t Sn	14.3
Eutrophication, freshwater	kg P eq./t Sn	0.007
Eutrophication, marine	Mole of N eq./t Sn	3.6
Eutrophication, terrestrial	Mole of N eq./t Sn	39
Summer smog	kg NMVOC eq./t Sn	9.6
Water use	m <sup>3</sup> world eq./t Sn	617

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