Recycling share and carbon emission data for Stainless Steel

European and Asian stainless steel result in the same carbon emission

The amount of scrap used in the production of stainless steel determines the level of carbon emission. Consequently, the difference between carbon emission from production of European steel and production of Asian steel is insignificant as the amount of scrap used is almost similar. In addition, our calculations show that transport by containership results in less carbon emission than truck transport, a factor which supports the above statement.

In terms of scrap percentage, China alone differs significantly from the rest of the regions using only 23% scrap. This low percentage is explained by the fact that China is still an emerging market and only in the future (20-30 years from today), the scrap level will reach same high levels in China as the rest of Asia and Europe.

In addition to the above conclusions, the European producers mainly source coils for cutting and manufacturing. Suppliers of coils come from different regions, including China, which should also be taken into consideration when calculating carbon emission.

Transport by containership results in less carbon emission than truck transport

In general, transport is a minor factor for carbon emission compared to the production of stainless steel. However, our calculations show an obvious difference between transport by containership and tuck transport, concluding that transport by containership results in significantly less carbon emission than truck transport from European production.

Transport by containership

To calculate carbon emission relating to transport by containership, we have applied reports from our supplier who make actual calculations for all sea freight of all goods arriving at Dacapo. Calculations which include a range of factors, i.e. the route of the ship, the load factor, the speed and the weight & volume of the goods. Subsequently, we have calculated an average per container port to ensure that identical bundles are equally charged regardless of random details of the ship they are loaded to.

Truck transport

To calculate estimated carbon emission on a full truck delivered to Dacapo, we have applied actual data from EcoTransIT which is industry standard and equally used by our suppliers.

Stainless Steel production and carbon emission – regardless of the country of origin

The predominant source of carbon emission relating to stainless steel is the production of stainless steel, regardless of the country of origin.
Consequently, **recycling of stainless steel** is essential to ensure minimal carbon emission – and a substantial part of stainless steel scrap is already being recycled.
A study from 2015 published by Team Stainless and conducted by Yale University[i] concludes that while the average recycled content in the global stainless steel production is 44%, the European and Asian (excluding Chinese) productions comprise of 70% and 66% recycled content. The same study concludes that 85% of all stainless steel is recycled.
An ISSF report about Stainless Steel and CO2 equally states that the amount of scrap used in the production of new stainless steel is at general high level.

Our carbon estimated emission calculations are based on facts from the ISSF report (above):

Region	**Scrap %**	**Tons of Co2 per ton of stainless steel produced**
Europe	70	2.64
Asia	66	2.78
China	23	7.46

Dacapo carbon emission

In 2021, the estimated carbon emission from Dacapo was 199 tonnes of CO2. With a tonnage of 40.000 tons, this is the equivalence of a carbon emission of 0.004975 kg Co2 pr. kg stainless steel – or 4.975 kg per ton of stainless steel.

Data and sources

At Dacapo we are driven by data – and by delivering solutions based on data. We are constantly focusing on improving and developing data – this goes for all parts of our business including data regarding carbon emission.

Data for calculating carbon emission is not 100% transparent and fact based, however, we base our calculations on reliable reports from ISSF, Yale University – and EcoTransIT. In addition, we employ data from those of our suppliers who have made this available and in close cooperation with our suppliers, we continuously strive to obtain and provide the most accurate data.

Carbon emission data available for customers

As a part of our increased focus on sustainability, at Dacapo we have made our carbon emission data easily available for our customers and stakeholders.

Going forward, we will report on every invoice the carbon emission data related to the specific order. In this way, as a customer, you can easily communicate and calculate the carbon emission data to your customers, suppliers and other stakeholders.

As a Dacapo customer, you can login to our web shop and dive into our KPIs relating to carbon emission.

The KPIs are available to you as a customer enabling you to calculate your carbon emission at required level, i.e. order number, product group, requisition or invoice number – distributed on production and transport emission.

Sources

1. ISSF (International Stainless Steel Federation): Stainless Steels and CO2; Industry Emissions and Related Data, January 2022: Link to report
2. Yale University, Team Stainless: The Global Life Cycle of Stainless Steels, 2015: Link to report
3. https://www.ecotransit.org/en/