

# Self -Environmental Product Declaration

## Brazed Plate Heat Exchanger

Alfa Laval endeavours to perform its own operations as cleanly and efficiently as possible, and to take environmental aspects into consideration when developing, designing, manufacturing, servicing, and marketing its products.

This is done by identifying the significant environmental impacts of its products and operations and taking appropriate measures to reduce them. This work is supported by implementing environmental and energy management systems certified according to ISO 14001 and ISO 50001 in all its manufacturing sites.

Alfa Laval has been a signatory to the UN Global Compact since 2011 and complies with its ten principles for responsible business. Alfa Laval contributes to several of the Global Goals by offering products and solutions that enable its customers to improve the efficiency of their production processes by, for example, improving energy efficiency, reusing water, or reducing waste.

### UNI EN ISO 14064:2019

BHE-FHE Manufacturing Sites are certified, at organization level, for quantification and reporting of Greenhouse Gas Emissions and Removals.

### The Product

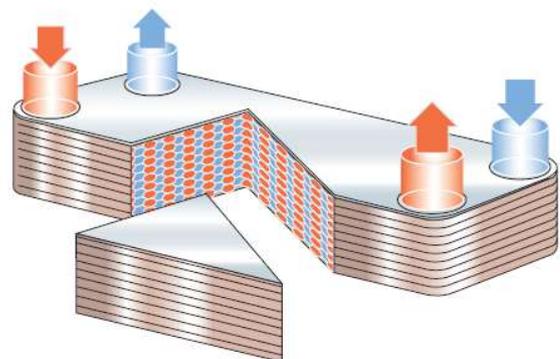
A brazed plate heat exchanger consists of a package of thin, corrugated metal plates. A thin copper foil is placed between each plate. The assembly is placed in a high temperature furnace in which the copper



foil melts and brazes two adjacent plates together. The melted foil also seals the channel formed between two plates.

To retain high internal pressure, two thicker front (Frame) and end (Pressure) plates are normally brazed to both sides of the plate pack. Connections for media are either brazed or welded to the front plate.

The size of the unit and the number of plates are determined by the requirements of the particular application and duty. Each individual brazed plate heat exchanger is optimised for its duty and as a result, the usage of materials is kept to a minimum.



## Product Components

Responsible sourcing is a priority at Alfa Laval. To ensure compliance and high sustainability standards, a Supplier code of conduct has been developed i.e., The Business Principles for Suppliers.

The latter focuses on the most important sustainability aspects in Alfa Laval supply chain. All components are checked against EU legislation and global agreements such as REACH RoHS candidate list.

### Plates and Connections

Corrugated Plates, Frame Plate, and Pressure Plate are made of Stainless-Steel type 304 or type 316. Connections are normally made of Stainless-Steel (SS) type 304 or 316. Normally, Stainless-Steel represents the 90% of the total weight. The percentage value of recycled content of SS can reach 85%.

### Brazing Material

For a complete brazed heat exchanger, the Copper (Cu) constitutes around 10% of the total weight. The percentage value of recycled content of Cu can reach 41%.

### Insulation Material

The brazed heat exchanger can be insulated, by using polypropylene and polyurethane, to minimize heat transfer between the heat exchanger and the environment.

### Packing

Alfa Laval packing materials consist of Wooden (pallets, collars), Plywood (boxes), Cardboard (boxes), Packaging steel (frames for fixation etc.), Instruction books, Plates & labels, Consumables (tape, paper filling material, straps).

To optimize and improve the packaging from a sustainability point of view, Alfa Laval has released Sustainability Requirements on packaging set.

The entire procedure is based on the 3 R (Recycle, Reduce, and Reuse) principle of waste management, and it encourages the usage of Life Cycle Approach when evaluating the different packaging options.



## Manufacturing Process

The manufacturing process generally consists of three main phases such as pressing, brazing, and testing. During the pressing phase, both the copper and stainless-steel patches are overlapped and pressed to produce a plate pack. Then the frame plate, pressure plate and an additional copper foil are added.

The assembled heat exchanger is placed on alloy pallets (grid) and then fed into the brazing furnaces. These are electric furnaces that run a programmed heating and cooling cycle, allowing the copper sheet to braze evenly across the corrugated plates. After leaving the brazing furnaces, the brazed plates are tested, labelled, and packed to be ready for shipping.

## Transportation

Alfa Laval aims at lowering the negative impact of goods transportation. Despite Alfa Laval ability to influence the decarbonization of transport industry is relatively low, there is a strong commitment to reduce the impact by choosing transport modes with lower carbon emissions.

In practice, Alfa Laval is minimizing air transportation and optimizing internal logistics to ensure minimum emissions from goods transport.

## Use Phase

Brazed plate heat exchangers are passive components used to heat or cool water, with no electronic equipment inside. The brazed plate heat exchangers can be applied in three main equipment's such as:

- Heat Pumps i.e., mechanical devices able to extract low-grade heat from any source (water, air, soil etc.) and upgrade it by providing indoor air heating and cooling.
- Refrigeration Units i.e., mechanical devices able to remove the heat from an indoor environment thanks to an efficient heat exchange.
- Boilers i.e., mechanical device able to provide hot water for domestic usage.

It is also worth noting that, being passive products that do not consume energy directly, there are no direct emissions associated with energy consumption in the product's use phase.

## End of Life

Brazed plate heat exchangers must be recycled according to relevant, local regulations.

Alfa Laval has signed a partnership with Stena Recycling to introduce a ground-breaking business model for boosting circularity in the heat exchanger supply chain.

The initiative, entitled 'Re-Made to Matter', will allow people to switch to a more energy-efficient heat exchanger and get a refund for the old one, which will then be recycled. Packaging can be reused, recycled, or used for energy recovery.



## References

- <https://www.alfalaval.com/>
- <https://www.alfalaval.com/media/stories/sustainability/sustainability-supply-chain/>
- <https://www.alfalaval.com/media/news/2021/alfa-laval-and-stena-recycling-s-groundbreaking-sustainability-initiative-debuts-in-the-nordics/>
- <https://www.alfalaval.com/about-us/sustainability/a-matter-of-trust/sustainability-reports/>

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