



Environmental Product Declaration

Fusion-bonded plate heat exchanger

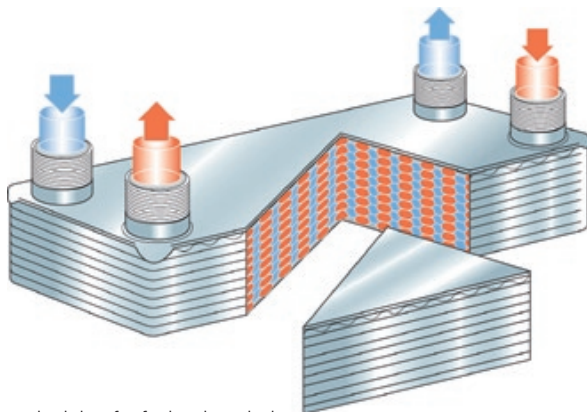
Alfa Laval endeavours to perform its own operations as cleanly and efficiently as possible, and to take environmental aspects into consideration when developing, designing, manufacturing, servicing and marketing its products. It does this by identifying the significant environmental impacts of its products and operations and taking appropriate measures to reduce them. This work is supported by implementing environmental management systems (normally certified to ISO 14001) in all its manufacturing operations.

This Environmental Product Declaration is made in accordance with ISO 14021. For more information, Life Cycle Assessment and Sustainability Reports are available on request.

The product

A fusion-bonded plate heat exchanger consists of a pack of thin corrugated metal plates. A filler material is placed between each plate. The assembly is placed in a high temperature furnace in which the filler melts and bonds two adjacent plates together. The melted filler also seals the channel formed between two plates. In order to retain high internal pressure, two thicker front and end plates are normally bonded to both sides of the plate pack. Connections for media are either bonded 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 fusion-bonded plate heat exchanger is optimised for its duty and as a result, the usage of materials is kept to a minimum.



Flow principle of a fusion-bonded plate heat exchanger



Construction materials

Plates and connections

Both the corrugated plates and the thicker front and end plates are made of stainless steel type 304 or type 316. The degree of recycled material in stainless steel 316 is typically between 60-90%. Connections are normally made of stainless steel type 304 or 316, but may also be made of carbon steel.

Packing

Packing material consists of wood, plastics, cardboard boxes and, in some cases, metal straps. Alfa Laval enforces strict environmental demands on suppliers for all types of packing material.

Filler material

The filler material has a composition very similar to stainless steel type 316 with small amounts of silicon and boron as melting point depressants.

Insulation material

The fusion-bonded heat exchanger is often insulated in order to minimize heat transfer between the heat exchanger and the ambient. In cooling duties the insulation is made of polypropylene, and in heating duties it is made of polyurethane.

Restricted substances

All components are checked against EU legislation and global agreements such as the Montreal Protocol and the REACH candidate list. No components contain any substances on those lists.

Manufacturing

The major environmental impact during manufacturing comes from the construction materials. Energy (electrical, fossil fuels) typically accounts for less than 10% of the total environmental impact of manufacturing.

All Alfa Laval's manufacturing sites operate with an environmental management system. Data on energy consumption and emissions to air and water and other environmental factors are reported annually in Alfa Laval's Sustainability Report.

Use

The heat exchanger as such does not give rise to any emissions and does not consume any energy. To create a pressure drop – the driving force for heat transfer – across the heat exchanger, external pumps are normally needed.

In order to maintain the level of performance, Alfa Laval recommends cleaning at regular intervals, of which the frequency depends on application and duty. Alfa Laval provides non-toxic cleaning chemicals containing biodegradable surfactants.

Transportation

Transportation accounts for a large part of Alfa Laval's CO₂ emissions. In order to reduce these emissions, all transportation providers are evaluated and classified from an environmental point of view. Furthermore, strict demands are placed on transportation providers to propose ideas for reducing the environmental impact of Alfa Laval's transportation.



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End of life

Waste of the product is not hazardous (EU Directive 91/689/EEC). Chemicals must be drained off before any end of life treatment and treated according to local regulations.

Recycling

The fusion-bonded heat exchanger cannot be dismantled, but it is still possible to recycle, thus reducing the use of virgin material for new production of metals. It should be sorted as stainless steel. Local regulations may apply; for more information about sorting and recycling, please contact your local waste handling/environmental authority.

Packing

Wood and cardboard boxes can be reused, recycled or used for energy recovery. Plastics should be recycled or incinerated at a licenced incineration plant. Metal straps should be sent for material recycling.

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com