Environmental product declaration

Brazed Plate Heat Exchangers
SWEP International AB
2022

SWEP

SWEP optimizes the use of energy, material, and space in heating and cooling systems. We take pride in contributing to a comfortable and sustainable life for people around the world, and a competitive edge for our customers.

At SWEP, we constantly challenge efficiency: from the products we design to our daily work and interactions. Continuously using our expertise and innovation to create sustainable heating and cooling solutions. Our brazed plate heat exchangers provide unparalleled performance at the lowest life-cycle cost.

Our purpose
We believe in creating more from less. That our future rests on giving more energy than we take – from our planet and our people.
So we are here to lead the conversion to sustainable energy usage in heat transfer, constantly creating more from less energy, material and space.

Our vision
To significantly lower energy usage in heat transfer solutions

Environmental strategy
At SWEP, we work to minimize the negative environmental impact of our operations, production, and products. Every time we are faced with a choice that has an environmental impact; our aim is to move towards a sustainable solution.

carbon footprint standard
CO_2e Reduced Organisation

Here are some of the things we have done and continue to do:

- We aim to make all choices and decisions with climate-neutral and environmentally friendly solutions in mind
- All our factories are certified according to ISO 14001 standard
- We have reduced our carbon intensity per kg produced by 34% from 2016 to 2021 and our goal is to become carbon neutral in scope 1+2 emissions by 2030
- We are constantly developing our products to reduce the amount of material while increasing performance and efficiency
- We design with the lifecycle impact of our products in mind, which is why we have developed a range of heat exchangers designed for natural refrigerants
- We strive to minimize the environmental impact of our operations by switching to renewable energy as well as installing solar panels, heat recovery solutions and more energy efficient equipment
- We have implemented a new travel policy that requires environmental considerations when planning travels and choosing mode of transportation
- We continuously work with our suppliers to find materials and transportation solutions that have lower carbon emissions
- CO_2 emissions per product are highlighted in SWEP SSP, enabling customers to factor in the environment when selecting between our products

About the product

Brazed plate heat exchangers (BPHEs, sometimes known as plate-to-plate heat exchangers) are one of the most efficient means to transfer heat from one medium to another.

A brazed plate heat exchanger consists of corrugated plates that combine to create channels through which a hot medium and a cold medium (typically water) can be distributed.

BPHEs can be used for a range of functions in a heating or cooling system – they can act as condensers, evaporators, oil or gas coolers and be used for other functions that involve the transfer of heating or cooling.

BHPEs are widely used in many different industries, and often in large-scale residential heat networks. They play an important role in delivering air conditioning process and production, refrigeration, data center cooling and residential heating.

BPHE materials

The most common material combination in SWEP BPHEs is plates in austenitic stainless steel, brazed together with copper. However, various material combinations and designs can be used to achieve optimal qualities.

SWEP purchases raw materials from selected suppliers that live up to our quality and sustainability standards. We always collect documentation of all materials in a BPHE, which allows each component to be traced back to supplier, date of manufacture, detailed material composition, etc. This is a requirement for many of the third-party approvals held by SWEP BPHEs.

Stainless steels

The standard material for channel plates, cover plates, start plates, end plates, and various types of rings and connections for the BPHE is an austenitic-type stainless steel. SWEP uses steel that correspond to different EN and US standards and the most common grades are 316 and 304. Stainless steel is made from a high percentage of recycled scrap.

The typical composition of 316 steel is:

- Iron (Fe), balance
- Chromium (Cr), 16,5-18,5%
- Nickel (Ni), 10-13%
- Molybdenum (Mo), 2-2,5%
- Nitrogen (N) ≤ 0,10%
- Carbon (C) ≤ 0,045 %

The typical composition of 304 steel is:

- Iron (Fe), balance
- Chromium (Cr), 17,5-19,5%
- Nickel (Ni), 8-10,5%
- Nitrogen (N) ≤ 0,10%
- Carbon (C) ≤ 0,045 %

Copper

The standard brazing material for copper-brazed SWEP BPHEs is 99.9% pure cadmium-free copper foil.

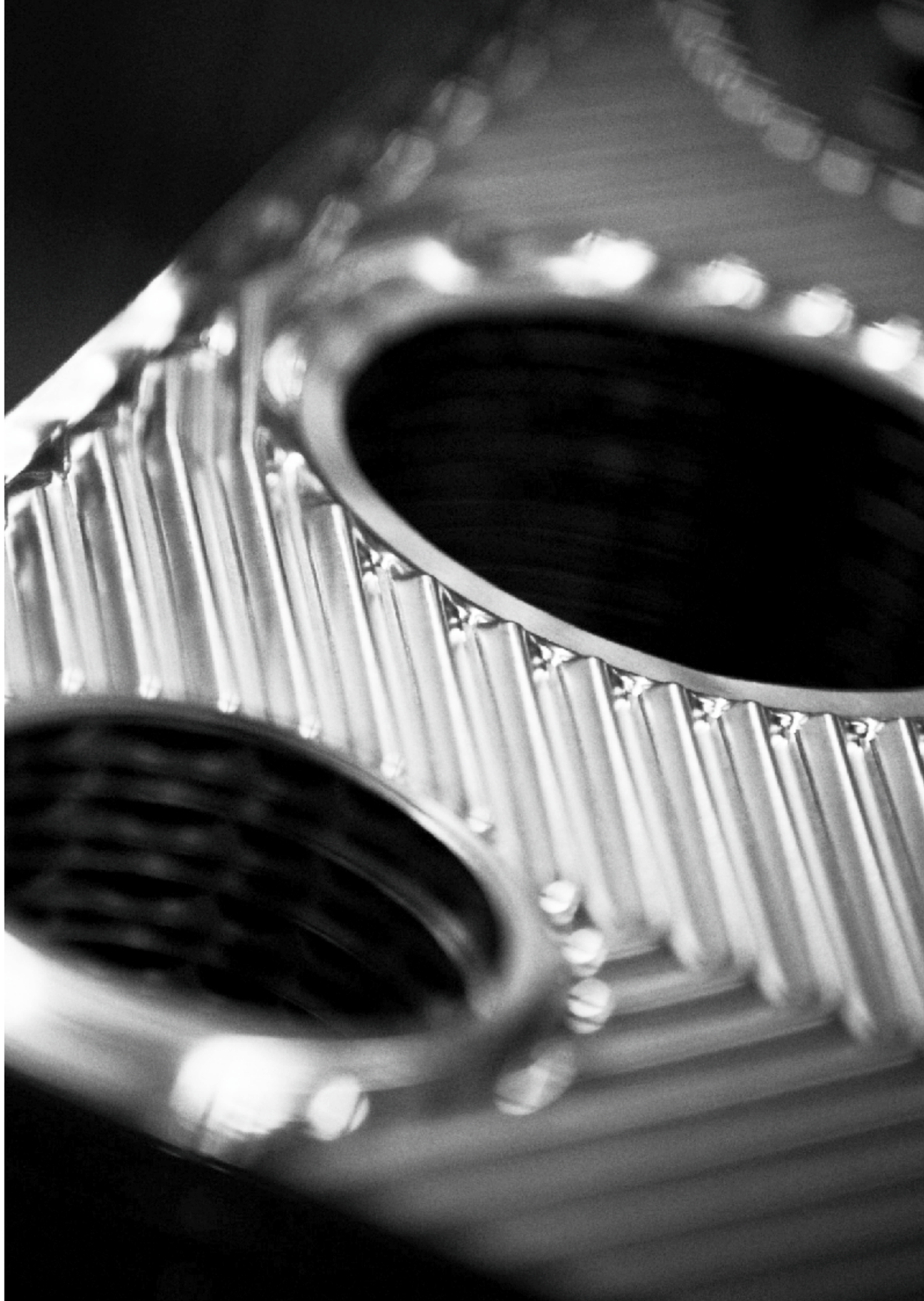
Nickel

The typical composition of our nickel brazing foil is:

- Ni remain
- Cr 14,5-15,5 %
- B 1,1-1,6 %
- Si 7,0-7,5 %
- Fe max 1,0 %
- C max 0,06 %
- P max 0,02 %
- S max 0,02 %
- Al max 0,05 %
- Ti max 0,05 %
- Zr max 0,05 %
- Co max 1,0 %
- Se max 0,005 %
- Other elements total max 0,5 %

All-stainless

All stainless products use a brazing material in the form of an iron-based filler instead of copper or nickel. The filler is similar to stainless steel, but with added melt depressants.



Packing material

At SWEP we choose our packing materials with environmental impact and circularity in mind, which is why we primarily use wooden pallets and cardboard. We are continuously working with our suppliers to reduce the environmental impact of our packing materials, for example through buying secondhand pallets and recycled cardboard.

Materials used for packing are: corrugated cardboard, wooden pallets, pallet collars, wood bolts, wood laths, masonite board, plastic film (PE), and plastic ribbon (PET).

Manufacturing

The main environmental impact during manufacturing comes from electricity consumption. SWEP uses electricity mainly for machines, brazing furnaces, hydraulic presses, electric forklifts, ventilation, computers, and lighting. In 2021, 70% of our electricity came from renewable sources and we aim to increase this share even further.

Transportation

At SWEP we track emissions from transportation and take actions to reduce the climate impact from our shipments. We do this partially through a focus on reducing the fuel intensive transportation methods, such as air freight and express shipments, and partially through collaborations with our forwarders on switching to more environmentally friendly modes of transportation, for example using biofuels.

Usage

Brazed plate heat exchangers make efficient use of energy, material, and space. For example, our AsyMatrix™ technology utilizes asymmetric plate patterns to transfer more heat using less material. By introducing new efficient technologies SWEP continues to decrease the material usage for heat exchanger applications.

SWEP offers Sealix™ and All-stainless solutions that allow BPHEs to be used for applications with demanding fluids, thereby allowing end users to convert from less efficient heat exchanger technologies to BPHE. With Hypertwain™ SWEP can offer the most efficient heat exchanger solution for the reversible heat pump market, allowing large energy savings for the end user, decreasing the CO_2 footprint and operational cost while having a small footprint.

Recycling

All the raw material we use for BPHE manufacturing is 100% recyclable, this includes all cutoffs and scrap material from production. All waste from manufacturing, such as stainless steel, copper and nickel, is collected and transferred to a recycling company.

Energy efficiency

A BPHE itself does not require any energy to operate, but it is often part of a larger system that uses energy. We design our BPHE's for different types of applications to ensure that they contribute to the overall energy efficiency of the end system they are installed in.

End of life

Waste from our products are not hazardous (EU Directive 91/689/EEC). Chemicals must be drained off before any end-of-life treatment and treated in accordance with local regulations. At the end of its lifecycle a heat exchanger that has been drained of all fluids becomes metal scrap. Depending on the scrap's material composition it can be recycled into new metal-based products.

Certifications and legislation

SWEP products must comply with a wide range of rules, regulations, and standards globally. Often, this requires certification by an independent, third-party organization.

All SWEP's manufacturing locations are ISO 9001 and ISO 14001 certified

- ISO 9001 is the internationally recognized business standard for quality management
- ISO 14001 is the internationally recognized business standard for environmental management. It prescribes controls for those activities that have an effect on the environment. These include the use of natural resources, the handling and treatment of waste, and energy consumption

Compliance with REACH, ROHS & TSCA

- In accordance with these regulations, we consider it very important not to use any of the restricted substances. We regularly check updates to the regulations and inform customers accordingly

Free from conflict minerals

- SWEP products, components, parts, and materials are free from conflict minerals mined or produced in the covered countries
- Conflict minerals are tin (cassiterite), tungsten (wolframite), tantalum (columbite-tantalite or coltan), and gold, and the metals derived from these minerals

SWEP ensures efficient heat transfer where less means more. Since 1983, millions of our innovative brazed plate heat exchangers have been integrated into HVACR and industrial applications worldwide, enhancing the quality of life for billions of people. Our expertise in sustainable energy use has grown SWEP into a global company with more than 1,100 employees, five production sites, and a presence in 50 countries. As part of Dover Corporation, we help redefine what is possible within the Climate & Sustainability Technologies segment.
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