Weber
Cooling

Vacuum for Cooling

Innovative Technology for Cooked Food & Sushi

webervacuum.group

Sales | Rentals | Support | Refurbishments

Ultra-fast & uniform cooling
saving on cooling space & energy costs
optimizing taste & bite, improving shelf life

Vacuum cooling is a rapid pre-cooling technology. By continuously reducing the pressure inside the vacuum room, you force (a fraction of) the product's own moisture to evaporate, at decreasing temperatures. This evaporation (boiling) costs energy, which is taken from the produce in the form of a temperature reduction; your product cools down! Vacuum works like a reverse microwave:
You cool all your produce, inside and out, completely uniform and ultra-fast.

Many advantages can be achieved by cooling with vacuum. Your cooling time will be reduced to minutes, preserving food quality and minimizing bacteria growth, thus maximizing shelf life. All products are cooled uniformly, to the core. Only with vacuum you can really control your temperature. Using vacuum will save substantial on cooling space and will reduce your energy costs.
Vacuum is the most efficient cooling technology available in the market!

A wide range of food products can profit from vacuum cooling. The technology is used within the (airline) catering industry, at industrial kitchens and other food production companies. For special applications like (Sushi) rice, vacuum also can improve taste & bite. For bread & bakery products vacuum cooling offers also substantial productivity increases, as baking time can be reduced.
Cooling with vacuum is perfect for most cooked, fried & baked products!

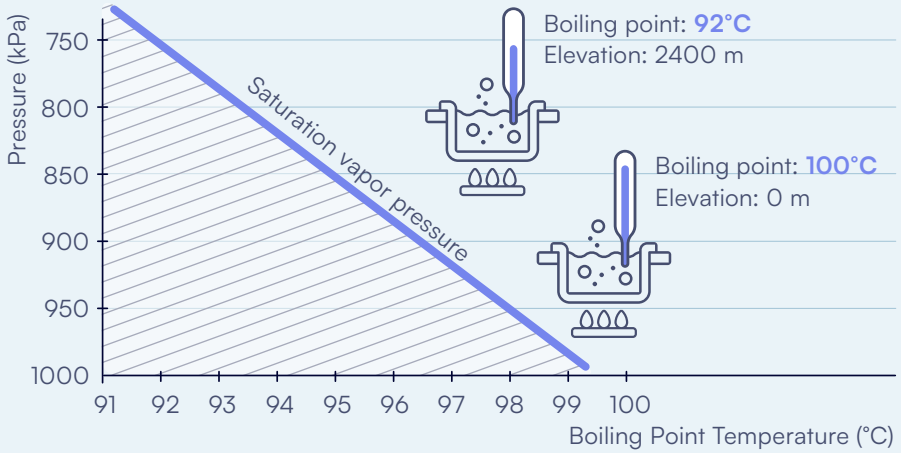
Watch our videos

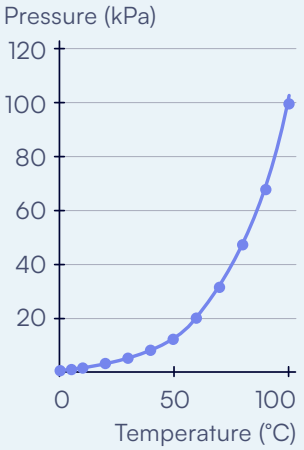
Vacuum Cooling | **Airline Meals** →

Vacuum Cooling | **Sushi & Rice** →

Vacuum Cooling
Technology Explained

Vacuum works with pressure. There is a relation between the pressure level and the boiling point of water. The lower the pressure, the lower the boiling point of water. When introducing a cooked or baked product product into the vacuum room, vacuum pumps start evacuating the air in the room, lowering the pressure. When the pressure level reaches the product's temperature, a fraction (0,8-2%) of the moisture inside the product is being forced to evaporate. This evaporation process extracts energy (= heat) from the product. Because of the created vacuum, not only the outside is cooled down, but the product's core as well, as cooling takes place from inside the product.





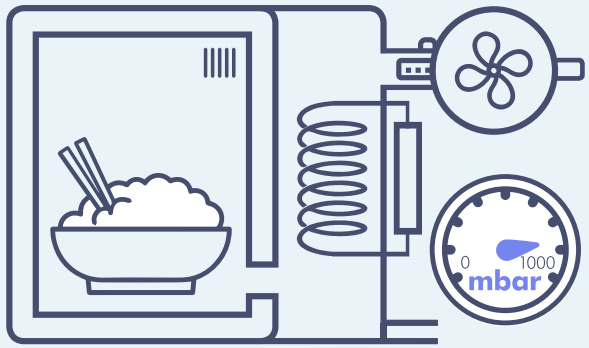
A condensing system is used to condensate the water vapor coming from the produce. This system is being cooled by a refrigerant and (glycol) water (Hydronic cooling). Based on intensive research, and hundreds of vacuum coolers installed in the market — Weber Cooling (a member of Weber Vacuum Group) has optimized the vacuum — cooling balance for each product to be cooled. Our systems can cool most types of warm/cooked food and sushi in a matter of minutes, uniformly, while preventing bacterial growth, helping you optimize your operations, and increasing product shelf life.

Note: For every 8-12°C reduction in temperature, approximately 1% of the produce weight needs to be turned into water vapor. In an average cycle of 5-30 minutes, weight loss can vary between 5-8%.

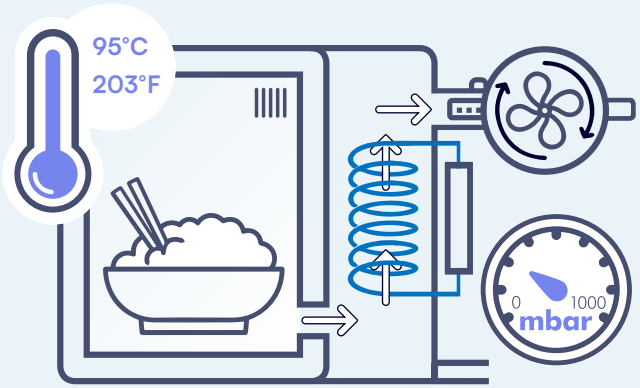
Table relation Pressure and Boiling point of water

Pressure on system		Temperature at which water boils	
mBar	Torr mm Hg	°F	°C
1000	760	212	100
56.2	42.2	95	35
42.4	31.8	86	30
31.7	23.8	77	25
28.4	21.3	68	20
20.6	15.5	64.4	18
18.2	137.7	60.8	16
17.0	12.8	59	15
16.0	12.0	57.2	14
15.0	11.3	55.4	13
14.0	10.5	53.6	12
13.1	9.8	51.8	11
12.3	8.6	48.2	9
10.7	8.0	46.4	8
10.0	7.5	44.6	7
9.3	7.0	42.8	6
8.7	6.5	41	5
8.1	6.1	39.2	4
7.6	5.7	37.4	3
7.1	5.3	35.6	2
6.6	5.0	33.8	1
6.1	4.6	32	0

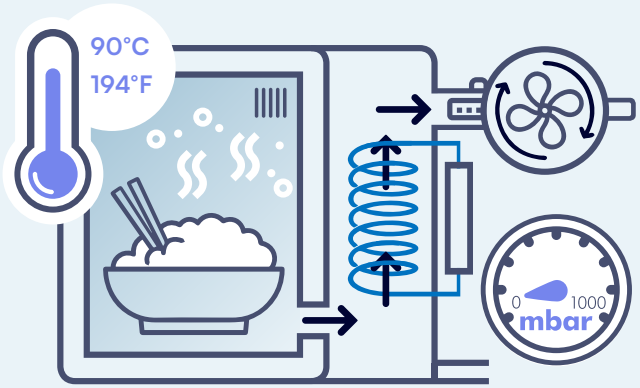
Cyclus - What happens inside the vacuum room?



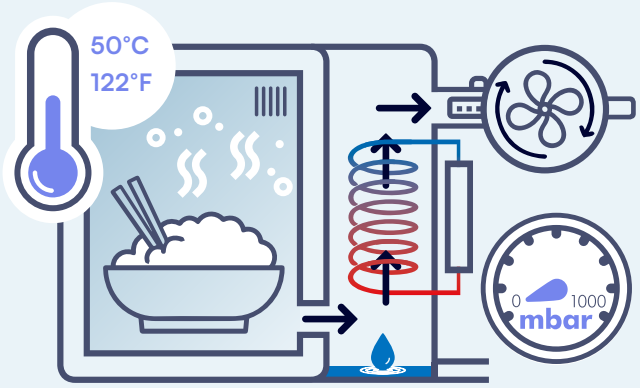
1 The product is placed in the vacuum room and room is closed.



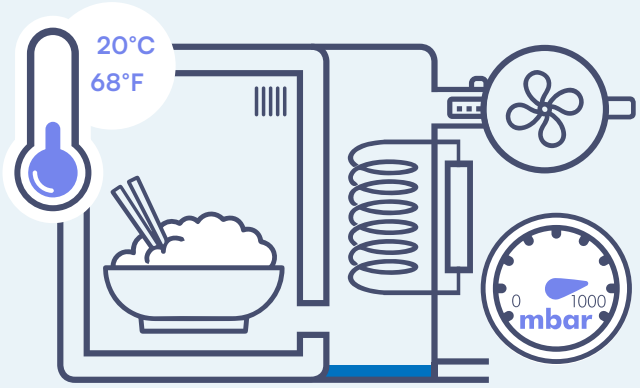
2 The vacuum pump starts and reduces the air pressure in the room from 1000 mbar to the desired pressure.



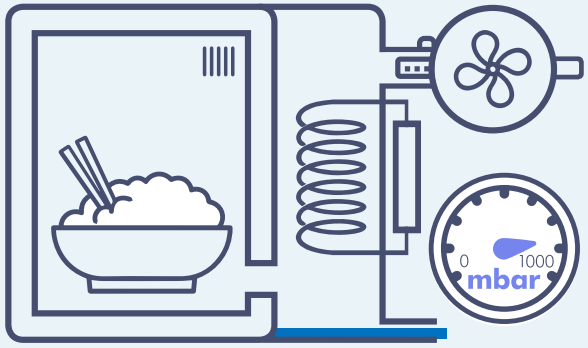
3 A small amount of water within the product will start boiling when pressure reaches temperature level of the product. This boiling process requires heat that is extracted from the product, enabling the cooling.



4 The water vapor is condensed by passing a “cold wall”. The dried air goes out through the vacuum pump.



5 The cycle ends when the product is cold and the pressure returns to 1000 mbar.



6 The condensed water is drained and the vacuum cooler is ready for the next load.

Why Weber

Only the Weber Vacuum Group offers a full range of standardized stainless-steel solutions, from compact to high capacity, tailored as needed for your specific application.
We guarantee the highest value and reliability.

Our unique features

Wide model range, with easy customization; we make the vacuum chamber fit to your specifications

Hydronic cooling: We use glycol water as cooling medium. Reducing the amount of refrigerant by > 70% and minimizing maintenance.

Lowest Energy Cost: By the perfect balance between vacuum & cooling, we keep the average energy consumption to an absolute minimum.

WeCool Software, allowing for perfect cooling control

Low Maintenance: Simple & sturdy design, aimed at minimizing maintenance. For year-round production we offer special vacuum technology, further reducing maintenance (and energy) costs. We set a new benchmark here.

Global Support: Through our own offices in Europe and Asia, and by our professionally trained worldwide partners. Remote access (powered by EWON) allows for quick intervention, and predictive maintenance.

We make Vacuum Cooling affordable

Premium quality & ultimate performance. At surprisingly affordable costs, which we can realize through our:

- **economies of scale** — nobody builds more vacuum coolers than the Weber Vacuum Group
- **focus** — vacuum technology is in our vines, it's our DNA, that allows us to build the most intelligent and affordable solutions
- **agility** — with low overhead and world-wide sourcing, we can design & build - fast & flexible, at lowest cost

For general **Food & Kitchen** we offer the **WeFood Range**

- General food vacuum cooling solutions
- Standard design for single up to four racks, each rack 100 kg
- Cooling within 20 - 30 minutes

For **Sushi & Rice** we've designed ultra **high-speed WeRice Range**, with special control to enhance the taste & byte

- Special design for sushi & rice cooling
- Standard design for up to two racks (150 and 300 kg)
- Cooling within 5 - 15 minutes

For **Bakery**, we have a **special range of solutions**. Please read our Bakery Brochure on this!

A revolution for you!

Integrating a vacuum cooler in your factory is relatively simple to do. Our standard room sizes are designed to handle one or several Gastronome racks or customer specific bins or trolleys. Rooms can be supplied with one or two (hinged or sliding) doors. The machine room (containing the vacuum & cooling technology can be placed next to the room, or further away, in a low care area. **We help you design the perfect solution.**

Weber Cooling can advise you on which products will cool easily, and which products require special adaptation, or cannot be cooled at all.

As a rule of thumb: If water vapor can be released through the surface of the food, it will cool. As cooling takes place by evaporation (boiling) of some of the water from the product, sauces & soups are difficult to cool (splashing). Sausages & air tight packed food will not cool. On the other side, the smaller the individual parts, the easier & fast cooling can take place. Rice, pasta & potatoes, sliced or minced meat and (cut) vegetables will cool fast and uniformly.

Cooling down from around 80 - 100 °C / 175 - 210 °F to around 30 °C / 85 °F can be done within 5 - 10 minutes (with the right machine). Cooling down to temperatures below 10 °C / 50 °F might take up to 20 - 30 minutes. With vacuum you can cool down close to freezing, but the highest cooling efficiency & speed will be achieved at higher temperature levels.

We make
Vacuum Cooling affordable

A dedicated range of vacuum coolers has been designed to cool hot food:

Our powerful WeFood systems are developed for the efficient cooling of all types of warm food, at industrial kitchens, airline catering operations and other food producers. The systems can be designed for standard cooling (down to around 20 °C or 68 °F) or for deep cooling (down to 5 °C or 41 °F).

The standard range is developed for gastronorm trolleys 590 / 655 × 670 / 740 mm, 1.700 mm high.

Based on your needs, it is possible to adjust internal room dimensions.

Our powerful WeRice systems are developed for high-speed cooling of rice for sushi or bento applications, and for finished sushi, on an (semi) industrial scale. For first stage rice cooling we design for cooling down to around 20 °C or 68 °F, within 5 - 10 minutes. Second-stage cooling and deep cooling is possible with our our deep cooling option, going down to 5 °C or 41 °F within 10 - 20 minutes, depending on starting temperature and load.

The standard range is developed for gastronorm trolleys 590 / 655 × 670 / 740 mm, 1.700 mm high.

We offer standard models for up to two trolleys, or 150 and 300 kg.

For both WeFood and WeRice range tailor-made designs can be made on request. All our models can be supplied as integrated unit (with the technology on board) or as space-saving compact unit, with technology placed in a different (low-care) area.

Market references

For **Airline Catering** we've supplied many systems to the Airline industry over the last years, China Eastern, China Southern and Lufthansa are among our customers here. Our vacuum coolers offer unparalleled cost efficiency and performance. **No other system will guarantee homogenous cooling – to the core**. Of all cooked food!

Pastries & **Soufflés** have proven to provide premium taste and strongly increased shelf life when cooled by vacuum. For **Pasta** we've supplied solutions to manufacturers of **snack** ingredients. **Quinoa** can also be cooled down fast and efficiently. **Falafel** is one of the fried products which can be cooled. Fortune 100 companies produce dairy based **meat replacers**, cooled with our vacuum systems.

For **Sushi & Rice** we've supplied leading supermarkets and restaurant chains in the UK and on the European continent. Cooling the the rice after cooking – to prepare for sushi production, and after forming – to maximize storage life. **Only with vacuum you will get the sweeter taste, richer structure and best bite experience!**

For **Bread** & **Bakery** vacuum brings even more, as the final stage of the baking process is completely transferred to the vacuum cooler. Besides up to 35 % shorter baking times and decimated cooling times **vacuum will also improve the structure of the bread, generate more volume**, will ensure a crispier crust and will result in an overall longer shelf life. We supply turnkey solutions to leading bakeries in Europe, America, Africa & Asia.

Weber Cooling is the world leading supplier of Vacuum Cooling Solutions

We ONLY do vacuum cooling, for ALL applications where vacuum cooling is used. We've developed dedicated, tailor made solutions for each of these vacuum cooling applications.

FOOD APPLICATONS

Bread & Pastry | Food & Kitchen | Rice & Sushi

FRESH APPLICATONS

Vegetables & Herbs | Flowers & Cold Chain | Turf, Sedum & Substrate

Weber Cooling can provide highest quality solutions at lowest costs, thanks to our:

- **Economies of scale** – we are the largest vacuum cooler supplier in the world.
- **Low overhead** – we combine a lean and agile organization with a strong partner network.
- **Intelligent design** – using modular technology and innovative solutions.

Vacuum Baking Experience Centers

In our Vacuum Baking Experience Centers (in Europe and Asia) you can test all your recipes and can experience all the advantages that vacuum can bring for your products. You will understand what it means that "**vacuum cooling will become a part of your baking process**"!

With regional offices in Europe & Asia and a dedicated worldwide partner network, we provide fast & reliable maintenance & support. At our head office in the Netherlands we have testing facilities & also offer demo & research vacuum coolers for on-site testing.

Contact

Weber Vacuum Group
NL-3334KC Zwijndrecht, Gildenweg 16 | The Netherlands
+31 884 256 250
info@webervacuum.group
webervacuum.group