

High pressure processing (HPP) – Food preservation 2.0

The process - quick, safe and naturally sustainable

Advantages of high-pressure processing (HPP)

The high-pressure processing of fruits and juices denaturises pathogenetic germs and fungi. Nevertheless, that non-thermal process preserves vitamins, flavouring and colour pigments. As food is processed in the final packaging, that process meets maximum hygienic requirements, because a later contamination is excluded. Additives are not used; thus, the product maintains its pure and biological state.

Application areas

A higher water activity is necessary for the HPP process; therefore smoothies, fruit and juices are especially appropriate. As the product is not heated up, taste and appearance remain unaltered. The consumer receives a gently and - most of all - safely and durably made product. New drink variants like DETOX or ANTI-OXIDANTS can be processed gently as well.

Packing materials

The product is compressed by approx. 15 % at a pressure of 6,000 bars; the same also applies to the packing material. Therefore, flexible vacuum or MAP packing materials on the basis of PE, PET or EVON are appropriate for that process. The portion of air within the packing material (upper space) is fully compressed during the processing and has no influence on product or packing material.

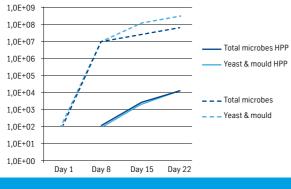
Results

The graphical illustrations 1 and 2 show what the effect of HPP on yeast and moulds is. Compared to an unprocessed sample the number of bacteria is reduced directly by the processing - the product remains stable for 20 days. Compared to that the unprocessed sample is contaminated; after a short time it exceeds the approved benchmarks issued by the German Society for Hygiene and

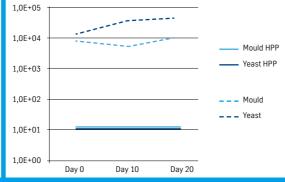
Already today many processors worldwide apply HPP to gently and safely process their products being worth several billions of Euros.



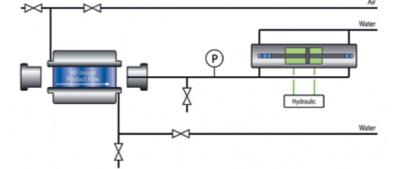
Graphical illustration 1: Denaturisation of yeasts and moulds following the HPP processing of fruit salads

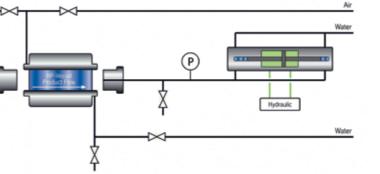


Graphical illustration 2: Denaturisation of yeasts and moulds following the HPP processing in smoothies



Diagrammatic structure of an HPP plant





Necessary supply

The subsequent cycle may begin.

The process

HPP offers the chance to process products

optimally; if required, the packing design

has to be adapted to the basket. Baskets

are transported automatically into the HP

vessel is increased up to 6,000 bars. That

value approximately conforms to the weight force exerted by three Jumbo Jets on the

surface of a smartphone. After a dwell time of approx. three minutes, which is set product-

specifically, the plant relieves the pressure

exerted. The water in the vessel is drained

and the vessel returns to its initial position.

vessel. Following that, it enters the plant and

The HPP process demands water in potable water quality. That water can be reused after each cycle. Therefore, wastewater or waste products do not occur. The amount of electricity needed varies in dependence on the plant capacity.









Outside left: Fruit salad unprocessed and processed (6,000 bars / 3 min.)

Middle: Pineapple and orange juice before and following the processing

Outside right: Cold pressed fruit juices