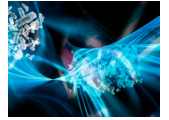
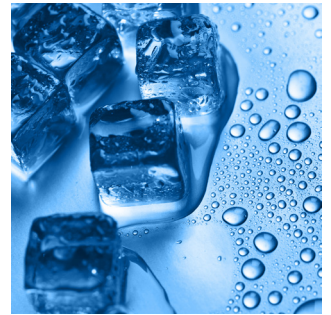




## Liquid Coffee Concentrate



Freeze Concentration of Coffee Extract



### Why liquid coffee concentrate?

- Reduction of:
  - transportation cost
  - packaging cost
  - storage cost
- New product development
- New market opportunities – export
- High quality concentrate:
  - as ingredient
  - for canned coffee
  - for dispenser systems
- Opportunities in institutional markets

Freeze concentration technology, your guarantee for:

- Total retention of original product characteristics
- Quality in = quality out
- Simple, flexible, efficient operation
- No intermediate cleaning needed
- Low production cost

### How to concentrate?

Innovation in GEA Messo PT freeze concentration technology has resulted in a new generation of low cost IceCon™ systems.

### Which products?

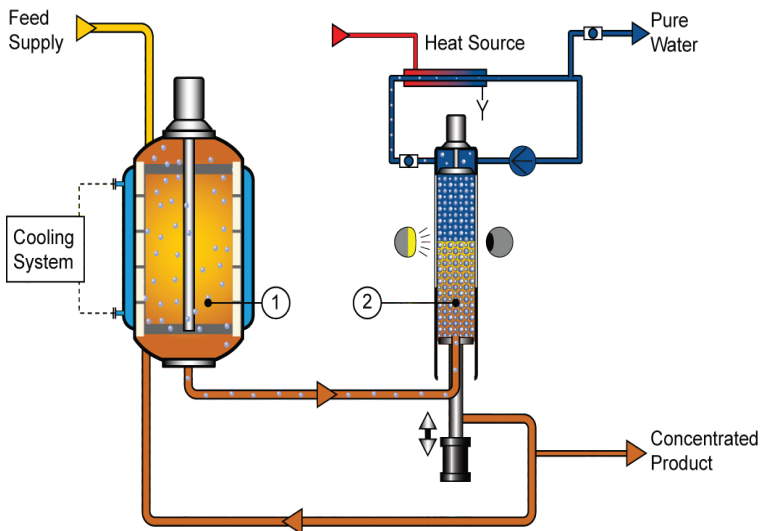
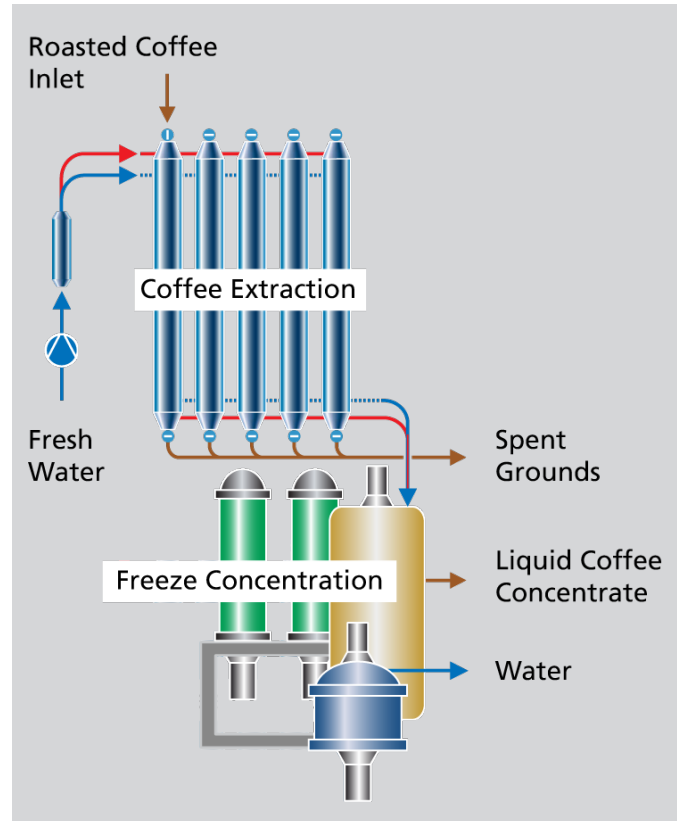
All kinds of coffee extracts regardless type of beans, roasting- or extraction method.



## Liquid Coffee Extract

Split or dual extraction provides a high quality aromatic extract ideal for further processing in a freeze concentration system. The second draw can be concentrated using conventional methods or optionally freeze concentrated (similar to full extraction).

Freeze concentration provides an economical coffee concentrate that makes it feasible to use top quality coffee extract for products like “canned coffee” and coffee ingredients.



Freeze concentration is the removal of pure water in the form of ice crystals at sub-zero temperatures. IceCon™ is the latest innovation of freeze concentration design. The diagram shows the complete process in its simplest form. This single stage process consists of one crystallizer (1) and one wash column (2). The crystallizer is a vessel with a cooling jacket. The inner wall of the vessel is scraped. The outer wall is cooled by a circulating refrigerant. Ice production and crystal growth take place inside the crystallizer. By creating residence time ice crystals grow, creating an optimal crystal size distribution for efficient separation. In the wash column, the concentrated liquid is separated efficiently from the ice crystals. A compressed ice crystal bed is washed with melted ice to remove all traces of concentrated liquid. Freeze concentration ensures that all original product characteristics remain in the concentrate.

## Next Steps

On-site demonstration of this technology is possible in various configurations using GEA Messo PT's pilot plants. For more information regarding this technology and your specific configuration requirements please contact us at: [info.niropt.nl@gea.com](mailto:info.niropt.nl@gea.com) or phone +31 73 6390 390.

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