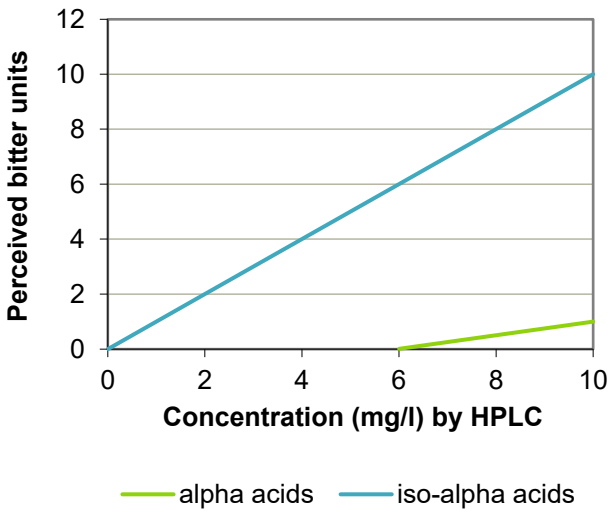
AlphaExtract

❖ Overview

- **AlphaExtract** is a pure, aqueous solution of natural alpha acids in the form of potassium salts, derived from CO_2 hop extract.
- **AlphaExtract** imparts a smooth bitterness to beer with a bitterness only 10 % of that of iso-alpha acids.
- In addition, **AlphaExtract** improves the stability and cling of beer foam.

Sensory and analytical bitterness



❖ Specifications

- Description: yellow to amber solution containing the potassium salts of alpha acids from hops
- Concentration: 20.0 ± 1.0 % (w/w) of alpha acids
- pH: 8.5 (± 0.5)
- Viscosity: 6 mPas at 20 °C (68 °F)
- Density: 1.050 (± 0.020) g/ml at 20 °C (68 °F)

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❖ Properties

- **Appearance**

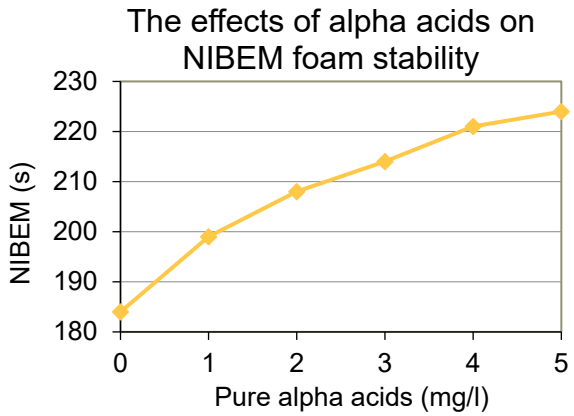
  Yellow to amber in color, **AlphaExtract** is a homogeneous, aqueous solution. Free flowing at the recommended storage temperatures, **AlphaExtract** is miscible in demineralized water and alcohol.

- **Utilization**

  Utilization of alpha acids in the finished beer can vary between 60 – 70 % (based on HPLC analysis) depending on the time and efficiency of dosing, the quantity of adjuncts (if any) and the bitterness level.
  Actual utilization will vary from brewery to brewery due to differences in equipment and process conditions.

- **Flavor**

  AlphaExtract provides a smooth (sensory) bitterness at a dosing rate of 7 – 8 mg/l, depending on the type of beer. However, this will lead to an increase in the analytical bitterness value. The perceived bitterness of **AlphaExtract** is smoother than that of pure iso-alpha acids. At the same time, **AlphaExtract** enhances both foam retention and cling. An improvement in beer foam is already noticeable at 3 – 4 mg/l of alpha acids in the finished beer.



- **Quality**

  All Hopsteiner® products are processed in facilities which fulfill internationally recognized quality standards.

❖ Packaging

AlphaExtract is normally packaged in 20 kg pails. Other sizes are available on request, e.g. IBC of 640 – 1000 kg.

❖ Product Use

AlphaExtract is typically added before the final step in filtration.

- **Dosage**

  Dosage of **AlphaExtract** is based on the product concentration, the desired dosing rate and the expected utilization. Actual utilization will vary from brewery to brewery depending on the time and point of the addition.

- **Application**

  We recommend adding **AlphaExtract** at full strength (undiluted) into the center of the beer stream for at least 70 % of the total volume being transferred, preferably prior to the final step in filtration. An accurate, high pressure dosing pump is required to add the product into the beer stream at a point where vigorous mixing is assured.
  If dilution is necessary, always add **AlphaExtract** to demineralized water and adjust the pH to 8.5 – 9.5 using potassium hydroxide (KOH) or potassium carbonate (K_2CO_3).
  If containers are used over several days, it is highly recommended that the headspace be flushed with nitrogen (CO_2 is not suitable).

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- **Cleaning Recommendation**

  AlphaExtract should not be left in dosing lines at low temperatures. Lines and dosing pumps should be flushed with warm, slightly alkaline, demineralized water or ethanol for purposes of cleaning.

- **Storage**

  AlphaExtract should be stored in sealed containers at 1 – 5 °C (34 – 41 °F). Avoid exposure to sunlight and use opened containers as soon as possible.

- **Best Before Date**

  AlphaExtract is stable for one year from the date it was produced / packaged if stored under the recommended conditions.

- **Safety**

  AlphaExtract should be handled using routine precautions to avoid contact with skin and, in particular, the eyes. Any product coming into contact with the skin should be immediately washed off with soap and water or an appropriate hand cleanser. If **AlphaExtract** gets into the eyes, flush with copious amounts of water until clear and seek medical attention.

  For full safety information, please refer to the relevant Hopsteiner® safety data sheet.

❖Analytical Methods

- **Concentration of Bitter Substances**

  Alpha acids can be measured using the following methods:

  – HPLC according to Analytica-EBC 7.7 or ASBC Hops-14, with the current ICE standard

- **Concentration of Alpha Acids in Beer**

  The concentration of alpha acids in beer is best determined by HPLC using the current ICE standard.

  If either the Analytica-EBC 9.8 or ASBC Beer-23 method is applied, please note that 1 mg/l of alpha acids is equal to an increase of 0.4 – 0.6 bittering units. At the same time, the sensory bitterness only slightly changes although the analytical bitterness value increases.

- **Foam Stability and Cling Test**

  Foam stability can be measured using the following methods listed in MEBAK, ASBC or Analytica-EBC:

  - NIBEM-T Meter
  - NIBEM Cling
  - Steinfurth Foam Stability Tester
  - Ross & Clark
  - Pour Test

❖Supplementary Information

- **Usage in Combination**

  If **AlphaExtract** is to be used in combination with **Iso-Extract**, stable aqueous solutions of alpha acids plus iso-alpha acids can be produced to customer specifications.

  If **AlphaExtract** and Tetra are used in combination, **AlphaExtract** must be added to the beer before **Tetra**.

- **Stability of Alpha Acids in Beer**

  It is not unusual to detect a loss of alpha acids over the normal shelf life of beer. Nevertheless, this has been known to have no effect on the stability and cling of beer foam.

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- **Light Stability of Alpha Acids**

  It is not recommended that **AlphaExtract** be used in light stable beers, as alpha acids can transform into iso-alpha acids, which are not light stable.

❖ Technical Support

We are pleased to offer assistance and advice on the full range of Hopsteiner® products:

- copies of all relevant analytical procedures
- Safety Data Sheets (SDS)
- assistance with pilot or full-scale brewing trials
- special analytical services

❖ Patent

AlphaExtract is covered by US Patent 9,796,955

Disclaimer: The information provided in this document is believed to be correct and valid. However, Hopsteiner® does not guarantee that the information provided here is complete or accurate and thus assumes no liability for any consequences resulting from its application.

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