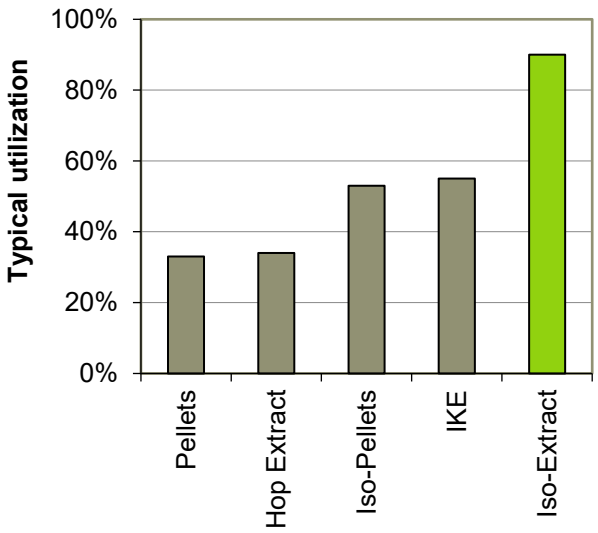
Isomerized Hop Extract 30 %

❖ Overview

- **Isomerized Hop Extract 30 % (Iso-Extract)** is an aqueous solution of the potassium salts of iso-alpha acids produced exclusively from CO_2 hop extract.
- **Iso-Extract** can be used post-fermentation to adjust bitterness or to partially replace conventional hop products used to impart bitterness.
- **Iso-Extract** is typically added prior to filtration and has the highest yield of all hop products.

Comparison of hop product utilization



❖ Specifications

- Description: clear, pale amber to yellow aqueous solution of the potassium salts of iso-alpha acids
- Iso-alpha acids: typically 30.0 ± 2.0 % (w/w)
- Alpha acids: < 0.6 %
- Beta acids: < 0.2 %
- Hop oil: < 0.1 %
- pH: 9.0 (± 1.0)
- Viscosity: 15 – 20 mPas at 20 °C (68 °F)
- Density: 1.065 (± 0.005) g/ml at 20 °C (68 °F)

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❖ Properties

- **Appearance**

  Pale amber to yellow in color, **Iso-Extract** is a clear, homogeneous, aqueous solution. Free flowing at the recommended storage and application temperatures, **Iso-Extract** is miscible in demineralized water, alcohol and propylene glycol.

- **Standardization**

  Iso-Extract is typically supplied as a 30 % w/w solution of the potassium salt of iso-alpha acids; however, 10 or 20 % concentrations are also available.

- **Utilization**

  Based on HPLC analysis of the finished beer, utilization of iso-alpha acids can be as high as 85 – 90 % if the extract is added prior to the final step in filtration.
  Actual utilization will vary from brewery to brewery due to differences in equipment and process conditions.

- **Flavor**

  Iso-Extract produces a clean bitter flavor. It can be used as a partial replacement for kettle hopping. **Iso-Extract** is primarily used to adjust the final bitterness of beer.
  Noticeable changes in the bitter flavor of beer may be observed if more than 30 – 40 % of the total bitterness is contributed by **Iso-Extract**.

- **Quality**

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

❖ Packaging

Iso-Extract is normally packaged in 20 kg pails. Other sizes are available on request, e.g. 5-Gal. Jerricans or IBC of 640 – 1000 kg.

❖ Product Use

Iso-Extract is typically used for the post fermentation adjustment of beer bitterness.

- **Dosage**

  Dosage of **Iso-Extract** (typically 30 %) is based on the concentration of the **Iso-Extract**, the expected utilization and the desired intensity of bitterness in the beer.

- **Application**

  Iso-Extract is added at full strength (undiluted) prior to filtration.
  If dilution is necessary, always add **Iso-Extract** to demineralized water first and adjust the pH to 8.5 – 9.5 using either potassium hydroxide (KOH) or potassium carbonate (K_2CO_3). Laboratory scale testing is recommended prior to commercial use.
  Never dilute full-strength **Iso-Extract** with beer, as the lower pH will cause precipitation.
  Suitable dosing equipment should be used to add **Iso-Extract** into the beer stream at a point where vigorous mixing is assured during beer transfer.
  If containers are used over several days, it is recommended that the headspace be flushed with nitrogen (CO_2 is not suitable).

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- **Cleaning Recommendation**

  Iso-Extract 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**

  Iso-Extract should be stored in sealed containers at 5 – 15 °C (41 – 59 °F). Avoid exposure to sunlight and use opened containers as soon as possible.

- **Best Before Date**

  Iso-Extract is stable for three years from the date it was produced / packaged if stored under the recommended conditions.

- **Safety**

  Iso-Extract is an intensely bitter product. Solutions of **Iso-Extract** are mildly alkaline and therefore contact with sensitive skin should be avoided. If **Iso-Extract** 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**

  Iso-alpha acids can be measured using the following methods:
  - HPLC according to Analytica-EBC 7.9 or ASBC Hops-9C, Hops-9D with the current ICS standard.

- **Bitterness in the Finished Beer**

  When determining the bittering units of the finished beer, take into account that **Iso-Extract** contains only iso-alpha acids and unlike more traditional hop products, there is no contribution of other bittering substances to the analysis results. Hence, the bittering units will be lower compared to the concentration of iso-alpha acids measured by HPLC (Analytica-EBC 9.47), given that **Iso-Extract** was used exclusively or in higher quantities. The factor 50, used for the calculation of bittering units, can be adjusted to a higher value to match the final sensory bitterness.

❖ 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

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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