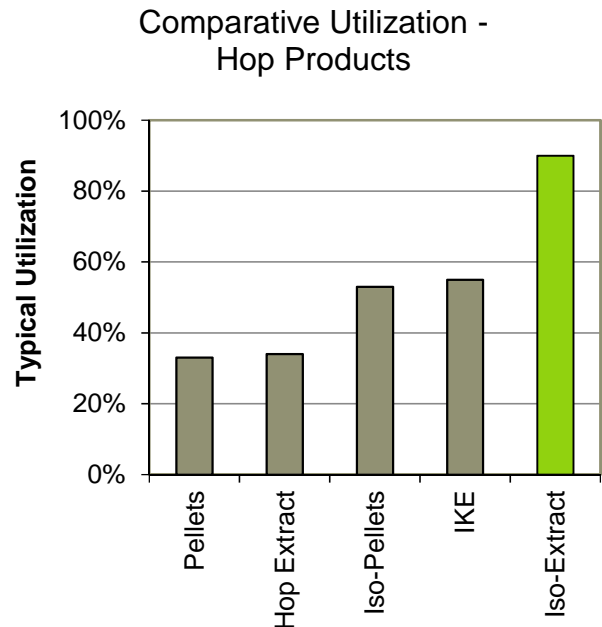


## Isomerized Hop Extract 30 % (Iso-Extract)

### ❖ Overview

- **Isomerized Hop Extract 30% w/w (Iso-Extract)** is an aqueous solution of the potassium salts of iso-alpha acids produced entirely from CO<sub>2</sub> hop extract.
- **Iso-Extract** can be used post fermentation to top-up bitterness or to partially replace traditional forms of bittering.
- **Iso-Extract** is typically added before filtration and achieves the highest yield of all hop products.



### ❖ Specification

- **Description:** A clear, pale amber to yellow aqueous solution of iso-alpha acid's potassium salts
- **Iso-alpha acids:** typically 30 ± 2 % (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)

## ❖ Properties

### • Appearance

A homogeneous, pale amber to yellow, clear aqueous solution; free flowing at recommended storage and use temperatures. Miscible with demineralized water, alcohol and propylene glycol.

### • Standardization

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

### • Utilization

Based on HPLC analyses utilization of iso-alpha acids in the final beer can be as high as 85 – 90 % if the extract is added prior to final filtration.

Actual utilization will vary from brewery to brewery depending on plant 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 mostly used to adjust final bitterness in beer.

Noticeable changes in the bitter taste might be noticed, if more than 30 – 40% of the beer's total bitterness is achieved by adding **Iso-Extract**.

### • Quality

All Hopsteiner® products are produced in plants accredited to internationally accepted quality standards.

## ❖ Packaging

**Iso-Extract** is normally packaged into pails of 20 kg or 25 kg. Also IBC containers of various sizes are available.

## ❖ Product Use

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

### • Dosage

Calculation is based on the bitterness to be achieved, the strength of the **Iso-Extract** (typically 30%) and the expected utilization.

### • Addition

**Iso-Extract** is added prior to filtration at full strength.

If necessary, it can be diluted to 2 – 5 % in de-ionised water. Should a slight haze appear, this can be removed by adjusting the pH to 8 – 9 by the addition of potassium carbonate ( $K_2CO_3$ ) solution.

Never dilute full strength **Iso-Extract** with beer, as the lower pH will cause precipitation.

Suitable dosing equipment should be used to ensure, that the **Iso-Extract** is added vigorously, in-line during beer transfer.

In case containers are used for several days, it is recommended to flush the headspace with nitrogen ( $CO_2$  is not suitable).

- **Storage**

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

- **Best Before Date**

**Iso-Extract** is stable 3 years from date of production under the recommended storage 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, irrigate with excess water until clear and seek medical attention.

For full safety information please see the relevant Hopsteiner® safety data sheet.

## ❖ Analytical Methods

- **Concentration of Bitter Substances**

Iso-alpha acids can be measured by any of the following methods:

- HPLC method according to Analytica-EBC 7.9 or ASBC Hops-9C, -9D using the current ICS standard.

- **Bitterness in the final Beer**

If measuring BU's in the final beer, take into account that **Iso-Extract** contains only iso-alpha acid and that, unlike more traditional forms of bittering, there is no contribution of other bittering components to the analyses. Hence, the BU value will be lower compared to the concentration of iso-alpha acids measured by HPLC (Analytica-EBC 9.47), at least if **Iso-Extract** was used exclusively or in higher amounts. The factor 50, used for the calculation of BU's, can be adjusted to a higher value to finally match the sensory bitterness.

## ❖ Technical Support

We will be pleased to offer help and advice on the full range of Hopsteiner® products:

- Copies of all relevant analytical procedures
- Safety Data Sheets (SDS)
- Assistance with pilot or full brewery trials
- Specialist analytical services

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