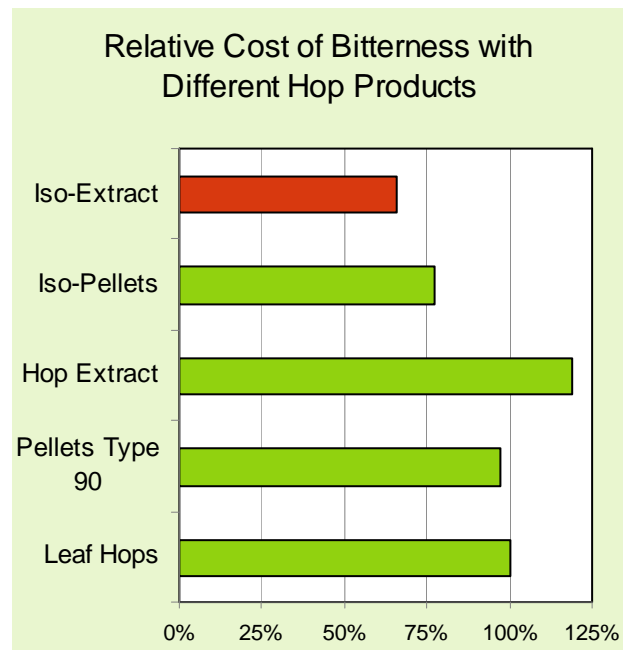


Iso-Extract 30 % (Isomerized Hop Extract)

❖ Overview

- **Isomerized Hop Extract 30% (Iso-Extract)** is produced from CO₂ extract and contains only purified isomerized α-acids.
- **Iso-Extract** can be used to top-up bitterness or used as a partial hop replacement (up to 70% of the total bitterness).
- **Iso-Extract** is added post fermentation, greatly improving the utilization of iso-α-acids into beer and therefore is the cheapest form of bittering.



❖ Specification

- **Description:** An aqueous solution of the potassium salts of iso-α-acids.
- **Iso-α-acids:** Normally supplied as a 30 % w/w (+/- 2 %) concentration of iso-α-acids
- **Alpha-acids:** < 0.4 %
- **Beta-acids:** < 0.1 %
- **Oils:** < 0.1 %
- **pH** 9.0 (± 1.0)
- **Density:** 1.065 (± 0.01) g/ml
- **Haze:** 2 % w/v solution remains bright at ambient temperature for 1 hour

PDS 11/07 issued 05/2009

❖ Properties

□ Appearance

A homogeneous, pale amber, clear aqueous solution; mobile and free flowing at all normal storage and use temperatures. Miscible with demineralized water and alcohol.

□ Utilization

Based on HPLC analyses (using the ICS DCHA Iso standard) utilization of iso- α -acids **in final beer** can be as high as 85 – 90 % when the extract is added immediately prior to final filtration.

□ Flavor

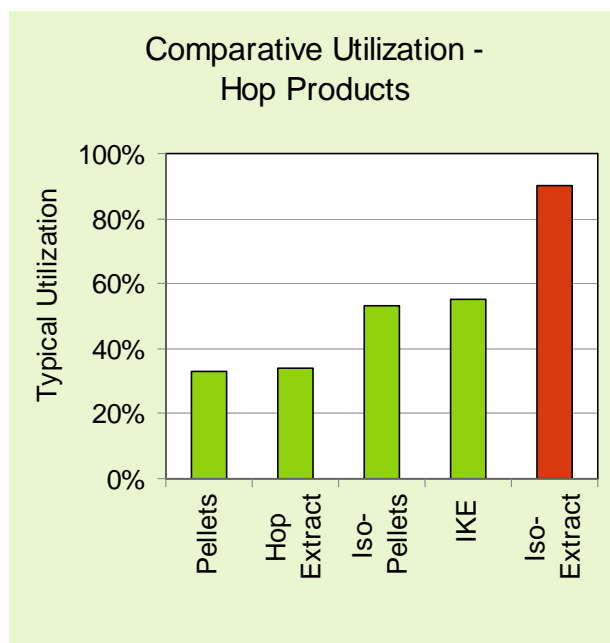
Iso-Extract produces a clean, bitter flavor and, when used for adjustment, results in beers of consistent bitterness.

□ Quality

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

❖ Packaging

Iso-Extract is normally packaged into 20 kg pails or 25 kg LDPE containers.



❖ Product Use

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** solution and the expected utilization (usually 80 – 90 %). Actual utilization will vary from brewery to brewery depending on method and time of addition.

□ Addition

Iso-Extract is added prior to filtration to beer at full strength. If necessary, it can be diluted to between 2 – 5 % in de-ionised water prior to addition. During dilution avoid aeration, as any resultant solution of CO₂ will reduce the pH and cause precipitation. Should a slight haze appear, this can be removed by adjusting the pH to 8 – 9 by the addition of potassium carbonate solution. Never dilute full strength **Iso-Extract** with beer, as the lower pH will also cause precipitation. Suitable dosing equipment should be used to ensure that the **Iso-Extract** is added vigorously, in-line during beer transfer.

□ Storage

Iso-Extract should be stored in unopened containers at 10° – 15°C (50° – 59°F). Avoid exposure to sunlight and use up any opened containers as soon as possible.

□ Best Before Date

Iso-Extract is stable 2 years from date of production under the recommended storage conditions.

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□ **Safety**

Iso-Extract is an intensely bitter material. However 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 Steiner material safety data sheet.

❖ **Analytical Methods**

□ **Concentrations of Iso- α -acids**

The concentration of iso- α -acid is measured by HPLC using the current ICS standard according to the EBC 7.9 method.

□ **Concentrations of α - and β -acids**

Residual α - and β -acids can be measured by HPLC using the current ICE standard according to the EBC 7.8 method.

□ **Bitterness in the Final Beer**

If measuring BU's in the final beer, remember that **Iso-Extract** is a pure form of iso- α -acid and that, unlike more traditional forms of bittering, there will be less non-bitter impurities measured as part of the analysis.

Adjustments to the Optical Density multiplication factor (70 instead of 50 in case of 100 % addition of **Iso-Extract**) will therefore need to be made if beer specifications are to remain unaltered.

❖ **Technical Support**

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

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