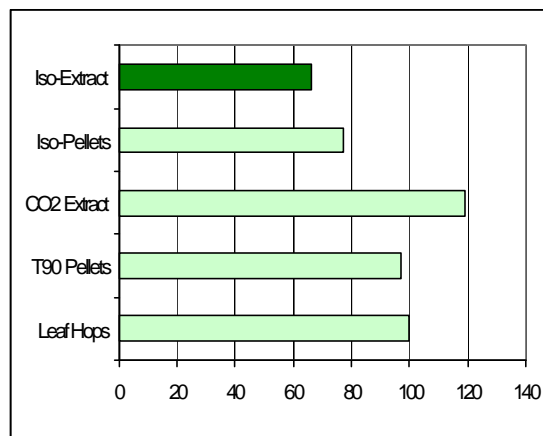


## Iso-Extract – 30% (Isomerised Hop Extract)

### ❖ Overview

- **Isomerized Hop Extract (Iso-Extract)** is produced from CO<sub>2</sub> extract and contains only purified isomerized a-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-a-acids into beer and therefore is the cheapest form of bittering.

**Relative Cost of Bitterness with  
Different Hop Products**



### ❖ Specification

- **Description:** An aqueous solution of the potassium salts of iso-a-acids.
- **Iso-a-acids:** Normally supplied as a 30% w/w (+/- 2%) concentration of iso-a-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

## ❖ 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 DCHA Iso standard) utilization of iso-a 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.

### □ Stability:

When kept in unopened containers **Iso-Extract** is stable for up to 2 years. Opened containers should be used quickly or flushed with nitrogen to eliminate oxygen prior to re-sealing. Never use CO<sub>2</sub> as the flushing gas.

### □ Quality:

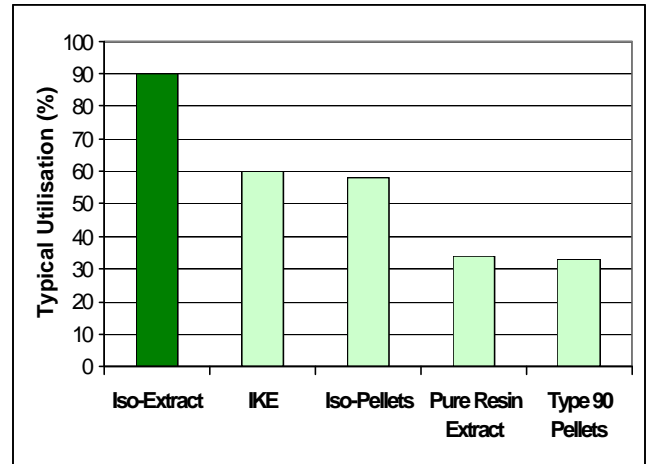
All Hopsteiner® products are produced in plants accredited to internationally accepted quality standards.

## ❖ Packaging

**Iso-Extract** is normally packaged into screw top, 25 litre LDPE containers.

25 litre 'Bag-in-box' containers or other pack sizes can also be supplied on request.

## Comparative Utilisation - Hop Products



## ❖ 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** can be added to beer at full strength but more usually it is diluted to between 2-5% in de-ionised water prior to addition. During dilution avoid aeration, as any resultant solution of CO<sub>2</sub> 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 5° - 15°C (41° - 59°F). Avoid exposure to sunlight and use up any opened containers as soon as possible.

□ **Safety:**

**Iso-Extract** is a non-toxic, 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

□ **Concentration of Iso-a-acids:**

The concentration of iso-a-acid is measured by HPLC using the current ICS standard according to the modified EBC 7.8 method.

□ **Concentration of a- and β-acids:**

Residual a- 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-a-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) 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

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