



## Hop extract isomerized 6%

**Isomerized hop extract (Iso-Extract)** is a pale, yellow to amber aqueous, alkaline solution of the potassium salt of iso-alpha-acids. It is produced from a CO<sub>2</sub> extract of hops and contains only purified isomerized alpha-acids. It can be used to top-up bitterness or used as a partial hop replacement (up to 70% of the total bitterness). It is added post fermentation, greatly improving the utilization of iso-alpha-acids into beer and therefore is the cheapest form of bittering.

<b>Specification</b>	
Description	An aqueous solution of the potassium salts of iso-alpha-acids
Iso-alpha acids (% w/v)	5.5-6.5
Alpha acids (% w/v)	<0.7
Beta acids (% w/v)	<0.3
Purity	>84.0%
pH of 1% solution in deionized water	9-10
Haze of 1% solution after 60 minutes at ambient temperature (EBC FHU)	<5.0
Specific gravity	1.0600-1.0850
Heavy metals	<20ppm
Lead	<5ppm

### Properties

#### Appearance

A homogenous, 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-alpha-acids **in final beer** can be as high as 85 – 90% when the extract is added immediately prior to final filtration.

#### Flavor

Clean, bitter flavor and, when used for adjustment, results in beers of consistent bitterness.

#### Quality

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

### 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.

### Brouwland

**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 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 for up to 24 months at temperatures between 2°C and 8°C (36°F – 46°F). Avoid exposure to sunlight and use up any opened containers as soon as practical.

**Best before date**

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

**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 material safety data sheet.

**Analytical methods****Concentrations of Iso-alpha-acids**

The concentration of iso-alpha-acids is measured by HLPC using the current ICS standard according to the EBC 7.9 method.

**Concentrations of alpha- and beta-acids**

Residual alpha- and beta-acids can be measured by HLPC 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-alpha-acid and that, unlike more traditional forms of bittering, there will be less nonbitter 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.