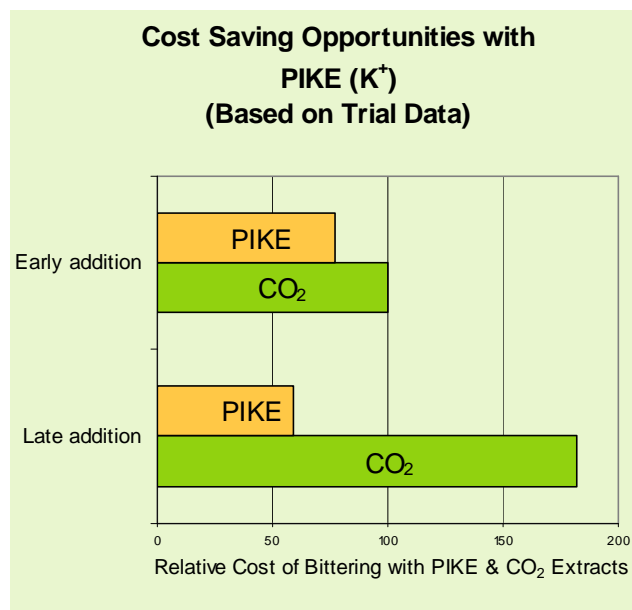


Potassium-Form Isomerized Kettle Extract (PIKE(K⁺))

❖ Overview

- **Potassium-Form Isomerized Kettle Extract (PIKE(K⁺))** contains the potassium salt of iso-alpha-acids, beta-acids and hop oils.
- **PIKE(K⁺)** is produced from CO₂ extract and can be used as a complete replacement for normal kettle extract.
- **PIKE(K⁺)** produces a similar flavor to CO₂ extract whilst greatly improving the utilization of iso-alpha acids.
- **PIKE(K⁺)** disperses readily in water and offers considerable 'house-keeping' benefits over other resin kettle extracts.



❖ Specification

- **Description:** A solvent-free, mixture of aqueous potassium iso- α -acids, β -acids and oils.
- **Iso-alpha-acids:** Iso- α -acid content varies according to the hop variety used but typically in the range 30 – 50 %.
- **Alpha-acids:** Typically < 2 %
- **Beta-acids:** Typically 12 – 35 % (depending on variety)
- **Hop oils:** Typically 2 – 10 % (depending on variety)
- **Density:** Typically 0.9 – 1.0 g/ml.

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❖ Properties

□ Appearance

A golden or pale brown thick syrup or semi-solid paste which becomes more fluid on warming.

□ Utilization

Based on HPLC analyses (using the DCHA Iso standard) utilization of iso-alpha **in final beer** can be as high as 45 – 55 % when the extract is added at the start of the boil. Trials have also shown that hop oil retention in late addition brews is greatly enhanced when using **PIKE(K⁺)** (up to 4 times).

□ Flavor

Brewing trials show that beers of identical aroma and taste can be produced when **PIKE(K⁺)** is used as a direct replacement for normal CO₂ extract. However care must be taken to ensure that late addition of **PIKE(K⁺)** does not result in excessive hop character due to the increased retention of hop oil in final beer.

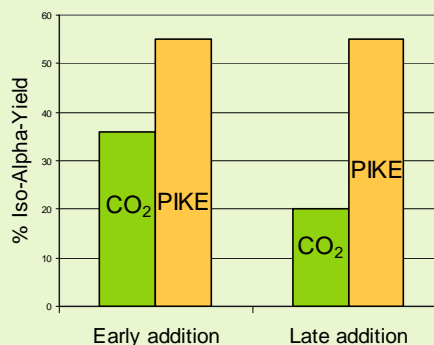
□ Quality

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

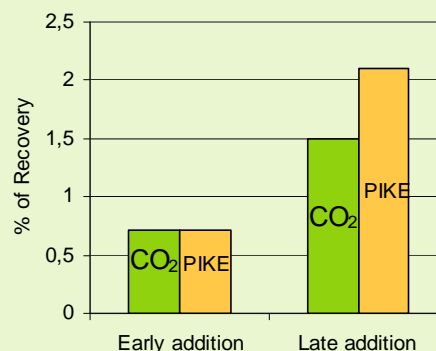
❖ Packaging

PIKE(K⁺) is normally packaged in 20 kg pails (44 lbs). It can also be packaged in cans and bulk drums according to customer requirements.

Comparative Iso-Alpha Yield
CO₂ Extract and PIKE



Comparative Oil Recovery -
CO₂ Extract and PIKE



❖ Product Use

Typically used in the kettle as 100 % replacement for normal kettle extracts.

❑ Dosage

Calculation is based on the iso-alpha concentration in the **PIKE(K⁺)** and the assumption that the utilization of the iso-alpha is likely to be at least 50 % better than that achieved with the alpha in normal extracts. Actual utilization will vary from brewery to brewery depending on plant and process conditions.

❑ Addition

PIKE(K⁺) should be warmed to 40 – 45°C (104 – 113°F) and thoroughly mixed before use. There is no need to mix **PIKE(K⁺)** if cans are used. **PIKE(K⁺)** can be added at any time during the kettle boil or even into the whirlpool at the start of the trub separation stage. **PIKE(K⁺)** can be added in similar ways to those used for normal kettle extracts including bulk handling and dosing. Unlike normal CO₂ extract or IKE, **PIKE(K⁺)** forms a milky emulsion with water and therefore any spillage can easily be washed away.

❑ Storage

PIKE(K⁺) should be stored in sealed containers preferably at < 10°C (50°F). Opened containers should be used up quickly.

❑ Best Before Date

PIKE(K⁺) is stable 2 years from date of production under the recommended storage conditions.

❑ Safety

PIKE(K⁺) should be handled in a similar way to normal kettle extract. Any material coming

into contact with the skin should be washed off with soap and water.

If **PIKE(K⁺)** gets into the eyes, irrigate with excess water until clear and seek immediate medical attention.

For full safety information please see the relevant Steiner material safety data sheet.

❖ Analytical Methods

❑ Concentrations of Iso- α -acids, β -acids and residual α -acids

The concentrations of iso- α -, β - and α -acids are measured by HPLC using the current ICS & ICE standards according to EBC 7.8 method; sample preparation according to the EBC method 7.7.

Alternatively, the chromatographic conditions of ASBC Hops-15 may be used.

❑ Concentrations of Hop oils

Hop oil concentration is normally measured by the following methods - IOB 6.3 or ASBC hops-13.

❑ Standardization

If required, the concentration of iso-alpha acids can be standardised to specified levels by the addition of glucose syrup. More conveniently, containers can be packed with a specified amount of iso-alpha per can.

❖ 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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