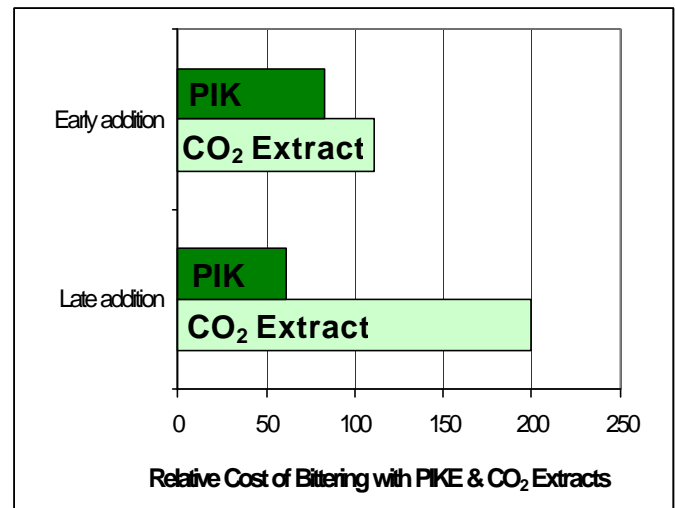


Potassium-Form Isomerized Kettle Extract (PIKE(K⁺))

❖ 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

Cost Saving Opportunities with PIKE (K⁺) (Based on Trial Data)



❖ Specification

- **Description:** A solvent-free, mixture of aqueous potassium iso-a-acids, β-acids and oils.
- **Iso-alpha-acids:** Iso-a-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% (variety dependent)
- **Hop oils:** Typically 2-10% (variety dependent)
- **Density:** Typically 0.9 – 1.0 g/ml.

❖ Properties

□ Appearance:

A golden or pale brown thick syrup 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 over 60% 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.

□ Stability:

PIKE(K⁺) is acceptably stable when stored correctly in unopened containers.

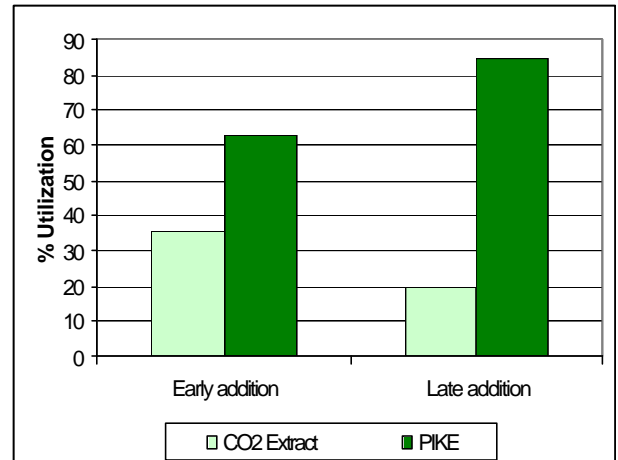
□ Quality:

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

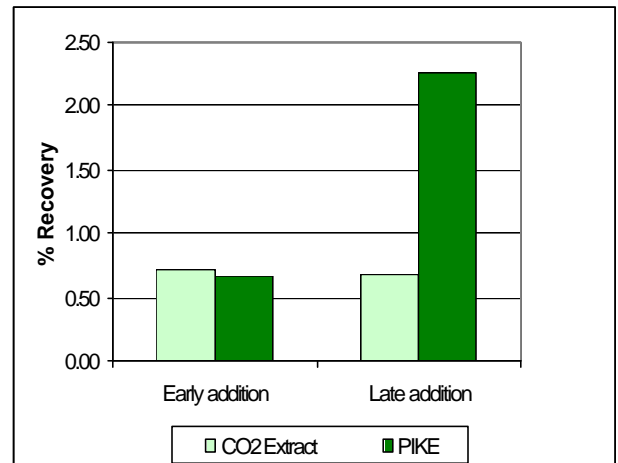
❖ Packaging

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

Comparative Utilisation CO₂ Extract & PIKE(K⁺) (Based on Trial Data)



Comparative Oil Recovery CO₂ Extract & PIKE(K⁺) (Based on Trial Data)



❖ 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 c. 40-45°C (104 - 113°F) and thoroughly mixed before use. **PIKE(K⁺)** can be added at any time during the kettle boil or 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.

❑ Safety:

PIKE(K⁺) is a non-toxic material and 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

❑ Concentration of Iso-a-acids, β-acids and residual a-acids:

The concentrations of iso-a-, β- and a-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.

❑ Concentration of Hop oils:

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

❑ Standardisation:

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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