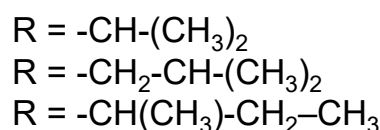
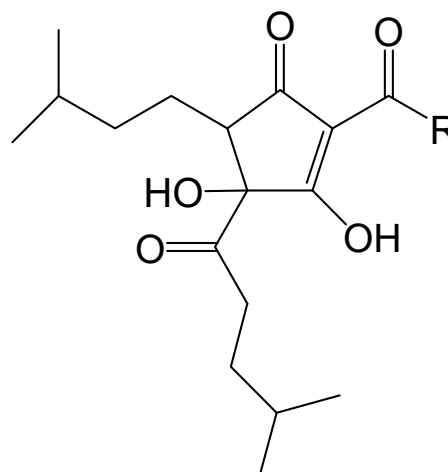


Tetra Iso-Extract

❖ Overview

- **Tetra Iso-Extract (Tetra)** is a pure, aqueous solution of the potassium salts of tetrahydro iso-alpha acids derived exclusively from CO₂ hop extract.
- **Tetra** is one of the most antibacterial hop acids produced from alpha acids. As little as 40 ppm of Tetra can inhibit the growth of gram positive bacteria in laboratory testing.
- **Tetra** is produced according to 21 CFR 172.560. Tetra is food grade, kosher and not an antibiotic.

Molecular Structure of Tetrahydro iso-alpha acids



❖ Specifications

- Description: amber, aqueous solution of the potassium salts of tetrahydro iso-alpha acids
- Concentration: 9.0 ± 0.5 % (w/w) of tetrahydro iso-alpha acids by HPLC or 10.0 ± 0.5 % (w/w) by UV spectrophotometric analysis
- Iso-alpha acids: below detection limit
- Alpha acids: below detection limit
- pH: 9.5 (± 1.0)
- Viscosity: 2 – 6 mPas at 20 °C (68 °F)
- Density: 1.017 (± 0.005) g/ml at 20 °C (68 °F)

❖ Properties

• Appearance

Tetra is a homogeneous, clear aqueous solution that is amber in color. It is free-flowing at the recommended storage and application temperatures. **Tetra** is miscible in demineralized water and alcohol.

• Quality

All Hopsteiner® products are processed in facilities which fulfill internationally recognized quality standards

❖ Packaging

Tetra is normally packaged in 20 kg pails. 10 kg jugs and 200 kg drums are also available.

❖ Product Use

In order to inhibit gram positive bacteria growth, **Tetra** is typically added to a yeast propagator or fermenter at a dose rate of 40 ppm. The product can be simply poured or added via a metering pump.

• Storage

Tetra should be stored in sealed containers at 5 – 25 °C (41 – 77 °F). Opened containers should be used within a few days. For long-term storage, the ideal temperature is between 10 – 20 °C (50 – 68 °F).

• Best Before Date

Tetra is stable two years from the date it was produced / packaged if stored under the recommended conditions.

• Safety

Tetra is a slightly alkaline, intensely bitter product and may be safely handled using routine precautions to avoid contact with skin and, in particular, the eyes. Any product coming into contact with the skin should be washed off immediately with soap and water or an appropriate hand cleanser. If **Tetra** gets into the eyes, flush with copious amounts of water until clear and seek medical attention.

For full safety information, please refer to the relevant Hopsteiner® safety data sheet.

❖ Analytical Methods

• Concentration of Bitter Substances

The concentration of tetrahydro iso-alpha acids can be measured using the following methods:

- HPLC according to Analytica-EBC 7.9 with the current ICS standards
- UV spectrophotometric analysis

❖ Technical Support

We are pleased to offer assistance and advice on the entire Hopsteiner® product range:

- Information on all relevant analytical procedures
- Safety Data Sheets (SDS)
- Special analytical services

Disclaimer: The information provided in this document is believed to be correct and valid. However, Hopsteiner® does not guarantee that the information provided here is complete or accurate and thus assumes no liability for any consequences resulting from its application.

PDS 13/21_LS, 11/2021