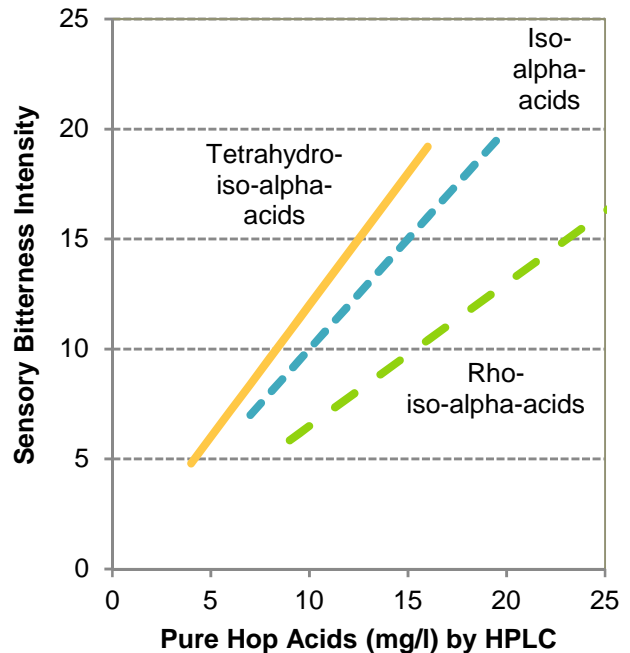


Rho Iso-Extract 35 % (Rho 35 %)

❖ Overview

- **Rho 35 %** is a pure, aqueous solution of the potassium salts of rho-iso-alpha acids produced entirely from CO₂-extract.
- **Rho 35 %** gives protection from light struck flavor when used as the complete source for hop-derived bittering or in combination with other reduced hop products.
- **Rho 35 %** will provide a smoother, non-lingering bitterness compared to regular iso-alpha acids.

Comparison of Sensory and Analytical Bitterness



❖ Specification

- **Description:** A reddish-brown, aqueous solution of rho-iso-alpha acids as potassium salts
- **Concentration:** 35 ± 1.0 % (w/w) of rho-iso-alpha acids by UV spectrophotometric analysis or corresponding HPLC value
- **Iso-alpha acids:** below detection limit
- **Alpha acids:** below detection limit
- **pH:** 8.5 (± 0.5)
- **Viscosity:** 20 – 25 mPas at 20°C (68°F)
- **Density:** 1.075 (± 0.005) g / ml at 20°C (68°F)

❖ Properties

• Appearance

A reddish-brown to amber liquid solution at room temperature; a re-dissolvable precipitation may form during normal storage

• Utilization

When added to conditioned beer prior to final filtration, the utilization of rho-iso-alpha acids is typically 70 – 85 %. Used in the brew kettle, the utilization is likely around 45 – 55 %.

Actual utilization will vary from brewery to brewery depending on plant and process conditions.

• Light Stability

Rho 35 % will only provide protection from light struck flavor in the complete absence of regular iso-alpha acids. **Rho 35 %** can be used in conjunction with any Hopsteiner® light stable product to achieve light stability.

• Flavor

Rho 35 % provides only bitterness. Comparing regular iso-alpha acid and rho-iso-alpha acid, the latter is assessed to have a smoother, non-lingering bitterness.

Depending on the total bitterness and type of beer, the bitter intensity of rho-iso-alpha acid is in the range of 60 to 70% based on the regular iso-alpha acid. Therefore the sensory factor of rho-iso-alpha acid is 0.6 - 0.7 if iso-alpha acid is 1.0.

• Quality

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

❖ Packaging

Rho 35 % is normally supplied in 20 kg pails.

❖ Product Use

Rho 35 % is typically used as a post fermentation addition but also a partial or even complete addition to the wort is applicable in order to reduce the risk of bacterial infections in wort.

• Dosage

Determination of the dosing rate is based on an estimated or known utilization and the desired bitter intensity in the beer. It must be taken into account that rho-iso-alpha acids are about 30 % less bitter than regular iso-alpha acids (see section Flavor).

• Addition

For post fermentation addition, **Rho 35 %** should first be heated to 60°C (120°F) and then agitated to ensure dissolution of any precipitated material before use.

We recommend to add the clear solution directly and vigorously in-line during beer transfer, preferably after primary filtration and any gravity adjustment. In any case, dosing should be done prior to the final clarification. The injection should take place over at least 70 % of the total volume being transferred.

If dilution is necessary, always add **Rho 35%** to demineralized water to achieve a dilution; adjust pH to 8 - 9 using KOH.

In case containers are used for several days, it is recommended to flush the headspace with nitrogen (CO₂ is not suitable).

- **For Light Stable Beer**

For maximum protection against light struck flavor, it is essential that no other sources of non-reduced iso-alpha acids be inadvertently introduced into the wort or beer. Therefore, be sure to:

- Use exclusively light stable hop products through the entire process.
- Avoid contamination from equipment surfaces that have been in contact with regular iso-alpha acids.
- Never pitch wort with yeast that has been in contact with regular alpha and iso-alpha acids.

- **Storage**

Rho 35 % should be stored in sealed containers at 5° – 15°C (41° – 59°F). Opened containers should be used up within a few days.

- **Best Before Date**

Rho 35 % is stable 3 years from date of production under the recommended storage conditions.

- **Safety**

Rho 35 % is a slightly alkaline, intensely bitter substance but may be safely handled using routine precautions to avoid contact with skin and, particularly, eyes. Any material coming into contact with the skin should be washed off with soap and water. If **Rho 35 %** gets into the eyes, irrigate with excess water until clear and seek medical attention.

For full safety information please see the relevant Hopsteiner® safety data sheet.

❖ Analytical Methods

- **Concentration of Bitter Substances**

The concentrations of rho-iso-alpha acids, can be measured by the following methods:

- HPLC method according to Analytica-EBC 7.9
- UV spectrophotometric analysis

Details of recommended methods are available on request.

- **Concentrations of reduced iso-alpha acids in beer**

The concentration of reduced iso-alpha acids in beer is determined by HPLC according to Analytica-EBC 9.47.

The analytical result of the corresponding BU value might need to be adjusted as the used factor for this analyses will result in lower values if reduced hop products were used exclusively or in higher amounts.

❖ Technical Support

We will be pleased to offer help and advice on the full range of Hopsteiner® products:

- Copies of all relevant analytical procedures
- Safety Data Sheets (SDS)
- Assistance with pilot or full brewery trials
- Specialist analytical services

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