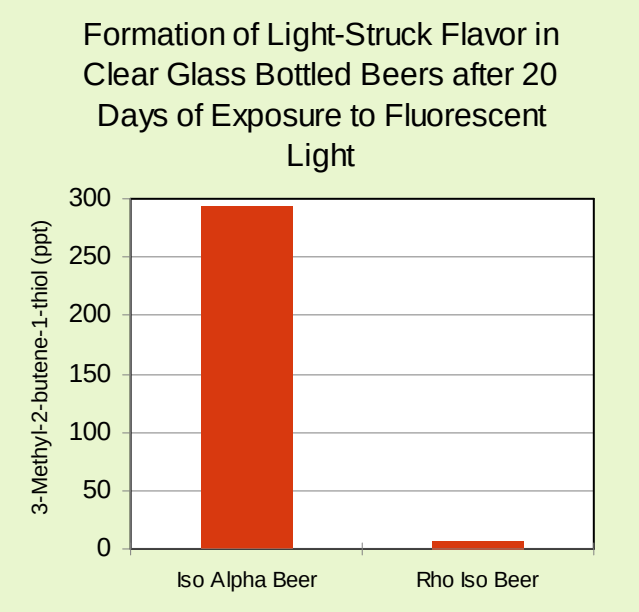
Rho-Iso-Extract – 35 %

❖ Overview

- ***Rho* – 35 %** is a pure, aqueous solution of the potassium salts of reduced (rho) iso-α-acids produced entirely from CO_2 Extract.
- ***Rho* – 35 %** gives protection from light-struck flavor when used as the complete source for hop-derived bittering or in conjunction with other reduced hop products.
- ***Rho* – 35 %** will give a slight enhancement to beer foam stability compared to an otherwise similar beer bittered in a conventional fashion.



❖ Specification

- **Description:** A reddish-brown, aqueous solution of reduced (*rho*) iso-α-acids in potassium salts form.
- **Concentration:** 35 ± 1.0 % (w/w) of *rho*-iso-α-acids by UV Spectrophotometric analysis or corresponding HPLC value.
- **Iso-alpha-acids** < 0.2 % by HPLC
- **Alpha-acids:** Not detectable (< 0.1 % by HPLC)
- **Beta-acids:** < 0.3 % by HPLC
- **Hop oils:** < 0.5 %
- **pH:** 8.5 (± 0.5)
- **Density:** 1.075 (± 0.005) g/ml

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❖ Properties

❑ Appearance

A reddish brown, mobile fluid; a redissolvable precipitate may form during normal storage.

❑ Utilization

When added to conditioned beer prior to final filtration, the utilization of the reduced iso-alpha-acids is typically 65 – 85 %. Used as a kettle additive, the observed utilization is likely to fall to 45 – 55 %.

❑ Flavor

Rho provides only bitterness. Many brewers consider that ***Rho*** imparts a particularly pleasant, "soft" bitterness to the beer.

❑ Quality

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

❖ Packaging

Rho is normally supplied in 20 kg (45 lbs) net wt. plastic pails.

❖ Product Use

Typically used as a post fermentation addition to unhopped beer. However, since a relatively high utilisation can often be achieved by addition to the kettle, some brewers prefer instead to make a partial or even complete addition to the wort, thereby reducing the chances of encountering bacterial infections.

❑ Dosage

Determination of the dosing rate is of course based on the anticipated utilisation but must take account of the fact that reduced (*rho*) iso-α-acids are inherently about 30 % less bitter than are normal iso-α-acids. Actual utilization will vary from brewery to brewery depending on plant and process conditions.

❑ Addition

For post fermentation addition, ***Rho*** should first be heated to c. 50ºC (120ºF) or a little above and then agitated to ensure dissolution of any precipitated material before use. We recommend that the clear solution be then injected directly and vigorously into a beer main, preferably after primary filtration and any gravity adjustment, but before final clarification. The injection should take place over at least 70 % of the volume being transferred.

❑ For Light Stable Beer

It is essential that no other sources of non-reduced iso-α-acids be inadvertently introduced into the wort or beer. Therefore it is essential to:

- Avoid contamination from equipment surfaces that have been in contact with normal iso-α-acids.
- Never pitch wort with yeast that has been in contact with normal α- or iso-α-acids.
- If beta extracts are used as kettle additives ensure that they are light stable.

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❑ Storage

Rho should be stored in sealed containers at 10° – 25°C (50° – 77°F). Opened containers should be used up within a few days.

❑ Best Before Date

Rho is stable 2 years from date of production under the recommended storage conditions.

❑ Safety

Rho 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*** gets into the eyes, irrigate with excess water until clear and seek medical attention.

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

❖ Analytical Methods

❑ Concentrations of Reduced (*rho*) Iso-α-acids in Product

The concentration of reduced (*rho*) iso-α-acids is measured by UV Spectrophotometry.

Analysis by HPLC, using the current ICS standard according to the EBC 7.9 method, is also possible. Details of recommended methods are available on request.

❑ Concentrations of Reduced (*rho*) Iso-α-acids in Beer

The concentration of reduced (*rho*) Iso-α-acids in beer is determined by the ASBC or EBC BU analytical method or by HPLC. The BU analytical result can be adjusted by a factor of 0.6 – 0.8 to compensate for the lower perceived bitterness of the tetrahydro-iso-α-acids.

❑ Light Stability Test

Light stability of ***Rho*** brewed beers, packaged in either clear or green glass bottles, can be tested by placing bottles in sunlight or next to a fluorescent light for 2 - 6 hours. The beers can be checked organoleptically for lightstruck flavors.

❖ 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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