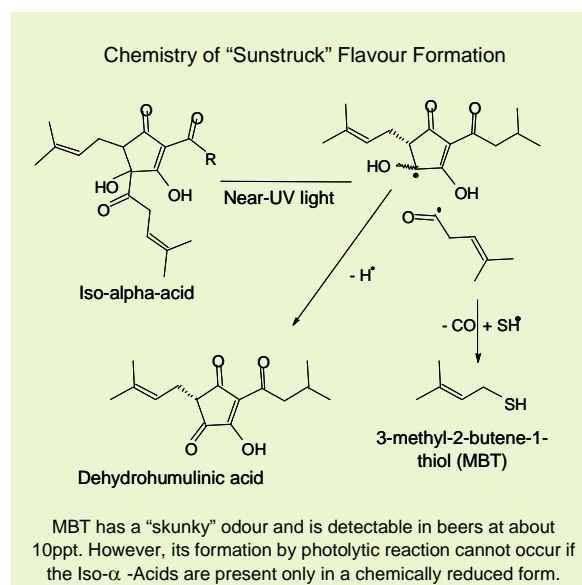


Rho-Iso-Extract – 10 %

❖ Overview

- **Rho – 10 %** is a clear, aqueous solution of the potassium salts of reduced (rho) iso- α -acids that is especially suitable for direct injection into beer.
- **Rho – 10 %** may be used alone, or in conjunction with other reduced iso- α -acids, for the purpose of imparting the bitterness and foaming characteristics to a light stable beer.
- **Rho – 10 %** is prepared from CO₂ Hop Extract by a special process that ensures substantial elimination of water-insoluble impurities that may reduce utilization values.



❖ Specification

- **Description:** A pale, reddish amber, mobile liquid at room temperature
- **Rho-iso-alpha-acids:** Standardized to 10 \pm 0.2 % w/v by HPLC
- **Iso-alpha-acids:** Less than 0.1 %
- **Alpha-acids:** Absent (< 0.1 %)
- **Beta-acids:** Less than 0.1 %
- **Hop oils:** Less than 0.2 %
- **pH** 8.8 (\pm 0.5)
- **Density:** 1.010 (\pm 0.005) g/ml

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❖ Properties

□ Appearance

A pale, clear, reddish amber and mobile liquid with slightly floral aroma.

□ Utilization

Based on HPLC analysis, utilization of rho-iso- α -acids into beer may be expected to fall in the range 85 – 95 %, though actual values will depend upon particular brewery circumstance.

□ Flavor

Rho – 10 % provides only bitterness to the beer. Many brewers consider that rho-iso- α -acids impart an especially pleasant, “soft” bitterness to beer.

□ Foam

Beer bittered solely with rho-iso- α -acids to the same taste bitterness as equivalent beer brewed with hops, hop pellets or hop extracts will have a slightly improved foam character.

□ Chemical Residues

Nitrates and heavy metals are almost completely absent from **Rho – 10 %**. Many pesticide residues that were present on the original hops will also be essentially absent or else much reduced in relation to the bittering potential of the product.

□ Quality

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

❖ Packaging

Rho – 10 % can be packaged in pails, drums or totes according to customer requirements:

| | |
|--------|-------------------------------|
| Pails: | 3 to 20 kgs (6.6 – 44.1 lbs); |
| Drums: | 50 & 200 kgs (110 – 441 lbs) |
| Totes: | 1000 kgs |

❖ Product Use

We recommend that **Rho – 10 %** be used for direct injection, as is, into beer prior to final filtration. However, if desired, **Rho – 10 %** may first be safely diluted into demineralized water but take care to avoid exposure to atmospheres that are enriched in carbon dioxide as this may cause excessive haze formation.

Best results will always be achieved if the rho-iso- α -acids solution is injected in a vigorous manner so that dispersion is almost instantaneous. For example, injection into a beer main close to the suction side of a transfer pump is a suitable technique.

For production of a light stable beer, it is essential that all sources of unreduced α - or iso- α -acids be excluded. Hence, only use yeast that has been harvested from a light stable beer and ensure that any kettle hop addition is also “light stable”.

Where the foam enhancing properties of Hopsteiner® **Tetra Iso-Extract – 10 %** are also desired, then the two products may either be injected separately, or else an appropriate blend may first be made by adding the necessary amount of **Tetra Iso-Extract – 10 %** to the **Rho – 10 %**.

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□ Dosage

Actual utilization will depend upon particular plant and process conditions, but highest utilizations are likely if **Rho – 10 %** is added to beer that does not contain a high content of yeast or other suspended solids.

Account must also be taken of the fact that rho-iso- α -acids are only 60 – 70 % as bitter as are normal iso- α -acids.

□ Addition

Rho – 10 % is easy to use and is best added into a beer main during at least 70 % of the transfer volume. Direct injection without prior dilution is recommended but, if desired, **Rho – 10 %** can be first diluted by adding product to demineralized water. For maximum stability, especially of diluted solutions, protect from exposure to air by blanketing with nitrogen, particularly if the local atmosphere is enriched with CO₂.

□ Light Stability

For maximum light stability, it is essential that non-reduced iso- α -acids are virtually absent in the beer. Therefore, be sure 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 - and iso- α -acids.

□ Storage

Rho – 10 % may be stored in sealed containers at temperatures of 10° - 15°C (50° - 59°F). Opened containers should be resealed and used within a few days.

DO NOT FREEZE!

In the course of time, a slight deposition of resinous material may occur. This is of no practical consequence and may be ignored.

□ Best Before Date

Rho – 10 % is stable 1 year from date of production.

□ Safety

Rho – 10 % may be safely handled using routine precautions to avoid contact with skin and, particularly, eyes.

Any solution coming into contact with the skin should be washed off with soap and water or proprietary hand cleansers. If **Rho – 10 %** gets into the eyes, irrigate thoroughly with water until clear and seek medical attention.

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

❖ Analytical Methods

□ Concentration of Reduced (Rho) Iso- α -acids

The concentration of reduced (rho) iso- α -acids is measured by HPLC using the current ICS standard according to the modified EBC 7.9 method. Details of recommended methods are available on request.

❖ 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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