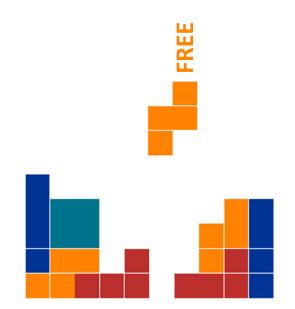


Hop Oil – Type SELECTED FREE

Overview

- Hop Oil Type SELECTED FREE is produced by conventional hop extraction with subsequent fractionation by means of distillation.
- Hop Oil Type SELECTED FREE has been specifically developed to improve flavor and taste of <u>alcohol-free and</u> <u>alcohol-reduced beers</u>. It can be applied on both, bottom and top-fermented brews.
- Hop Oil Type SELECTED FREE is dosed prior to filtration and has considerably higher recovery yields compared to conventional aroma hopping methods in the brew house.



Specifications

Description: pure hop oil diluted in propylene glycol

Key compounds: linalool

myrcene humulene caryophyllene hop esters

Bittering substances: not detectable

Viscosity: approx. 46 mPas at 25 °C (77 °F)
Density: approx. 1.0 g/ml at 20 °C (68 °F)

For batch-dependent information, please refer to the enclosed certificate of analysis.

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Steiner Hops Ltd.



Properties

Appearance

Hop Oil – Type SELECTED FREE is a nearly colorless to light green/orange, transparent or slightly turbid liquid, containing hop essential oils.

Flavor

Hop Oil – Type SELECTED FREE contains mainly polar hop components, which are especially soluble in alcohol-reduced and alcohol-free beers. This composition is typically also found in late hopped regular beers. Depending on the quantity added and the type of beer, Hop Oil – Type SELECTED FREE supports both, the overall flavor and the mouthfeel of the beer.

It is suitable for use in alcohol-reduced and alcohol-free beers brewed with conventional hop products as well as light stable beers. During beer aging the aroma components of **Hop Oil – Type SELECTED FREE** remain stable and contribute to overall flavor stability.

Utilization

Hop Oil – Type SELECTED FREE has an excellent recovery rate. Depending on the time of the addition, the recovery rate for hop oil can be close to 100%.

Quality

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

❖ Packaging

Hop Oil – Type SELECTED FREE is normally packaged in aluminum bottles of various sizes. The product is supplied as a dilution in propylene glycol.

❖ Product Use

Dosage

The quantity of **Hop Oil – Type SELECTED FREE** is determined by the brewer and depends on the character and intensity of the desired overall beer flavor.

Example (addition before / during filtration):

- Up to 3 ml/hl for bottom-fermented beers
- Up to 6 ml/hl for top-fermented beers

Trials performed by injecting the product into bottled beer with a microliter syringe are helpful for determining the quantity of **Hop Oil – Type SELECTED FREE** required.

Application

Shake the packaging well before use.

Hop Oil – Type SELECTED FREE can be added at different stages on the cold side of beer production, typically prior to filtration. For the highest possible yield, a direct addition into the beer stream prior to filtration is recommended. This enables the hop oil to dissolve in the beer without changing its flavor.

Steiner Hops Ltd.



Storage

Hop Oil – Type SELECTED FREE should ideally be stored at temperatures of 1 - 10 °C and in the delivered original container.

Best Before Date

Hop Oil – Type SELECTED FREE is stable two years from the date it was produced / packaged if stored under the recommended conditions. Once opened, it is recommended to use within one month and limit the number of openings.

Safety

Any product coming into contact with the skin should be immediately washed off with soap and water. If **Hop Oil – Type SELECTED FREE** 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

Aroma Compounds

Individual hop oil compounds can be analyzed by means of gas chromatography techniques using the following methods:

- Analytica-EBC 7.12
- ASBC Hops-17

❖ Technical Support

We are pleased to offer assistance and advice on the full range of Hopsteiner® products:

- Safety Data Sheets (SDS)
- assistance with pilot or full-scale brewing trials
- 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.