

## 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 alcohol-free and alcohol-reduced beers. 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.

## ❖ 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.

- **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.