

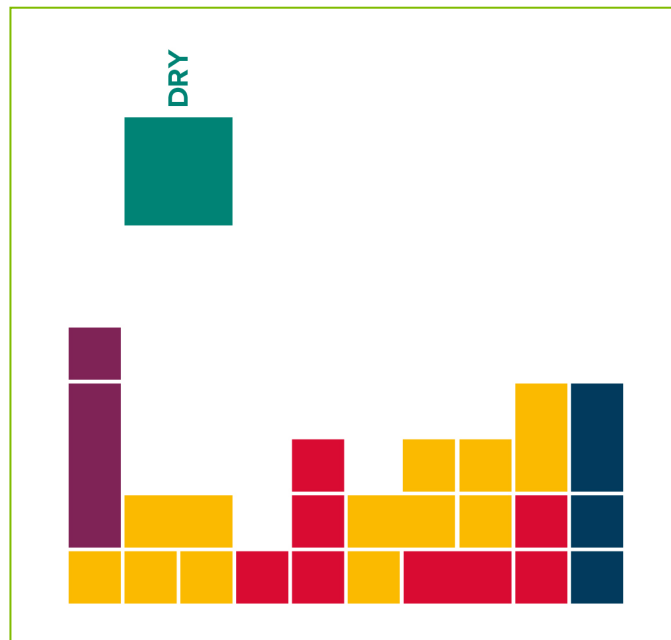
## HOP OIL TYPE DRY VARIETY SPECIFIC (V.S.)

### OVERVIEW

**Hop Oil Type DRY (v.s.)** is produced from hop pellets or a specific hop variety and contains the complete range of aroma substances characteristic of the variety.

**Type DRY (v.s.)** can be added at various points in the brewing process (typically on the cold side of production) and results in improved aroma yields compared to traditional hopping techniques. By using **Type DRY (v.s.)** the so-called “hop creep effect” will not occur.

**Type DRY (v.s.)** imparts a typical dry-hopped aroma which varies depending on the time of the addition.



### SPECIFICATIONS

<b>Short description</b>	pure hop oil containing the complete range of aroma compounds of the selected variety, 1:100 diluted in a blend of propylene glycol and ethanol
<b>Key compounds:</b>	<ul style="list-style-type: none"> <li>Myrcene</li> <li>Linalool</li> <li>Caryophyllene</li> <li>Farnesene</li> </ul>
<b>Bittering substances</b>	not detectable
<b>Density</b>	ca. 1.0 g/ml (20 °C / 68 °F)
<b>Viscosity</b>	ca. 46 mPas (25 °C / 77 °F)

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

### PROPERTIES

#### APPEARANCE

Type DRY (v.s.) is a nearly colorless to light green, transparent or slightly turbid liquid.

#### FLAVOR

Type DRY (v.s.) can be used to provide a strong hop aroma, or alternatively, a more subtle hop aroma depending on the quantity added as well as the time and point of the addition. This hop oil contains the complete range of aroma compounds present in the specific hop variety. The intensity of the bitterness might increase depending on the quantity added. During beer aging the aroma components of Type DRY (v.s.) remain mostly stable and contribute to overall flavor stability.

## UTILIZATION

Depending on the time and point of the addition, the recovery rate for certain aroma compounds of the hop oil can be as high as 95%. Actual utilization will vary from brewery to brewery due to differences in equipment and process conditions.

## QUALITY

All Hopsteiner® products are processed in facilities which fulfill internationally recognized quality standards. A monitoring system for residues is in place.

## PACKAGING

Our products are delivered in their respective recommended standard packaging. Alternatives may be possible upon customer request.

Standard packages of our processing plants in the USA (US) and Germany (DE) are:

- Aluminum bottles 0.5 and 1.0 kg (DE)
- Aluminium bottles 0.1 - 5.0 kg (US)

The product is supplied as a 1:100 dilution in a blend of 95 % propylene glycol and 5 % ethanol. Other dilutions or pure hop oils may be available on request.

## USAGE

### DOSAGE

The required quantity of Type DRY (v.s.) diluted to 1:100 depends on the point of the addition:

To fermentation: up to 500 g per hl

To maturation: 50 - 300 g per hl

The dosage rates above are intended for orientation only; actual additions will depend on the intensity of the aroma desired.

If Type DRY (v.s.) is used to replace pellets in existing recipes, 65 - 75% of the total oil content of the pellets will be sufficient to match the required aroma intensity.

- During fermentation: the loss of volatile compounds during fermentation, combined with the biochemical modification of aroma compounds by yeast, can produce a less herbal, more late hopping like aroma.
- During Maturation: additions during maturation will result in slight changes to the hop aroma, also due to a certain remaining yeast activity.
- During filtration: NOT recommended. Please have a look on our [Hop Oil Type ESSENTIAL](#), a product especially made for this application.

### APPLICATION

Shake the packaging well before use. Type DRY (v.s.) can be added at different stages of beer production. Dosing equipment which pumps the product into the beer stream is preferred for the addition of Type DRY (v.s.). Alternatively, the hop oil can be added to the tank prior to filling.

### STORAGE

The recommended storage temperature in the original unopened packaging is 1 - 10 °C.

### BEST BEFORE DATE

Under the recommended storage conditions, the shelf life from the date of production/ packaging is at least 1 year.

Opened containers should be consumed as soon as possible.

### SAFETY

Ensure good ventilation of the workplace and wear personal protective equipment. Avoid contact with eyes and skin. Do not inhale vapors or dusts. For full safety information, please refer to the relevant Hopsteiner® safety data sheet.

## ANALYTICAL METHODS

International approved methods listed in committees such as ASBC or Analytica-EBC using current standards are applied.

## PRODUCT ANALYTICS

Hop oil components

- Analytica-EBC 7.12 (GC)
- ASBC Hops-17 (GC)

## TECHNICAL SUPPORT

We are pleased to offer assistance and advice on:

- safety data sheets
- support for brewing trials on a pilot or commercial scale
- analytical services and information about analytical procedures

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.

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