

Hop Oil – Steam Distilled

❖ Overview

- **Steam Distilled Hop Oils** are preparations of hop essential oils from named varieties.
- **Steam Distilled Hop Oils** are prepared by classical steam distillation from selected whole hops.
- **Steam Distilled Hop Oils** may be used to impart aromatic hop character to beer, either by addition to the wort kettle or via post-fermentation addition.

Commonly Recognised Flavor Effects of Hop Oil Addition

Late Hopping	Dry Hopping
<i>Fragrant</i>	<i>Spicy</i>
<i>Floral</i>	<i>Hoppy</i>
<i>Citrus</i>	<i>Citrus</i>
<i>Spicy</i>	

❖ Specification

- **Description:** A clear, pale yellow or green, mobile liquid with characteristic odor.
- **Hop Oils:** 100% steam volatile oils.
- **Composition:** Characteristic of named variety.
- **Density:** Typically 0.82 – 0.86 g/ml.

❖ Properties

❑ Appearance:

Mobile, pale yellow or green, clear liquid

❑ Utilization

Retention of the hop oils is dependent upon the method of use. When oil is added to the wort kettle the individual components are driven out of the wort at a rate dependent upon the vigor of the boil and their particular volatilities.

❑ Flavor:

The flavor of the beer is modified according to the balance of the essential oil substances that survive into the packaged product. Additionally, a “late hopped” beer will contain a proportion of flavor active compounds that have been formed from hop oil components by yeast mediated, trans-esterification reactions during fermentation.

❑ Stability:

Steam Distilled Hop Oils are very stable when stored correctly.

❑ Quality:

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

❖ Packaging

Steam Distilled Hop Oils are packaged in HDPE, amber plastic bottles. Standard sizes are 125, 250, 500 and 1000 ml.

❖ Product Use

Typically used as a “late hop” addition in the kettle or as a “dry hop” addition into conditioned beer.

❑ Dosage:

Hop character in beer is generally noticeable at a level of 0.5 – 2 ppm of residual oil components. 4 – 6 ppm in finished beer would normally impart strong aroma and flavor notes. Dosage rates for dry hopping should be calculated on the basis that > 80% of the added oil will be retained, but for late hopping the rate needs to be very much increased to take account of the evaporative losses in the kettle and during fermentation.

❑ Addition:

Steam Distilled Hop Oils are typically added into the kettle 5 – 10 minutes before kettle cast. For optimum utilisation we recommend first diluting the oil 10 - 100x in ethanol or else dispensing as an aqueous emulsion formed just prior to addition by sonicating a mixture of oil, water and food grade emulsifiers. For dry hopping, the same preparative techniques may be used and the oil injected into the beer main during a transfer operation and prior to the final filtration.

❑ Storage:

Steam Distilled Hop Oils should be stored in sealed containers at <10°C (50°F).

❑ **Safety:**

Steam Distilled Hop Oils are non-toxic materials. Any material coming into contact with the skin should be washed off with soap and water. If **Steam Distilled Hop Oil** gets into the eyes, irrigate with excess water until clear and seek medical attention if irritation persists.

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

❖ **Analytical Methods**

❑ **Composition of Hop oils:**

Hop oil composition is determined by capillary GC analysis using an FPD detector. Details of method are available on request from Steiner.

❖ **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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