



# HopHaze®

HopHaze® is a proprietary aqueous formulation that is derived from 100% hop-derived ingredients. It is produced from a CO<sub>2</sub> extract of hops (*Humulus lupulus*). HopHaze® offers the brewer a hop-based product that imparts haze to beer. In the United States, the components that make up this product are generally recognized as safe (GRAS) in accordance with US FDA regulation 21 CFR 182.20.

## CHARACTERISTICS

HopHaze® contains natural ingredients that produce haze in beer. The product does not significantly affect the flavor and aroma of beer. In beer applications, HopHaze® does not impart sensory bitterness.

## PRODUCT SPECIFICATIONS

<b>Appearance</b>	The product is an amber to brown free flowing liquid at temperatures above 32 °F (0 °C)
<b>Concentration</b>	Standard concentration is 10.0 % +/- 0.5 hop resin components
<b>pH</b>	10.0 - 11.5
<b>Density</b>	Typically 1020 kg/ m <sup>3</sup>
<b>Viscosity</b>	Typically 5 mPas
<b>Solubility</b>	Soluble in pH-adjusted demineralized water, and in alcohol

## QUALITY AND FOOD SAFETY

Barth-Haas maintains quality management systems registered to the ISO 9001 standard, as well as food safety management programs based on internationally recognized (HACCP) principles. Please refer to our web site ([www.barthhaas.com](http://www.barthhaas.com)) for more information on our systems and programs.

## PRODUCT USE

HopHaze® can impart varying levels of haze to beer depending on the volume of the product that is added. The recommended point of addition is post-fermentation and post-filtration. At the point of addition, adequate mixing of HopHaze® and beer should occur. This can be accomplished through addition of the product on the suction side of a centrifugal pump. Do not dose HopHaze® in close proximity to CO<sub>2</sub> addition points. Losses of HopHaze® can occur due to localized pH reduction by CO<sub>2</sub>. The best practice is to add HopHaze® downstream some distance away from CO<sub>2</sub> inlets. A good starting point for gauging the haze potential of HopHaze® is by using an addition rate of 500 mg of the product per 1 L of beer or 177 mg (174 µL) per 12 oz (355 mL) bottle. Adjust the amount of HopHaze® accordingly depending upon the level of haze desired. We recommend 800 mg/L as the maximum addition rate. If dilution is necessary, the use of demineralized water and a pH adjustment to 10 - 11.5 with KOH is necessary. HopHaze® should not be diluted with beer prior to dosing. Do not use sodium bases to adjust the pH of the dilution water - caustic soda or sodium hydroxide form poorly soluble salts with most hop acids.



## PACKAGING

HopHaze® is normally supplied in high-density polyethylene containers of 1, 3.5, 5, and 20 kg. Larger package units are available on request.

## STORAGE AND BEST-BY RECOMMENDATION

Store at 5 °C- 25 °C (41 °F- 77 °F). Keep container closed and out of direct sunlight and prevent from freezing. Product should be used within 24 months of production. Open containers should be used within a few days.

## ANALYTICAL METHODS

Characteristics	Specification	Method
Appearance	Amber/Brown liquid	Visual
Assay Active Potency as hop resin components by HPLC (w/w)	9.5-10.5 %	HPLC
pH	10.0 - 11.5	pH Meter
Lead, Arsenic, Cadmium, Chromium	< 1 ppm	Inductively Coupled Plasma
Mercury	< 1 ppm	Atomic Fluorescence Spectrometry

## SAFETY

Any material that contacts with skin should be washed off with soap and water. For more information, download the relevant Safety Data Sheet (SDS) on our website.

## TECHNICAL SUPPORT

We will be pleased to offer help and advice on the use of HopHaze® in brewing.

E-Mail: [Brewingsolutions@barthhaas.de](mailto:Brewingsolutions@barthhaas.de) or [brewing.solutions@johnihaas.com](mailto:brewing.solutions@johnihaas.com)