



Totally Natural Solutions

HopSensation®



HopSensation® – Natural Hop Oil Aroma and Flavour Blends

General

HopSensation® is a flowable, 100% natural hop extract prepared from several varieties of hop cones or pellets by innovative extraction and distillation methods. Blending of these complimentary hop oils creates a balanced, complex extract for addition to a range of beer styles. HopSensation® consists of hop oil components in a soluble carrier.

Characteristics

HopSensation® provides an easy to use, reproducible method of adding balanced hop aroma and flavour to beer without the need to remove spent hop and associated beer losses! Adding HopSensation® gives a 'late hop' flavour as if pellets were added to the beer in a kettle or whirlpool at flame out, and also contributes dry hop aroma. HopSensation® delivers flavour and aroma characteristic of the specific variety of hops from which it is prepared.

Light stable: All products are free of iso and alpha acids and can be used with any beer packaging type.

Fully soluble: HopSensation® utilisation is 80% if used in pre-fermentation and up to 100% if dosed direct to bright beer.

Easy handling: Flowable, soluble hop oil extract provided as a standardised solution for dosing into bright beer.

Natural, clean label: 100% extract from hops by physical processes.

Hop Varieties

Totally Natural Solutions offers a comprehensive range of hop extracts from main growing regions in Europe, New Zealand and the USA. Popular examples include:

HopSensation®



Speciality Craft Beer Range:

<u>Product Name</u>	<u>Character</u>	<u>Typical Dose Rate</u>	<u>Suggested Beer Style</u>
HopSensation® DIPA	Big juicy citrus and tropical character	20-40g/hl	IPAs
HopSensation® West Coast IPA	Classic west coast character, Citrus & piney	10-30g/hl	IPAs
HopSensation® DDH	Tropical & Stone fruit forward with a citrus/pine backbone.	30-40g/hl	IPAs
HopSensation® NEIPA	Tropical, fresh, floral	20-40g/hl Late stage fermentation	IPAs
HopSensation® Tangelo Crush	Clean Citrus with subtle fruity character	10-20g/hl	Lagers, pale ales
HopSensation® NZ Pale	Stone & orchard fruits come together to bring a bold fruity character with subtle pine		Pales

Product Specifications:

Description: water white solution, can be hazy

Odour: characteristic of named hop variety

Specific gravity (20°C) 1.030 – 1.040

Flash point: >90°C (194°F)

Product use:

The HopSensation® extracts are used to replace or reduce the charge of hop pellets used in late and dry hopping. As such they improve beer consistency, reduce microbial risks and reduce beer loss through absorption onto the hop leafy material.

HopSensation®



The extracts are 100% hop and are used strategically to provide:

Late Stage Differentiation

The products can be used to differentiate from a single wort stream or to add layers of aroma and flavour to an existing product.

Premiumisation

Small additions of HopSensation® to an existing beer can add a premium hop aroma, enhancing the existing beer to a new height.

Pivoting and New Product Development

Development times are dramatically reduced as benchtop evaluations can provide indicative beer character. TNS can support NPD work.

Cost Reduction

Improved utilisation will reduce the cost in use and realise no beer loss when using HopSensation®

HopSensation® are fully soluble in beer and are intended for addition to fined or filtered beers. They can be dosed into finished beer without requiring subsequent filtration, with gentle mixing required for maximum effect. The optimum way of dosing HopSensation® products is with an in-line dosing system into the beer stream on transfer to the bright beer tank or racking vessel.

HopSensation® can also be added directly into the finishing vessel before transferring the beer, where the transfer provides mixing. For dosing direct to casks, we recommend doing so either during the racking process or into the full cask. HopSensation® should be added separately from cask finings.

Product Development:

Trials to determine the concentration required for balanced beer aroma and flavour effect should start with initial dose rate of 10ml/hl of HopSensation®.

This can be dosed to a bottle of beer using a pipette at a rate of 0.1 µL/ml bottle volume (i.e for a 330 ml bottle dose 33 µl). Chill the beer to normal drinking temperature and add the required volume of HopSensation® into the beer. Re-cap the bottle, inverting to mix and then chill for minimum 2 hours before tasting.

HopSensation®



Dose rate:

Typical dose rates are in the range of 5 – 40 ml/hl (0.05 – 0.4 ml/l). Depending on the base beer style and the effect you want to achieve the dose rate can be altered within this range. A good starting dose is 10ml/hl equivalent. (Note 1ml is equivalent to 10ppm)

Calculation example for a barrel or cask –

	<i>Equivalent</i>	<i>Equivalent</i>	Dose rate	Addition rate
36 gallon UK barrel	<i>288 pints</i>	<i>164 litres</i>	10ml per hl	16ml per barrel
9 gallon cask	<i>72 pints</i>	<i>41 litres</i>	10ml per hl	4ml per cask
31 gallon US barrel	<i>206 pints</i>	<i>117 litres</i>	10ml per hl	12ml per barrel

Bench top trials can be viewed at our website: www.totallynaturalsolutions.com

Packaging:

Standard packaging for HopSensation® is a 1 litre or 5 litre aluminium flask, and 20lt steel lacquered drums.

6 x 15ml Sample packs, 100ml and 500ml bottles are available on our webshop.

Storage and shelf life:

HopSensation® are stable in unopened containers for at least 12 months in the packaging supplied and should be stored at 5 - 25°C. Once opened they should ideally be used within 3 months.

Regulatory:

HopSensation® are made using clean label technologies, without solvent residues or chemical reagents. In the European Union they may be classified as natural hop flavouring or hop extract according to the flavouring legislation (EU1334/2008EC).

In the USA, HopSensation® is classified as a natural extractive, since essential oils, oleoresins and natural extractives (including distillates) from hops are GRAS for their intended use (21.C.F.R. § 582.20)