



# Spectrum

## CHARACTERISTICS

Spectrum is 100% natural and 100% hop derived. It is prepared from hop pellets by specific extractions. No additives, solvents or carriers are included in the formulation. Spectrum is dispersible in beer and is an alternative product to standard dry hopping.

Spectrum does not contain iso alpha acids, but (like pellets) it does contain unisomerised alpha acids that in high doses or late dosing can increase bitterness, particularly in hazy beers.

## PRODUCT SPECIFICATIONS

<b>Appearance</b>	Thick brown, flowable paste
<b>Color</b>	Brown
<b>Aroma</b>	Variety-dependent
<b>Category</b>	Hop extract, dry hopping
<b>Density</b>	1.1 - 1.3 g/cm <sup>3</sup>
<b>Oil</b>	3 - 10 ml/100g
<b>Water</b>	< 30 %

## ANALYTICAL METHODS

Hop oils are measured by EBC 7.10

## PACKAGING

Spectrum is supplied in 1, 5 or 10 kg containers. Containers meet all food industry packaging regulations.

## PRODUCT USE

Spectrum is used for dry hopping, ideally dosed into (secondary) fermentation.

The replacement rate for pellets with Spectrum is 1:5 to 1:8 when applied this way, so 100g Spectrum can replace up to 800g of T90 hop pellets. The higher the total dose rate, the less Spectrum is needed. It is not recommended to dose more than 1g/L Spectrum.

For further information on dosing, see sections "Dosing" and "Product Handling"

## STORAGE AND BEST-BY RECOMMENDATION

Spectrum should be stored at 2-15 °C. Spectrum is best if used within 18 months after processing. Avoid lower temperatures as this may provoke crystallization of the product and affect dispersibility.

Opened bottles should be blanketed with inert gas and resealed if placed back in storage. Once opened, use within 1 month.

## PRODUCT HANDLING

- Before use, ensure the product is fully warmed up to room temperature. (You can use a water bath at up to 40 °C for this.)
- NOTE: Warming the product will increase the flowability of Spectrum, but it will not melt.
- Pre-disperse Spectrum in cold or lukewarm deaerated water or wort for dosing.
- NOTE: The product should be dispersed in 5 - 10 times the amount of liquid. In some dynamic dosing systems, pre-dispersion may not be necessary. Vigorous stirring may be necessary for full dispersion.
- NOTE: you may need to scrape or rinse containers to fully remove the product.

## DOSING

- When using Spectrum for the first time or when replacing pellet hopping rates above 8 g/ L pellets, we strongly recommend replacing no more than 80% of the pellet charge with Spectrum.
- For most beer styles, the best dosing point for Spectrum is into secondary fermentation, i.e. 1 to 2 degrees Plato off terminal gravity.
- Use a replacement rate of 1:5 to 1:8 (w/w Spectrum to pellets) when using this dosing point, but no more than 1 g/L of Spectrum.
- Spectrum can be dosed during active fermentation, which delivers more fruity aromas and has not been seen to have any negative impact on the yeast.
- Use a replacement rate of 1:5 to 1:8 (w/w Spectrum to pellets) when using this dosing point, but no more than 1 g/L of Spectrum.
- If you are making a hazy beer, we recommend dosing Spectrum during active fermentation.
- Spectrum can be dosed during lagering/conditioning and into bright beer. Keep in mind that it is easy to overdose at this point. This will lead to a resinous hop burn, haze and, in conjunction with that, raised analytical IBUs. For customers looking to dose post-fermentation, we strongly recommend starting at 0.05-0.1 g/L of Spectrum and doing benchtop trials.
- At high addition rates, Spectrum may cause some color pickup in the beer.

## SAFETY

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

## QUALITY AND FOOD SAFETY

BarthHaas 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.

## TECHNICAL SUPPORT

BarthHaas will be pleased to offer any help and advice on the use of SPECTRUM® in brewing applications.  
E-Mail: [Brewingsolutions@barthhaas.de](mailto:Brewingsolutions@barthhaas.de)