

## Isomerised Hop Pellets

Isomerised Hop Pellets provide a more efficient provision of bitterness by replacement of hops, pellets or extract in the kettle. Isomerised Hop Pellets are produced by warming Stabilised Pellets at approximately 50 °C for one to two weeks. The  $\alpha$ -acids are nearly completely isomerised under these conditions, with a subsequent large increase in utilisation when added to the brewing kettle. Isomerised Hop Pellets can replace existing conventional, alpha hop products for bittering beer and provide opportunities for savings in hop cost through higher utilisation.

### Product specifications<sup>1</sup>:

Description:	Cylindrical pellets in which > 92% of the $\alpha$ -acids have been converted to iso- $\alpha$ -acids (by addition of food grade magnesium oxide and the action of heat)
Consistency:	A solid which normally breaks up into a powder
Colour:	Different shades of green (depending on variety)
Iso- $\alpha$ -acids:	Typically 4 - 16% (depending on the original alpha content of the variety and the crop year)
$\beta$ -acids:	As in original raw hops
Hop oils:	0.4 - 3.5 mL/100 g (depending on variety and crop year, composition of hop oils may vary due to the isomerisation process conditions)
Moisture:	7 - 12%

### Process Specifications:

Isomerised Hop Pellets are produced by warming Stabilised Pellets (produced by blending the hop powder with a small amount of magnesium oxide powder and pelletizing the mixture) to approximately 50 °C (122 °F) and holding for about two weeks.

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Further information on hop varieties is available at [www.barthhaasgroup.com](http://www.barthhaasgroup.com)

**Quality and Food Safety:**

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

**Product Use:**

Isomerised Hop Pellets can be used as a replacement of cone hops or Type 90 Pellets in the kettle. Expect an improvement of up to 50% in utilisation over that of cone hops or pellets. Because the  $\alpha$ -acids are mostly isomerised, high bitterness utilisation will be achieved almost irrespective of the time of addition. Although a good utilisation of bittering components can be achieved with Isomerised Pellets added late to the wort boil, this will also impact on the hop aroma imparted to the beer. We therefore recommend that Isomerised pellets are added early in the boil for bitterness, with conventional Type 90 or Type 45 pellets added late for hop aroma.

**Packaging:**

Isomerised Hop Pellets are packed in laminated foils, which are a barrier against diffusion of oxygen. The bags may be fully evacuated and sealed (hard pack) or back filled with an inert gas (soft pack). The foil material used meets all food industry packaging regulations. Pack sizes are available from 2.5 kg to 140 kg.

**Storage and Best-by Recommendation:**

Isomerised Hop Pellets should be stored cold at 0 - 5 °C (32 – 41 °F) and are best used within 3 years after processing. If stored at –20 °C (-4 °F) they should be used within 5 years. Foils, once opened, should be used within days to avoid deterioration of bitter acids and essential oils.

**Analytical Methods:**

- Iso pellets -- EBC 7.11 or ASBC Hops-14 ( $\alpha$ -acids and  $\beta$ -acids) & Hops-15 (iso pellets)
- Oil by Steam Distillation -- EBC 7.10 or ASBC Hops-13

**Safety:**

If dust is generated it is advisable to use a dust mask. Isomerised Hop pellets are a combustible material. For further information please download the relevant Safety Data Sheet (SDS).

**Technical Support:**

We will be pleased to offer help and advice on the use of Isomerised Hop Pellets in brewing.