

# ISOMERIZED PELLETS (TYPE 90 & TYPE 45)

Cylindrical pellets made from dried, milled and pressed leaf hops; most of the alpha acids in these pellets have been converted to iso-alpha acids.



## OVERVIEW

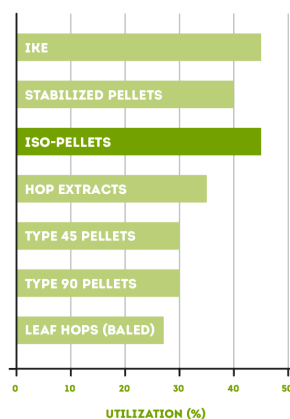
- **Iso-Pellets** are a hop product added to the wort kettle during the boiling process. They offer a higher yield as a result of pre-isomerization of the alpha acids during the production process.
- Isomerization is induced by adding a small amount of food-grade MgO during processing followed by warm storage of the packaged pellets.
- **Iso-Pellets** can replace conventional bittering and aroma products without impacting beer quality. Substantial cost savings are possible with pre-isomerized hop products. In addition, isomerized pellets have a long shelf life.

PROPERTIES	
APPEARANCE	<p><b>Iso-Pellets</b> are dull green pellets, approximately 6 mm x 10 – 15 mm in size (diameter x length).</p> <p><b>Iso-Pellets</b> are slightly harder than standard pellets, but bulk pellets should break apart easily when the package is opened.</p>
FLAVOUR	Brewing trials comparing the two types of pellets and backed up by extensive practical experience, demonstrate that beers with identical flavor profiles can be produced when <b>Iso-Pellets</b> are used in place of standard pellets. The flavor depends on the variety, quantity and time of addition. For further information, please refer to the hop variety data sheets.
UTILIZATION	Utilization of <b>Iso-Pellets</b> (including late kettle additions) normally falls within a range of 45 – 55% as determined by HPLC.
QUALITY	All Ellerslie Australia products are processed in facilities which fulfill internationally recognized quality standards.
PACKAGING	<b>Iso-Pellets</b> are packaged in metallized five- layer foil bags which are then packed in boxes. These are available 'soft' packs flushed with inert gas (N <sub>2</sub> and/or CO <sub>2</sub> ) at atmospheric pressure. Pack sizes range from 5kg (22lb) to 18kg (44lb).
STANDARDIZATION	The alpha acid content of <b>Iso-Pellets Type 45</b> can be standardized to specific concentrations during pellet production.

## QUICK SPECS

DESCRIPTION	Cylindrical pellets made from dried, milled and pressed leaf hops; most of the alpha acids in these pellets have been converted to iso-alpha acids
COLOR*	dull green
BETA ACIDS*	1 – 14%
ISO-ALPHA ACIDS*	1 – 25%, a minimum of 90% of the original alpha acids are converted to iso-alpha acids
HOP OIL*	0.2 – 7.0 ml/100g
MOISTURE CONTENT	7–9%
*DEPENDENT ON VARIETY AND CROP YEAR	

## TYPICAL UTILIZATION OF KETTLE HOP PRODUCTS



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## PRODUCT USE

**Iso-Pellets** are used in a similar way to standard pellets, contributing bitterness and hop aroma to beer.

### DOSAGE

The quantity of **Iso-Pellets** in an addition can be calculated using the iso-alpha acids content of the pellets and the assumption that utilization, due to pre-isomerization of the alpha acids, is likely to be approximately 50 % higher than that achieved with standard pellets.

Late kettle additions of **Iso-Pellets** (typically 5 – 20min prior to the end of the boil) result in the same utilization but increase hop aroma and flavor.

### ADDITION

**Iso-Pellets** can be added directly to the wort kettle or hop dosing vessel. Alternatively, owing to their free-flowing nature, additions of **Iso-Pellets** can be automated.

However, measures should be taken to avoid prolonged exposure to air in any bulk handling system. A contact time of about 10 minutes in boiling wort is sufficient to achieve maximum utilization.

### STORAGE

**Iso-Pellets** should be stored at low temperatures (< 5°C or < 41°F). Pellets in opened foil packs should be used quickly to avoid deterioration of the bitter acids and essential oils.

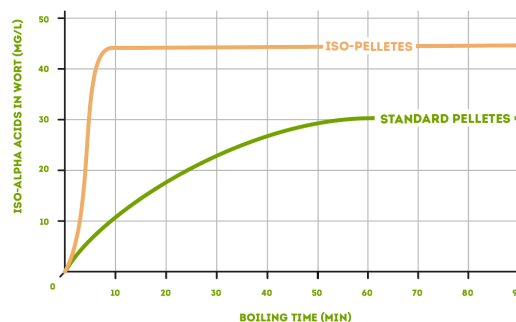
### BEST BEFORE DATE

**Iso-Pellets** are stable for six years from the date they were produced / packaged if stored under the recommended conditions.

### SAFETY

When handling this product, it is advisable to wear a dust mask. Hop pellets are combustible.

## DISSOLUTION AND ISOMERIZATION OF ALPHA ACIDS DURING WORT BOILING



## ANALYTICAL METHODS

### CONCENTRATION OF BITTER SUBSTANCES

**Iso-alpha**, beta and residual alpha acids can be measured using the following methods:

- HPLC according to Analytica-EBC 7.11 or ASBC Hops-15 with the current ICS and ICE standards

### CONCENTRATION OF HOP OIL

The hop oil concentration can be measured using the following methods:

- Analytica-EBC 7.10
- ASBC Hops-13

## TECHNICAL SUPPORT

We are pleased to offer assistance and advice on the full range of Ellerslie Australia products:

- copies of all relevant analytical procedures
- Safety Data Sheets (SDS)
- assistance with pilot or full-scale brewing trials
- special analytical services

**Disclaimer:** The information provided in this document is believed to be correct and valid. However, Ellerslie Australia does not guarantee that the information provided here is complete or accurate and thus assumes no liability for any consequences resulting from its application.



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