

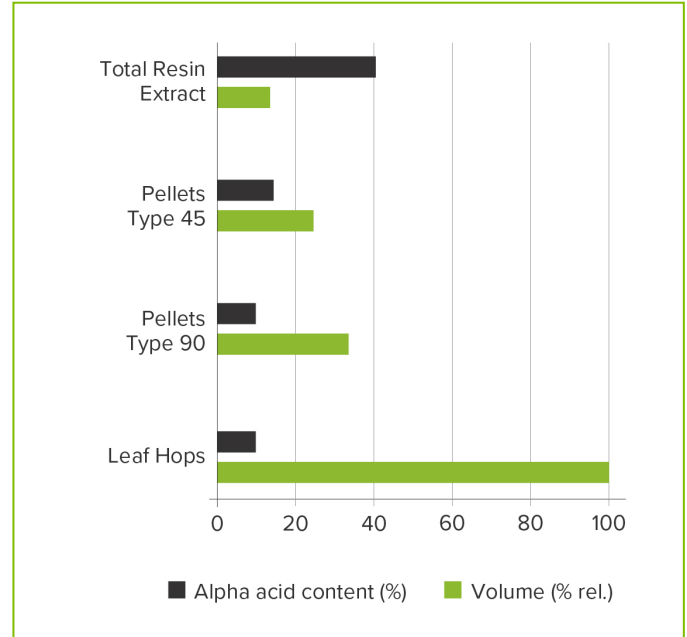
TOTAL RESIN EXTRACT

OVERVIEW

Total Resin Extract (TRE) is produced from aroma or bitter hop varieties through extraction with pure alcohol derived from fermentation. **TRE** contains all of the hop bitter acids (hard and soft resins) and hop oil components of the original leaf hops.

TRE is added to the kettle and can be used to partially or entirely replace leaf hops, hop pellets or CO₂ hop extract.

TRE offers a concentrated and practical alternative to leaf hops or hop pellets with an identical bitterness. Moreover, **TRE** has a long shelf life.



SPECIFICATIONS

Short description	hop extract for bittering during wort boiling
Alpha acids	20 - 55 %
Iso-alpha acids	0.5 - 2.0 %
Beta acids	15 - 30 %
Hop oils	3 - 12 %
Residual ethanol	< 0.3 %
pH	6.2 ± 0.5
Density	ca. 1.0 g/ml (20 °C / 68 °F)
Viscosity	400 - 1000 mPas (45 °C / 113 °F)

PROPERTIES

APPEARANCE

Dark green in color, TRE is a thick syrup/paste.

FLAVOR

The flavor and especially the bitter characteristics of the original hops are completely retained. Early additions of TRE during wort boiling mainly serve to impart bitterness.

UTILIZATION

If TRE is boiled for at least 50 minutes, utilization within the range of 30 - 40 % can be expected. Actual utilization will vary from brewery to brewery due to differences in equipment and process conditions.

QUALITY

All Hopsteiner® products are processed in facilities which fulfill internationally recognized quality standards. A monitoring system for residues is in place.

PACKAGING

Our products are delivered in their respective recommended standard packaging. Alternatives may be possible upon customer request.

Standard packages of our processing plants in the USA (US) and Germany (DE) are:

- Cans 0.5 - 3.1 kg (DE)
- Drum 200 kg (US / DE)

Filling can be done as gramm extract or gramm alpha acids. The extract can be adjusted to a specific bitter content by admixing tannin extract or glucose syrup.

USAGE

TRE is typically added to the wort kettle as a complete or partial replacement for leaf hops or hop pellets.

DOSAGE

Kettle additions of TRE are based on the concentration of bitter substances (CBV), an estimated or known utilization and the desired intensity of bitterness in the beer.

APPLICATION

Pre-warming cans of TRE is not necessary. Suspending punctured cans in the boiling wort will ensure that all of the extract is completely flushed out into the kettle.

If TRE is added by means of automatic dosing units, it should be warmed to 45 °C (113 °F) and gently mixed to ensure perfect dosing.

STORAGE

The recommended storage temperature in the original unopened packaging is < 10 °C (50 °F).

Short-term, transport-related temperature deviations do not affect product quality.

BEST BEFORE DATE

Under the recommended storage conditions, the shelf life from the date of production/ packaging is at least 8 years.

SAFETY

Ensure good ventilation of the workplace and wear personal protective equipment. Avoid contact with eyes and skin. Do not inhale vapors or dusts. For full safety information, please refer to the relevant Hopsteiner® safety data sheet.

ANALYTICAL METHODS

International approved methods listed in committees such as ASBC or Analytica-EBC using current standards are applied.

PRODUCT ANALYTICS

Concentration of bitter substances

- Analytica EBC 7.6 (LCV)
- ASBC Hops-8 (II) (LCV)
- Analytica-EBC 7.8 (HPLC)
- ASBC Hops-16 (HPLC)

The product is normally dosed according to its Conductometric Bitter Value (CBV) as this value better represents its bitterness potential.

Note: CBV = LCV (EBC 7.6) + 50 % of iso-alpha acids (EBC 7.8)

Concentration of hop oils

- Analytica-EBC 7.10 (Distillation)
- ASBC Hops-13 (Distillation)

TECHNICAL SUPPORT

We are pleased to offer assistance and advice on:

- safety data sheets

- support for brewing trials on a pilot or commercial scale
- analytical services and information about analytical procedures

Disclaimer: The information provided in this document is believed to be correct and valid. However, Hopsteiner® 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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Simon H. Steiner, Hopfen, GmbH
Mainburg, Germany
Email: info(at)hopsteiner.de
Phone: +49 (0) 8751 8605 0

S.S. Steiner Inc.
New York, USA
Email: sales(at)hopsteiner.com
Phone: +(1) 212 838 8900

Steiner Hops Ltd.
Guildford, England
Email: enquiries(at)hopsteiner.co.uk
Phone: +(44) 1992 572331

Hopsteiner Trading (Zhuhai) Co., Ltd.
Zhuhai, PRC
Email: info(at)hopsteiner.com.cn
Phone: +(86) 756 322 3340

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