Technical Data Sheet

CO_2 EXTRACT

OVERVIEW

- CO_2 Extract is produced from aroma or bitter hop pellets, using fluid or supercritical carbon dioxide.
- It contains alpha acids, beta acids and hop oils as present in the extracted hop variety, yet lacks some of the hard resins present in ethanol extract or pellets.
- The extract is added to the kettle in order to fully or partially replace leaf hops, pellets or ethanol extracts.
- It provides a comparable bitterness profile to pellets or ethanol extract at similar utilization.
- Its superior shelf-life of eight (8) years makes the extract conveniently storable.

PROPERTIES & SPECIFICATIONS

- **Appearance:** thick paste / syrup with golden/amber/green color which becomes more fluid when warmed.
- **Alpha acids*:** 30 – 55%
- **Beta acids*:** 15 – 40%
- **Hop oils*:** 3 – 12%
- **pH:** approx. 4.0
- **Viscosity:** approx. 300 mPas @ 45°C
- **Density:** approx. 0.9 - 1.0 g/l @ 20°C
- **Flavor:** aroma and bitterness profile of the used hop variety are largely retained.
- **Chemical Residues:** heavy metals, nitrates and most agricultural residues are significantly reduced during extraction.
- **Packaging:** tins, buckets or drums

PRODUCT USE**

- **Application**
  To maximize utilization, CO_2 Extract should be added early in wort boiling. When using tins, pre-warming is not necessary. These simply need to be punctured or opened and then suspended into the boiling wort which will flush out all the extract into the kettle.
  When using buckets or pumping the extract from drums with automated dosing units, it should be warmed up to 45°C and gently mixed before use.
- **Utilization**
  Depending on process conditions, CO_2 Extract will lead to 32-38% alpha acid utilization after 50 minutes of boiling. Isomerization is slower than with pellets at first, yet higher in total after 30 minutes. Later additions in kettle or whirlpool will reduce the bitter yield but increase the aroma yield as with pellets.
- **Dosage**
  Extract addition volumes to wort are typically based on the desired bitter intensity in the beer (IBU). Depending on the brewhouse utilization, bitter substances should be added accordingly.
- **Analytical Methods**
  Alpha and beta acids are usually measured by HPLC (EBC 7.7) or ASBC Hops-14. Alternatively, lead conductance value (LCV) is measured by EBC 7.6 or ASBC Hops-8. Spectrophotometric measurement by ASBC Hops-8 (I) is also possible. Hop oil content is measured by EBC 7.10 or ASBC Hops-13.
- **Storage & Best Before Date**
  Recommended storage is at < 10°C in sealed tins, buckets or drums. If in sealed containers, shelf life is eight (8) years. Opened it should be consumed within a few days, preferably stored chilled.

*) depending on hop variety

**) for safety information, please refer to MSDS