

# CRYO HOPS®

## LupuLN2®



### THE CRYO HOPS® PROCESS

Derived from the Greek word 'kryos', meaning frost, Cryo Hops utilizes industry-leading, cryogenic hop-processing technology to produce two innovative hop products. Whole hop cones are separated into concentrated lupulin and bract at extremely low temperatures in a nitrogen-rich atmosphere, preserving each component of the hop and avoiding opportunities for oxidation.

### LupuLN2® HOP PELLETS

LupuLN2 hop powder is the concentrated lupulin of whole-leaf hops containing resins and aromatic oils. It is designed to provide intense hop flavor and aroma, enabling brewers to dose large quantities of hops without introducing astringent flavors or vegetative material.

**LupuLN2 HOP PELLETS** are produced from LupuLN2 hop powder. To ensure preservation of the essential oils and resins, the production process is conducted at cool temperatures, approximately 30 degrees lower than T-90 pellet production. LupuLN2 hop pellets perform similar to T90 hop pellets and have comparable density and dissolving characteristics.

### INTRODUCING LupuLN2® INTO BEER

**KETTLE:** Late additions only; early kettle additions should be avoided to prevent boiling out the intense aroma characteristics.

**WHIRLPOOL:** Whirlpool additions are an excellent way to increase aroma and reduce trub-load from large, late additions.

**KNOCKOUT OR HOPBACK:** Due to fine particle size, there is low risk of clogging heat exchangers. This allows for extremely late additions, even with carryover into the fermenter.

**FERMENTER:** Use in the fermenter is an excellent way to increase aroma while reducing trub-loss. LupuLN2 will settle out during normal conditioning and can be fined, filtered or centrifuged as normal.

### RECIPE ADAPTATION

Regardless of application, early trials indicate LupuLN2 beers showcase pronounced juicy and resinous flavors with reduced grassy characteristics. As a result, some brewers recommend using LupuLN2 in conjunction with T90 pellets to ensure the complexity and flavors of the whole hop cone are retained.

Creating new recipes with LupuLN2 is an excellent (and safe) way to showcase hops in innovative beers and styles. As a starting point for recipe formulation or modification, the estimated dosing rate of LupuLN2 is 40-50% of hop pellets by weight.

### BENEFITS OF UTILIZING LupuLN2®

- Processed in an ISO-9001/14001-certified production facility
- Controlled, nitrogen-rich production environment with limited opportunities for oxidation
- Uniform particle-size distribution
- Intentional preservation of the lupulin glands
- Twice the resin content of T90 hop pellets
- Intense contribution of hop flavor and aroma
- Reduced vegetal and polyphenol flavor
- Greater sustainability in packaging, shipping and storage