YAKIMA CHIEF HOPS®

CRYO FRESH®

PRODUCT DATA SHEET

PACKAGED BY

Yakima Chief Hops
306 Division Street, Yakima, WA 98902 USA
Phone (509) 457-3200

DESCRIPTION

Combining the groundbreaking concept of Frozen Fresh Hops and the innovative technology of Cryo Hops®, we are pleased to introduce a new way to brew fresh hop beers with a convenient, easy-to-use, concentrated pelletized product. Cryo Fresh, an advancement of trial products YCH 301 and YCH 302, is derived from the concentrated lupulin of fresh whole-cone hops. This unique product captures the vibrant flavors and aromas of fresh hops, with a fraction of the footprint and the mess that comes with fresh whole cones. Cryo Fresh offers brewers the opportunity to replicate harvest-fresh aromatics year-round.

Cryo Fresh starts in the field with freshly harvested, un-kilned whole cone hops. These are immediately frozen, locking in their delicate aromas and preserving the integrity of the lupulin glands with a refined freezing process. From there, the whole fresh frozen cones undergo our patented cryogenic processing. This isolates the concentrated lupulin while preserving essential hop oils in a frozen, nitrogen-rich, low-oxygen environment, resulting in Cryo Fresh pellets.

PACKAGING & STORAGE

To preserve the quality, Cryo Fresh pellets must be stored at (0°F / -18°C). Under these conditions, Cryo Fresh pellets will remain stable in closed containers for one [1] year in nitrogen flushed, vacuum sealed packaging. Yakima Chief Hops will ship Cryo Fresh pellets with dry ice to ensure it remains frozen in transit. If the product cannot be maintained at frozen temperatures (0°F / -18°C), it must be used within 48 hours to ensure quality and safety.

Storage stability does vary per variety and can be negatively affected by exposure to oxygen, heat and/or light.

APPLICATION & USAGE

Cryo Fresh can be used at any stage, including the cold side, where traditional whole cone fresh hops are simply impractical. However, to maximize the fresh hop attributes, YCH suggests using Cryo Fresh in the active or post-fermentation dry hop.

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SPECIFICATION SHEET

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DESCRIPTION	METHOD	TYPICAL ANALYSIS
Alpha Acids*	UV Spectro. by ASBC HOPS-6A	2 - 10% (w/w)
Beta Acids*	UV Spectro. by ASBC HOPS-6A	2 - 10% (w/w)
Hop Storage Index	ASBC HOPS-12	Varies by variety & time from harvest
Lead		< 0.6 ppm
Arsenic		< 0.4 ppm
Cadmium		< 0.1 ppm
Mercury		< 0.05 ppm
Total Heavy Metals (as Pb eq.)		< 10 ppm
Pesticides	Comply with US Regulations & EC Directive 396/2005 Amendments	

** NOTE: Concentration dependent upon variety of hops and crop year*

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SAFETY DATA SHEET

CRYO HOPS INTENSITY

nqa ISO 9001 ISO 14001 Registered

1. PRODUCT IDENTIFICATION

1.1 Product Name	Cryo Fresh®, YCH 302 (Concentrated Hop Pellets) Made from frozen, unkilned hop cones
1.2 Supplier	Yakima Chief Hops Inc. 306 Division St. Yakima, WA 98902 (USA) Phone: +1.509.457.3200 Email: quality@yakimachief.com Website: yakimachief.com
1.3 Recommended Use	Ingredient used in brewing beer.
1.4 Restrictions on Use	None

2. HAZARD IDENTIFICATION

2.1 Hazard Classification	Not Applicable Product is natural, unrefined and contains no additives.
2.2 Label Elements	Not Applicable
2.3 Other Hazards	Dust may be a mild irritant to the eyes. Prolonged skin contact could cause dermatitis in some individuals. Dust generated during sweeping of spilled product may cause severe respiratory distress in some individuals.

3. COMPOSITION, INGREDIENT INFORMATION

3.1 Composition	A fine powder or pellet composed of ground hops, produced by milling and sieving, frozen, unkilned hop cones
3.2 Hazard Components	Not Applicable Product is natural, unrefined and contains no additives.

4. FIRST AID MEASURES

4.1 Oral Ingestion	Not Applicable
4.2 Eye Contact	Wash with copious amounts of water. Seek medical attention if irritation persists.
4.3 Skin Contact	Wash with warm, soapy water. Seek medical attention if irritation persists. Launder contaminated clothing before reuse.
4.4 Inhalation	Remove affected person to fresh air. Administer oxygen if necessary.
4.5 Symptoms	None Known

5. FIRE FIGHTING MEASURES

5.1 Extinguishing Media	Water, CO_2
5.2 Hazards from Fire	None Known

6. ACCIDENTAL RELEASE MEASURES

6.1 Procedure	Scoop, shovel spilled material into recovery container. Flush area with hot soapy water to remove final traces.
6.2 Protective Equipment	Use adequate ventilation or a respirator if in a confined area. Use rubber gloves. Wear Safety Glasses.

7. HANDLING AND STORAGE

7.1 Handling Equipment	Closed Container of Food Grade Quality. Stainless Steel, Lacquered Steel, Laminated Aluminum Foils or PET Pouches.
7.2 Precautions	Avoid generating excessive dust and prolonged skin contact. Use personal protective equipment (Section 8)
7.3 Storage Conditions	Store in dry, odor free environment at (0°F / -18°C). Under these conditions, YCH 302 products will remain stable in closed containers for one [1] year in nitrogen flushed, vacuum sealed packaging. If the product cannot be maintained at frozen temperatures (0°F / -18°C), it must be used within 48 hours to ensure quality and safety. Storage stability does vary per variety and can be negatively affected by exposure to oxygen, heat and/or light.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

8.1 Permissible Exposure Limits (PELs)	Not Applicable
8.2 Threshold Limit Values (TLVs)	Not Applicable
8.3 Engineering Controls	Provide adequate ventilation
8.4 Personal Protective Equipment (PPE)	Skin Protection: wear rubber gloves if prolonged exposure Eye Protection: wear safety glasses Respiratory Protection: wear face mask if dust will be generated

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Appearance & Odor	Yellow, green or brown pellet with an herbal, pungent odor.
9.2 Odor	Hoppy, depends on variety
9.3 Odor Threshold	No data available
9.4 pH	No data available
9.5 Freezing Point	No data available
9.6 Boiling Point	No data available
9.7 Flash Point	No data available
9.8 Evaporation Point	No data available; Solid
9.9 Flammability	No data available
9.10 Upper/Lower Flammability	No data available
9.11 Vapor Pressure	No data available; Solid
9.12 Vapor Density	No data available; Solid

9.13 Density	Varies with production parameters
9.14 Solubility in Water	Insoluble
9.15 Partition coefficient	No data available
9.16 Auto-ignition Temperature	No data available
9.17 Decomposition Temperature	No data available
9.18 Viscosity	Not Applicable; Solid

10. STABILITY AND REACTIVITY

10.1 Reactivity	Product is sensitive to oxidation in open containers in absence of inert atmosphere an/or under excessive temperatures
10.2 Stability	Product is stable under appropriate storage conditions, in closed containers and/or under inert atmosphere. (Section 7.3)
10.3 Possibility of Hazardous Reactions	None known
10.4 Conditions to Avoid	See Section 7.3
10.5 Incompatible Materials	None Known
10.6 Hazardous Decomposition Products	None Known

11. TOXICOLOGICAL INFORMATION

11.1 Acute Toxicology	None Known. Product is “Generally Recognized As Safe” (GRAS 21 CFR 182.20)
11.2 Routes of Exposure	Inhalation: No data available Ingestion: No data available Skin contact: No data available Eye contact: No data available
11.3 National Toxicology Program	Not listed on Report of Carcinogens

12. ECOLOGICAL INFORMATION

12.1 Toxicity	No data available
12.2 Potential for Persistence and Degradation	No data available. Product is all natural and biodegradable.
12.3 Bioaccumulation	No data available. Product is all natural.
12.4 Mobility in Soil	No data available
12.5 Other Effects	No data available

13. DISPOSAL CONSIDERATIONS

13.1 Product Disposal	According to regulations in force.
13.2 Packaging Disposal	According to regulations in force; for paper/cardboard.

14. TRANSPORTATION INFORMATION

14.1 UN Number	Non-hazardous product
14.2 Shipping Name	Cryo Fresh™
14.3 Hazard Class	Non-hazardous product
14.4 Packing Group	Non-hazardous product
14.5 Environmental Hazards	Non-hazardous product
14.6 Other	Product is not classified as ADR and should not be transported along with ADR classified Cargo. Product should be stored away from engines or any heat source during transportation.

15. REGULATORY INFORMATION

15.1 Regulations	Food grade: suitable for brewing applications Complies with limits for heavy metals, pesticide residues, and nitrates Allergen-free, Non-GMO Fully traceable from source
15.2 REACH	Not Applicable (No EINECS Ref.)

16. OTHER INFORMATION

16.1 Safety Data Sheet Issue Date	2015-11Nov-10
16.2 Safety Data Sheet Revision Date	2025-12Dec-08
16.3 Safety Data Sheet Other	Safety Data Sheet reviewed 2025-12Dec-08