YAKIMA CHIEF HOPS®

HyperBoost™ OIL-BOOSTED HOP EXTRACT

PRODUCT DATA SHEET

ADVANCED PRODUCTS EFFICIENT

nqa. ISO 9001 ISO 14001 Registered

PACKAGED BY

Yakima Chief Hops, 306 Division Street, Yakima, WA 98902 USA
Phone: +1 (509) 457-3200

DESCRIPTION

HyperBoost™, formerly YCH 701, is an oil-enriched flowable hop extract product. It is produced using a proprietary supercritical CO_2 extraction process, and is intended to be used in dry-hopping applications. Brewers can expect efficiency gains when swapping traditional hop products for HyperBoost, as well as amplified hop aromas.

- All varieties have a greater than 40% total oil content
- HyperBoost's extreme flowability makes it easy to add directly to the fermenter
- Does not contribute to hop creep

APPLICATIONS

1. The optimal time to use HyperBoost is during active fermentation. It can be added during fermenter fill, or during the initial stages of fermentation. The convection of fermentation will ensure that the HyperBoost is well incorporated into the beer. This method also allows time for survivable compounds to make it into your beer.

2. Post-Fermentation dry hopping with HyperBoost should include a rousing or recirculation step to ensure the HyperBoost is well mixed, as a portion of oil may end floating on top of the beer. As long as a mixing step has been performed, any oils floating on top of the beer are likely non-survivable. Higher replacement rates will likely be more acceptable for completely new recipes. Changes to existing brands will likely be more noticeable. Individual replacement rates and dosing methods will vary slightly depending on your brewery and recipe needs.

3. Post-Crash dosing is generally not recommended, as HyperBoost will have a harder time getting into solution it is best to dose in line during a transfer. This technique has successfully been used to 'revive' crashed beers that need an extra boost of aroma.

REPLACEMENT RATES

Yakima Chief Hops recommends using HyperBoost for 25-50% of your dry hop charge, as a starting point. That means that 100 g of HyperBoost can be used in place of 10 kg of T-90 pellets!

TRADITIONAL PRODUCT	REPLACEMENT RATE	100g OF HYPERBOOST IS EQUIVALENT TO:
T-90 PELLETS	1 : 100	10 kg / 22 lb
CRYO HOPS®	1 : 50	5 kg / 11 lb

AVAILABLE VARIETIES

HyperBoost is currently available in Citra®, Mosaic®, Simcoe®, Krush™, Talus®, Idaho 7®, Strata® and more. All HyperBoost lots are made from a single hop varietal.

STORAGE RECOMMENDATIONS

HyperBoost should be stored in its original 100 g or 1 kg aluminum bottle until it is ready to be used. As with all hop aroma products, lower storage temperatures will provide the best protection against degradation. YCH recommends storage of product below 40°F (5°C).

An unopened bottle of HyperBoost will remain stable for up to two years. Once opened, use a partial bottle within 6 months.

PACKAGING & HANDLNG REQUIREMENTS

Due to its low flash point, HyperBoost is classified as a flammable product. It needs to be shipped and stored according to all local, state, and federal guidelines.

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SPECIFICATION SHEET

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METHOD ASSAY	METHOD	TYPICAL ANALYSIS
Identification	UV absorption curve is similar to that of referenced standard	-
Alpha Acids Assay	UV Spectro by ASBC HOPS-6A, HPLC - EBC 7.7 or ASBC HOPS-14 (ICE-4 Std.)	15-40% (w/w)
Beta Acids Assay	UV Spectro by ASBC HOPS-6A, HPLC - EBC 7.7 or ASBC HOPS-14 (ICE-4 Std.)	5-15% (w/w)
% Oil by Distillation	EBC 7.10 or ASBC HOPS-13	>40% (w/w)

YAKIMA CHIEF HOPS®

HyperBoost™ OIL-BOOSTED HOP EXTRACT | SAFETY DATA SHEET

ADVANCED PRODUCTS EFFICIENT

nqa. ISO 9001 ISO 14001 Registered

1. PRODUCT IDENTIFICATION

1.1 Product Name	HyperBoost™, YCH 701 Trial, Oil Enriched Extract Made from Hop Pellets
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	Flammable liquid, Category 3.
2.2 Label Elements	 Signal word: Warning Hazard statements: H226 – Flammable liquid and vapor Precautionary statements: P210 – Keep away from heat/sparks/open flames/hot surfaces – No smoking P381 – Eliminate all ignition sources if safe to do so. P403 + 235 – Store in a well ventilated place. Keep cool.
2.3 Other Hazards	Prolonged skin contact could cause dermatitis in some individuals.

3. COMPOSITION, INGREDIENT INFORMATION

3.1 Composition	A slightly acidic resin; concentrate of oils, alpha acids, beta acids and uncharacterized resins produced by CO_2 extraction.
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	Unknown

5. FIRE FIGHTING MEASURES

5.1 Extinguishing Media	Dry Powder, Foam, Water, CO_2
5.2 Hazards from Fire	Closed containers may build up pressure when exposed to heat and should be cooled with water spray. Keep product and empty container away from heat and sources of ignition.

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 or PET
7.2 Precautions	Avoid prolonged skin contact. Use personal protective equipment (Section 8)

7.3 Storage Conditions	Store at room temperature or at a temperature range of -3°C to 5°C (25°F to 41°F).

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

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Appearance & Odor	Yellow, green or brown resin concentrate with a pungent odor.
9.2 Odor	Typical hoppy, depends on variety
9.3 Odor Threshold	No data available
9.4 pH	3 - 4
9.5 Melting Point	-20°C, depending on variety
9.6 Boiling Point	> 100°C
9.7 Flash Point	49°C
9.8 Evaporation Point	No data available
9.9 Flammability	No data available
9.10 Upper/Lower Flammability	No data available
9.11 Vapor Pressure	No data available
9.12 Vapor Density	No data available
9.13 Density	0.85 – 0.95
9.14 Solubility in Water	Insoluble
9.15 Partition Coefficient	No data available
9.16 Auto-ignition Temperature	249°C

9.17 Decomposition Temperature	No data available
9.18 Viscosity	No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity	Product is sensitive to oxidation in open containers, and/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 Toxicity	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 Bio-accumulation	No data available. Product is all natural.
12.4 Mobility in Soil	No data available
12.5 Other Effects	No data available

13. DISPOSABLE CONSIDERATIONS

13.1 Product Disposal	According to regulations in force.

13.2 Packaging Disposal	According to regulations in force; for paper/cardboard, steel and PET.

14. TRANSPORTATION INFORMATION

14.1 UN Number	UN 1197 Extracts, flavoring, Liquid, 3 III
14.2 Shipping Name	HyperBoost™, YCH 701 Trial
14.3 Hazard Class	3-Flammable liquid
14.4 Packing Group	III – Minor Danger
14.5 Environmental Hazards	Non-hazardous product
14.6 Transport Section	Department of Transportation (DOT) In accordance with DOT Transport document description: UN1197 Extracts, Liquid, 3, III UN-No. (DOT): UN1197 Proper Shipping Name (DOT): Extracts, liquid, Class (DOT): III Minor Danger Hazard Labels (DOT: 3- Flammable Liquid  DOT Packaging Non Bulk (49 CFR 173.xxx): 203 DOT Packaging Bulk (49 CFR 173.xxx): 242 DOT Special Provisions (49 CFR 172.102): B1- If the material has a flash point at or above 38 C (100 F) and below 93 C (200F), then the bulk packaging requirements of 173.242 of this sub-chapter is applicable. IB3- Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2; Composite (31HZ1 and 31HA2, 31HB2,31HN2,31HD2 and 31HH2). Additional Requirements: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see special Provisions IP8 in the Table 2 for UN2672) T2- 1.5 178.274(d)(2) Normal 178.275(d)(3) TP1- The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = 97 / 1 + a (tr – tf) Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees Celsius of the liquid during filling.

	DOT: Packaging Exceptions (49 CFR 173.xxx): 150 DOT Quantity Limitations passenger aircraft/ rail: 60 L (49CFR 173.27 DOT Quantity Limitations Cargo aircraft only: 220 L (49 CFR 175.75) DOT Vessel Stowage Location: A- The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel. Emergency Response Guide (ERG) Number: 127 Other information: No supplementary information available. Transport document description (IMDG): UN 1197 EXTRACTS, LIQUID, 3, III, **Transport by Sea** UN-NO. (IMDG): 1197 Proper Shipping Name (IMDG): EXTRACTS, LIQUID CLASS (IMDG): 3-Flammable liquids Packing Group (IMDG): III – substances presenting low danger Limited Quantities (IMDG): 5 L **Air Transport** Transport document description (IATA) : UN 1197 Extracts, liquid, 3, III UN-No. (IATA): 1197 Proper Shipping Name (IATA): Extracts, liquid Class (IATA): 3-Flammable Liquids Packing Group (IATA): III- Minor Danger

15. REGULATORY INFORMATION

15.1 Regulations	Food Safe Heavy Metals, Pesticides/Herbicides/Fungicides, Nitrates, Radioactivity: Below tolerance levels. Allergenic-Free Non-GMO Traceable
15.2 REACH	Not Applicable (No EINECS Ref.)

16. OTHER INFORMATION

16.1 Issue Date	2023-02Feb-06
16.2 Revision Date	2023-08Aug-03
16.3 Other	