YAKIMA CHIEF HOPS®

DYNABOOST™

PRODUCT DATA SHEET

PACKAGED BY

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

DESCRIPTION

DynaBoost, formerly named YCH 702, is a flowable whirlpool hop extract at room temperature that is produced through supercritical extraction of hop pellets with CO_2, utilizing a proprietary extraction technique. DynaBoost is designed to increase both hop aromatics and hotside yield. It is most effective when used in the whirlpool. DynaBoost contains 35-50% alpha acids, 10-20% beta acids, and 18-22% total oil. DynaBoost is produced from single hop varietals to deliver variety specific flavors to your beer.

PACKAGING & STORAGE

DynaBoost is available in 1 kg and 10 kg HDPE containers. In general, these containers are equivalent to 10 and 100 kg (22 and 220 lbs) of T-90 hop pellets. DynaBoost should be stored below 25°C (77°F), though as with all hop products, aromatic quality will remain more stable at cooler temperatures, as low as -1°C (30°F). Under these conditions, DynaBoost will remain shelf stable in closed containers for two (2) years. Storage stability does vary per variety and can be negatively affected by exposure to oxygen, heat and/or light.

APPLICATION & USAGE

DynaBoost is designed to maximize aromatic contributions and yields in the whirlpool. While the alpha acids present will provide some bitterness, DynaBoost's strength comes from its high concentration of beer-soluble compounds. When dosed into the whirlpool, these 'survivable' compounds have a high chance of making their way into the final beer. Additionally, since there is no vegetal matter present in DynaBoost, when it's used to replace T-90 pellets, there should be significantly less trub produced in the whirlpool, resulting in higher beer yields. DynaBoost can be dosed directly into the whirlpool, as long as there is agitation. Higher retention of aromatic compounds can be expected at lower whirlpool temperatures, though active cooling of the whirlpool is not required. If product is stored in refrigerator it is best to warm to room temperature so product is flowable. Shake well to maintain homogeneity.

USE RATE CALCULATIONS

A typical dosage rate 0.2 to 0.5g per liter of wort is recommended depending on brewer's discretion. A typical replacement dosage for T-90 pellets with DynaBoost would be a 10:1 dilution, meaning for every kilogram of T-90 pellets, add 100g of DynaBoost. Unless whirlpool hops provide the vast majority of the bitterness in a given beer, the difference in bitterness pickup during whirlpooling is likely negligible due to lower isomerization rates as temperatures cool in the whirlpool. If a beer is largely defined by the bitterness generated in the whirlpool, bitterness can be adjusted with CO_2 extract, ISO, or another hop product.

AROMA

DynaBoost is variety specific, and will retain the same characteristics as the hops that went into making it. In general, when used as suggested, the aroma impact in beer should be very similar to a beer made with an equivalent dose of a traditional hop product. As always, final beer sensory notes will be dependent on many factors, such as addition time, temperature, and yeast choice.

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SPECIFICATION SHEET

ADVANCED PRODUCTS EFFICIENT

nqa ISO 9001 ISO 14001 Registered

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DESCRIPTION	METHOD	TYPICAL ANALYSIS
Identification	UV absorption curve is similar to that of reference standard	
Alpha Acids Assay*	UV Spectro. by ASBC HOPS-6A, HPLC - EBC 7.7 or ASBC HOPS-14 (ICE-3 Std.)	35 - 50% (w/w)
Beta Acids Assay*	UV Spectro. by ASBC HOPS-6A, HPLC - EBC 7.7 or ASBC HOPS-14 (ICE-3 Std.)	10 - 25% (w/w)
% Oils By Distillation*	EBC 7.10 or ASBC HOPS-13	18 - 22% (v/w)
Oil Composition	GC FID, ASBC HOPS METHOD-17	as reported
B-Pinene	GC FID, ASBC HOPS METHOD-17	as reported
Myrcene	GC FID, ASBC HOPS METHOD-17	as reported
Linalool	GC FID, ASBC HOPS METHOD-17	as reported
Caryophyllene	GC FID, ASBC HOPS METHOD-17	as reported
Farnesene	GC FID, ASBC HOPS METHOD-17	as reported
Humulene	GC FID, ASBC HOPS METHOD-17	as reported
Geraniol	GC FID, ASBC HOPS METHOD-17	as reported
Lead		< 1.0 ppm
Arsenic		< 0.5 ppm
Cadmium		< 0.03 ppm
Total Heavy Metals (as Pb eq.)		< 10 ppm
Pesticides	Comply with US Regulations & EC Directive 396/2005 Amendments	

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SAFETY DATA SHEET

ADVANCED PRODUCTS EFFICIENT

nqa ISO 9001 ISO 14001 Registered

1. PRODUCT IDENTIFICATION

1.1 Product Name	DynaBoost, YCH 702, YCH 702 Trial 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	Not Applicable Product is natural, unrefined and contains no additives.
2.2 Label Elements	Not Applicable
2.3 Other Hazards	Prolonged skin contact could cause dermatitis in some individuals.

3. COMPOSITION, INGREDIENT INFORMATION

3.1 Composition	A slightly acidic solid or resinous phase; concentrate of iso-alpha acids, beta acids, oils and uncharacterized resins produced by CO2 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	None Known

5. FIRE FIGHTING MEASURES

5.1 Extinguishing Media	Dry Powder, Foam, Water, CO2
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 or PET
7.2 Precautions	Avoid generating excessive dust and 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	Yellowish clear liquid with a pungent odor.
9.2 Odor	Typical hoppy, depends on variety
9.3 Odor Threshold	No data available
9.4 pH	4 - 6
9.5 Melting Point	40 – 60° (104 – 140°F), depending on variety
9.6 Boiling Point	> 100°C
9.7 Flash Point	> 100°C
9.8 Evaporation Point	< 1
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 – 1.10
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	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 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, steel and PET.

14. TRANSPORTATION INFORMATION

14.1 UN Number	Non-hazardous product
14.2 Shipping Name	DynaBoost, YCH 702, YCH 702 Trial
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 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 Safety Data Sheet Issue Date	22023-02Feb-02
16.2 Safety Data Sheet Revision Date	
16.3 Safety Data Sheet Other	