

PRODUCT DATA SHEET

Hop Aroma

PRODUCED BY

Yakima Chief - Hopunion
203 Division Street, Yakima, WA 98902 USA
P 509.453.4792 // F 509.453.1551

DESCRIPTION

Hop Aroma is the beta acid & oil fraction of hops derived from CO₂ hop extract. The mild extraction and subsequent separation conditions preserve all the essential hop oils and other hop compounds that contribute to a complex hoppy character. This hop extract is virtually free of alpha acids and will not provide any bitterness or contribute to a sun struck flavor. Typical analysis of the product: <1.2% alpha acids, 30-55% beta acids, and 20-32% hop oils.

Fresh hop aroma and flavor characteristics will not change after extended periods of storage.

APPLICATION

Hop Aroma is primarily used as kettle hop ingredient to ***economically replace or reinforce the aroma fraction of the traditional kettle hop bill.*** It is designed to provide hop character to beer and our belief is that the quantity of hop oils and the time of their addition will have more influence on beer aroma than the oil profile of hops alone.

Hop Aroma used in the brew kettle will lead to ***improved trub formation.*** Also, beta acids and hop oils will enhance the ***antimicrobial and antifoam properties*** in wort.

ADDITION PROCEDURE

Add the Hop Aroma into wort early during kettle boil to control excessive foaming and contribute to the kettle break and late during kettle boil to provide hop aroma to beer. Hop Aroma, packaged in tins, has to be heated up to 104°F (40°C) and properly mixed in order to melt and homogenize the product before making an addition into the brew kettle. Heating temperature and time to melt may vary slightly. Temperatures above 122°F (50°C) are not recommended to prevent loss of delicate aroma components. The addition of 0.2 Kg - 0.5 Kg of Hop Aroma to the equivalent of 100 HL of finished beer 10-15 minutes before kettle break will provide a good base for evaluation of hop character.

AROMA

The aroma of the extract will be variety specific. Perception of hoppy character and various related notes in beer will depend on the quantity of product added and the time of addition during kettle boil.

PACKAGING

Standard packaging is available in 4 Kg tins containing 3 Kg of extract.

The inner coating of metal tins are approved by the FDA for use with food products and meet the requirements of Food Additive Regulation 21 CFR 175.300. Tins are marked with 16-9000 Food Grade Ink.

STORAGE

Hop Aroma should be stored at a temperature between 26.6°F and 68°F (-3°C and 20°C) and will remain stable in closed container for 3 years when stored under these conditions.

SPECIFICATION SHEET

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	METHOD	TYPICAL ANALYSIS
Alpha Acids Assay:	HPLC - EBC 7.7 ASBC HOPS-14 (ICE-3 Std.)	< 1.2% (w/w)
Beta Acids Assay:	HPLC - EBC 7.7 ASBC HOPS-14 (ICE-3 Std.)	30 - 55% (w/w)
% Oils by Distillation:	EBC 7.10 ASBC HOPS-13	> 20% (v/w)

	METHOD	TYPICAL ANALYSIS
Lead		< 1.0 ppm
Arsenic		< 0.5 ppm
Cadmium		< 0.03 ppm
Total Heavy Metals (as Pb eq.)		< 10 ppm

* NOTE: Concentration dependent upon hop variety and crop year

SAFETY DATA SHEET

Hop Aroma

1. PRODUCT IDENTIFICATION

1.1 Product Name	Hop Aroma (HopAroma Super, HopAroma 10%, Enhanced Oil Extract) Made from CO ₂ hop extract
1.2 Supplier	Yakima Chief - Hopunion, LLC 203 Division St. Yakima, WA 98902 (USA) Tel.: 800 952 4873 555 West South Hill Road PO Box 209 Sunnyside, WA 98944 (USA) Tel.: (509) 839-9022
1.3 Emergency Contact	Yakima Chief - Hopunion, LLC 203 Division St. Yakima, WA 98902 (USA) Tel.: 800 952 4873 Website: ychhops.com
1.4 Recommended Use	Ingredient used in brewing beer
1.5 Restrictions on Use	None

2. HAZARD IDENTIFICATION

2.1 Hazard Classification	Not applicable Product is natural
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 resinous phase of beta acids, oils and uncharacterized resins produced from CO ₂ hop extract.
3.2 Hazard Components	Not applicable Product is natural

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, 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 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 25°F to 41°F (-3°C to 5°C).

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	7 - 9
9.5 Melting Point	104°F – 140°F (40°C – 60°C), depending on variety
9.6 Boiling Point	> 32°F (100°C_
9.7 Flash Point	> 212°F (100°C)
9.8 Evaporation Rate	< 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 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 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	Hop Aroma
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 Allergen-free Non-GMO Traceable
15.2 REACH	Not Applicable (No EINECS ref.)

16. OTHER INFORMATION

16.1 Issue Date	26 May 2015
16.2 Revision Date	
16.3 Other	