



**YAKIMA CHIEF HOPS®**



# CO<sub>2</sub> HOP EXTRACT

## PRODUCT OVERVIEW SHEET

### THE PROCESS OF SUPERCRITICAL CO<sub>2</sub> EXTRACTION

Yakima Chief Hops' CO<sub>2</sub> Hop Extract is produced using a supercritical CO<sub>2</sub> process which extracts the soft resins and essential oils contained in hops. The extraction process filters out solid particles while the CO<sub>2</sub> is recovered and reused. The resulting pure resin extract is analyzed in the lab and packaged into food-grade tins for use in brewing.

### BENEFITS OF UTILIZING CO<sub>2</sub> HOP EXTRACT

CO<sub>2</sub> hop extract is pure resin extract of hops containing alpha acids, beta acids, and hop oils. It is primarily used as a kettle ingredient to provide bitterness. Variety specific flavor/aroma contributions can be expected when used for late kettle or whirlpool additions. The following are benefits of utilizing CO<sub>2</sub> hop extract:

- Increased brewhouse yields through reduced kettle trub
- Reduced hot-side brew kettle foam formation during the boil
- Bitterness, flavor, and aroma via late boil and whirlpool additions
- Variety specific hop character and related notes in beer when used in the whirlpool
- Reduced vegetal and polyphenol flavor contribution
- Increased alpha utilization
- Excellent stability of alpha acids, beta acids and hop oils
- Extended shelf life and reduced storage requirements

### INTRODUCING CO<sub>2</sub> HOP EXTRACT INTO BEER

There are many methods to dosing CO<sub>2</sub> hop extract successfully. Two common methods include: adding an open or perforated tin to a grant during runoff, or mixing it with hot water/wort in a secondary vessel and pouring the resulting mixture into the kettle boil. The alpha acids in CO<sub>2</sub> hop extract are not isomerized until they are boiled during the brewing process.

Determining the best method to dose CO<sub>2</sub> hop extract depends on brewing system specifics. Yakima Chief Hops' CO<sub>2</sub> Hop Extract is packaged in custom food-grade tins which can be conveniently added to the brew kettle. For ease of use, it is recommended to formulate recipes using full-tin increments.

Actual utilization of alpha acids is dependent on equipment and process specifics. Early kettle additions (60-90 minutes of extract boil time) are usually used to achieve the bulk of bittering and using CO<sub>2</sub> hop extract will lead to a utilization of approximately 35% in the finished beer. Adding CO<sub>2</sub> hop extract late during kettle boil will result in variety specific flavor and aroma contributions. For best results, lab analysis of wort/beer should be conducted to confirm bitterness.

### PACKAGING CONSIDERATIONS

CO<sub>2</sub> Hop Extract is packaged in tins with FDA approved, food-grade coating for use with food products. This meets the requirements of Food Additive Regulation 21 CFR 175.300. The tins are generally packaged based on grams of alpha acid (GMA) and are labeled on the bottom with 16-9000 food grade ink for easy product identification.

### CALCULATING DOSAGE BASED ON GMA

Yakima Chief Hops provides digital extract calculators at [tools.yakimachief.com/calculators](https://tools.yakimachief.com/calculators). For guidance on creating a new CO<sub>2</sub> hop extract recipe, consult the Dosage Calculator. To convert a traditional recipe into CO<sub>2</sub> hop extract for the bittering addition, utilize the Conversion Calculator. The following calculation can be utilized to convert pounds of hop pellets to GMA:

$$(\text{pounds of hop pellets}) \times 454\text{g} \times (\% \text{ alpha acid}) = \text{GMA}$$



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## CURRENT AVAILABILITY & PRICING

Yakima Chief Hops' CO<sub>2</sub> Hop Extract is variety specific. Analysis values depend on variety and can vary by crop year.

CURRENT AVAILABILITY	CO <sub>2</sub> HOP EXTRACT		TYPICAL ANALYSIS		
	ALPHA BY UV SPECTROSCOPY & OIL BY DISTILLATION				
	24 X 150 GMA	12 X 300 GMA	ALPHA*	BETA*	OIL* (mL/g)
AMARILLO® BRAND VGXP01	⊙	⊙	38 - 45%	25 - 33%	5 - 8
CASCADE	⊙	⊙	35 - 42%	35 - 40%	4 - 7
CHINOOK	⊙	⊙	55 - 62%	15 - 20%	6 - 9
CTZ	⊙	⊙	55 - 65%	15 - 20%	7 - 10
EKUANOT® BRAND HBC 366	⊙	⊙	55 - 61%	14 - 17%	8 - 12
PAHTO™ BRAND HBC 682	⊙	⊙	68 - 75%	14 - 16%	4 - 6
MILLENNIUM	⊙	⊙	53 - 57%	15 - 19%	6 - 9
MOSAIC® BRAND HBC 369	⊙	⊙	58 - 66%	15 - 17%	6 - 9
NUGGET	⊙	⊙	50 - 55%	15 - 18%	6 - 9
SIMCOE® BRAND YCR 14	⊙	⊙	60 - 65%	16 - 19%	5 - 8
WARRIOR® BRAND YCR 5	⊙	⊙	60 - 68%	16 - 18%	4 - 7

*\* Actual alpha and oil percentages will vary based on lot and crop year.  
Yakima Chief Hops offers CO<sub>2</sub> Hop Extract in full case quantities. Individual tin sales are available to customers of Country Malt Group.*

## FUTURE CONTRACTING

Future contracting is available for the listed varieties. Discounts may apply depending on contract length, volume, and varietal availability. Contact your regional sales manager for information and pricing.

## CUSTOM ORDERS

Yakima Chief Hops offers custom extraction with a minimum 6,000 pounds of hop pellets. Contact your regional sales manager for information and pricing.