



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

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

YCH 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 brew house yields through reduced kettle trub
- Reduced hot-side brew kettle foam formation during the boil
- Bitterness, flavor, and aroma via late boil additions
- Variety specific hop character and related notes in beer
- 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. CO<sub>2</sub> hop extract is not isomerized until it is boiled during the brewing process.

Determining the best method to dose CO<sub>2</sub> hop extract depends on brewing system specifics. YCH 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. Partial tins should be covered and stored in a refrigerator or freezer.

Actual utilization of alpha acids is dependent on equipment and process specifics. Early kettle additions (60-90 minutes of extract boil time) are used to achieve international bitterness units (IBUs) in wort/beer and will typically lead to the isomerization of 35% of the alpha acids in 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 utilized to confirm bitterness. To learn about beer analysis services visit [alphaanalyticstesting.com](http://alphaanalyticstesting.com).

## 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

YCH HOPS provides digital extract calculators at [www.ychhops.com/brewing-tools](http://www.ychhops.com/brewing-tools). 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:

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



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

## CURRENT AVAILABILITY

YCH HOPS' CO<sub>2</sub> hop extract is variety specific. Analysis values depend on variety and can vary by crop year.

**AVAILABILITY & PRICE ARE SUBJECT TO CHANGE.**  
CONTACT YOUR REGIONAL SALES MANAGER FOR MORE INFORMATION.

HOP VARIETY	SPOT AVAILABILITY PRICE PER TIN / CASE		LAB ANALYSIS BY UV SPECTROMETER		
	150 GMA (24 CANS)	300 GMA (12 CANS)	ALPHA ACIDS	BETA ACIDS	TOTAL OIL
Cascade	☑	☑	35 - 42%	35 - 40%	4 - 7%
Chinook	☑	☑	55 - 62%	15 - 20%	6 - 9%
Citra® HBC 394	☑	☑	58 - 66%	14 - 17%	7 - 11%
CTZ	☑	☑	55 - 65%	15 - 20%	7 - 10%
Ekuanot™ HBC 366	☑	☑	55 - 61%	14 - 17%	8 - 12%
HBC 682 CV	☑	☑	68 - 75%	14 - 16%	4 - 6%
Mosaic® HBC 369	☑	☑	58 - 66%	15 - 17%	6 - 9%
Simcoe® YCR 14	☑	☑	60 - 65%	16 - 19%	5 - 8%
Warrior® YCR 5	☑	☑	60 - 68%	16 - 18%	4 - 7%

*YCH 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

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