

Hops

NAME	ACID RANGE (ALPHA %)	FLAVOR PERCEPTION	COMMERCIAL EXAMPLE
Amarillo Hops	7-11%	Amarillo hops have a flowery, citrus-like aroma with medium bittering value that is gaining acceptance as a substitute for Cascade due to its hardy nature.	Ales, IPAs
Cascade Hops	4.5-7%	Very successful and well-established American aroma hop developed by Oregon State University's breeding program in 1956 from Fuggle and Serebrianker (a Russian variety), but not released for cultivation until 1972. It has a flowery and spicy, citrus-like quality with a slight grapefruit characteristic. One of the "Three Cs" along with Centennial and Columbus. Substitutes: Centennial and Columbus (but they have a higher Alpha Acid content).	Pale Ales, IPAs, Porters
Centennial Hops	9.5-11.5%	American aroma-type variety bred in 1974 and released in September 1990 by S.T. Kenny and C.E. Zimmermann, the breeders of this variety. Similar to Cascade and Chinook. The genetic composition is 3/4 Brewers Gold, 3/32 Fuggle, 1/6 East kent Golding, 1/32 Bavarian and 1/16 Unknown. One of the "Three Cs" along with Cascade and Columbus. Centennial is often referred to as a 'Super Cascade', since it has a strong citrus aroma.	Ales, IPAs
Chinook Hops	12-14%	This green bine cultivar (W-421-38) was released in May 1985 in Washington State and Idaho from a cross between a Petham Golding and a USDA-selected male (63012M). Slightly spicy and very piney. Its alpha acid content ranges from 12 to 14%.	Most beer styles, from Pale Ales to Lagers
Citra Hops	12-14%	Citra Brand is a registered trademark used with HBC 394 cv special aroma hop variety developed by the Hop Breeding Company (a joint venture between John I. Haas, Inc. and Select Botanicals Group, LLC). It was released in 2007. Citra Brand hops have fairly high alpha acids and total oil contents with a low percentage of cohumulone content. Citra Brand hops imparts interesting citrus and tropical fruit characters to beer.	
Crystal Hops	3.5-6.2%	An American triploid variety developed in 1993 from Hallertau, Cascade, Brewer's Gold and Early Green. It is spicier than Hallertau (cinnamon, black pepper, and nutmeg). Substitutes: any Hallertau variety, Mount Hood, Liberty.	German-style Pilsner, Lager, Kölsch, ESB, Belgian Ales
CTZ Hops	14-17%	Columbus hops rank high on the bittering scale, yet are also valued for its oil content which creates a hop that is an interesting dichotomy of sharp and herbal.	American IPAs & Pale Ales, Stout, Lager
Fuggle Hops	4-5.5%	This variety was noticed growing "wild" in the hop garden of George Stace Moore's house at Horsmonden in Kent, England in 1861. In 1875 it was introduced by Richard Fuggle who lived in the village of Brencley (not far from Horsmonden) and hence it was called Fuggle. The aroma is earthier and less sweet than Kent Goldings.	English-style beers (particularly Stout), American Ales
Golding Hops	4-6%	Flowery tones that have produced some of England's best bitters.	All English-style beers (Ales, ESB, Bitter), Belgian-style Ales
Hop Hash			
Lambic Hops	1-2%	Popular American development in 1976 of the English Fuggle. Named for the Willamette Valley, an important hop-growing area. It has a character similar to Fuggle, but is more fruity and has some floral notes.	Lambics
Magnum Hops	12%	A high alpha acid bittering hop with mild flavor and low aromatic characteristics. Commercial examples include. 12-15% alpha acid.	Ales, Lagers, IPAs
Mosaic Hops		Mosaic™ Brand HBC 369 cv is a daughter of the YCR 14 cv hop variety and a Nugget derived male. It has high alpha acids and tropical, blueberry, tangerine, floral, and earthy aromas.	Brown Ales, IPAs, Pale Ales
Mt. Hood Hops	4-7%	Mt. Hood rhizome is a Hallertauer triploid hybrid with good yield, good vigor. Mt. Hood is a half-sister to Ultra, Liberty & Crystal.	Lagers, Pilsners, Bocks, Wheat, Alt, and Helles beers
Northern Brewer Hop		Grown in Europe and America as a dual-purpose hop, but mainly used for bittering in combination with other hops. Woody/earthy/fruity aroma and flavor.	IPA, Pale Ale, Hefeweizen
Nugget Hops	11.5-14%	Floral, resinous aroma and flavor. Primarily a bittering hop.	Ales, Stouts
Perle Hops	7-9.5%	German dual-purpose hop. Often used in combination with other hops. Spicy and slightly floral/fruity.	Hefeweizens, Strong Ales, Lagers, Pilsners, Kolsch
Saaz Hops	4.5%	An aromatic blend of earth and spice with a low bittering value.	European Noble Ales
Simcoe Hops	12-15%	In 2000, Select Botanicals Group released the Simcoe Brand YCR 14 hop variety which is an aroma variety known for its versatility and unique characteristics. Simcoe Brand hops boasts several different aromas including passion fruit, pine, earthy, and citrus, and also has strong bittering qualities with an alpha acid level of 12%-14%. It is used extensively in the craft and home brewing industry.	Pale Ales, IPAs, Red Ales, Strong Ales
Triumph Hops			Continental Lagers
Willamette Hops	4-6%	The king of aroma hops in the U.S. with its modest bittering value and sublime blend of flowers, fruit, earth and spice notes.	Ales, Lagers
Ahtanum	(alpha acid: 5.7-6.3% / beta acid: 5.0-6.5%)	Ahtanum is an aroma-type cultivar bred by Yakima Chief Ranches. Its name is derived from the area near Yakima where the first hop farm was established in 1869 by Charles Carpenter.	
Amarillo	(alpha acid: 8-11% / beta acid: 6-7%)	Amarillo is an aroma-type cultivar of recent origin, discovered and introduced by Virgil Gamache Farms Inc.	
Cascade	(alpha acid: 4.5-6.0% / beta acid: 5.0-7.0%)	Cascade is an aroma-type cultivar which originated as the first commercial hop from the USDA-ARS breeding program. It was bred in 1956 but not released for cultivation until 1972. It reached its peak in 1975 when it produced 13.3% of the total American crop. It was obtained by crossing an English Fuggle with a male plant, which originated from the Russian variety Serebrianka with a Fuggle male plant. A very popular U.S. variety, with a moderate bitterness level and fragrant, flowery aroma. Cascade is often used in highly hopped West Coast ales that have a citrus-floral hop character.	
Centennial	(alpha acid: 9.5-11.5% / beta acid: 4.0-5.0%)	Centennial is an aroma-type cultivar, bred in 1974 and released in 1990. The genetic composition is 3/4 Brewers Gold, 3/32 Fuggle, 1/16 East Kent Golding, 1/32 Bavarian and 1/16 unknown. A relatively new hop on the market, this hop used to be called CFJ90. Described by some as a "Super Cascade" and we tend to agree, but it's not nearly as "citrusy". Some even use it for aroma as well as bittering. Bitterness is quite clean and can have floral notes depending on the boil time.	
Chinook	(alpha acid: 12.0-14.0% / beta acid: 3.0-4.0%)	Chinook is a bittering variety with aroma characteristics released in May, 1985. It was bred by crossing a Petham Golding with the USDA 63012 male. A high alpha acid hop with a wonderful herbal, almost smoky character when used as an aromatic during the last few minutes of the boil when dry hopping. Excellent for hopping American-style Pale Ales, especially those brewed to higher gravities.	
Columbus	(average alpha acid: 12%)	This high alpha variety has a pungent aroma and clean bittering. Excellent for bitter ales and American IPA styles, and can be dramatic when dry hopped.	
Cluster	(alpha acid: 5.5-8.5% / beta acid: 4.5-5.5%)	Cluster originated from mass selection of the Cluster hop, which is an old American cultivar. It is suggested that they arose from hybridization of varieties, imported by Dutch and English settlers and indigenous male hops.	

Crystal	(alpha acid: 4.0-6.0% / beta acid: 5.0-6.7%)	Crystal is a triploid aroma-type cultivar, released for commercial production in 1993. It originates from a seedling selection (No. 8309-37) made at Corvallis in 1983 between the colchicine - induced tetraploid 'Hallertau mf' (USDA 21397) and the diploid male downy mildew resistant aroma hop, USDA 21381M. Crystal is a half-sister of Mt. Hood and Liberty.	
Fuggle	(alpha acid: 3.8-5.5% / beta acid: 1.5-2.0%)	<p>Fuggle is an aroma-type cultivar selected in England as a chance seedling in 1861. It reached its peak in the U.K. in 1949 when 78% of the English crops were grown as Fuggle. It is also marketed as Styrian (Savinja) Golding in the Slovenian Republic. In the USA it is grown in Oregon and Washington State.</p> <p>Superb in English-style ales, and lends a unique character not imparted by the more subtle American-grown Fuggles.</p>	
Galena		<p>Galena is a bittering-type cultivar which was bred in 1968 from Brewers Gold and an open pollination, i.e. an unknown male plant. It was released for cultivation in 1978.</p> <p>Galena is the most "mellow" hop of the high-alpha varieties, and has replaced Cluster as the most widely grown US hop. The bitterness is clean and well balanced. Great general purpose bittering hop. (alpha acid: 12.5-14.0% / beta acid: 7.5-9.0%)</p>	
Golding		<p>Golding is a group of aroma-type cultivars originating in England. Over the decades, the group has been changed and widened. Mostly they have been named after villages in East Kent, (Petham, Rothersham, Canterbury, Eastwell) or hop farmers, who grew them (Amos's Early Bird, Cobbs).</p> <p>English Goldings grown in East Kent, are a premium hop, called East Kent Golding and should not be confused with U.K. Goldings, which are grown in other parts such as Kent, Worcestershire, Hampshire and Herefordshire. The cultivar grown in the USA (Oregon and Washington State) is a Canterbury Golding.</p> <p>The premier English aroma hop. Superb in English-style ales, and lend a unique character to fine lagers as well. This hop has a unique spicy aroma and refined flavor. (alpha acid: 4.0-6.0% / beta acid: 2.0-3.0%)</p>	
Hallertau mf		<p>Hallertau mf (Mittelfrueh) is an aroma-type cultivar which originated in Germany as a land - race hop. The original Hallertau mf in Germany has been replaced with other Hallertau types with similar quality characteristics. The name indicates that it is a middle to early ripening cultivar.</p> <p>If you are looking to brew an authentic European-style lager, this is the best choice. Mild spicy flavor and aroma. (alpha acid: 3.5-5.5% / beta acid: 3.5-5.5%)</p>	
Horizon		Horizon is a high alpha-aroma cultivar, a diploid seedling result of a cross made in 1970 between the USDA 65009 female plant (with Brewers Gold and Early Green lineage) and the male plant 64035M. It was released as a commercial variety in 1998. (alpha acid: 10.2-16.5% / beta acid: 6.5-8.5%)	
Liberty		Liberty is a triploid aroma-type cultivar, the result in 1983 of the colchicine induced tetrapcoid female cultivar Hallertau mf and a downy mildew resistant male, USDA 64035M. It is a half-sister to Ultra, Mt. Hood and Crystal. (alpha acid: 3.5-4.5% / beta acid: 3.0-3.5%)	
Magnum			
Mount Hood		Magnum is a bittering/aroma type cultivar, bred in 1980 at Huell, the German Hop Research Institute, from the American variety Galena and the German male 75/5/3. (alpha acid: 10.0-12.6% / beta acid: 5.0-7.0%)	
Northern Brewer		<p>Mt. Hood is a triploid aroma-type cultivar, the 1983 result of a cross between the colchicine - induced tetraploid female Hallertau mf (USDA 21397) and the USDA 19058M, male plant. It is a half-sister to Ultra, Liberty and Crystal.</p> <p>An aromatic variety derived from Hallertau with a refined, spicy aroma and clean bittering. A good choice for lagers. (alpha acid: 4.0-6.0% / beta acid: 5.0-7.5%)</p>	
Nugget		<p>Northern Brewer is a bittering-type cultivar, bred in 1934 in England from a Canterbury Golding female plant and the male plant OB21. Northern Brewer has been used in the breeding process of many newer varieties. This cultivar is grown in England, Belgium, Germany and the USA.</p> <p>A strong fragrant hop with a rich rough-hewn flavor and aroma, ideal for steam-style beers and ales. Northern Brewer has a unique mint-like evergreen flavor. (alpha acid: 8.0-10.0%/ beta acid: 3.0-5.0%)</p>	
Perle		<p>Nugget is a bittering-type cultivar, bred in 1970 from the USDA 65009 female plant and USDA 63015M. The lineage of Nugget is 5/8 Brewers Gold, 1/8 Early Green, 1/16 Canterbury Golding, 1/32 Bavarian and 5/32 unknown.</p> <p>Nugget is a great bittering hop with a heavy herbal aroma. (alpha acid: 12.5-14.5% / beta acid: 4.0-6.0%)</p>	
Saaz		<p>Perle is an aroma-type cultivar, bred in 1978 in Germany from Northern Brewer. It is grown in Germany, Belgium and the U. S. A.</p> <p>Perle is a newer variety, originally from Germany but now grown quite successfully in the US. Perle is a medium alpha hop with a very clean, almost minty bitterness and pleasant aroma. (alpha acid: 7.0-9.5% / beta acid: 4.0-5.0%)</p>	
Satus		Saaz is the traditional noble hop for true pilsner beer. Saaz is famous for its spicy, clean bitterness. (average alpha acid: 3.0%)	
Simcoe		Satus is a bittering-type cultivar of recent origin. (alpha acid: 12.5-14.0% / beta acid: 8.5-9.0%)	
Spalt Select		Simcoe is a bittering/aroma type cultivar bred by Yakima Chief Ranches. (alpha acid: 12.0-14.0% / beta acid: 4.0-5.0%)	
Sterling		Spalt Select is an aroma type cultivar, bred in Germany and released for cultivation in the late 1980's. It is grown in Germany in the Hallertau and Spalt areas and in the U.S.A. in Washington State. (alpha acid: 3.5-5.5% / beta acid: 3.0-4.5%)	
Tettnang		Sterling is an aroma cultivar, a diploid seedling made in 1990 with a 21522 female plant and a 21361 male plant. Its parentage is 1/2 Saazer, 1/4 Cascade, 1/8 64035M (unknown German aroma X open pollination),1/16 Brewers Gold, 1/32 Early Green, and 1/32 unknown. (alpha acid: 4.5-5.0% / beta acid: 5.0-6.0%)	
Tomahawk		<p>Tettnang is an aroma-type cultivar which originated in the Tettnang hop growing area of Germany as a land-race hop. It is grown in the U.S.A. in Oregon and Washington State.</p> <p>The original noble hop from the Tettnang region of Germany, ideal for your finest lagers and wheat beers. This limited availability hop has a fine, pure aroma, that is not present in United States grown Tettnanger. (alpha acid: 4.0-5.0% / beta acid: 3.5-4.5%)</p>	
Ultra		Tomahawk is a bittering hop of recent origin, bred by Charles Zimmermann. It is the first commercially grown 'Super Alpha' variety. In 1998 it contributed to 11% of the USA hop crop. (alpha acid: 14.0-18.0% / beta acid: 4.5-5.8%)	

US Fuggle		Ultra is a triploid aroma-type cultivar, originated in 1983 from a cross between the colchicine-induced tetraploid Hallertau mf (USDA 21397) and the diploid Saazer-derived male genotype (USDA 21237m). Ultra is the half-sister to Mt. Hood, Liberty and Crystal. Its genetic composition is 4/6 Hallertau mf, 1/6 Saazer, and 1/6 unknown. This cultivar was released for commercial production in March, 1995. (alpha acid: 4.5-5.0% / beta acid: 3.6-4.7%)	
Vanguard		A mild-flavored English-style hop grown in Oregon, with a fragrant wood-like aroma. Milder in character than English Fuggles. This hop imparts a smooth, well rounded hop character. (average alpha acid: 3.9%)	
Warrior		Vanguard is a diploid seedling made in 1982 between USDA 21285, which has Hallertau mf parentage and USDA 64037m. It was released for cultivation in 1997. (alpha acid: 5.0-6.0% / beta acid: 5.0-7.0%)	
Willamette		Warrior is a bittering hop of a recent origin, bred by Yakima Chief Ranches. (alpha acid: 15.0-17.0% / beta acid: 4.5-5.5%)	
		Willamette is a triploid aroma-type hop, which originated in the mid 1970s and is a seedling of Fuggle. It is a very popular aroma hop, contributing in 1998 to 18% of the total USA hop crop. A variation on English Fuggle hops grown in Oregon and Washington. Willamette has a fragrant spicy woody aroma. An excellent American aromatic hops for ales and lagers. (alpha acid: 4.0-6.0% / beta acid: 3.5-4.5%)	