

Name	Alpha Acid %	Possible Substitutions	Flavor Description	Use For
Admiral (U.K.)	13.5%-16% Bittering	Target, Northdown, Challenger	Known for its bittering potential. Said to be citrusy, orange flavored. A good compliment hop to Targets. Good dual purpose hop.	English style IPA and other ales
Ahtanum	4-6.3% Finishing	Amarillo, Cascade	Floral, citrus, sharp, and piney. Fruity flavors and a spicy aroma, a little woody, earthy. This is grown in small quantities right now.	Ale
Amarillo	8-9% Bittering, Flavour	Cascade, Centennial	A flowery, citrus-like aroma (more orange than grapefruit) with medium bittering value that is gaining acceptance as a substitute for Cascade due to its hardy nature.	Good for bittering and flavor, but an acceptable aroma hop as well. Pale Ales, IPAs, Porters
Apollo	15-19% Bittering	Columbus, Magnum	A Super High alpha variety with Citrus notes, emphasis on orange, resin, spicy.	Any beer with a big hop profile, definitely all american!
Aquila	6-7.5% Finishing	Cluster, Galena	Recently developed as an aroma hop originating in the U.S.	American Ales
Aramis (FR)	8.1% Dual Purpose	Willamette, Challenger, and Ahtanum	Sweet spicy notes with hints of citrus and herbs.	Pilsner, Lagers, Wheat, Belgian Style Saison
Aurora Slovenian	8.0% Aroma	Norther Brewer	Intense and pleasant, lime, floral and piney scent.	US Ale, Belgian Ale, and English Ale
Azacca	14-16%		Intense and tropical. Sustained impressions of citrus and very ripe mango, with notes of orchard fruit (pears, apples) and pine needles throughout.	Excellent aromatic qualities make Azacca™ a go-to hop for late and dry hop additions in a variety of styles. Shows well as a single hop in a simple grist.



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Banner	9-11% Dual Purpose	Aquila, Cluster, Galena	Similar to Aquila and Cluster with good yield.	Bittering with good flavor. Light and dark American lagers.
Belma	10.8% Bittering	Columbus	pleasant fruity, floral, and earthy spicy aroma	IPA, Pale Ale, Stout, Barley Wine, and Lager
Bitter Gold	15.44-18.84% Bittering	Galena, Nugget	Specific aroma descriptors include pear, watermelon and fresh cut grass.	All Styles
Boadicea (U.K.)	8-9%		spicy	
Bobek Slovenian	5.1% Aroma	Fuggle, Willamette	piney, lemony, floral scent.	English Ale, Belgian Ale, US Ale, and Pilsners Possible
Bor	7-11%		Floral, Spicy, Herbal & Earthy	
Bramling Cross (U.K.)	5-8% All purpose	Bullion, Northern Brewer & Galena	Variety Bramling crossed with a male seedling from a Manitoba female. Blackcurrant, lemony aroma.	Can be good for spiced ales
Bravo	14-17% Bittering	Apollo, Zeus	New Super High Alpha. The higher Co-Ho levels mean a not completely smooth bittering, but not as harsh as Chinook. (it's bittering properties are similar to Simcoe). Flavor and aroma are described as an earthy spice and herb, fruity and floral, so, I guess that is is different things to different people. It's a decendant of Zeus and Nugget.	American IPA, American Pale Ale, American Stout
Brewers Gold	6-9% All Purpose	Bullion, Northern Brewer and Galena, Bramling Cross.	Sibling of and similar to Bullion only maturing earlier and more disease resistant. English/wild Canadian cross. Pungent English character.	Mainly bittering. Stouts and Dark ales.



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Brooklyn	17.5-19.5%		Specific aroma descriptors include distinctive tropical, grapefruit and passion fruit characters; intense resinous pine.	
Bullion	6.5-9% Bittering	Brewers Gold, Northern Brewer and Galena ,Bramling Cross, Mt Ranier	Intense,black currant aroma, spicy and pungent. One of the earliest high alpha hops in the world. Raised in 1919 in England from a wild Manitoban female crossed with an English male hop.	Mainly bittering. Stouts and Dark ales.
Calypso	10-12% Dual Purpose		Pleasant, fruity aroma, with hints of pear and apple	Ales, Stouts and Barley Wines
Cascade (U.S.)	4.5-7% All Purpose	Amarillo, Centennial, Ahtanum	Flowery, citrus & spice with grapefruit the noticeable fragrance quite often. This medium aroma balances the low bittering value. Derived from a cross between fuggles and the Russian hop Serebrianker. Very popular hop among craft brewers.	Good for flavor and aroma, but an acceptable bittering hop. Pale Ales, IPAs, Porters
Caliente	14-16% Dual Purpose		The aroma has a little lemon zest and a hint of pine, but it is dominated by a very distinct stone fruit aroma. I got a really nice juicy aroma of fresh peach/nectarine/plum from this hop.	
Cashmere	7.7-9.1% Dual Purpose		Mild herbal aroma with strong melon, lemon, lime and slightly spicy notes.	
Celeia (SL)	3.0-6.0% Aroma	Saaz, Bobek, Savinjski Golding	Pleasant and hoppy, similar to traditional European varieties	



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Centennial	8-11.5% Bittering, Aroma	Cascade, Amarillo	Flowers & citrus most evident. A medium aroma with mid to high bittering value makes it a dual purpose choice. Cross between Brewer's Gold and a selected USDA male	romatic but acceptable for bittering. Medium to Dark American Ales, IPAs.
Challenger (UK)	8.2% Dual Purpose	Cluster, US Perle, GR Perle, or Northern Brewer.	fine aroma, and spicy, fresh, cedar, green tea scent.	English Ale, Porter, Stout, ESD, Bitter, Barley Wine, and Brown Ale.
Chelan	12-14.5%		Specific aroma descriptors include distinctive tropical, grapefruit and passion fruit characters; intense resinous pine.	
Chinook	10-14% Bittering	Columbus, Northern Brewer, Nugget, Cluster, Galena	Mild to medium-heavy, spicy, distinct piney aroma like a pine forest washed with exotic spice and infused with grapefruit. This alluring aroma and a high bittering value has gained this hop full respect from craft & major brewers. Cross between Petham Golding and USDA select male	Strong bittering ability. Most beer styles from Pale Ales to Lagers
Citra (U.S.)	11-13% All Purpose	Simcoe ,and other fruity citrusy "C" hops	Very fruity Citrus, peach, apricot, passion fruit, grapefruit, lime, melon, gooseberry, lychee fruit, pineapple, mango, papaya and other tropical fruit flavors and aromas. A very new high alpha Hallertauer Mittelfrüh, Tettnanger, EKG hybrid with distinctive citrus aroma.	Pale ales, IPA



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Cluster	5.5-8.5% All Purpose	Galena, Chinook, Eroica	Floral aroma, Excellent general purpose hop with medium and well-balanced bittering potential and no undesirable aroma properties. Good for Dark beers.	Bittering with good flavor. Light and dark American lagers
Columbia	12-16% Bittering	Centennial, chinook, eroica	A Centennial substitute. Very pungent, aromatic, and clean tasting	mbers, ales, pale ales, porters and stouts.
Columbus AKA Zeus/Tomahawk	11-16% All Purpose	Centennial, Chinook, Galena, Nugget	Earthy, spicy, pungent, with some citrus overtones. Not overwhelmingly citrus like Cascade. High on the bittering scale yet also valued for its oil content creates a hop that is an interesting dichotomy of sharp and herbal, suprisingly pleasant aroma.	Bittering mainly, good flavor. American IPAs & Pale Ales, Stout, Lager
Comet	8-11% Bittering	Galena	A rare U.S. hop. Used primarily for their bittering character. Wild American aroma that is objectionable to some brewers, Comet today is no longer grown commercially.	Most ales and lagers
Crystal	3-5% Finishing	Liberty, Mt. Hood, Hallertau, Ultra	Mild and pleasant, a delicate blend of spices and flowers. Low bittering value adds to the charm. Known as a triploid, three hops contributing characteristics: Cascade, Brewer's Gold and Early Green	German-style Pilsner, Lager, Kölsch, ESB, Belgian Ales
Dana (SL)	12.3% Dual Purpose		lemony, pine, and floral aroma	



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Delta	6.5% Dual Purpose		Aroma Type Hop Mild and pleasant, slightly spicy with a hint of citrus. Still experimental	American Pale ales, American IPA, experiment with new styles
Dr. Rudi (NZ)	10-12% Dual Purpose		Fresh citrus peel, pine and lemongrass flavors	Ale
East Kent Golding	4.5-6.5%		Specific aroma descriptors include smooth and delicate with floral, lavender, spice, honey, earth, lemon and thyme overtones.	
Ella (Australia)	14.0-16.0% Aroma		Spicy, hoppy and floral with hints of anise	Lager
Eroica	11-13% All Purpose	Chinook, Cluster, Gale na, Nugget.	Aroma is quite strong, but not unpleasant. Better aroma than many high alpha acid hops. Suitable for general bittering. Bred by open pollination of Brewer's Gold	bittering and good aroma for high alpha hops (use sparingly). Pale ales, dark ales and Stouts
El Dorado (U.S.)	14-16% Dual Purpose	Citra, Nelson Sauvin, Rakau	Elicits responses of fruity notes, specifically tropical fruit flavors. Other fruit notes offered have been pear, watermelon and stone fruit	American Pale Ale, IPA
Equinox	14.4 - 15.6% Aroma		A pronounced aroma profile with citrus, tropical fruit, floral and herbal characteristics. Specific descriptors include lemon, lime, papaya, apple, and green pepper	
Eureka	18.0-19.0%		Black currant, dark fruit, strong herbal notes, pine tree, mint, pungent, light grapefruit	
Falconer's Flight	9.5-12% Aroma		rind, "Simcoe like", "Summit like", citrus, tangerine.	
Falconer's Flight 7C's	9-10.5% Aroma		Strong fruit and citrus characteristics, with layers of spicy and earthy overtones	Pale Ale



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First Gold	6-9% All Purpose	any Golding variety	Pleasant citrus/apricot nose that is outstanding in ESB's, IPA's, or fruit beers. Dwarf hop with fine English Golding character with Higher alpha.	English style ales, porters, fruit beers
Fuggle	4.0-5.5% Finishing	Willamette, East Kent Goldings, Styrian Goldings	Classic English aroma hop with moderate bittering value. Mild and pleasant, spicy, soft, woody, with some fruit tones. Also known over-seas as Styrian Golding.	Finishing, Dry hopping. English ales, especially Pale ales, Porters, Stouts
Galaxy (Australia)	11-13% All Purpose	Simcoe, Citra, Amarillo any IPA type Hop.	Australian high alpha dual purpose hop with a big unique aroma, described as a combination of citrus and passionfruit.	Good for bittering with tropical fruit flavors and very fragrant. Pale Ales, IPA's, Barley Wines
Galena	10-14%	Chinook, Nugget, Pride of Ringwood, Cluster	Medium aroma but pleasant hoppiness. Bred from Brewer's Gold by open pollination. Excellent high alpha acid hop with balanced bittering profiles paired with acceptable hop aroma.	Very bitter, but blends well with finishing hops. American ales, stouts and lagers. Suitable for all beer styles.
Glacier (U.S.)	5-9% Finishing	Styrian Golding, U.S. Fuggle, U.S. Tettnang, Willamette, Palisade	Pleasant aroma of citrus mixed with sweet fruity of pear or apricot. Aroma seems to be the strong suit of this hop	American ale or ESB
Golding	4-5% Finishing	Kent Goldings, Fuggle, Willamette	Refined Gentle, Fragrant and pleasant with flowery tones, that has produced some of England's best bitters.	Classic English ales, kettle hopping, dry hopping, spicy flavor. All English-style beers (Ales, ESB, Bitter), Belgian-style Ales
Grapefruit EXP	18.0-20.00%		Apollo, Wye Target	



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Green Bullet	9-11% Bittering		A high alpha hop with fruity and resinous flavors and floral aromas, from New Zealand. Considered a bittering variety typically for Lager, Green Bullet also carries a solid Styrian characteristic of subtle spiciness which finds it at home in a freshly drawn pint of Bitter or an Irish-style Dry Stout.	Lagers, some ales and stouts
Hallertau (Tradition)	3.5-6% Finishing	Mt Hood, Liberty, Crystal	Named for its origins in the Hallertauer region of Germany, this is a noble aroma hop with ever-so-subtle flower and spice fragrances defining its "über alles" superiority	Good all around bittering and finishing. Stock ales, Altbiers, Belgian ales, and Continental style lagers. Pilsner, Bock, Lager, Wheat
Hallertau Aroma	7.5-9% Aroma		Wood, Citrus	
Hallertau Blanc (German)	9.0-12.0% Aroma		Floral and fruity with passion fruit, grapefruit, pineapple, grape and lemongrass overtones	American-style Ale
Hallertau Hersbrucker	3-5% Finishing	Mt. Hood	Drier, spicier than Hallertauer. Most important aroma variety in Germany.	German ales and lagers.
Hallertau Magnum	11-16% Bittering		Fruity, Apple, Pepper	
Hallertauer Merkur	10-14% Bittering		citrusy, sugar-like, mint, pineapple	
Hallertau Mittelfruh	3-5% Aroma	any Hallertau	Typical characteristics of a hallertau mild and pleasant aroma	Good all around bittering and finishing. Stock ales, Altbiers, Belgian ales, and Continental style lagers. Pilsner, Bock, Lager, Wheat



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Hallertauer Nugget	9-13% Bittering		Fruity, Sugar-like, Mint, Pineapple	
Hallertauer Taurus	12-17% Bittering		Pepper, Line, Currant, Spicy	
HBC291	10-12%		Specific aroma descriptors include "super noble," floral, earthy, citrus and sweet fruit.	
HBC 438	14-18%		Aroma characteristics of stone fruit, tropical fruit, orange, mint and herbal	American Pale Ale/Cream Ale, IPA
Helga (Australia)	4.9-7.3% Aroma	Hallertau	Very mild and pleasant with delicate floral and herbal tones	Ale
Herald	11-13% Bittering		New high-alpha acid dwarf hop. Orange, Grapefruit.	
Herkules	12.0-17.0% Bittering		Spicy, floral and hop notes with hints of pine, black pepper and melon	German-style Ales
Horizon	11-14% Bittering	Magnum	A cross between Brewers gold and German(probably Hallertau) aroma hops bred in Oregon.	American ales and lagers.
Huller	12-14% Bittering		A universal hop for both bittering and aroma.	Bitters, German ales and lagers
Hull Melon (German)	6.9-7.5% Aroma		Distinct fruit characteristics including honeydew melon and strawberry flavors	
Jarrylo	14.5-17.5% Dual Purpose		Pear, orange, spicy, fruity	
Junga (Poland)	9.9% Bittering	Target, Nugget, or Galena	blackcurrant, spicy, grapefruity aroma.	Lagers and Ales
Kazbek	5-8% Aroma		Specific aroma descriptors include spicy and lemon	
Kohatu	6-7% Dual		Specific aroma descriptors include fresh tropical fruit characters and an excellent finish and bitterness.	



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Kent Golding (UK)	3-5% Finishing	Goldings (British Columbia), Fuggle, Willamette.	Refined Gentle, Fragrant and pleasant with flowery tones. Traditional old English hop. Referred to as East Kent Goldings if grown in East Kent, Kent Goldings if grown in Mid-Kent, and Goldings if grown elsewhere.	Classic English ales, kettle hopping, dry hopping, spicy flavor. All English-style beers (Ales, ESB, Bitter), Belgian-style Ales
Legacy (U.S.)	10.2% Dual Purpose	Cluster, Galena, or Northern Brewer.	Clean grapefruit, floral, black currant notes and a spicy aroma.	Ales, Lagers, and Stouts
Lemondrop	5.5-7%		Lemon, Orange, grapefruit, citrus, blackberry, super cascade, menthol, pine, licorice, peppermint, green tea	
Liberty	3-5% Finishing	Hallertau, Mt. Hood, Crystal	American cousin to Hallertau with very similar flower and spice characteristics, mild and pleasant, quite fine. Best used as a finishing hop in German-style lagers. -	American and German ales, Lager, Pilsner, Bock, Kölsch
Lubelski	5.1% Aroma	Saaz, Sterling	herbal, earthy and floral notes.	Lager, Golden Ales, Strong Lagers
Lublin (Poland)	3-4.5% Finishing	Czech Saaz, Tettnang	Mild and typical of noble aroma types. Another source of the classical noble-aroma type hop with long and strong traditions. Widely believed to be a clone of Saaz.	
Magnum (German & US)	10-16% Bittering	Northdown, Northern Brewer, Galena	A German thoroughbred with limited Pacific Northwest plantings. Prized for its high bittering value, the aromatic nature is one of spice and citrus, but is minimal compared to its big bittering.	Pale Ales, IPAs, German-style Lager



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Mandarina Bavaria (German)	7.0-10.0% Aroma		Distinct tangerine and citrus flavors	
Marynka (Poland)	7.9% Dual Purpose	Perle, Hersbrucker, Strisselspalt, Northern Brewer, Magnum, Brewers Gold	earthy and herbal tones	Pilsners. Lagers, Pale Ales, and Porters
Medusa	4.80%		Aromas include guava, citrus, and melon fruits.	
Merkur (German)	12.0-15.0% Bittering	Magnum, Taurus, Tradition	Strong earthy, floral and citrus impressions	Lager
Millenium	14-16% Bittering	Nugget, Columbus	Very similar to Nugget hops in aroma and flavor. Some descriptors included floral, resinous, and a bit spicy/herbal.	American Style Ales
Mosaic	11.5-13.5% Aroma		A complex array of tropical fruit, citrus, berry, herbal, earthy and pine characteristics	IPA
Motueka (NZ)	6.5-7.5% All Purpose		An excellent hop in many applications from first kettle additions through to late. This hop offers a unique aroma and flavour making it suitable for producing bigger more traditional style Lagers, especially Bohemian Pilsener. Excellent when employed in multiple additions from a single hop bill and sits well on the palate to balance speciality malt sweetness. An excellent variety for Belgian Ales and gives a real edge to Cask Bitter.	



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Mt. Hood	5-8% Finishing	Hallertau, Liberty, Crystal	Hybrid of Hallertau with similar mild flower/spice aroma characteristics with a hint more of the forest. "Clean" commonly describes it, with similarities to the German Hallertau and Hersbrucker varieties	American and German ales and lagers
Mt. Rainier	5.0-8.1% Dual Purpose	Brewers Gold, Fuggle, Hallertau	Excellent floral and noble aromas, with citrus and licorice overtones	Lager
Nelson Sauvin (NZ)	12-14% Bittering		Described to have a white wine fruitiness of "crushed gooseberries". A hop that requires judicious application in the brew house, this truly unique dual-purpose variety can be used to produce big punchy Ales as well as subtle yet bitter Lagers. The fruitiness may be a little overpowering for the uninitiated, however those with a penchant for bold hop character will find several applications for this true brewer's hop.	ales and lagers
Newport	13-17% Bittering	Galena, Nugget	Mild aroma. Fairly pungent, resinous flavor. An Oregon original derived from Brewers gold, Mittelfruh, Late Grape, Belgium 31, and Fuggle. Newport hops were bred as a potential replacement to Galena based on their resistance to mildew. Widely used by the Rogue Brewery.	virtually any style



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Northern Brewer (German & US)	7-10%	Chinook, Nugget, Galena, Perle	A true dual-purpose hop containing moderate amounts of alpha acids combined with an acceptable aroma profile. Neutral, clean aroma, woody with evergreen and mint overtones and slightly higher-than-average bittering value.	Good for bittering with strong flavors and very fragrant. Steam beers, English-style Ales, ESB, Bitter, Porter, and German lagers.
NorthDown (UK)	6-10% Dual Purpose	Northern Brewer, Target	Mellow English higher alpha-acid hop. Similar to Northern Brewer, but with a better flavor and aroma than domestic NB; A clean bittering hop.	General purpose bittering, flavor and aroma for heavier ales. Porters.
Nugget	11-16% All Purpose	Chinook, Columbus, Galena, U.K. Target, Cluster	Strong heavy and herbal, spicy aroma and high bittering value (along with desirable growing traits) has brought this hop variety to the forefront of the industry. Selected from a cross between Brewer's Gold and a high alpha male.	Extremely bitter. All Ales, Stouts
Olympic	11-13% Bittering	Chinook, Galena	Mild to medium, citrusy aroma, spicy.	mainly bittering. Stouts and Dark ales.
Omega	9-11% Bittering		pleasant European aroma characteristics, resistant to verticillium wilt	General bittering lagers, ales, stouts
Opal (German)	5-8%	Styrian Golding	German dual-purpose hop	German ales and lagers
Orion	6-8% Finishing	any noble hop	Classic Noble style, Dual Use hop from Germany	
Outeniqua	12-13.5%			
Pacifica (NZ)	5-6% Finishing		Orange marmalade aptly describes the citrus aroma notes achieved through late addition. Bittering quality is such that early kettle additions net a soft yet solid finish even in highly bittered beers.	Aroma Hop in multiple styles



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Pacific Gem (NZ)	13-15% Bittering		A pleasing fruity aroma of blackberries with a woody flavor are the essence of this variety used mainly as a bittering agent in organic beers.	Organic Pale Ales, IPAs
Pacific Hallertau	5-6% Aroma			
Pacific Jade (NZ)	12-14% All Purpose		The aroma of this hop is described as "bold" as it delivers a herbal infusion of fresh citrus and crushed black pepper. The citrus aroma and flavour notes work well to temper malt sweetness in "fullish" Ales especially when used moderately as a finishing hop.	Dry Lagers
Palisade	5.5-9.5% Finishing	Glacier	Aroma described as floral, Subtle Apricot, Grassy or "Pretty". Non-aggressive, smooth hop flavor with a fruity, non-citrusy aroma more characteristic of english style Pale ales.	Baetter for Aroma and flavor in english style ales despite the high alpha.
Pekko	13.16%		Clean, Pleasant, floral, citrus, mint, herbal, mellow, pineapple, thyme, saaz-like cucumber, sage, touch of lemon	
Perle (German & US)	6-8.5% All Purpose	Northern Brewer, Cluster, Galena	A palate-pleaser with its moderate,pleasant, minty clean bittering qualities and refreshing, spicy "green hop" aroma. Derived from English Notheren Brewer.	A wide range from Pale Ale to Lager to Stout
Phoenix (UK)	10-12% Bittering	Challenger	Attractive English aroma (sources say similar to challenger) with high alpha-acid. Use as an aroma hop were reportedly dissapointing.	English Ales including porters, stouts, ESBs, and bitters



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Pilgrim (U.K.)	9-13% Dual Purpose	U.K. Challenger, U.K. Target	Distinct fruit and spice characteristics with pleasant lemon, grapefruit, pear and berry flavors	Ale
Pilot	8.5-11.5% Dual		Specific aroma descriptors include lemon, spice and marmalade flavor.	
Pioneer	8-10% Dual purpose	Yeoman, Herald, Omega	New dwarf variety with clean bitterness and mild English aroma. Unusual pleasant lemon/grapefruit citrus aroma distinctively hoppy.	English Ales, ESBs, and bitters.
Polaris (German)	18.0-23.0% Aroma		Intense floral and pleasant mint tones	
Premiant (Czech)	7.0-11.0% Aroma		Pleasant, mild aroma	
Pride of Ringwood (Australia)	7-10% All Purpose	Cluster, Galena, Centennial	Quite pronounced aroma but not unpleasant, citrus-like. At the time of release in 1965 it was the highest alpha hop in the world. closely associated with such famous beers as Foster's Lager	Predominantly bittering but with interesting aromatic qualities. British ales, Australian- style ales and lagers
Progress	5-8% Dual Purpose	Goldings, Fuggles	Similar to Fuggles but a little sweeter. aka UK Progress and Wye Progress. Bred from Whitbred Goldings Variety but with an assertive fruity aroma. Robust, Fruity, Lime. M. Jackson called them "junipery".	Widely used for real cask ales. English and Scottish ales
Rakau (NZ)	10-11% Dual Purpose	Amarillo, Summit	Fresh orchard fruits, specifically apricot with some resinous pine needle characteristics are noted	Ale



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Riwaka (NZ)	4.5-6.5% Finishing	Czech Saaz, possible American "C" hops	powerful grapefruit "citrus" characters are literally breathtaking. A punchy addition to the new-world styles of Pale Ale and regional Pilseners. A cult hero that is established in the New Zealand craft beer culture.	Pale ales or any hop dominant ale
Saaz (Czech)	3-5% Finishing		The Old World steadfast standby made famous by Pilsner Urquell possesses the aromatic blend of earth and spice notable in European nobles. Low bittering value.	Finishing, very flavorful. Bohemian-style beers, Continental lagers, Wheats, Pilsener lagers.
Saazer	2.8-3.5% Aroma		Grass, resinous, lemon	
Santiam	5-7.9% Finishing	German Spalt, German Spalt Select, German Tettnang, Citra	Resembles a Noble hop aroma. Herbal. Floral. This is a mixture of Tettnanger, Mittelfruh, Cascades, and who knows what else. Aroma is a suggestion of Tettnanger. Another product of Corvallis Oregon (Go Beavers!).	American Lagers, German Lagers and Ales, and Wheat beers.
Saphir	3-4.5% Finishing	Hallertau Mittelfruh	Refined, sweet, mild clean citrus, hint of tangerine. It was bred with a Hallertau parent and probably a long list of other hops to make it more commercially viable.	Plisners, German lagers, Belgian whites
Satus	12.5-14% Bittering	Galena, Nugget, Chinook, Pride of Ringwood	Medium but pleasant hoppiness, citrusy.	Ale, Porter, ESB
Savinjski Golding	2.8-5.5% aroma	Fuggle, Bobek	Very mild, noble hop flavor	Belgian-style Ales
Select (German)	3.0-6.5% Aroma	Saaz, Tettnang, Hersbrucker, Spalt	Floral and fruit characteristics	Lager
Serebrianka	2.3% Aroma		light perfume, mellow, elegant, subtle, gentle, almost tobacco like smell.	



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Simcoe	12-14% Bittering	Amarillo, Cascade, Centennial	Aromas of passionfruit, apricot, Intense pine and woody aroma adds to the fresh, youthful vigor of this complex hop. Dual purpose but generally considered a bittering hop.	American Ales, IPAs, Double IPAs
Sladek (Czech)	9-10% Finishing	Saaz	Hybrid aroma variety of Saaz type with excellent impact on hoppy taste and aroma of beer. New dual purpose Czech hop.	Lagers
Smaragd (German)	4.0-6.0% Aroma		Predominantly fruity with strong floral and hop tones	Ale
Sorachi Ace (Japan)	13-16% Bittering		A Japanese winner by all counts with its powerful lemon aroma, high bittering value and flavorful personality.	American Ales, lagers, Pale Ales, Wheat
Southern Brewer	9-10.5% Bittering			
Southern Cross (NZ)	12% Bittering		The aroma is characterised by a heady mix of lemon peel and pine needles layered beneath the clean spiciness. Primarily a bittering hop but reported to have a nice mellow aroma as a late addition hop.	Lagers
Southern Promise	9.5-11.5% Dual Purpose		Grapefruit, ginger, apricot	
Southern Star	12-14% Bittering		Grapefruitm Pear, Rose, Orange, Gooseberries	
Sovereign (U.K.)	5-6% Aroma	U.K. Fuggle	fruity, intense, and pleasant grassy floral and earthy scent.	English Ale, American Ale, and Lambic.
Spalt	3-6% Finishing	Saaz, Tettnang, Ultra	Traditional German noble hop. A Saaz alternative, Aromatic and flavorful.	German lagers
Spalter	2.5-5.5% Aroma		spicy, fruity, floral, pine, vanilla, Tea	
Spalter Select	3-6.5% Aroma	Hallertau	Spicy, Floral, grassy	



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Sterling	6-9% Aroma & Bittering	Saaz, Mt. Hood	Herbs and spices dominate, flowers and citrus around the fringes. Moderate bittering values with a mix of Saaz and Mt. Hood properties.	Ale, Pilsner, Lager
Sticklebract (NZ)	9-11% Bittering		Noted for its piney, citrusy aroma. May give a unique New Zealand twist to English beer styles. Coarse, high-alpha acid variety.	Ales
Strisselspalt	4.1% Aroma	Mt. Hood, Hersbrucker, or Crystal.	pleasant and hoppy, medium intensity.	Pilsner, Lager, and Wheat Beer.
Styrian Goldings (Celeia)	4-6% Finishing	Fuggle, Willamette	Delicate, slightly spicy, soft and floral. A world renowned aroma hop with widespread usage in both ale and lager brewing. An ecotype of Fuggle grown in Slovenia.	Bittering, finishing, dry hopping. english style ales, Vienna/Oktobert lagers, Belgian ales, Pilseners.
Summit (Dwarf)	16-18% Bittering	Simcoe	Quite new on the scene (2003) but the consensus is very positive with its "peak" bittering value coupled with robust citrus notes of orange, tangerine and grapefruit. Receiving accolades as an ideal hop for the ultimate Pale Ale.	Pale Ale, IPA Drifter Pale Ale, Widmer Brothers
Summer (Australia)	5.6-6.4% Dual Purpose		Balanced citrus, melon and light apricot tones	Ale
Sun	12-16% Bittering	Magnum	A very high alpha acid bittering hop from Washington state, a sister to Zeus most likely derived from Northern Brewer. Reportedly has an intense but pleasant aroma.	



Name	Alpha Acid %	Possible Substitutions	Flavor Description	Use For
Super Alpha (NZ)	10-12% All Purpose		Slight fresh grassiness beneath a mix of aromas such as pine needles and lemongrass. A very versatile hop in the brew house where it can be used to deliver a very crisp bitter edge on the back pallet as well as excellent aroma qualities. Like most New Zealand varieties the exceptional oil profile sets it apart as a hop with many applications.	
Super Galena	13-16% Bittering	Galena, Nugget, Cluster, Chinook.	uper Galena is a super high alpha variety developed by the Hopsteiner breeding program and released in 2006. It has relatively high contents of both alpha and beta acids, making it a good bittering hop with pleasant aroma. Super Galena is comparable to Galena in its aroma and bitterness profile, but offers a substantially higher yield and complete resistance to all current hop powdery mildew strains found in the U.S.	Very bitter, but blends well with finishing hops. American ales, stouts and lagers. Suitable for all beer styles.
Super Pride (Australia)	14%	Pride of Ringwood	A high alpha variety bred from Pride of Ringwood.	Lager
Sussex (UK)	4.3-5.8% Aroma		Delicate (similar to Fuggie)	
Sybilla (Poland)	6.4% Dual Purpose	Perle, Northern Brewer, Magnum, Nugget.	lemon, pine, floral aroma	Ales and Lagers
Sylva (Australia)	5.6-7.3% Aroma	Saaz	Complex and subtle, floral and herbal characteristics	Lager
Tahoma	7.2-8.2% Aroma		Predominate citrus and lemon notes with cedar, pine, floral, pepper and subtle green melon notes	
Talisman	7-9%		Derived from Cluster.	



Name	Alpha Acid %	Possible Substitutions	Flavor Description	Use For
Target (U.K.)	9.5-12.5% All Purpose	None really quite like it, maybe East Kent Goldings or Northdown.	Widely used for high alpha acid content combined with an acceptable aroma. Pleasant English hop aroma, quite intense.	Robust bittering. British ales and lagers.
Taurus	12-15% Bittering	Magnum, Citra, Tradition	Ultra high-alpha acid variety of Hallertau, giving medium bitterness. It has a distinctive hoppy tang with a delicate aroma.	
Tettnang	4-5% Finishing	Saaz, Spalter, Ultra	Fine, very spicy, mild, floral, very aromatic. Recently established in the U.S., traditional German variety, true noble aroma variety.	Finishing. Wheats and lagers.
Tomahawk AKA Columbus ,Zeus	15-17% Bittering	Columbus	Earthy, spicy, pungent, with some citrus overtones. Not overwhelmingly citrus like Cascade. High on the bittering scale yet also valued for its oil content creates a hop that is an interesting dichotomy of sharp and herbal.	Bittering American style ales, stouts
Topaz (Australia)	13.7-17.7% Dual Purpose		Resinous, grassy tones with light tropical flavors	
Tradition	10-13% Bittering	Magnum, Hersbrucker, Taurus	High-alpha acid Hallertau variety with German characteristics grown to replace Hersbrucker.	Lagers, Pilsner, Bock, Wheat, Weizen
TriplePearl	10.25-11.2% Aroma	Perle	Pleasant and balanced with notes of melon, orange citrus, resin, spice and pepper.	Pale Ale
Triskel (FR)	8.0-9.0% Aroma	Ahtanum, Centennial, Chinnok, Simcoe	Strong floral, fruit and citrus characteristics	Belgian-style Ales



Name	Alpha Acid %	Possible Substitutions	Flavor Description	Use For
Ultra	3% Finishing	Hallertau, Any Noble hop, Crystal, Liberty, Mt. Hood	Newer domestic aroma variety with Saaz characteristics. Very fine, mild, spicy with floral notes. Bred as a substitute for Hallertauer Mittelfrüh.	finishing hop for Pilsner and German style lagers
Vanguard	4-6% Finishing		Slightly flowery, mild. Similar to Hallertau Mittlefruh and saaz in aroma. A gentle hop for subtle bitterness, aroma, and flavor.	Use in not-so-overly-malty beers. Light lagers, Pilsners, Kolsch, Wheat, and Munich Helles.
	2.5-3.4% Aroma		Specific aroma descriptors include fresh peaches and apricot characteristics; freshly squeezed limes with top notes of mixed citrus.	
Waimea (NZ)	16-19% Dual Purpose		Intense tangelo and citrus fruit with subtle pine characteristics	IPA
Wakatu (NZ)	6.5-8.5% Dual Purpose		Restrained floral notes and freshly zested lime	Lager
Warrior	15-17% Bittering	Nugget	Grapefruity and lemony, some piney notes. Also saw pineapple as a descriptor. Its high bittering value and very mild aroma offers new dimensions to IPA & Double IPA brewers.	bittering big beers like Dogfish Head IPA.
WGV (UK)	7.8% Aroma	Goldings	spicy, herbal, and earthy aroma.	Pale Ale, Light Bitter, and Wheat Beer.
Whitbread Golding	5-8% Aroma	Golding, Progress, Bramling Cross	Fruit, Melon, Herbal	
Willamette	3.5-6% Finishing	Styrian Golding, U.S. Fuggle, U.S. Tettnang	The king of aroma hops in the U.S. with its modest bittering value and the joyous harmony of flowers, fruit, earth and spice. A quality aroma hop with a smooth soft flavor.	Finishing, dry hopping. American and British ales and lagers



Name	Alpha Acid %	Possible Substitutions	Flavor Description	Use For
Yakima Gold	8.8-10.5% Dual Purpose		Mild and pleasant. Lemon zest & grapefruit	
Yeoman	9-14% Bittering	Target	A popular bittering hop in the U.K.Similar to Targets.Not too available in the U.S.	British ales and lagers
Zenith	9-10%		Has a good aroma.Not too available.If found can be used in	British ales and lagers.A.A
Zeus AKA Columbus ,Tomahawk	13-17% Bittering	Columbus	Earthy, spicy, pungent, with some citrus overtones. Not overwhelmingly citrus like Cascade. High on the bittering scale yet also valued for its oil content creates a hop that is an interesting dichotomy of sharp and herbal.	Bittering American style ales, stouts
Zythos	10-12.5%		Distinct tropical (pineapple) and citrus tones, with slight pine characteristics	American-style Ale

