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Comparing and Selecting Hops

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So how do I choose the right hops for my beer? With such a wide range of flavor and aroma characteristics, this chart can serve as a helpful guide to the multitude of hop varieties available to homebrewers. Whether you are trying to find a substitute hop for a certain style or are looking to experiment with a hop you've never brewed with before, the following list can help to get you started.

Name	Alpha Acid %	Possible Substitution	Flavor Description
Admiral	11.0-15.0%	U.K. Challenger, U.K. Northdown, U.K. Target	Known for its bittering potential. Fruity, tea and citrusy aroma.
Ahtanum®	3.5-12.0%	Amarillo, Cascade	Floral, citrus, sharp, and piney.
Amarillo®	8.0-11.0%	Cascade, Centennial	Citrusy, flowery.
Apollo™	15.0-19.0%	Zeus	A high alpha acid varietal known for its disease resistance.
Aramis	6.5-8.5%		Sweet, spicy notes, with hints of citrus and herbs aroma.
Ariana	10.0-13.0%		Fruity, with intense berry character of black currant and gooseberry. Citrus high notes (particularly grapefruit) with slight resinous and herbal tones.
Aurora	7.5-8.8%	Northern Brewer	Floral, citrusy, herbal, aniseed and tea aroma.
Australian Galaxy™	13.5-15.0%		Intense and potent. Musky tropical fruit (passionfruit, apricot, Key lime) with dank citrus and earthy blackcurrant.
Australian Vic Secret™	14.0-17.0%		Clean and bright tropical character (passionfruit, pineapple) with supporting notes of fresh herbs and pine needles. Similar to Galaxy but lighter and less dominating.
Azacca®	14.0-16.0%		A dual-use, high-alpha hop. Aroma and flavor characteristics of apricot, ripe mango, orchard fruit, orange, grapefruit, pine, and pineapple.

Belma	12.1-12.1%		Clean bitterness, citrus, tropical fruit flavors.
Bitter Gold	12.0-15.0%		Pine, Grapefruit and floral aroma.
Boadicea	8.0-10.0%		Resinous and spicy with a bright orchard fruit and floral backdrop. It can project a new-mown grass or clover character in the hop back or dry hop.
Bobeck	3.5-7.0%	U.K. Fuggle	
Bor	7.0-10.0%		Hoppy and spicy aroma.
Bouclier	7.9-8.5%		Herbal, grass and spice aroma.
Bramling Cross	5.0-7.0%	U.K. Kent Golding, U.K. Progress, Whitbread Golding Variety	Grapefruit, vanilla and gooseberry aroma.
Bravo™	14.0-17.0%	Apollo, Zeus	Orange, fruity, vanilla and floral aroma.
Brewer's Gold	5.7-7.8%	Bullion	Bittering hop with neutral aroma character.
Brewer's Gold	6.0-7.0%	Bullion, Galena, Northdown, Northern Brewer	Black currant, fruity, spicy.
Brooklyn	17.5-19.5%		Grapefruit, passionfruit, spice and sweet hay aroma.
Bullion	6.5-9.0%	Columbus, Northern Brewer	A rich hop primarily used for bittering. Intense blackcurrant aroma.
Buzz Bullets®	8.0-10.0%		Citrus and floral notes.
Callista	2.0-5.0%		Intense fruit flavors of stone fruits (apricot and peach), red berries, and passion fruit.
Calypso™	12.0-14.0%		Exhibits pleasant fruity notes-apple, pear, fruit punch.
Cascade	3.0-5.0%	Any noble hops	Different than US grown Cascades with more of a spicy flavor and lemony aroma.
Cascade	6.0-8.0%	Ahtanum, Cascade, Centennial	Similar to US Cascade, has floral, citrus grapefruit character.
Cascade (US)	4.5-7.0%	Amarillo, Centennial, possibly Columbus	Pleasant, flowery, spicy, and citrusy. Can have a grapefruit flavor.
Cashmere	7.7-9.1%		

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	This dual purpose variety is an offspring of Cascade and Northern Brewer. Cashmere has aroma and flavor characteristics of melon, lemon, lime, herbs, and citrus fruits.		
Celeia	3.0-6.0%	Styrian Golding	Moderate and pleasant zesty bitterness with matching floral aroma, making its use widespread in both ale and lager brewing. Stores very well.
Centennial	9.5-11.5%	Cascade, possibly Columbus	Medium with floral and citrus tones.
Challenger	6.5-8.5%	Northern Brewer, U.S. or German Perle	Mild to moderate, quite spicy.
Chelan	12.0-14.5%		Mild aroma.
Chinook	11.0-14.0%	Columbus, Northern Brewer, Nugget, U.K. Target	Mild to medium-heavy, spicy, piney, and grapefruity.
Citra®	11.0-13.0%		Intense citrusy flavor.
Cluster	5.5-8.5%	Galena	Medium and quite spicy.
Columbia	5.0-6.0%		Noble aroma.
Columbus/Tomahawk	15.0-17.0%	Chinook, Northern Brewer, Nugget, U.K. Target	Pleasant, with pungent aroma.
Comet	8.0-10.5%		Grapefruit, lemon, orange, and grassy notes.
Crystal	3.5-5.5%	French Strisslespalt, Hallertauer, Hersbrucker, Liberty, Mt. Hood	Mild and pleasant, spicy and flowery.
CTZ	14.5-16.5%		Citrus collides with pungent spice for an intense late hop contribution.
Czech Kazbek	5.0-8.0%		It can show a dominant bright citrus note of lemon or grapefruit, but never obscures the quintessential mixture of floral and earthy spice of its Saaz parent.
Czech Saaz	2.0-5.0%		Soft, pleasantly spicy and herbal with vivid woodsy, earthy, and dark floral character. Distinctively “hoppy” in pale worts.

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			Rootstock grown elsewhere doesn't have the same range or balance as Czech flowers.
Dana	7.2-12.6%		Floral and citrus aroma.
Delta™	5.5-7%		Spicy, earthy, ginger and citrusy aroma.
Denali™	13.0-16.0%		Pineapple, pine and citrus aroma.
Dr.Rudi	10.0-12.0%		Moderate. Sweetly grassy with overtones of lemongrass, pine sap, and dried fruit.
East Kent Goldings	4.0-6.5%		Flowery with citrus peel or citrus candy overtones and a herbaceous, spring meadow-like undercurrent. Gentle and refined, dry hopping can bring forth its citrus aspects alongside a fresh grassy note.
Ekuanot®	14.5-15.5%		Strong impressions of citrus, fruit, and herbs.
El Dorado®	14.0-16.0%		Dual purpose hop with fruity, tropical flavors.
Ella™	13.3-16.3%		Dual purpose hop that displays floral and subtle spice notes. When used as a late addition or dry hop, it imparts grapefruit and topical flavors.
Empire	8.5-10.5%		A good dual purpose hop with very unique aromas. Reminiscent of Cluster, but with overtones of plum, fig cucumber, and mild wood.
Endeavour	7.5-10.6%		Blackcurrant, loganberry, spice, grapefruit and lime aroma.
Enigma™	13.5-16.5%		Pinot gris, raspberry, redcurrant and tropical fruit aroma.
Epic	3.0-5.0%		Fruity and berry aroma.
Eroica	9.0-12.0%	Chinook, Galena, Nugget	Strong but pleasant aroma.
Eureka!™	17.0-19.0%	Simcoe	An offspring of Apollo and German Merkur, Eureka! has aromas and characteristics of strong herbal notes, pine, mint, grapefruit rind, tangerine, and other citrus. Great

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			for brewers looking for varieties to use in late addition, whirlpool, or “hop stand” hop additions.
Experimental BRU-1	13.0-15.0%		It is big and bold with a fruit-forward character.
Experimental HBC 682	9.0-11.0%		It has a pleasant and potent bitterness that is clean and neutral when used for the bittering addition.
First Gold	6.0-10.0%	maybe Crystal, U.K. Kent Golding	A little like Golding family; spicy.
Fuggle	4.0-5.5%	Styrian Golding, U.S. Fuggle, Willamette	Mild, pleasant, hoppy, and robust.
Fuggle	3.0-5.6%	Styrian Golding, U.K. Fuggle, U.S. Tettnanger, Willamette	Mild and pleasant, earthy and fruity.
Galaxy™	11.0-16.0%		When used as a late addition or dry hopped, it contributes a pungent flavor of passionfruit and citrus.
Galena	11.5-13.5%	Chinook, Nugget, Pride of Ringwood	Medium but pleasant hoppiness, citrusy.
Glacier	3.3-9.7%	Styrian Golding, U.S. Fuggle, U.S. Tettnanger, Willamette	Dual purpose hop with a citrus earthy aroma.
Golding(UK)	4.0-7.0%	U.K. Golding, U.K. Progress, Whitbread Golding Variety	Mild, extremely pleasant, and gently hoppy.
Green Bullet™	11.0-14.0%	Crystal, Hallertauer Tradition, Liberty, Mt. Hood, Ultra	Moderately intense with a distinct floral, resinous character reminiscent of Styrian Goldings, layered with hints of musky Southern Hemisphere fruit.
Hallertau Aroma	6.5-8.5%	Perle	A dual purpose hop which has been used to replace Perle
Hallertau Blanc	9.0-11.0%		Winey, passion fruit, grapefruit, gooseberry, pineapple character.
Hallertau Magnum	11.0-16.0%		Has a fine, if understated, character, showing restrained and mild fresh flower and fruit aromatics when used late in the boil.
Hallertau Merkur	10.0-14.0%		Citrusy, sugar-like, mint and pineapple aroma.

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Hallertau Mittelfrüh	3.0-5.5%	German Tradition, Liberty, Ultra	Complex, but mild and approachable. A mixture of sweet, earthy,and herbal with vivid impressions of new-mown hay, sweet spices, and dried flowers.
Hallertau Taurus	12.0-17.0%		Pepper, lime, currant and spicy aroma.

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Hallertau Tradition	4.0-7.0%	Crystal, Liberty	Known for its aromatic properties. A replacement for Hallertauer Mittelfrüh.
Hallertauer	3.5-5.5%	Hallertauer Tradition, Liberty, Ultra	Very mild, pleasant, and slightly flowery, some spicy.
Hallertauer Gold	6.0-6.5%	Crystal, Mt. Hood	Known for its aromatic properties similar to Hallertauer.
Helga™	5.4-7.3%		The ideal Australian hop to provide your beer with the refined hop characters typical of the flavour and aroma contributions from European hops.
Herald	9.0-13.0%		New dual-purpose hop
Herkules	13.0-17.0%		Pepper, spicy, resinous and orange aroma.
Hersbrucker	1.5-4.0%	French Strisslespalt, Mt. Hood	Floral and herbal – similar to Mittelfrüh, but with an added element of fruit and more dominant spice component.
Horizon	10.0-14.0%	Magnum	Spicy, floral. Low co-humulone results in clean tasting beer.
Huell Melon	7.0-8.0%		Honeydew melon and strawberry aroma.
Idaho 7™	13.0-15.0%		A dual-purpose variety with flavors and aromas of tropical fruit, orange, apricot, black tea, pine, and herbs.
Idaho Gem™	11.0-14.0%		Forward impressions of fruit candy supported by citric grapefruit.
Jarrylo®	15.0-17.0%		A high-alpha hop, the flavor imparts a mild sweetness and a tea-like spice, with flavors and aromas of banana, pear, spice, and herbal notes.
Junga	12.0-12.0%		

	Bittering hop with a blackcurrant, spicy, grapefruity aroma.		
Kent Golding	4.0-5.5%	U.K. Progress, U.S. Golding, Whitbread Golding Variety	Gentle, fragrant, and pleasant.
Kohatu	3.0-3.0%		Aroma hop with high essential oils and intense floral characters of pine needles and tropical fruit.
Kohatu®	6.0-7.0%		Pleasant tropical fruit, showing bright lime and pineapple with traces of pine.
Legacy	N/A		Clean grapefruit, floral, black currant notes and a spicy aroma.
Lemondrop™	5.0-7.0%	Amarillo	This aroma hop originated from a cross between Cascade and USDA 19058 male. It features (of course) lemony, floral, earthy, herbal, grassy, citrus, pepper, and pine notes.
Liberty	3.0-5.0%	Hallertauer, Hallertauer Tradition, Mt. Hood	Mild and clean aroma, slightly spicy character.
Loral®	10.0-14.0%		Dark fruit, floral, lemon-citrus and pepper aroma.
Lotus™	13.0-17.0%		Orange, vanilla, berry and tropical fruit aroma.
Lubelski (Lublin)	3.0-4.5%	Czech Saaz, U.S. Saaz, U.S. Tettnanger	Mild and typical of noble aroma types, spicy, herbal.
Magnum	12.0-16.0%	Northdown, Northern Brewer	Known for bittering value and quality.
Magnum	10.0-14.0%	Northdown, Northern Brewer	High alpha variety
Mandarina Bavaria	7.0-10.0%	Cascade	Mandarin orangey flavor and aroma.
Marynka	9.0-12.0%		Aniseed, grapefruit and lemon aroma.
Melba™	7.0-10.0%		Passionfruit, Grapefruit, citrus and summery characteristics.
Meridian	6.3-6.3%		One brewer has used it in a single hop lager beer, which he described as “clean and “crisp with a “refreshing sweet lemon character.

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Merkur	12.0-15.0%	Magnum	high-alpha, bittering hop
Millennium	15.5-18.5%	Nugget	Mild, herbal, similar to Nugget.
Mosaic®	11.5-13.5%		Complex and pronounced. Strong impressions of citrus oil, balsam pine, blueberry, peach and tropical fruit. Notable mango character, but also shades of lime and mandarin orange.
Mosaic™	11.5-13.5%	Nugget, Simcoe	Both fruity and containing grassy, floral, earthy notes.
Motueka™	6.5-7.5%	Czech Saaz, U.S. Saaz	Aroma hop that is fruity, tropical and citrusy.
Mount Hood	4.0-7.0%		Moderately intense and sweet with suggestions of herbal notes, flowers and green fruit. Noble-like, it can be pungent with a more pronounced herbal note in fresh brews.
Moutere™	17.5-19.5%		Intensely tropical and fruity with dominant grapefruit and passionfruit notes, and undertones of spry hay, earthy baking spice, and resinous pine.
Mt. Hood	3.0-8.0%	Crystal, French Strisslespalt, Hersbrucker	Mild, pleasant, and clean, somewhat pungent and resiny.
Mt. Rainier	5.0-8.1%	Hallertauer	only available in 2012
Mt.Rainier	5.0-9.4%		Grass, Cedar, Lemon and Tea aroma.
Nelson Sauvin™	12.0-13.0%		Distinctive white wine “fruitiness,” gooseberry. Considered by some as “extreme,” this hop is often used in specialty craft and seasonal beers.
Newport	13.0-17.0%	Galena, Nugget	Fairly pungent.
Northdown	6.0-10.0%		Fruity with some spiciness.
Northern Brewer	7.0-10.0%	Chinook, U.S. Northern Brewer	Medium-strong with some wild tones.
Northern Brewer (German)	6.0-10.0%	Chinook, Nugget	Medium-strong with some wild tones.
Northwest Golding	4.0-5.0%		Known for aromatic properties.
Nugget	11.5-14.0%		

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Chinook, Columbus, Galena, U.K. Target	Quite heavy and herbal.		
Olympic	11.0-13.0%	Chinook	Mild to medium, citrusy aroma, spicy.
Opal	5.0-8.0%	Styrian Golding	German dual-purpose hop. Herbal, pepper, grass and aniseed aroma.
Orbit	N/A		Orbit is different each year as it uses a proprietary blend of hops specially selected out of the New Zealand "Hops with a Difference" breeding program.
Orion	6.0-8.5%		Spicy aroma.
Pacific Gem™	13.0-15.0%	Galena	Bittering hop with delicate blackberry and floral oak. Pleasant aroma and high bitterness level.
Pacific Jade™	12.0-14.0%		A "soft" bittering hop with spicy and citrus aroma qualities.
Pacifica™	5.0-6.0%	Hallertau family	An aroma hop with some citrus and floral character
Pahto™	17.0-20.0%		Herbal, earthy, and floral.
Palisade®	5.5-9.5%	Perhaps Cascade	Some "American" characteristics.
Pekko™	13.0-16.0%	Saaz	A clean and pleasant variety with floral mint, herbal, citrus, thyme, cucumber, lemon, and sage characteristics. Sometimes described as "Saaz like."
Perle	6.0-8.5%	Northern Brewer, U.S. Perle	Moderately intense, good and hoppy, fruity and a little spicy.
Perle (German)	4.0-8.0%	Chinook, Cluster, Galena, Northern Brewer	Known for its aromatic and bittering properties, pleasant and slightly spicy.
Phoenix	8.0-12.0%	U.K. Challenger, U.K. Kent Golding, U.K. Northdown	Dual purpose hop with aromas of pine, chocolate, molasses, and floral.
Pilgrim	9.0-13.0%	U.K. Challenger, U.K. Target	Dual purpose hop with citrusy, fruity, spicy, and lemon aromas.
Pilot	8.5-11.5%		Marmalade, lemon and spice aroma.
Pioneer	8.5-11.4%	U.K. Kent Golding	A mild, typical English aroma.
Polaris	18.0-24.0%		

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			Intense and lingering impressions of wintergreen, pleasant fruit notes, with a Hallertau-like sweetness and herbal note. Can exhibit a pungent, exotic spice flavor early in fermentation.
Premiant JOIN NOW → (/landing-page/byo-digital-membership/^	7.0-10.0%		A dual purpose variety with a balanced bitterness and a fruity, lemon and lavender aroma.
Pride of Ringwood	7.0-10.0%	Cluster, Galena	Quite pronounced, woody, earthy, herbal.
Progress	5.0-7.0%	Fuggle, U.K. Kent Golding	Moderately strong, good aroma. Spicy, currant and cassis aroma.
Rakau	9.0-11.0%		High alpha acids and oil content (particularly myrcene) with low cohumulone, making it ideal for the “hoppy not bitter” school of new world IPAs. Aromas and flavors of ripe fruit, grassiness, lemon, grapefruit juice, and hints of tropical flowers.
Rakau™	9.0-11.0%		Unique aromas described as, “the whole orchard.” Dominant stone fruits (especially apricot), tropical fruits, and candy.
Riwaka™	4.5-6.5%	Czech Saaz, possible American "C" hops	Citrusy, grapefruit aroma hop
Saaz	3.0-4.5%	U.S. Saaz	Very mild with pleasant hoppy notes, earthy, spicy, and herbal.
Saaz	3.0-5.0%	Czech Saaz	Mild and pleasant, earthy and spicy.
Saazer	2.8-3.5%		Grass, resinous and lemon aroma.
Sabro™	12.0-16.0%		Complex and distinct fruit and citrus. Unique tangerine, coconut, tropical and stone fruit underscored by hints of cedar and mint.
Santiam	5.0-7.0%	German Spalt, German Spalt Select, German Tettnanger	Noble characteristics. Spicy, herbal and floral aroma.
Saphir	2.0-4.5%	Any noble hops	Strongly but pleasantly spicy with sweet, fruity overtones (citrus, red berries). Mild and approachable in the “noble hop” sense.

Satus	12.5-14.0%	Galena	Known for its bittering and aromatic properties.
Savinjski Golding	4.6-6.0%		Noble aroma.
Select (German)	3.0-6.5%	Czech Saaz, German Spalt, Tettnanger	Spicy, flowery, and hoppy with prominent undertones of ripe berry and citrus. Spice and wood character reminiscent of Spalt and Saaz. Powerful impressions but with great finesse.
Simcoe®	2.1-27.3%		A bittering and aromatic hop. Berry, bubblegum, citrus, earth, passion fruit and pine aroma.
Sladek	4.5-8.5%	Czech Saaz, U.S. Saaz, U.S. Tettnanger	A dual-purpose Saaz hybrid. Fruity, passion fruit and citrus aroma.
Smaragd	4.0-6.0%		Fruity and floral aromas.
Sorachi Ace	11.0-12.5%		Bittering hop with lemony aroma
Southern Cross™	11.0-14.0%		Piney, resinous bittering hop
Sovereign	4.5-6.5%	U.K. Fuggle	Complex with moderate to intense fruit (peach, red currant, berry, cherry) not quite balanced by a delicate, tangy spice quality. Suggestions of green tea leaves. Pairs well with earthy or herbal varieties in a blend.
Spalt	4.0-5.5%	German Spalt Select, U.S. Saaz, U.S. Tettnanger	Mild and pleasant, slightly spicy.
Spalt Select	4.0-6.0%	German Spalt, U.S. Saaz, U.S. Tettnanger	Very fine Spalter-type aroma.
Spalt Select	3.0-5.0%	Saaz, Tettnanger	Medium intensity and pleasant hoppy qualities. Medium-strong aroma with wild American tones.
Sterling	6.0-9.0%	Saaz	Herbal, spicy, pleasant aroma, hint of floral and citrus.
Strisslespalt	3.0-5.0%	Crystal, Hersbrucker, Mt. Hood	Medium intensity, pleasant, hoppy.
Styrian Aurora	7.0-9.5%	Northern Brewer, Styrian Golding, U.S. Styrian Bobek	Intense, pleasant and hoppy. Very suitable for extraction and for combination with other varieties in the brewing process.
Styrian Bobek	3.5-7.0%	Styrian Golding, U.K. Fuggle, U.S. Fuggle, Willamette	Intense, pleasant hop aroma. Similar to Fuggle type.

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Styrian Celeia	3.0-6.0%	Saaz, Slovenia Bobeck, Styrian Golding	Pleasant, hoppy. A high-quality aroma variety with excellent bitterness and aroma qualities.
Styrian Golding	4.5-6.0%	U.K. Fuggle, U.S. Fuggle, Willamette	Delicate, slightly spicy.
Styrian Golding Celia	3.0-6.0%		Invitingly earthy and resinous as befits its Fuggle background, but with a more refined and restrained nature. When used in a hopback or as a dry hop, look for heightened floral and sweet spice.
Summer™	5.6-6.4%		A hop variety formerly known as Summer Saaz that has a gentle floral aroma, slightly earthy. Expect apricot and stone fruit notes when used in dry hopping.
Summit™	15.0-18.0%	Simcoe	Ultra high-alpha bittering hop
Sun	12.0-16.0%	Magnum	High-alpha hop with intense character
Super Alpha	10.0-12.0%		Earthy, piney bittering hop.
Super Galena™	13.0-16.0%		Grass and spice aroma.
Super Pride	12.5-16.3%	Pride of Ringwood	A high alpha variety bred from Pride of Ringwood.
Sussex	4.3-5.8%		Earthy, grass, mint, citrus and vanilla aroma.
Sylva™	5.6-7.3%		Floral, herbal and noble aroma.
Tahoma	7.0-8.5%		Lemon, citrus, orange and spicy aroma.
Target	8.0-13.0%	Fuggle, Willamette	Intense and pleasantly pungent with dried citrus and sagebrush overtones. Whirlpool or dry hop additions play up a spice character.
Taurus	12.0-17.0%	Magnum	high-alpha hop
Tettnang (German)	2.5-5.5%	Czech Saaz, German Spalt, Santiam	Shifting and evolving mix of floral, fruity, herbal and spicy – fresh herbs, grass, dried flowers, citrus peel, black tea.
Tettnang (US)	4.0-5.5%	German Spalt, German Spalt Select, Saaz, U.S. Tettnanger	Mild and pleasant, slightly spicy, herbal.
Tomahawk®	15.0-17.0%	Columbus	Primarily a bittering hop.

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Topaz™	13.7-17.7%		A dual purpose hop, Topaz adds a resinous, grassy flavors; however, with later additions and in higher gravity brews, light tropical fruit flavors (some say lychee) become more pronounced.
Tradition	5.0-7.0%	Hallertauer Mittelfrüh, Hersbrucker	Very fine and similar to Hallertauer Mittelfrüh.
Triplepearl	10.3-11.2%		Melon, orange, resin, spice and pepper aroma.
Triskel	2.5-5.0%		Fruity, citrusy and floral aroma.
Ultra	2.0-4.1%	Hallertauer Tradition, Liberty, Saaz	Very good to outstanding, some Saaz-like qualities. Aromatic properties similar to Hallertauer.
Vanguard	4.0-6.0%	Hallertauer Mittelfrüh, Saaz	Aroma similar to continental European types.
Vic Secret™	14.0-17.0%		An aroma hop with resinous, grassy and mild fruit flavors. Late and dry hop additions introduce appealing clean and distinct pineapple and pine characters. Lighter and less dominant than Galaxy.
Wai-iti™	2.5-3.5%	Saaz	Aroma hop with a startlingly citrus aroma made up of mandarin, lemon and lime zest
Waimea™	16.0-19.0%		High alpha but also lots of oils giving fresh tangelo and citrus fruit aroma with pine needles
Wakatu™	6.5-8.5%	Hallertauer Mittelfrüh, Nelson Sauvin	Wakatu features floral aromas, as well as notes of fresh lime zest, citrus oils, and has a Mittlefrüh-style sweetness.
Warrior®	14.5-16.5%	Nugget	A bittering and aromatic hop.
WGV (Whitbread Golding Variety)	5.0-7.5%	Glacier, Styrian Golding, U.K. Kent Golding, U.K. Progress, U.K. Target	Quite pleasant and hoppy, moderately intense, slightly spicy.
Willamette	4.0-6.0%	Styrian Golding, U.S. Fuggle, U.S. Tettnanger	Mild and pleasant, slightly spicy, fruity, floral, a little earthy.
X04190	3.0-5.0%		Light pear, green tea and floral aroma.

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X06277	13.0-15.0%		Pineapple, pine and citrus aroma.
X07270	15.0-19.0%		Spicy, resinous and tangerine aroma.
X09326	3.9-7.0%		Berry, tropical fruit, grapefruit and herbal aroma.
X10416	15.0-18.0%		Orange, citrus, pine, mint and tropical fruit aroma.
Yakima Cluster	6.0-8.5%		Used as a kettle hop for bittering.
Yakima Gold	7.0-8.0%		Grapefruit and lemon zest aroma.
Zappa™	6.0-8.0%		Spicy with strong notes of tropical fruit (mango, passion fruit), citrus, and pine. Additional descriptors include savory, mint, and Fruity Pebbles™.
Zeus	15.0-17.0%	Columbus	Aromatic and pleasant. Black pepper, onion and light citrus aroma.

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