

## Odor Compounds in Cascade and Willamette Hops

Compound Name	Odor Description	Average Concentration (mg/100 g hops)
Methyl-1 butyl acetate	Estery, fruity, banana, pear, sweet	0.05
Ethyl 2 methyl butyrate	Sweet, green, fruity, apple	0.17
Isobutyl isobutyrate	Strong, fresh, fruity, apple, banana	0.34
Nerol	Rose	0.35
Citronellal	Citrus, green, fruity, rose	0.36
p-cymene	Fresh citrus terpene woody spicy	0.76
B ionone	Violets	0.94
a-pinene	Pine	1.40
Geraniol	Sweet flowery	1.56
Hexanal	Green grass, hay	1.59
Epoxide	Spicy	2.51
Unknown7	???	2.97
Limonene	Citric, terpenic, orange	3.03
Unknown5	???	3.24
Citral	Sweet citrus	3.57
Eudesmol	Spicy	3.88
Unknown	???	4.13
Farnesol	Spicy	4.69
Unknown6	???	4.86
G. Acetate	Geranium, floral sweet citrus	6.94
Linalool	Floral/orange	7.61
Unknown4	???	8.53
isovaleric acid	Cheesy, rancid	9.08
Unknown3	???	10.01
Caryophyllene Oxide	Spicy	11.12
Methyl heptonoate	Sweet, fruity, peach, apricot, green, berry	11.13
Citronellol	Floral, rose, citrus, green	11.22
b-pinene	Sharp terpene like pine, coniferous pine	11.58
Unknown2	???	11.71
Epoxide2	Spicy	21.34
Farnesene	Green, woody, weedy, herbal, lifting, pine and gin	85.24
Caryophyllene	Woody (woody:cedarwood, sandalwood, curry)	112.97
A-terpineol/Humulene	Piney/woody	296.98
Myrcene	Green, balsamic and slightly metallic aroma	698.70