



Linalool Oxide

The floral, herbal notes of this ingredient can brighten fruit flavors, tea and more.

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Linalool oxide occurs in two distinctly different structural guises in nature. The most common structural form is based on a five member, furan-like ring structure (FEMA#3746, CAS# 1365-19-1). The less common form is based on a six member, pyran-like structure (FEMA# 4593, CAS# 14049-11-7). Both types of linalool oxide exist as *cis*- and *trans*- isomers. Despite the differences in structure, the aromas of the different forms of linalool oxide have a strong family resemblance. The furan-based linalool oxide has a floral character, somewhat reminiscent of lavender, but this is dominated by the profile of black tea. The pyran-based linalool oxide is more obviously floral, with less resemblance to tea. In flavors, use of the furan-based linalool oxide is dominant.

Comparisons with other flavor materials are difficult because its character is somewhat unique. Nevertheless, it is interesting to compare linalool oxide to linalool (FEMA# 2635, CAS# 78-70-6). The floral note of the two chemicals is somewhat similar, but linalool oxide is notably brighter and much more herbal, with a strong character of tea. In nature, the two chemicals are often found together and in many flavors a subtle combination of the two can be extraordinarily effective. In combinations, a good starting ratio is two parts of linalool to one part of linalool oxide, but the best ratio depends to some extent on the flavor profile.

The dose rates given here are the levels of linalool oxide to be used in flavors that are intended to be dosed at 0.05% in a ready-to-drink taster, beverage or bouillon.

Stone Fruit Flavors

Apricot: Linalool is widely used at high levels in apricot flavors but linalool oxide

is arguably even more effective. A level of 5,000 ppm gives a slightly caricatured effect, but it is very attractive.

Nectarine: Similar exaggerated levels also work well in nectarine flavors, although around 2,000 ppm is probably preferable for a more natural profile.

Peach: Peach flavors are a little more subtle and often more oriented toward peach skin notes, so 500 ppm is the best starting level.

Cherry: Here the floral tea character is less dominant altogether and 100 ppm is all that is required for a useful, lifting effect.

Tropical Fruit Flavors

Papaya: Very high levels can be used in papaya flavors, but linalool oxide is best used in combination with linalool at levels in the region of 2,000 ppm.

Lychee: The floral note in lychee flavors is important, but more subtle and 200 ppm is a good level of addition.

Mangosteen: A level of 200 ppm of linalool oxide has an interesting, brightening, effect in mangosteen flavors.

Mango: Mango flavors are also brightened by moderate additions of this ingredient, starting at 100 ppm.

Passion Fruit: In both yellow and purple styles of passion fruit flavors, 100 ppm also works well.

Soursop: A level of 50 ppm is a good initial level for soursop flavors. At this level, the effect is subtle but distinctly lifting.

Pineapple: The impact of this ingredient in pineapple flavors is mainly to increase realism and add subtly to the fresh juice character at levels around 50 ppm.

Banana: The effect and the optimum level, around 50 ppm, are similar in banana flavors.

Guava: The level of use of linalool oxide in guava flavors can vary radically, but lower levels are best, in the region of 20 ppm.

Citrus Flavors

Grapefruit: From 500–1,000 ppm of linalool oxide brightens grapefruit flavors and enhances the juice, as opposed to peel, character.

Lemon and Lemon Lime: Low levels, in the region of 100 ppm, are better in lemon, lemon lime flavors.

Orange and Tangerine: Modest additions, from 20–50 ppm, work well in orange juice flavors and add to the impression of freshness.

Lime: The most common style of lime flavors, those derived from distilled oil, only need small additions of linalool oxide, around 10 ppm, to add a little lift.

Other Fruit Flavors

Grape: Again in this application, combinations with linalool are very effective. Levels of use can be quite high if a specifically floral grape character, such as Muscat, is desired but the best starting point for most grape flavors is 1,000 ppm. Concord grape flavors benefit from lower levels, around 200 ppm.

Blueberry: Similar comments apply to blueberry flavors, and a combination of linalool oxide and linalool is extremely desirable. A good starting level of linalool oxide is in the region of 1,000 ppm.

Black currant: Both authentic and traditional style black currant flavors can gain lift and freshness from additions of this chemical around 500 ppm.

Raspberry: Linalool oxide can be used alone in raspberry flavors to good effect, although combinations with linalool also work well. Ideal levels of use range from 100 ppm to 500 ppm.

Cranberry: A level of 200 ppm of linalool oxide has an interesting, brightening effect in cranberry flavors, heightening the impression of fresh cranberry juice.

Blackberry: Realistic blackberry flavors have an attractive perfumed musky note dominating their profile. The best

level of use of this ingredient is at the lower end of the range for raspberry flavors, around 100 ppm.

Strawberry: Linalool oxide is usually only a minor afterthought in strawberry flavors, but it does add to the impression of freshness at 50 ppm.

Apple: It is also something of an afterthought in apple flavors, at around the same level of 50 ppm.

Tea Flavors

Black Tea: Linalool oxide is a very important component in all good black tea flavors, and the best effects are achieved when this chemical is used in conjunction with linalool. Levels vary, but 2,000 ppm is perhaps optimal.

Oolong Tea: Levels are a little lower in red tea types, more in the region of 1,000 ppm.

Green Tea: Green tea varies considerably in character but, in general, the levels of linalool oxide are much lower than in black tea, 200 ppm is a good place to start.

Floral Flavors

Elderflower: This is sadly only a very minor flavor category, but it is nevertheless evocative for anyone who has memories

of the fabulously Elysian character of homemade elderflower wine. Usage levels as high as 5,000 ppm can be used in flavors destined for more mundane use in elderflower cordial.

Chrysanthemum: This is also a highly regional flavor taste, but it can also benefit from robust additions of linalool oxide, in the region of 2,000 ppm in flavors destined for chrysanthemum tea applications.

Other Flavors

Honey: Honey flavors vary in character and the level of floral character is normally the determining factor. Linalool oxide is unusual in that it can be used in all the different types of honey flavors to good effect at levels in the region of 1,000 ppm.

Chocolate: Modest additions, around 200 ppm, give a little added lift to all chocolate flavors, but especially to dark chocolate types.

Tomato: Only 100 ppm of linalool oxide is needed to brighten both fresh and cooked styles of tomato flavor.

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