Linalool

This flavor mainstay, when used at various levels, fits an extremely wide range of tea and fruit flavor profiles.

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Linalool (FEMA# 2635, CAS# 78-70-6) is one of the most widely distributed flavor chemicals in nature. The aroma of the ingredient is strongly floral, resembling lavender, with some hints of citrus. To me, this intensely monochromatic floral aroma can be a little off-putting when it is exaggerated to the extremes sometimes found in Earl Grey teas. At a lower, more natural concentration, it becomes highly attractive and plays an indispensable role in a short list of floral-accented flavor profiles, notably tea, apricot, peach and blueberry. In addition, it performs sterling service at moderate levels in an extremely wide range of other flavor profiles. It is this chameleon characteristic that has ensured that for most of the history of the flavor industry up to the present, linalool, although primarily a fragrance raw material, has consistently rated amongst the top 30 most widely used flavor raw materials by volume.

The dose rates given throughout this article are the levels suggested for use in flavors that are intended to be dosed at 0.05% in a ready-to-drink beverage or in a simple bouillon.

Tea Flavors

Earl Grey: Earl Grey tea was traditionally powerfully flavored with bergamot oil, and that is still the case with some brands. However, for many brands the flavor has evolved into something much more complex, but linalool is still always a key ingredient, added to the tea leaves or powder at up to 0.3%. This equates to more than 50,000 ppm in the standard-strength flavor used in these articles.

Black tea: The ideal level of linalool in black tea flavors varies considerably, but is much, much lower than the level in Earl Grey tea. Around 4,000 ppm is ideal.

Green tea: Green tea is not quite as dependent on linalool as black tea, and a good level of addition in green tea flavors is around 2,000 ppm.

Citrus Flavors

Bergamot: Bergamot oil is traditionally the main component of Earl Grey tea flavors and can involve the use of extremely high levels of linalool, up to 50,000 ppm in a standard strength flavor.

Mandarin and tangerine: Both of these flavor types contain significantly higher levels of linalool than orange flavors. The ideal level depends on the amount of floral note that is desired, but 2,000 ppm is a good starting point.

Kalamansi and yuzu: The effect of linalool in kalamansi and yuzu flavors is a little more restrained than in tangerine flavors, and the ideal level is around 1,000 ppm.

Grapefruit: Grapefruit oil only contains about 0.1% of linalool in nature, but the ideal level of addition to grapefruit flavors is often higher than this, around 500 ppm in grapefruit flavors.

Lemon: The effect of linalool in lemon flavors is very similar to that in grapefruit flavors—lifting and brightening—and the ideal level of addition is also similar, around 400 ppm.

Orange: Levels of use in orange flavors depend on the profile that is required, especially the level of tangerine notes in the profile, but 400 ppm is a good starting point.

Tropical Fruit Flavors

Papaya: The role of this ingredient in papaya is central—without the bright floral note the character would be overwhelmingly cloying. A level of 5,000 ppm is a good starting level, but even higher levels are workable.

Pineapple: Linalool can play a significant role in authentic-tasting pineapple flavors and provides welcome contrast to the dominant fruity notes. A level of 1,000 ppm works well.

Passion fruit: The same comments are equally true of passion fruit flavors, and the ideal level of addition is quite similar: around 800 ppm.

Watermelon: Levels of this ingredient in watermelon flavors vary considerably depending on the profile, because many commercial watermelon flavors bear only a modest passing resemblance to the real

fruit. One thousand ppm is a good starting point.

Banana: Linalool can add welcome complexity and realism to banana flavors at levels of addition in the region of 800 ppm.

Mango: Ripe mango flavors can benefit from the addition of around 200 ppm of this ingredient, but higher levels work better when the flavor has a dominant mango skin profile.

Guava: Guava flavors can be lifted and brightened by the addition of modest amounts of linalool, ideally around 200 ppm.

Lychee: This is quite a difficult profile to achieve, and many lychee flavors are overly accented toward rose. The use of 200 ppm of linalool will help offset this defect.

Other Fruit Flavors

Blueberry: Linalool is an essential ingredient in blueberry flavors, and the best level of use is in the region of 3,000 ppm.

Grape: Concord type grape flavors can benefit from the addition of around 600 ppm of this ingredient, but 2,000 ppm is much more appropriate for white grape, vinifera-type flavors, especially Muscat.

Peach, nectarine and apricot: One thousand ppm of linalool is very effective in nectarine, apricot and peach flavors, with higher levels adding a distinctly confectionery (but still quite pleasant) nuance to peach and apricot flavors.

Plum: Similar levels, around 1,000 ppm, work very well in realistic plum flavors, especially those destined for confectionery applications.

Strawberry: The best level of use in strawberry flavors depends on the type of strawberry profile required. Wild strawberry profiles can make good use of higher levels, around 800 ppm. Less perfumed profiles require lower levels of addition, around 200 ppm.

Blackberry: Authentic blackberry flavors have a noticeable musk component, and this category of flavors can benefit particularly well from the addition of 500 ppm of linalool.

Raspberry: The effect in realistic raspberry flavors is relatively subtle, and the ideal level of addition is in the region of 300 ppm. Higher levels can be used in flavors that are more strongly violet in character or are more fantasy-oriented.

Blackcurrant: Only low levels of addition are needed for blackcurrant flavors, and 80 ppm is quite effective.

Other Flavor

Elderflower and rose: Both of these categories of floral flavors can easily be too simplistic, and both are well-served by levels of added linalool in the region of 1,000 ppm.

Tomato: All the different profiles of tomato flavors can be helped by moderate additions of linalool, but this is especially true of fresh types in which the level of addition should be around 500 ppm.

Olive: Authentic olive flavors can be improved by relatively modest additions of linalool. One hundred ppm is a good place to start.

Honey: The ideal level of addition depends on the type of honey required, ranging from 10 ppm to 100 ppm for more floral types.