



Citronellyl Formate

Fresh, floral and reminiscent of rose petals, this ingredient adds color to flavors.

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Everyone loves the lift and quintessentially fragrant floral character of rose otto (Bulgarian rose; pictured, at right). Many useful natural raw materials contain several hidden gems, but rose otto is one of those rare natural miracles in which almost all of them work in perfect harmony. Nothing conspires to work against the overall effect.

Because citronellol is the obvious key floral note in rose otto, it is easy to forget the role of the citronellyl esters, especially since they are often present at levels below 0.1%—far below the level of the parent alcohol. Citronellyl formate (FEMA# 2314, CAS# 105-85-1) defies this logic and refuses to be ignored. Its character is pungent, but attractively natural, fresh and floral, and distinctly reminiscent of rose petals. Because it is highly characterizing, citronellyl formate is one of the most useful floral notes, adding color to a wide range of different flavor types.

Floral Flavors

Rose: Citronellyl formate adds lift and realism to rose flavors and performs well at modest levels in the region of 100 ppm. Higher levels, up to 500 ppm, are also interesting, imparting novelty and a degree of pungency, while remaining authentic.

Elderflower: The effect in elderflower flavors is similar, but, because the flavor character is less rose-like, the ideal level is about 50 ppm.

Chrysanthemum: Similar levels, up to 50 ppm, work well in chrysanthemum flavors and enhance the impression of naturalness.

Tropical Flavors

Lychee: Lychees have a subtle rose character. One of the most glaring faults in many commercial lychee flavors is a



rose note that is anything but subtle. Citronellyl formate is perfectly subtle in this context, and is highly effective at around 200 ppm.

Mango: Although this ingredient has a less emphatic part to play in mango flavors, the level of use is somewhat similar to lychee, between 150-200 ppm.

Guava: A level of 150 ppm also works well in guava flavors, adding an attractive floral lift and noticeable realism.

Papaya: One hundred ppm is a good level of use for citronellyl formate in papaya flavors, reducing the cloying character and brightening the flavor.

Calamansi: Real calamansi fruit has a subtle and distinctive flavor. Unfortunately, its essential oil is scarce and expensive. Citronellyl formate helps shade citrus notes towards true calamansi character at around 50 ppm, but higher levels are also interesting.

Banana: Citronellyl formate levels in banana flavors need to be more modest.

As little as 10 ppm can give a hint of skin character and some added realism.

Other Fruit Flavors

Pear: This ingredient is truly excellent in pear flavors, significantly enhancing the natural character and adding pear skin notes. Levels of use can vary, depending on the other components, but 400 ppm is a good starting point.

Apple: Apple flavors can be much more assertive than pear flavors, but 400 ppm of citronellyl formate also works surprisingly well in apple flavors, adding skin and green notes and lift.

Tangerine and mandarin flavors: A citronellyl formate level of 200 ppm works well in mandarin flavors, brightening the character considerably. Slightly lower levels are preferable in tangerine flavors, but the effect is similar.

Grape: Many grape flavors can seem far too one-dimensional. This chemical can be very helpful at 200 ppm in Concord

grape flavors, or at around 50 ppm or lower in more subtle types of grape flavors, such as Muscat.

Apricot: The effect of linalool in many apricot flavors, especially those destined for confectionery applications, can tend to dominate the profile. A citronellyl formate level of 150 ppm can help to add complexity and realism.

Orange: Levels of addition of this material in orange flavors can vary widely, but 100 ppm is a good compromise, brightening and enhancing the peely notes.

Peach: Peach flavors do not often have the same level of dominant floral notes as apricot flavors, but this component is still useful at around 100 ppm.

Lemon: The comment earlier in this article about lychee flavors also applies to lemon flavors: it is all too easy to impart a level of rose notes that defy reality. In lemon flavors, citronellyl formate side-steps this problem and gives very authentic results at around 50 ppm.

Lime: A similar effect can be achieved in cold-pressed lime flavors at 50 ppm. Distilled-type lime flavors derive much less benefit from this ingredient.

Blackberry: Citronellyl formate works very well in conjunction with the musk and berry notes in blackberry flavors at around 50 ppm.

Strawberry: A level of 50 ppm of this ingredient is also close to ideal in strawberry flavors, adding brightness and lift.

Raspberry: The ideal level of addition of citronellyl formate in raspberry flavors is quite subtle, but noticeable, in the region of 20 ppm.

Blackcurrant: The level is even more subtle in blackcurrant flavors, but 10 ppm will still add welcome authenticity.

Other Flavors

Ginger: This ingredient works well to enhance the fragrant character of ginger flavors. Levels of use depend on the other ingredients, and can be higher in ginger ale flavors, up to 300 ppm.

Honey: Levels of use also vary widely in honey flavors, but citronellyl formate can be very attractive at 200 ppm in floral honey flavors, adding welcome brightness and lift.

Cream soda: The same is true of cream soda flavors, which can often be heavy. A level of 200 ppm lightens and lifts the profile.

Black tea: Although this ingredient will work in both the green and black tea variants, it is far more effective in black tea. The best level of use is very much dependent upon the other components, but 50 ppm is a good starting point.

Vanilla: The best vanilla bean flavors can be very intricate, with a wide range of ingredients each adding a little to a web of complexity. Citronellyl formate only has a small part to play, but it can be helpful at levels in the region of 20 ppm.

Maple: Maple flavors may seem an eccentric application for such a floral ingredient, but the effect is similar to that in vanilla flavors, a subtle extra complexity and brightness at around 20 ppm.

Sweet basil: Similarly modest levels, around 20 ppm, can add freshness, lift and realism to sweet basil herb flavors.

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