

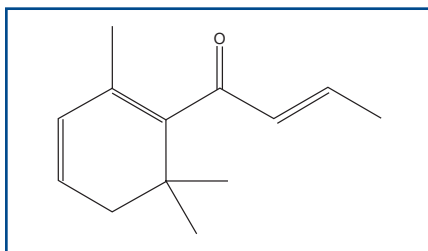


Flavor Bites: Damascenone

Application in berry, fruit and fermented flavors

John Wright; johnwrightflavorist@gmail.com

Flavor creation is not the only hobby I pursue—food and wine are my other two deeply followed passions. I particularly appreciate the complex, yet fascinating flavor transformation that a wine undergoes, after spending a few years in a cool dark corner of a cellar. The aging process not only gets rid of some harsh components present in young wine, but it also adds a few desirable characteristics of cedar, dark red berries and farmyards. One particular chemical that is most reminiscent of this lovely red berry character is Damascenone (FEMA# 3420), and hence a personal favorite.



Before damascenone was commercially available, adding a highly characteristic ripe berry note to flavors was difficult. The closest one could get in achieving this profile was by using dimethyl benzyl carbinyl butyrate (FEMA# 2394). Although this material lacked the natural character of damascenone, it was widely used, especially in berry flavor formulations.

Today, however, there are many close alternatives available, such as α -damascone (pictured; FEMA# 3659), β -damascone (FEMA# 3243)

and δ -damascone (FEMA# 3622). α -Damascone has a very attractive apple nuance, whereas β -damascone has more than a hint of cedar (suitable in berry flavors); δ -damascone, on the other hand, is not frequently used in formulations. Still I believe damascenone provides the best overall realism, depth and richness.

Application in Berry Flavors

Raspberry: Damascenone would have been a marvelous raw material, had its usage been restricted only to raspberry flavors. Three hundred ppm is a good starting level in a raspberry flavor that is used at 0.05% in a beverage. Nevertheless, this level is only a guideline, because damascenone has a very flat dose/response curve and is virtually impossible to overdose. As such, while a noticeable effect could be achieved by using damascenone at 30 ppm, a good (and unique) flavor could be easily created to accommodate 3,000 ppm. Also, while damascenone works especially well in combination with β -ionone (FEMA# 2595), using it at high levels allows the addition of equally high levels of β -ionone to give a very attractive, but slightly surreal effect.

Blackcurrant: Damascenone is equally important in blackcurrant flavors, as it adds a deep, realistic berry character to the intrinsically thin sulfur top notes. So while 100 ppm is a good starting level, this material can



be used at higher levels to give a more specific effect.

Blackberry: Creation of blackberry flavors is usually similar to that of raspberry flavors, and this also applies to the use of damascenone. Nevertheless, a slightly lower guideline level of around 200 ppm is probably called for in these flavors.

Cranberry: Unlike the previously mentioned flavors, cranberry does not contain a significant violet component. As such, a good starting level in this case is a little lower, at around 150 ppm, even though damascenone provides a significant part of the recognizable character of cranberries.

Blueberry: As blueberry flavors can easily end up tasting thin and one-dimensional, use of around 50 ppm of damascenone can significantly add to the depth of flavor.

Strawberry: Damascenone is not an essential component of strawberry flavors, but it is a very widely used trace ingredient; a good starting level is 20 ppm.

Gooseberry: As gooseberry flavors depend heavily on a number of very volatile components, addition of around 20 ppm of damascenone can add depth.

Other Fruit Flavors

Peach: Damascenone is frequently used in peach flavors to add complexity and richness. A good starting level is around 50 ppm, but practical use levels can vary considerably from 10–1,000 ppm.

Apricot: As in peach flavors, damascenone enjoys a wide range of acceptable use levels, starting around 30 ppm.

Plum: This ingredient forms a considerable part of plum flavor profile, and high use levels, starting at around 3,000 ppm, are recommended.

Raisin: High use levels of damascenone, starting around 2,000 ppm, are vital in raisin flavors.

Apple: Despite not being a vital component of apple flavors, this material can be used at a very wide range of levels—typically at around 10 ppm; these can go up to 1,000 ppm, according to the desired profile.

Pear: Similar to apple flavors; typically used around 20 ppm.

Grape: Damascenone adds complexity to grape flavors; a good starting level is 50 ppm.

Cherry: Although not a key component of cherry flavors, damascenone does provide a subtle nuance and increased realism to cherry flavors. Recommended use levels are around 20 ppm.

Tropical fruits: This ingredient works well in mango, mangosteen, kiwi, guava, lychee, pineapple and passion fruit flavors. Use levels are relatively low, from 10–30 ppm.

Citrus fruits: Damascenone is not an obvious candidate for citrus flavors, but it can be added in subtle quantities, around 10 ppm, to add juiciness, especially to grapefruit flavors.

Fermented Flavors

Whisky: 200 ppm of damascenone adds a “cask-aged” character to whisky flavors and softens the harsher fusel notes.

Cognac and schnapps: Around 300 ppm can be added to these flavors.

Rum: Rum flavors particularly benefit from the addition of damascenone; recommended starting level is around 500 ppm for dark rums, and 300 ppm for light rums.

Beer: Subtle levels from 2–10 ppm are useful in beer flavors.

Wine: Typically levels around 100 ppm work well in wine flavors, but higher levels can also be used.

Vodka: Vodka flavor is very subtle, but levels of damascenone at around 5 ppm have a positive, mellowing effect.

Other Flavors

The use of damascenone is by no means limited to fruit and fermented flavors. Vegetable flavors, and tea flavors in particular, can benefit from this ingredient.

Tomato: Addition of around 100 ppm of damascenone is very helpful in this flavor, especially in recreating the character of tomato juice or concentrate.

Bell peppers and jalapenos: Again, damascenone is a very useful and characteristic ingredient in these

flavors and works best when used at 300 ppm.

Tea: Damascenone is extensively used in all types of tea flavors, a typical starting level being 30 ppm.

Hazelnut: It is not an obvious ingredient for hazelnut flavors, but worth trying at 5 ppm.

Malt: Usage of damascenone in these flavors is counterintuitive, but one can try using 5 ppm.

Coffee: Using damascenone in coffee flavors is another unlikely suggestion, but one can try using it at 2 ppm.

To purchase a copy of this article or others, visit www.PerfumerFlavorist.com/magazine. pf

