

Leffingwell & Associates

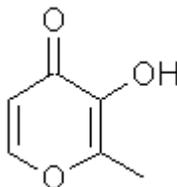
Odor Properties & Molecular Visualization

BURNT SUGAR, CARAMEL & MAPLE NOTES & Molecular Structures

Several closely related GRAS chemical structure types are responsible for providing the "burnt sugar" type notes associated with many products (caramel, cotton candy, maple sugar, cooked fruits such as strawberry & pineapple, as well as roasted products such as chicory & coffee). Here we will examine the flavor properties (odor descriptions and intensities) and show the molecular structural similarities.

As will be noted, each of these very important flavor chemicals possesses the alpha-enol function adjacent to a carbonyl. Also of interest is that the replacement of methyl groups with ethyl groups in these structurally similar compounds generally results in an amplification of odor intensity.

Maltol or 3-hydroxy-2-methyl-4-pyrone...C₇H₈O₃

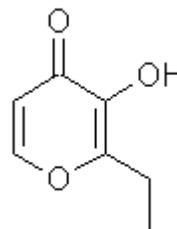


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is an important flavor chemical that occurs naturally in products such as Caramel, Chicory, Cocoa, Coffee, Milk, Roasted Malt, Strawberry, and Bread ... just to name a few. The odor is often described as that of "cotton candy", the spun caramelized sugar product sold at fairs.

Odor Detection Threshold (in water) = 35,000 ppb

Sweet, fruity, berry, caramellic odor; fruity preserve-like. Very important in commercial fruit flavors.

Ethyl Maltol or 3-hydroxy-2-ethyl-4-pyrone...C₈H₁₀O₃

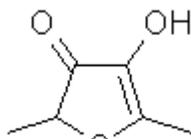


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is the ethyl analog of Maltol, wherein the 2-methyl group is now 2-ethyl. This material is not occurring in nature. The odor is also that of "cotton candy"; in fact the odor/flavor properties are nearly identical except that Ethyl maltol is 4-5 times as intense in flavor applications and perhaps slightly more fruity. I have been unable to find a published value for its odor detection threshold, but would expect it to be in the range of 10,000 ppb.

Odor Detection Threshold (in water) = NA

Sweet, fruity-caramellic odor; fruity preserve taste

Furaneol^(R) or 2,5-Dimethyl-4-hydroxy-3(2H)furanone ..C₆H₈O₃



You must have [Java](#) installed to view the molecular visualization on this page
To manipulate the molecule in the Jmol window, place your mouse pointer in the frame and "right click to access the menu options.