

PeriodicGraphics

With Compound Interest

THE SCENTS OF THE SEASON

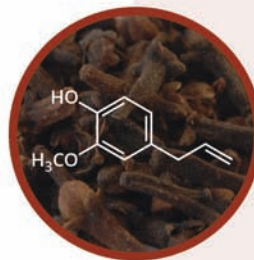
The holiday season brings with it a variety of characteristic smells. All of these have a chemical basis: Although some can be attributed to a small number of compounds, others are the product of a larger range of molecules. Below, we look at a selection of the chemical contributors to holiday aromas.



Christmas Tree α-PINENE

α-Pinene is one of the main compounds behind the fresh, green smell of a Christmas tree.

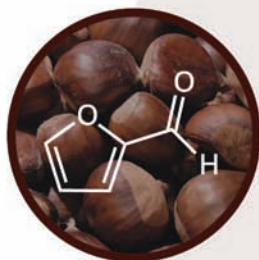
Pinene is the most common terpene in nature and is also found in the essential oil of rosemary. Additionally, it has insect-repelling properties.



Mulled Wine EUGENOL

Cloves are a key ingredient in mulled wine, and eugenol is a major contributor to their smell.

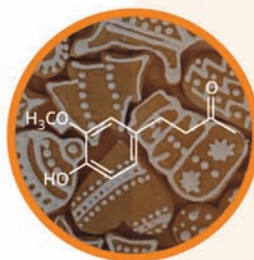
Other important aroma compounds in cloves include 2-heptanone, which has a fruity, spicy smell, and methyl salicylate (also known as oil of wintergreen).



Roasted Chestnuts FURFURAL

The aroma of roasted chestnuts is a result of numerous compounds, including monoterpenes and butane, pentane, hexane, and heptane derivatives.

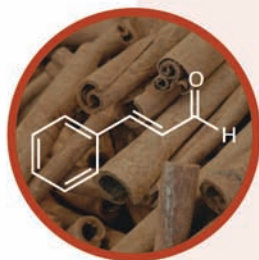
Furfural is one of these compounds, and it emits a sweet, woody, almondlike aroma.



Gingerbread ZINGERONE

Gingerbread, as its name suggests, has ginger to thank for its spicy smell. Zingerone is the compound responsible for cooked ginger's pungency and also contributes to its smell.

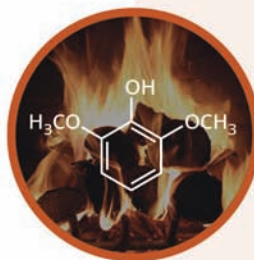
Zingerone isn't present in raw ginger but is formed when it is cooked.



Cinnamon CINNAMALDEHYDE

Cooks use cinnamon as a flavoring in a range of seasonal foods and drinks, including mulled wine and baked foodstuffs.

Cinnamaldehyde makes up 90% of the essential oil of cinnamon bark and is responsible for both its taste and aroma.



Wood Fire SYRINGOL

Burning wood produces a huge number of organic compounds, and a variety contribute to its aroma.

Syringol is one of these. It has a smoky aroma and is also partly responsible for the smell of smoked meat.



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Periodic Graphics is a collaboration between C&EN and Andy Brunning, chemistry educator and author of the popular graphics blog Compound Interest. To see more of Brunning's work, go to compoundchem.com.