

Periodic graphics

A collaboration between C&EN and
Andy Brunning, author of the popular
graphics blog **Compound Interest**

More
online

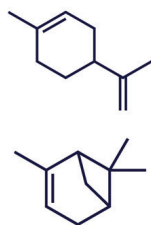
To see more of
Brunning's work, go to
compoundchem.com.
To see all of C&EN's
Periodic Graphics,
visit **cenm.ag/
periodicgraphics**.

HOW AIR FRESHENERS WORK

Some air fresheners just mask bad smells, while others claim to eliminate odors completely. Here, we review the different types of compounds found in air fresheners and how they combat stench.

FRAGRANCES

Air freshener aroma compounds mask bad smells. They include terpenes such as limonene and α -pinene. Some people have expressed concern that these can react with ozone to produce formaldehyde, a carcinogen.



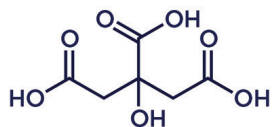
LIMONENE

α -PINENE

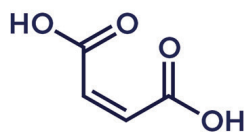
ODOR NEUTRALIZING

Some air fresheners use organic acids, which can react with smelly compounds to break them down to more benign molecules.

CITRIC ACID

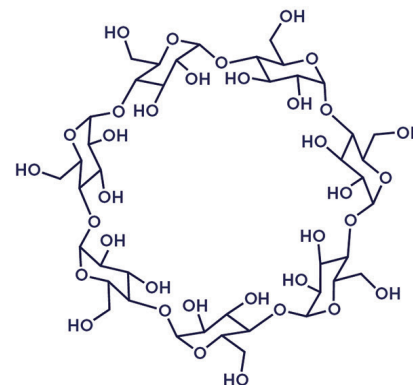


MALEIC ACID

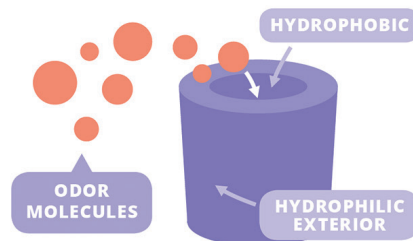


ODOR TRAPPING

Cyclodextrins are ring-shaped molecules made from cornstarch. Odor molecules get caged within cyclodextrin's cavity, stopping them from reaching your nose.



β -CYCLODEXTRIN



ODOR MOLECULES

HYDROPHOBIC

HYDROPHILIC EXTERIOR

Hydrophobic odor molecules get trapped in cyclodextrin's hydrophobic center.