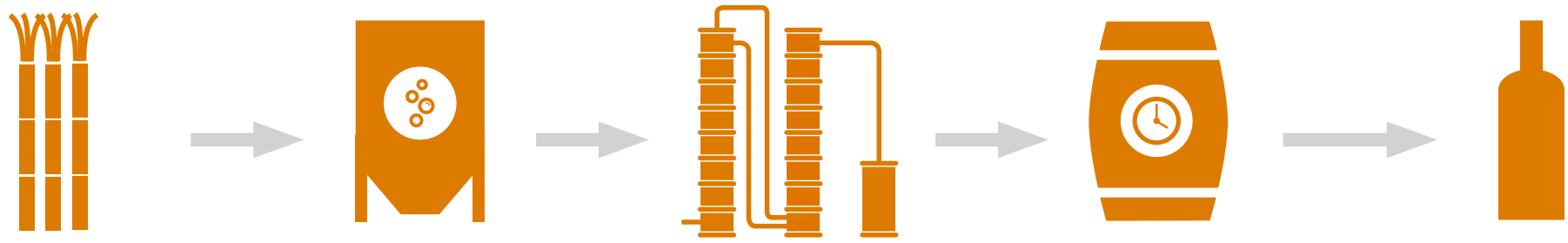
The Chemistry of Rum

COMPOUND INTEREST



RAW MATERIALS
Molasses, sugar cane juice, or cane syrup

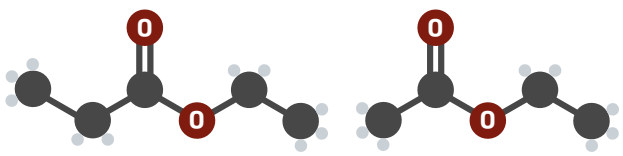
FERMENTATION
Usually at 30–33˚C and pH 5.5–5.8 for 1–3 days

DISTILLATION
Using either continuous or pot-still distillation

AGEING
Often carried out in charred oak barrels

MIXING
Different distillates blended for consistency

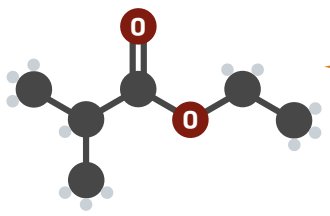
Esters



Ethyl propanoate
Caramel/fruity aroma

Ethyl acetate
Pear drops aroma

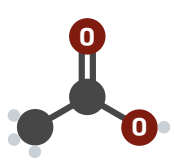
The levels of short-chain carboxylic acids are higher in rum than in other spirits like whiskey, which may explain its higher ester content when compared to other alcohols.



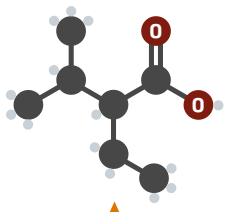
Ethyl isobutyrate
Butterscotch aroma

Esters are important contributors to the aroma of rum, and are responsible for fruity notes. Ethyl acetate is typically the most abundant, though a large number of other esters are also present.

Acids and alcohols

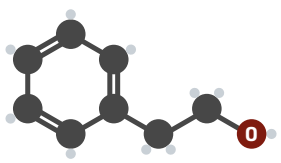


Acetic acid

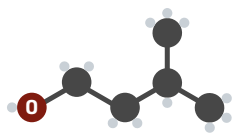


2-ethyl-3-methyl butyric acid

Acids in rum are important for production of esters, but also contribute to flavour. Acetic acid is the main volatile acid in rum, whereas 2-ethyl-3-methyl butyric acid is characteristic of rums.Strong smelling higher alcohols are also important odorants.



Phenethyl alcohol
Floral aroma

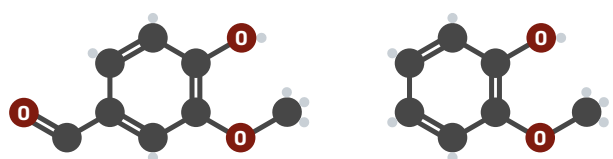


Isoamyl alcohol
Malty aroma

KEY

- Carbon
- O Oxygen
- Hydrogen

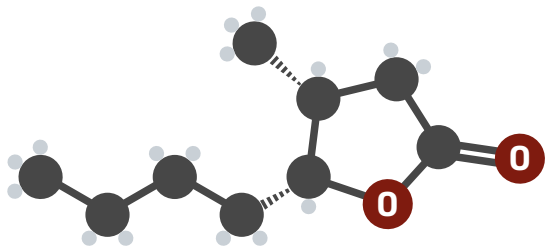
Other compounds



Vanillin
Sweet, vanilla aroma

Guaiacol
Smoky aroma

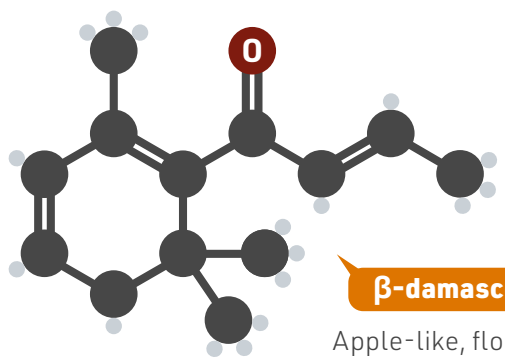
A number of compounds originate from the barrels that the rum is aged in. These include phenolic compounds, and also oak lactones. These are found in lower quantities than in whiskey, as rum is not aged in barrels for as long.



(Z)-oak lactone
Woody aroma

Dark vs. white rum

To remove colouration, white rums are usually filtered through charcoal. As well as removing colour-causing compounds, this also removes some aroma and flavour molecules.



β-damascenone
Apple-like, floral aroma

β-damascenone is a potent odorant in dark rum due to its low odour threshold. However, it is much less apparent in white rum, due to loss during filtration.