

THE CHEMISTRY OF RUM



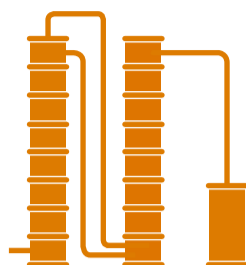
RAW MATERIALS

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

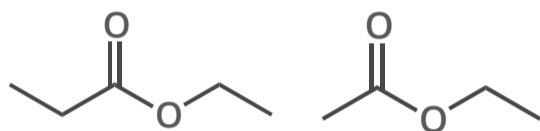


MIXING

Different distillates blended for consistency

Distilled rum originates from sugar cane plantations in the Caribbean. It was a useful way of disposing of molasses, a by-product of refining sugar cane. There is not a single standard for rum, with different countries having different regulations for the spirit, but it can be loosely split into dark, gold, light, and spiced rums.

ESTERS



ETHYL PROPANOATE & ETHYL ACETATE
caramel-like, fruity aroma; pear drops-like aroma

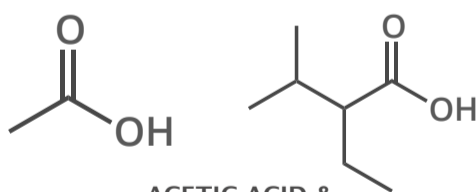
The levels of short-chain carboxylic acids are higher in rum than in other spirits like whiskey, which may explain its higher ester content when compared to other alcohols.



ETHYL ISOBUTYRATE
butterscotch-like 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.

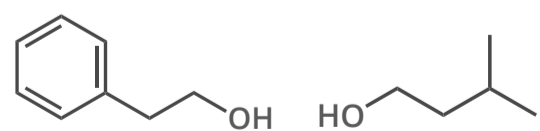
ACIDS & ALCOHOLS



ACETIC ACID & 2-ETHYL-3-METHYL BUTYRIC ACID

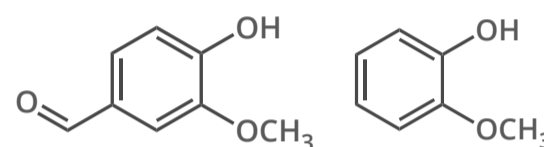
Acids in rum are important for production of esters, but also contribute to flavour. Acetic acid is the main volatile acid in rum, whereas 2-ethyl-3-methyl butyric acid is characteristic of rums.

Strong smelling higher alcohols are also important odorants.



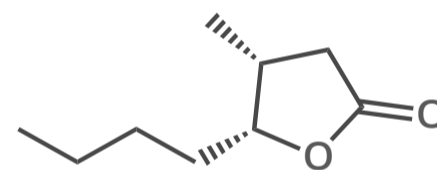
PHENETHYL ALCOHOL & ISOAMYL ALCOHOL
floral aroma; malty aroma

OTHER COMPOUNDS



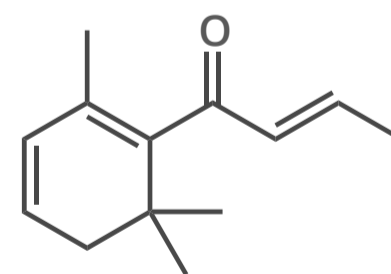
VANILLIN & GUAIACOL
sweet, vanilla-like aroma; smoky aroma

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



β-DAMASCENONE
apple-like, floral aroma

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

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.

