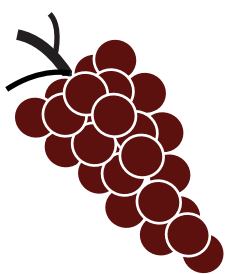
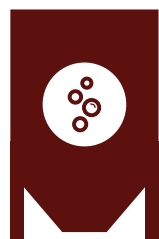


# The Chemistry of Wine



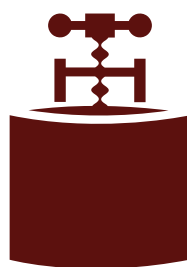
## PREPARATION

Grapes are harvested and their stems are removed



## FERMENTATION

Skins kept submerged for colour and flavour in red wine



## PRESSING

Presses liquid from skins. Done before fermentation for white wines



## AGEING

Stored in vessels which affect wine flavour as it ages

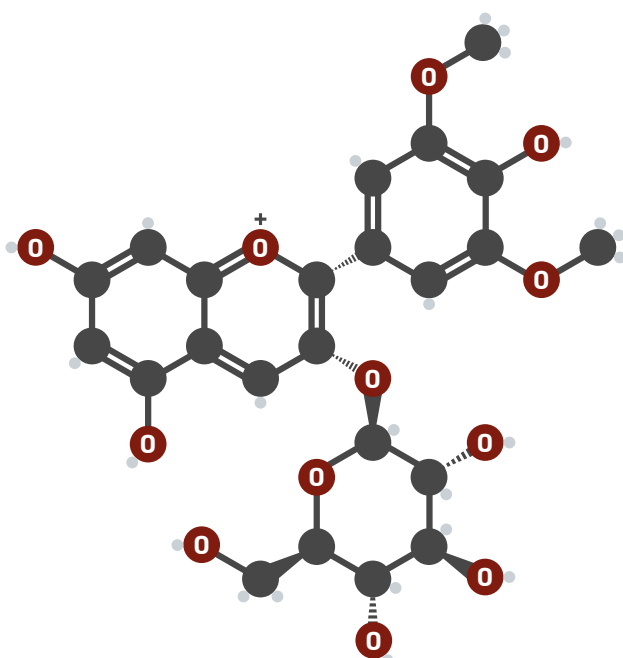


## BOTTLING

Blended with other varieties or barrels then bottled

## Anthocyanins

Anthocyanins are found in the skin of grapes. As soon as the grapes are crushed, they can react with other chemicals in wine to produce polymeric pigments.

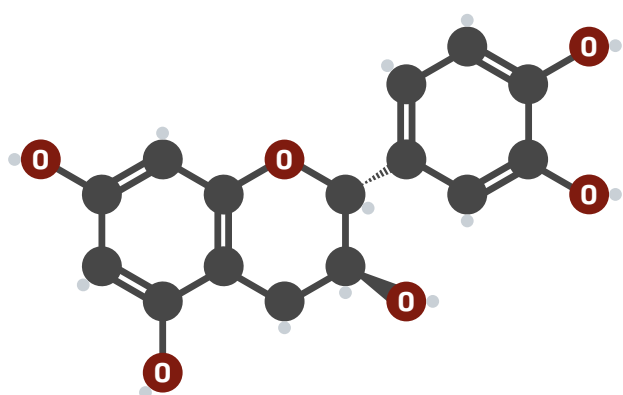


**Malvidin 3-glucoside**

An anthocyanin

## Flavan-3-ols

Flavan-3-ols originate in the seeds of grapes, and are known for their bitterness. In red wine, the amount present can reach up to 800 milligrams per litre. 20 milligrams per litre is the amount required in order for a bitter taste to be imparted. Flavan-3-ols are found in lower levels in white wines.



**Catechin**

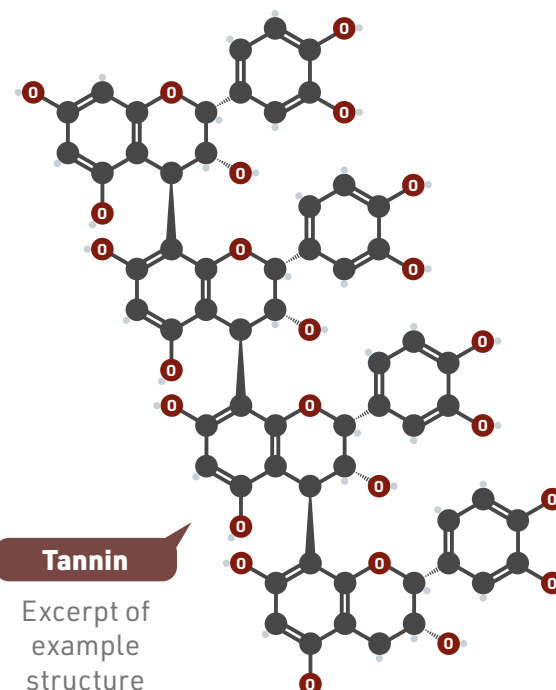
A flavan-3-ol

### KEY

- Carbon
- Oxygen
- Hydrogen

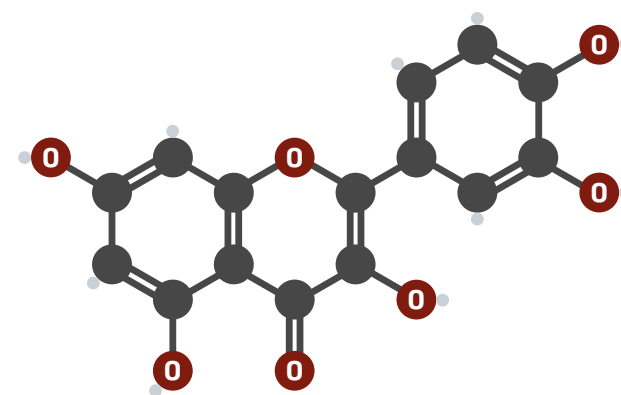
## Tannins

Tannins are polymers of other chemicals in wine. Condensed tannins are polymers of flavan-3-ols and give red wine its astringency, a dry feeling in the mouth after drinking. Changes in tannin structure over time are an important factor in wine ageing.



## Flavonols

Flavonols can help enhance the colour of red wine, via a process called 'co-pigmentation'. These compounds have potential anti-oxidant and anti-carcinogenic effects; however, their concentration in red wine is likely too low to confer any significant health benefits.



**Quercetin**

A flavonol