

Tank materials: past and present



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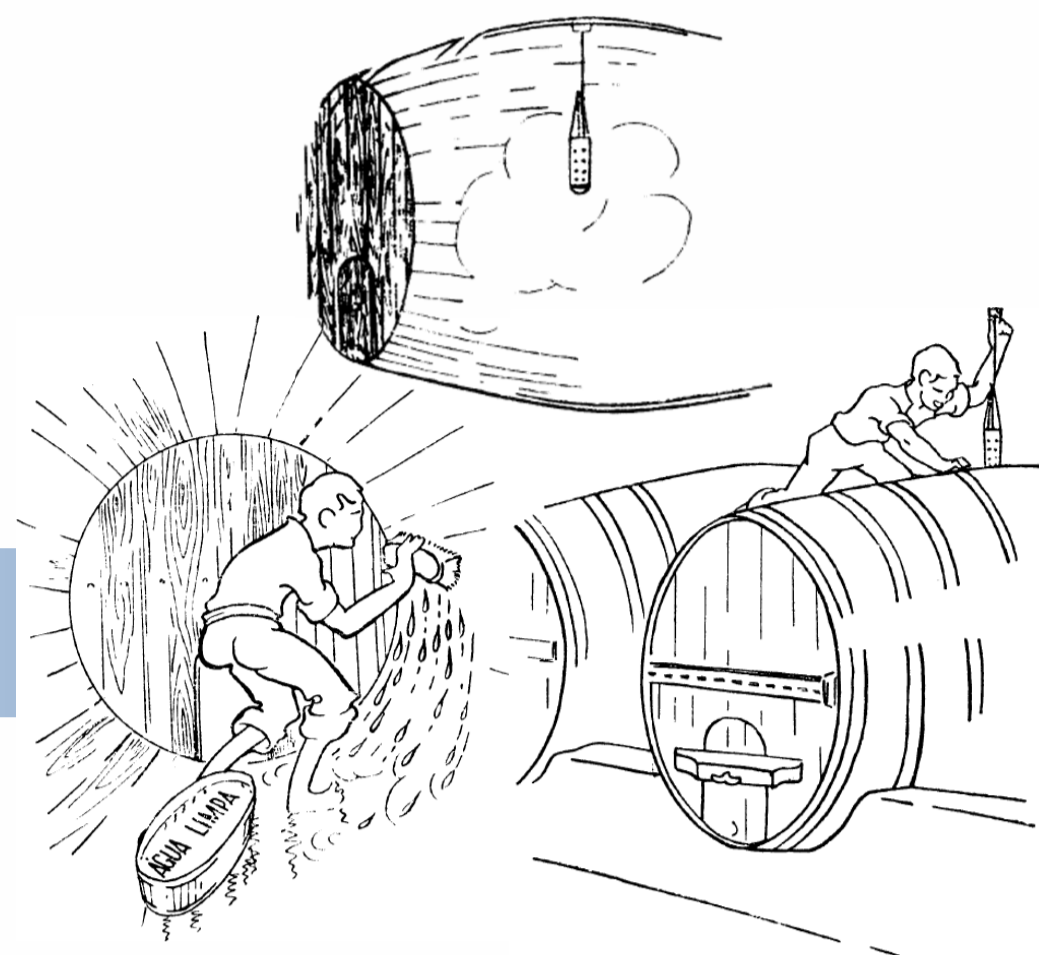
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Pitch

Applying materials to vessel walls (wooden casks, amphorae, etc.) to make them waterproof is of course not a new endeavour - applying pitch (derived from tree resins) to vessels is described in ancient texts.

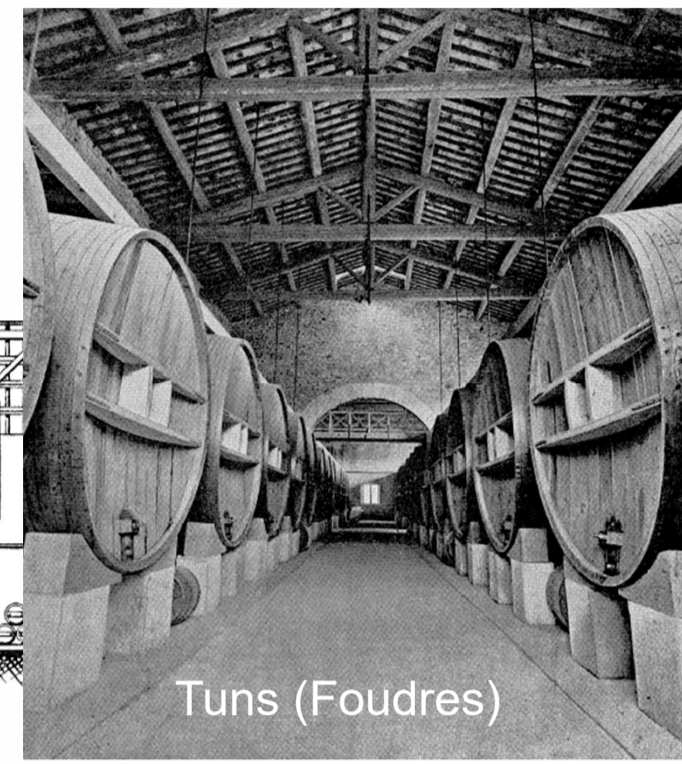
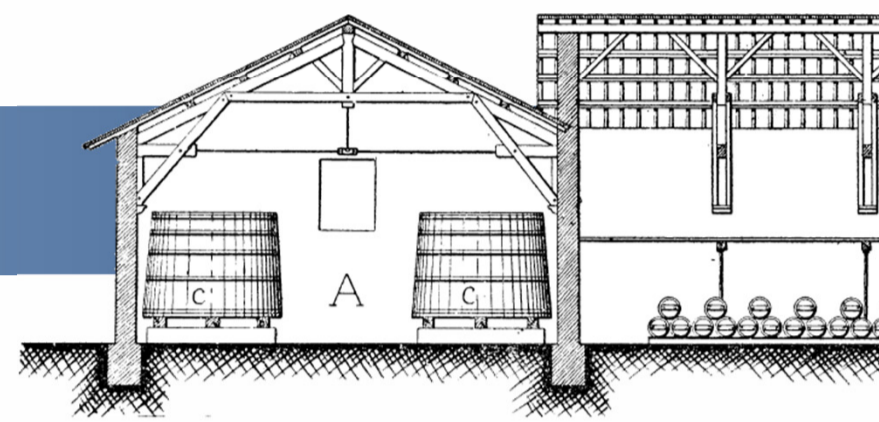


Manual cleaning and sulfuring

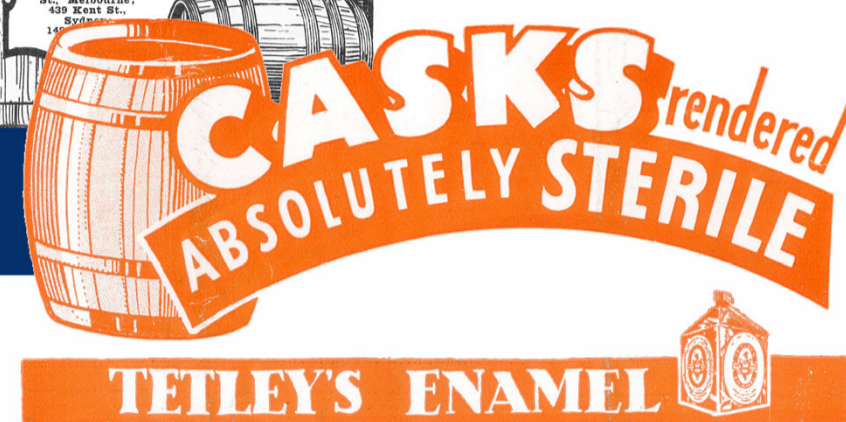
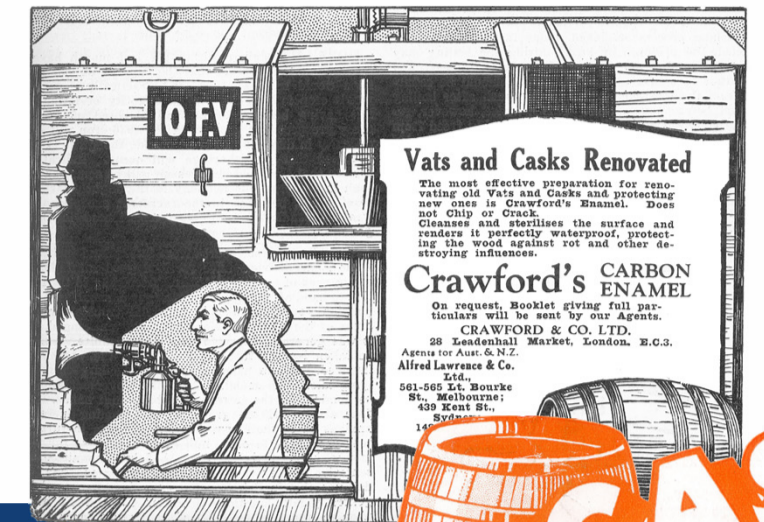
Cleaning tuns was not for the claustrophobic. Sulfuring was a common operation.

Wood

Wooden vats (Cuves en bois)

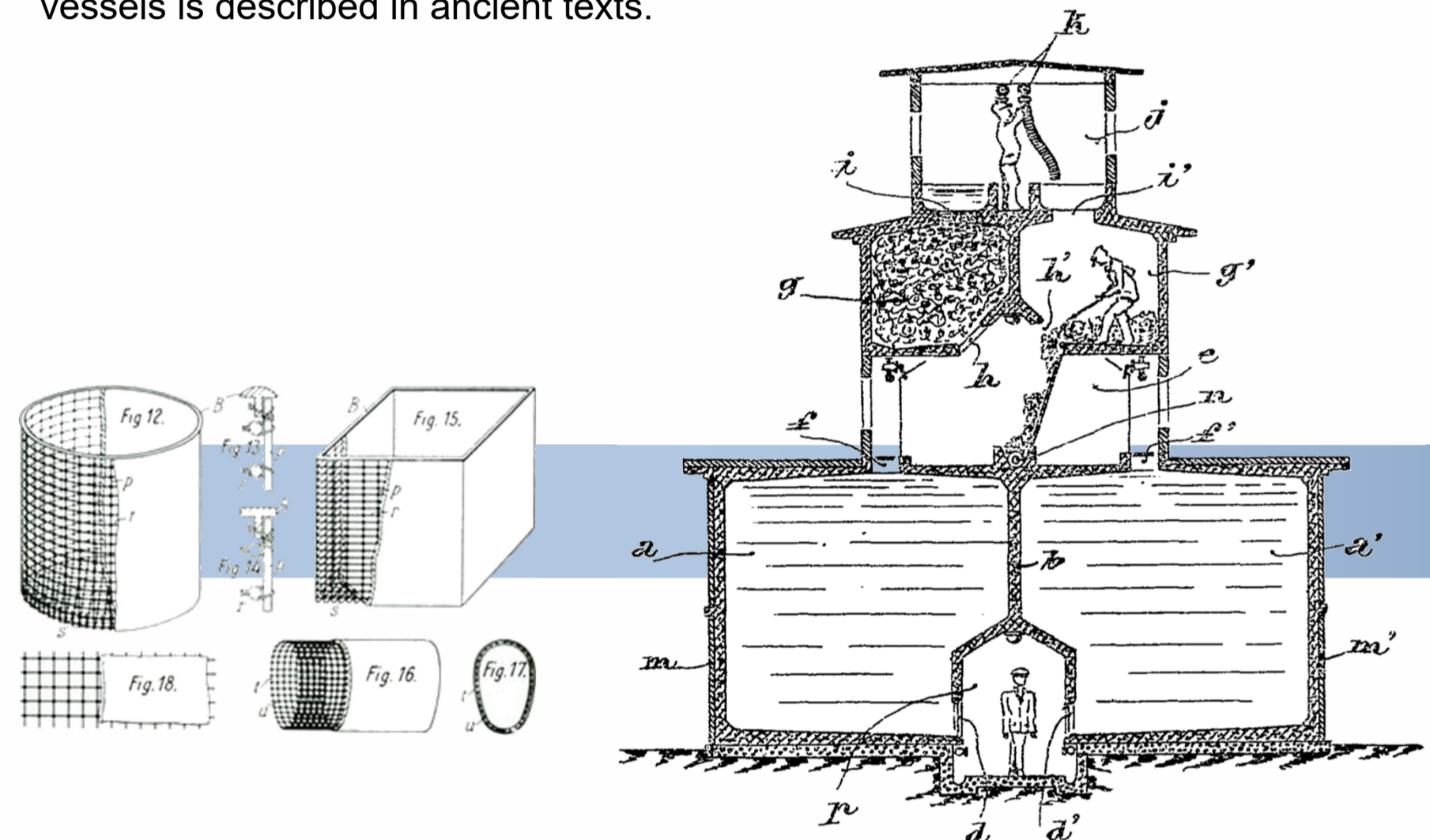


Tuns (Foudres)



Different coatings ('enamels')

Many different coatings were sold to the beverage sector for lining porous vessels. They are marketed as 'enamels', but they are not glass enamel. Tetley's enamel, for which advertisements often appear in old Australian beverage trade magazines, is described as a "black bituminous liquid made from a secret formula".



Reinforced concrete tanks

Reinforced concrete allowed relatively cheap construction of winery tanks in shapes that maximised the use of space. The final surface is made from layers of cement paste (no aggregate) to give a smooth finish.



Tartaric acid treatment of cement

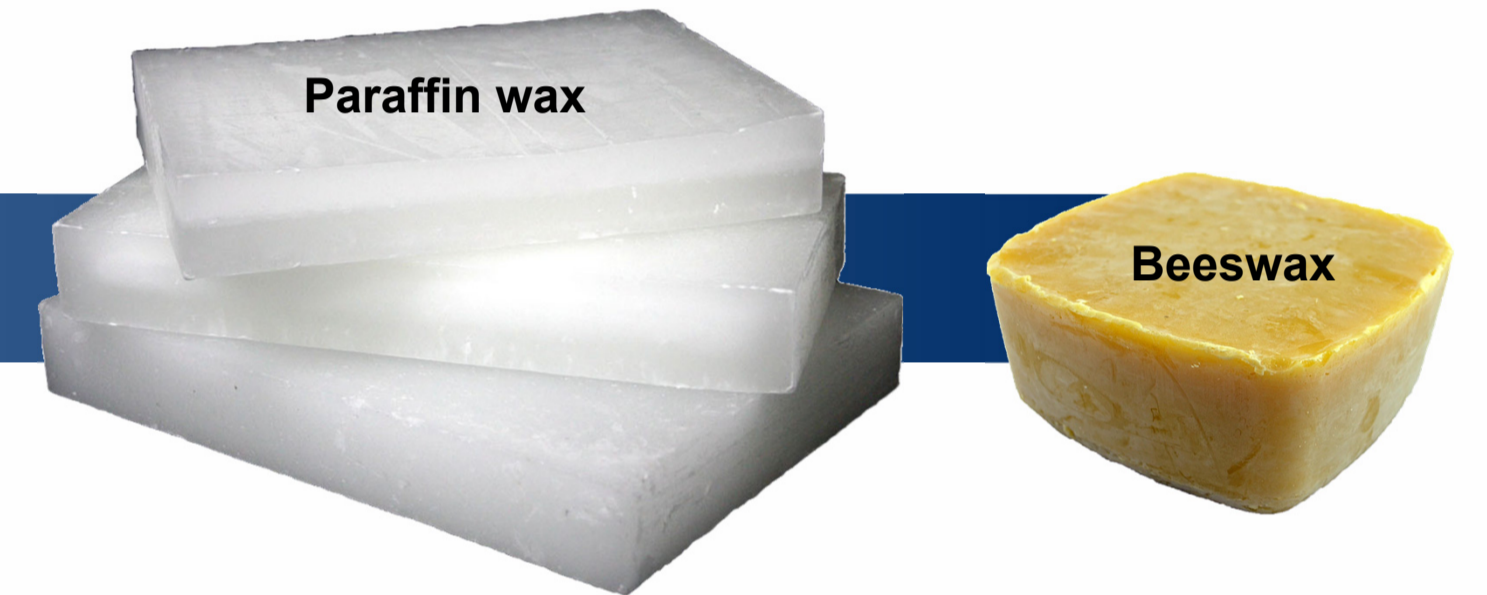
The tartaric acid reacts with the calcium carbonate in the cement to create a sealing layer of calcium tartrate crystals.

Cement



Silicate treatment of cement

Silicates react with the calcium hydroxide in cement to produce dense calcium silicate hydrate crystals. A similar technique is now often used for polished cement floors.



Waxing tanks – an Australian approach?

While tanks were no doubt waxed in many countries, the frequency of mentions, suggests that this practice was more common in Australia. Paraffin wax together with some beeswax was melted and sprayed onto the tank surface. A blow torch was then used to melt it on with a smooth finish. The next year cellar hands would scrape back all the old wax and repeat the process. It was a massive job.

Wood → Cement → Steel → Stainless steel



Artisanal cement

Cement tanks have become chic. The materials appear similar to those used in the past. Historical methods of surface treatment (e.g. tartaric acid washes) are often being used again instead of the epoxy lining that had become typical for most European winery cement tanks. The tanks are available in new shapes, no longer based around space optimisation – allowing better access for use, cleaning, etc.

Vitrenite!

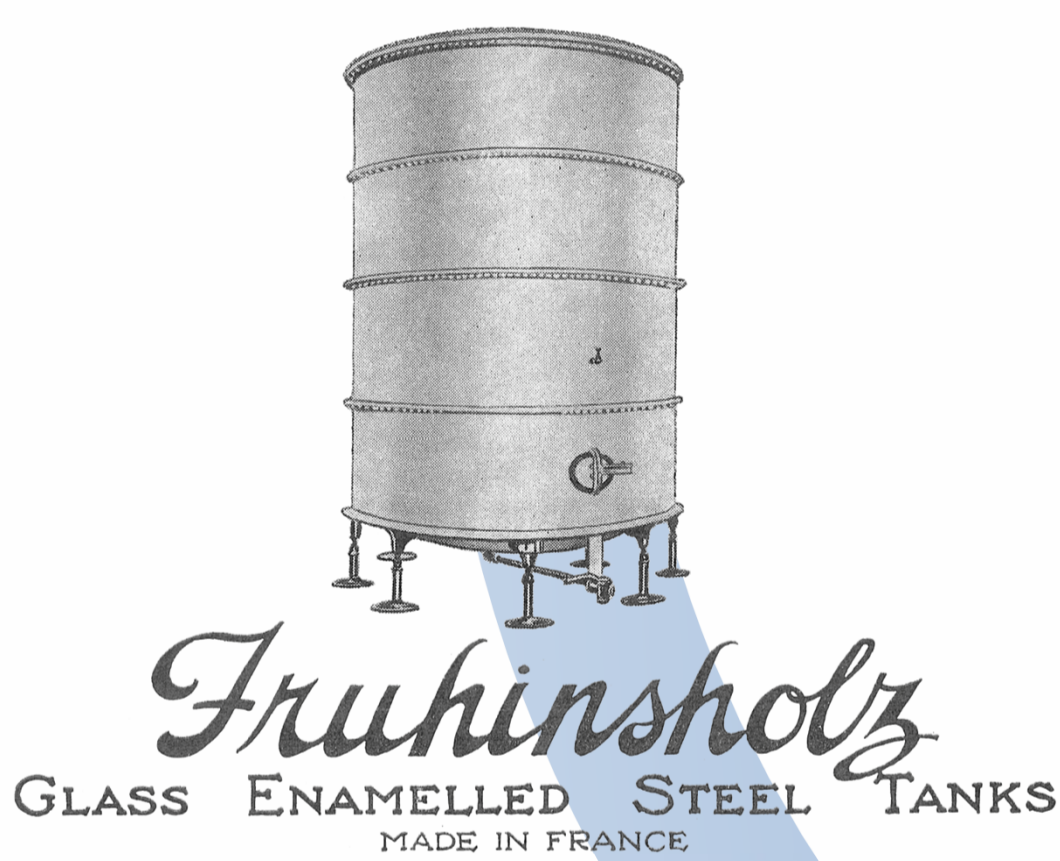
Australia's own plastic coating.

Protect it with **PROTECTIT TANK LINING**



Problems with tank lining

Lining wooden, cement and steel tanks can be labour intensive and involve time spent in confined spaces. There can also be issues with the lining materials being damaged and metals leaching into the wine or microbial growth in wood and cement.



Glass enameled tanks

Glass enameled tanks were an expensive option of steel tank lining. Tank sizes were somewhat limited because the coating needs to be baked on in a furnace.



Emaillit and Munkadur

Steel tanks with an Emaillit phenol-based hot-cured lining were used for pressure fermentation tanks. These tanks controlled fermentation speed using pressure, instead of just by cooling.

While expensive, these tanks delivered a massive quality advance at the time, since previously in the industry white wine was often being open fermented. From the mid-1960s, Munkadur began to be used to line steel tanks. This was a solvent-free, cold-curing epoxy that could be applied directly at wineries.

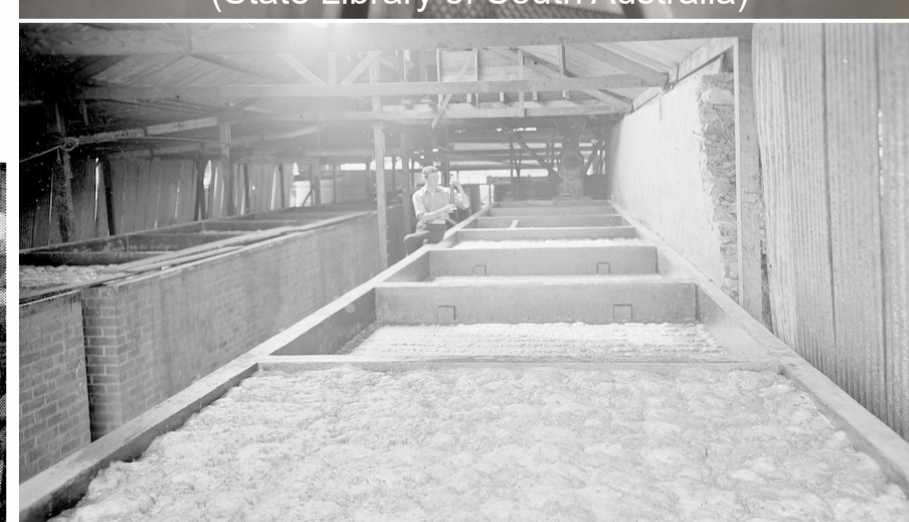
Steel

Metal tanks and cheap water cooling for fermentation

Metal is a better conductor of heat than cement and metal tanks have thinner walls. This is useful during fermentation to dissipate heat, particularly if water is run over them.



Open fermenters at Barri Winery, c. 1951 (State Library of South Australia)

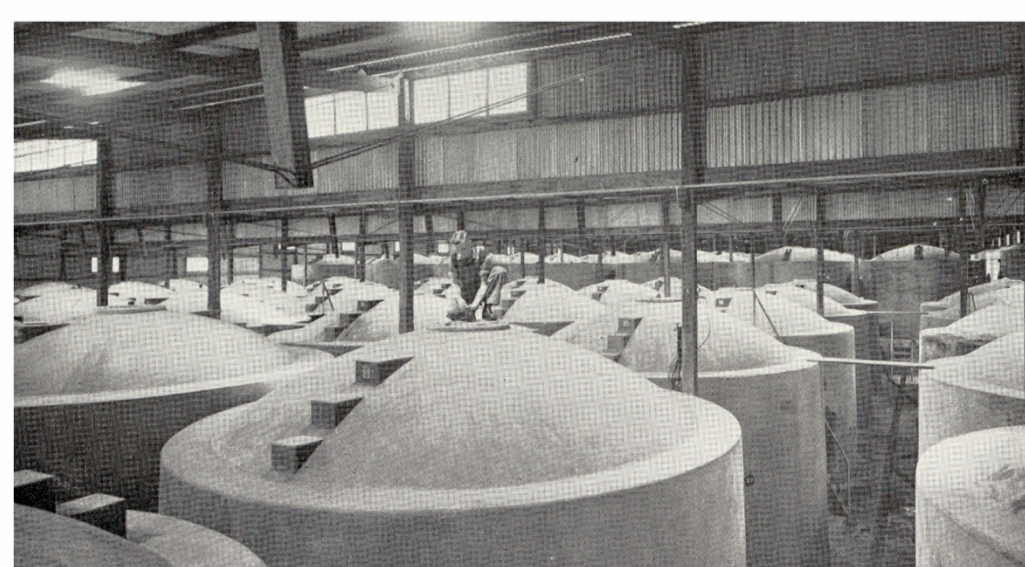


Open fermenters at Tatachilla, c. 1900 (State Library of South Australia)



Open ferments and heading down

Open ferments were once common in Australia and the USA for red wine and also bulk white wines. Heading down boards for reds were much more common than they are now (only 20% of large Australian wineries now use this technique at all for red wines – www.awri.com.au/survey)



Portuguese dome tanks (built c. 1950s)

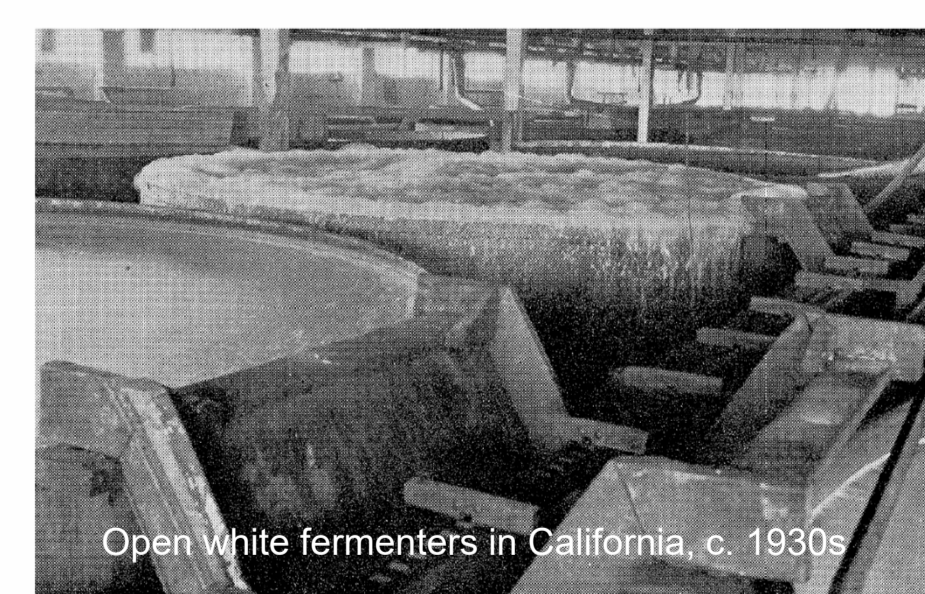
Brick amphorae in Algeria, c. 1890s



Stainless steel - a game changer -

For winery tanks and equipment, stainless steel eliminated risks of metal contamination and the need for lining vessels - and the associated labour and health and safety issues.

Stainless steel was one of the most important technical advances in wine production in the 20th century.



Open white fermenters in California, c. 1930s



Open fermenters at Tatachilla, c. 1950s