

Understanding the possible impact of rubber transfer hoses on wine



Use in cellar operations

Rubber suction hoses are commonly used in wineries to transfer wine between vessels and to facilitate cleaning and sanitation. Although the contact time between wine and the internal surface of the hose is typically low, issues such as equipment failure, maintenance or process delays can result in wine residing in these hoses for extended periods of time.

Rubber

Rubber products come in many different forms and can contain a wide range of compounds. Some of these compounds can migrate into wine during extended contact periods, leading to a noticeable chemical and sensory impact.

There are two broad categories into which rubber types can be placed: natural rubber and synthetic rubber. Most hose products used in the wine industry have synthetic rubber as their internal (product contact) surface and a different rubber compound type as the external surface.

Different types of rubber material that are used in commercial transfer hoses and have contact with wine are summarised in Table 1.



Table 1. Types of rubber used in winery transfer hoses

| RUBBER TYPE | ADVANTAGES |
|--|--|
| Natural rubber | Extremely flexible and good resistance to high temperatures. |
| Butyl rubber (IIR) | High impermeability to air and gases as well as water and steam. |
| Ethylene propylene diene monomer (EPDM) | A very durable, high-density rubber. Extremely resistant to heat, oxidation and weather extremes. |
| Nitrile rubber (NBR) | Extremely resistant to oil. A very resilient rubber with good mechanical elasticity. Resistant to most detergents. |
| Chloro-butyl rubber | High impermeability to air, gases and moisture. |
| Ultra high molecular weight polyethylene (UPE) | A versatile rubber, able to withstand a wide range of chemicals. Very good mechanical strength. |

Product quality impact and risk factors

Work at the AWRI has shown that some of the components present in these types of rubber can migrate into wine during extended contact periods, leading to a noticeable chemical and sensory impact on the wine. The presence of these migration compounds in wine may be perceived as 'reductive', 'rubbery' or 'plastic' characters.

It appears that different rubber types have the capacity to impart taints to wine at different rates, during extended contact periods. This migration rate is typically highest during the first hours of contact between the wine and the rubber and can be accelerated by higher processing and/or environmental temperatures.

Compounds that have been found in wine following extended contact periods with rubber materials include hydrogen sulfide ('rotten egg', 'sewage'), carbon disulfide ('sweet', 'ethereal', 'rubber'), benzothiazole ('sulfurous') and butylated hydroxytoluene ('plastic').



AWRI
COMMERCIAL SERVICES
SO MUCH MORE THAN A GREAT LAB

Fact Sheet

WINEMAKING

Recommendations

The AWRI recommends that a proactive risk management approach is taken with rubber products used in winemaking and that contact times between wine and the rubber are minimised as much as possible. In general, any vessels or ancillary equipment which have a rubber contact surface with the wine should be checked for their potential to impart taints into the wine during processing, especially during extended contact periods. This independent assessment is available through AWRI Commercial Services.

Contact

For further information, please contact:

Neil Scrimgeour

Phone 08 8313 6600 **Fax** 08 8313 6601 **Email** neil.scrimgeour@awri.com.au

Website https://www.awri.com.au/commercial_services/

Address Wine Innovation Central Building, Corner of Hartley Grove & Paratoo Rd, Urrbrae (Adelaide), SA 5064

Acknowledgement

This work was supported by Australia's grapegrowers and winemakers through their investment body Wine Australia, with matching funds from the Australian Government. The AWRI is a member of the Wine Innovation Cluster.