

# Wine Australia for Australian Wine

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## Bulk wine loading, unloading and transportation procedure

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# Bulk wine loading, unloading and transportation procedure

The following procedure is designed to assist bulk wine exporters minimise the potential for wine to be substituted, oxidised or contaminated during transit and thus contributes to the maintenance of Australia's reputation for wines of quality and integrity.

Wine Australia may prevent shipments to offshore facilities where the standards expected by the Australian wine community are not met – either in Australia or overseas. It is recommended that exporters and their agents (including bottlers) comply with this procedure when preparing and loading or unloading bulk wine in the course of transportation.

Exporters may consider providing agents, including transporters and bottlers, with instructions such as those set out in this document to avoid wine spoilage.

## Procedure

### 1. Wine preparation

It is essential to ensure that wine prepared for shipment in bulk is in good condition prior to loading. The following steps should be undertaken before the wine is loaded into the container.

#### **Oxygen**

Dissolved oxygen levels should be controlled.

It may be necessary to sparge the wine with food grade nitrogen or carbon dioxide before loading and again before bottling. Hoses should be purged with inert gas prior to use. Tank filling should be performed in such a manner that oxygen pick-up is minimised.

Dissolved oxygen levels should be measured at the completion of wine preparation and prior to bottling using suitably accurate equipment.

The recommended maximum dissolved oxygen is 1.5 mg/L. A record of this analysis should be retained.

#### **Microbial stability**

Non-fortified wines with greater than 2 g/L residual sugar or 0.2 g/L malic acid can potentially undergo undesirable changes in transit due to microbiological agents.

Appropriate filtration should be carried out on the wine prior to loading. Pumps, hoses, filters and other wine preparation equipment should be adequately sanitised.

Prior to loading and bottling, wine should be assessed for microbial stability.

#### **Organoleptic status**

It is good practice to ensure that the wine is in sound condition prior to loading. A suitably qualified person should taste the wine and assess for any faults before it is loaded. A record of this

assessment should be retained. If possible, organoleptic assessment should be conducted by a suitably qualified professional prior to bottling occurring overseas.

#### ***Wine chemistry status***

It is recommended a chemical analysis of the wine be performed prior to loading and before and after bottling. The following analyses should be conducted:

- alcohol
- total acidity and pH
- volatile acidity
- free and total SO<sub>2</sub>
- residual sugar.

Other analyses such as colour, cold/heat stability, dissolved oxygen, metals, ascorbic acid and malic acid ought to also be considered.

The results should be compared against any agreed standards. Records of analysis should be retained.

#### **Samples**

It is recommended that pre-loading holdback samples are retained for reference in the event of any dispute.

Samples should be taken in glass bottles and sealed with a non-cork closure. The samples should be taken at the last possible point upstream of the container loading, e.g., from the outlet of any in-line filtration that is carried out during loading.

Samples should be retained by the consigner for at least six months. Samples should be identified in a way that links them to both the wine batch and the bulk shipment to which the wine batch is allocated.

#### ***Pre-shipment approval***

It is recommended exporters conduct a formal pre-shipment approval prior to loading. The following steps should be carried out:

- A review of the microbiological, wine chemistry and tasting results should be carried out by a suitably qualified person.
- If the wine meets the criteria for shipment, a formal pre-shipment approval should be recorded against the wine batch.

## **2. Container inspection and preparation**

#### ***Container status***

It is essential that the container is sound and free from contaminants. A suitably qualified person should sight and retain a copy of a certificate of cleanliness for each container loaded. The qualified person should also inspect the container to ensure:

- freedom from taint or odour

- freedom from traces of water, detergents, sanitising agents and previous cargo
- integrity of seals and general soundness.

A record of the container inspection and approval should be retained.

#### ***Flexible containers***

Containers must be made from inert material suitable for wine contact. The material must provide adequate protection against oxygen ingress to ensure the maintenance of wine quality during transit. Appropriate measures should be taken to protect against contamination from volatile compounds (e.g., TCA) during transit.

### **3. Loading and unloading the wine**

#### ***Oxygen***

It is important to exclude oxygen from non-fortified wine during loading and unloading. The container should be filled in a way that minimises oxygen pick-up, using processes such as inert gas cover and low turbulence pumping.

Dissolved oxygen testing should be carried out at the completion of filling to verify that the oxygen content of the product remains below the recommended maximum of 1.5 mg/L. A record of this analysis should be retained.

#### ***Temperature***

Wine temperature at filling is important as wine in bulk can expand and contract. It is recommended that wine is filled into bulk containers at between 15 and 20° C.

The temperature at filling should be recorded for each container.

#### ***Ullage***

Some containers require ullage or headspace to accommodate expansion and contraction during shipment. Bulk containers should be positioned on a level surface prior to filling. The ullage should be appropriate for the container configuration. If possible, the ullage space should be purged with inert gas prior to sealing the container.

The ullage space should be recorded for each container.

#### ***Volume***

An accurate measurement of shipment volume should be carried out.

Volume should be measured either by use of a calibrated flow meter, a calculation based on the net shipment weight and wine density or accurate dipping.

The volume of each shipment should be recorded.

#### ***Seals***

Pilfer-proof seals should be applied to each container.

#### ***Samples***

Further holdback samples should be taken directly from the container at the completion of loading. If the wine is potentially subject to microbial degradation, the samples should be taken in a way that does not threaten microbial integrity. It is recommended samples are sent to the consignee for comparison with the wine in the container at unloading.

#### ***Chemical and organoleptic status***

It is recommended that the chemical and organoleptic status of the wine is verified again at the completion of filling.

#### ***Traceability***

Records must be taken and retained of the container number, the volume despatched, the seal number, the product code, any vintage, variety and origin associated with the blend, and the tank from which the wine was drawn.

### **4. Shipping arrangements**

It is recommended that shipment to the consignee follows as direct a route as possible, avoiding delays, trans-shipping and other potential opportunities for interference or degradation of the product.

### **5. Engagement with bottlers**

The following step is an extract from the [In market labelling and quality control guide for Australian wine bottled in China](#) which is available to download from the Wine Australia website but is applicable to all export markets.

You should advise your customer of the vintage, variety and geographical composition of your wine to ensure the bottler can comply with Chinese labelling requirements even if the wine is blended with other components.

Although bulk wine bottled in China is regarded as domestic product (albeit with the possibility of being labelled as containing Australian wine as the raw material) any quality or safety problem with the final product could reflect badly on the reputation of Australian wine in general. Hence you may wish to advise your customer of the following recommendations:

- The bottler should record the shipping container number in which the wine is received and have a system in place to uniquely identify each wine and to be able to trace it throughout the production process. The bottler should record at least the temperature, the alcohol level, and the sulphur dioxide content of the wine as received.
- Nothing other than permitted materials (see Chinese National Standard GB 2760-2014) should be added to Australian wine. Records should be maintained of sulphur dioxide, or other adjustments.
- Wine should be stored at less than 20° C in full vessels, or in extreme cases, where the vessel is not full, the wine should be protected by inert gas in accordance with Chinese legal requirements. Vessels used for storing wine should not be used for any other purpose.
- Whilst many bottling facilities would have independently audited quality management systems, such as ISO 22000, or HACCP systems, in place, an extremely critical element is to

have a documented glass breakage procedure with all relevant staff trained in its application. The procedure should be easily accessible from all points where breakage may occur in the presence of open bottles. An example of the key points in such a procedure is provided below

- If the wine is subsequently transferred to another facility within China it should be accompanied by copies of all relevant documents regarding its composition and provenance.

#### **About Wine Australia**

Wine Australia supports a competitive wine sector by investing in research, development and adoption (RDA), growing domestic and international markets and protecting the reputation of Australian wine.

Wine Australia is an Australian Commonwealth Government statutory authority, established under the *Wine Australia Act 2013*, and funded by grape growers and winemakers through levies and user-pays charges and the Australian Government, which provides matching funding for RDA investments.