III.4.1 Construction of tanks and ancillary equipment

4.1.1 General

All materials used in the construction of tanks and of ancillary equipment, such as hoses, hose connections, pipelines, seals and gaskets, valves, strainers, pumps, temperature gauges or sampling apparatus, should be inert to wine, and should meet any appropriate legislation concerning materials in contact with food.

Copper and its alloys, such as brass, bronze or gun metal, should not be used in the tanks or ancillary equipment of a ship or road/rail tanker that are designed for the transport of wine. Temperature gauges containing mercury should not be used. Glass equipment and glass sample bottles should be avoided where breakage might lead to contamination.

4.1.2 Tanks

All tanks, pumps and fittings should be constructed of stainless steel, of polished AISI 304 or 316 (EN58J) quality or equivalent rating. Where existing vessels with tanks constructed of materials other than AISI 304 or 316 stainless steel are required to be used, the Purchaser must be informed and his approval to use the vessel obtained in writing in advance. In this event, the Purchaser should notify the Supplier or Agent that approval has been given for the vessel to be loaded subject to the condition of the vessel being acceptable immediately prior to loading.

In all cases, tanks should be fitted with a bottom outlet valve capable of being connected to the pumps to assist cleaning and sanitising procedures, to ensure complete drainage, and to allow bottom loading and discharge of the wine. This is an essential requirement for tankcontainers and roadtankers.

Ideally, ships' tanks should each be fitted with an independent pump which should be reversible to allow wine to be loaded and discharged via a bottom outlet valve. Pumps must be capable of being cleaned, sanitised and inspected as described in Sections 6.2 and 5.1, respectively.

Internal fittings within the tank should be kept to a minimum and should be constructed of the approved grade of stainless steel. For roadtankers and tankcontainers, all internal fittings should be constructed of the agreed grade(s) of stainless steel (see above). Internal ladders must have fully sealed ends except in the case of the side supports of a ladder being specifically designed for use as a loading or discharge pipe. In this case the ladder rungs must be completely sealed from the loading/discharge section.

Tank doors or manways should be of sound construction and well-fitting. They should be easily accessible for steaming, washing with a pressure spray system using a

rotating head or other cleaning and sanitising procedures. Sealing gaskets/washers should be detachable from the tank door or manway to allow manual cleaning and replacement at regular intervals.

It may be useful to equip each compartment of the container or tank with a cleaning-in-place system, correctly sized and positioned. However, this should be avoided if the container or tank is also used to transport viscous liquid foodstuffs.

Tank closing or sealing devices should be constructed in such a way that will not allow the intake of air or liquid during a sea voyage. Where necessary, seals should be tamper evident or should comply with appropriate excise requirements.

Expansion pipes and pressure relief valves should be constructed of stainless steel and be of sound construction. They must be capable of being cleaned and sanitised and should include a non-return valve to prevent the return to the tank of the expanded liquids, with suitable provision to avoid a consequential vacuum in the tank. Particular attention must be given to the pressure in tanks during transport and discharge.

Fittings should be of a common size either 80 mm, 90 mm, 100 mm or 150 mm, preferably of the bayonet type with free jointing or male screw thread. Where non-standard fittings are in use, suitable cleaned and sanitised stainless steel adapters should be made available by the Ship Owner or Freight Forwarder.

It is strongly recommended that tanks should be insulated against temperature variations which might be reasonably anticipated in the course of transit. Where appropriate, further temperature control equipment should be fitted, to give in all cases the possibility to refrigerate the tank or the wine and to monitor temperature.

4.1.2.1 Flexible containers

The containers should be constructed from inert materials, approved for wine contact and impervious to oxygen and potential volatile contaminants (such as chloroanisoles, petroleum, fuel oil,....).

4.1.3 Hoses, pipelines and pumps

All flexible hoses used during loading and unloading must be of inert material suitable for contact with wine, be suitably reinforced and be of such a length to make cleaning easy. Couplings should be of stainless steel or other inert materials. When not in use, all flexible hoses for delivery of the wine shall be stored with the ends capped after draining and not in contact with the floor. There must be clear marking or identification systems for pipelines.

4.1.4 Precautions against unnecessary exposure to air

Pipelines and their connections should be designed to prevent the admission of air. It may be appropriate to sparge the wine with nitrogen, carbon dioxide or a mixture of

nitrogen and carbon dioxide to remove oxygen during loading and unloading. Tank filling should be done wherever possible from the bottom of the tank. Where filling is done over the top of the tank, the pipe (cleaned on the inside and outside) should lead to near the bottom to avoid cascading and thus aeration. It is preferable to purge the pipeline leading to the tank with inert gas before use. However, if air is used a suitable means must be provided to prevent it coming into contact with the wine in the tanks. It is essential that any air or inert gases used in these operations be of food quality.

Where necessary, equipment for the provision of inert gas blanketing of the wine during transport should be fitted in accordance with the appropriate construction and operating regulations or recommendations for tankcontainers.

Containers, tanks or their compartments should be fully filled so as to limit the risk of oxidation.