

International Trade Logistic

Bulk Product: Alcohol



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EPGDIB 17-19 Batch - IIFT

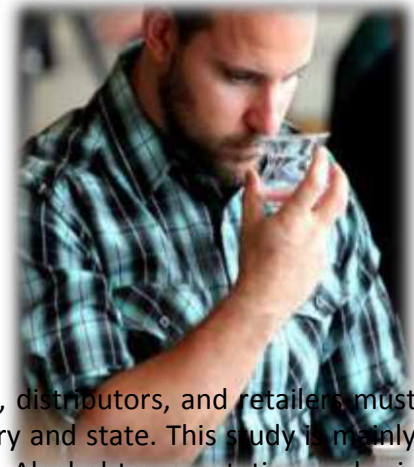
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1. Introduction

Wine, beer, and spirits often signal fun and festivities which results steady demand although the market is a serious challenge due to complexity in supply chain, regulations and most import thing is logistics. Export requirements may vary depending on what product is being exported (e.g. beer, wine or distilled spirits), whether the exporter is also the producer of the product, and/or whether the product is

being exported tax paid or without payment of tax. Suppliers, distributors, and retailers must comply with myriad regulations, many of which vary by country and state. This study is mainly focused to logistics pattern and necessary formalities towards Alcohol transportation on basis of Export-Import/International trade aspects. The Alcohol indicates here the alcoholic liquor segment, e.g; wine, scotch, beer etc.



Shipping wine in bulk has implications for wine quality. This is because wine comprises a complex organic mixture of subtle flavours and aromas that give individual wines and brands their distinctive tastes. The science behind making, bottling and transporting wine is well established and modern analytical techniques are now quite advanced thus significantly improving understanding. The effect of oxygen, fermentation and the impact of temperature are now well documented, and thus control of product integrity is more easily managed. With a better understanding of the wine making process, better materials in which to transport the wine and much improved facilities within the country to handle and bottle the product, bulk filling has become an attractive option. Shipping wine in bulk has many environmental benefits and these are the subject of a separate study¹ and consequently are not covered in detail in this report.

2. Material Handling Equipment

Product – Alcohol

Process of handling - Palletization → Containerization → Use of material handling equipment Mode – Sea

a. At Yard

ForkLift



A forklift (also called lift truck, jitney, fork truck, fork hoist, and forklift truck) is a powered industrial truck used to lift and move materials over short distances. In port it is used to move the pallets. For our case pallets of alcohol. Forklifts are rated for loads at a specified maximum weight and a specified forward center of gravity. This information is located on a nameplate provided by the manufacturer, and loads must not exceed these specifications. In many jurisdictions, it is illegal to alter or remove the nameplate without the permission of the forklift

Reach Stacker



A reach stacker is a vehicle used for handling intermodal cargo containers in small terminals or medium-sized ports. Reach stackers are able to transport a container short distances very quickly and pile them in various rows depending on its access. Reach stackers have gained ground in container handling in most of the ports because of their flexibility and higher stacking and storage capacity when compared to forklift trucks. There are also empty stackers or empty container handlers that are used only for handling empty containers quickly and efficiently.

Straddle Carrier



A straddle carrier or straddle truck is a freight carrying vehicle that carries its load underneath by "straddling" it, rather than carrying it on top like a conventional truck. The advantage of the straddle carrier is its ability to load and unload without the assistance of cranes or forklifts. The lifting apparatus under the carrier is operated by the driver without any outside assistance and without leaving the driver's seat.

The most common use of straddle carriers is in port terminals and intermodal yards, where they are used for stacking and moving ISO standard containers. The carrier straddles its load, picking it up and carrying it by connecting to the top lifting points using a container spreader. They travel at relatively low speeds (up to 30 km/h) with a laden container. Drivers of the carrier sit at the very top and face the middle, so they can see behind and in front of them. Straddle carriers can lift up to 60 t (59 long tons; 66 short tons), which equals up to two full containers.

b. At Loading/Unloading on / from ship

Gantry Crane



A gantry crane is a crane built atop a gantry, which is a structure used to straddle an object or workspace. They can range from enormous "full" gantry cranes, capable of lifting some of the heaviest loads in the world, Ship-to-shore gantry cranes are imposing, multi-story structures prominent at most container terminals, used to load intermodal containers on and off container ships. They operate along two rails (waterside and landside designations) spaced based on the size of crane to be used. There are other material handling equipment like Stacker & Reclaimer at port, but for our case gantry crane is applicable.

3. Type of Vessel & Its characteristics

The classifications of vessels are as follows

- ✦ General cargo vessels
- ✦ Container ships
- ✦ Tankers
- ✦ Dry bulk carriers
- ✦ Multi-purpose vessels
- ✦ Reefer ships

Alcoholic Beverages In terms of the type of cargo for which the containers are mainly intended, they are classified as it is used for perishable goods like meat, fruits and vegetables. The container ships used in the international traffic are designed with the cells.



In this project we have consider sea route for transportation of goods (Alcohol). Alcohol is shipped in container. In container shipping set of terms such as FCL or CL and LCL is used.

- ✦ A container load fills a container, and the container moves through the system as a filled container
- ✦ A less-than container load shipment is some fraction of a container load and will be matched with other fractional loads, possibly owned by other parties, so as to fill a container that can be loaded on and off of the vessel
- ✦ At the other end of the trip, the container is “devanned,” or opened and its contents separated back into fractional loads (DE-STUFFED)

Vessel characteristics

- ✦ Vessel size can be expressed in exterior dimensions; however, a more common measure is tonnage.
- ✦ The most frequently used measure is deadweight tonnage (dwt)

- ✚ DWT: tons of cargo, stores, and fuel a vessel can carry.
- ✚ Gross tonnage is defined as the number of units of 100 cubic feet of permanently enclosed space in the ship, leaving out “exempted spaces” like double-bottom and peak tanks.
- ✚ Net tonnage is gross tonnage less spaces that cannot earn revenue, such as the engine room.
- ✚ Gross tonnage applies to vessels, and is often used to compare the relative sizes of various nation’s fleets



The developing alcohol industry requires a specific, well-functioning and accurate logistics system that can meet the requirement of alcohol importers from different countries.

Organizing cargo transportation by various modes of transport in Europe, the CIS, the Baltics, the Balkans, East Asia, and Central Asia. Company needs and cargo characteristics, develop optimal delivery routes, and calculate the transport costs of excisable goods.

There are various types of alcoholic beverages including: vermouth, wine, beer, and strong spirits, among others. As cargo, alcohol is delicate and subject to the adverse effects of various external factors. The sensitivity to external influences and the properties of alcohol products necessitate strict observance of all conditions and rules for the carriage of alcohol, including special packaging, labeling, and maintaining a certain temperature regime.

Failure to comply with the requirements for transporting Alcohol may lead to cargo damage or other complications. To avoid spoilage and loss of alcoholic properties, it is necessary to maintain a certain temperature regime, monitor the level of humidity in the vehicle, monitor the quality of the label, and use reliable excise warehouses for labeling the goods with stamps and counter labels. The transportation of alcohol products involves fragile glass bottles, the preservation of which requires special security measures. In addition, strict

requirements for the import and export of alcohol are established by legislation on the circulation of excisable goods. In particular, special labeling is mandatory on alcoholic beverage packaging.

Thus, we can say for transportation via sea for product alcohol following vessels can be used.

Supramax ,Panamax and Handymax depends upon shipment size like FCL, CL or LCL.

Ship Classification	Dead Weight Tons	% of World Fleet	% of Dry Bulk Traffic
Panamax	60,000-80,000	19%	20%
Supramax	45,000-59,000	37%	18% w/ Handysize
Handysize1	5,000-35,000	34%	18% w/ Supramax

Shipping Operation

Cargo ships fall into two further categories that reflect the services they offer to industry: liner and tramp services. Those on a fixed published schedule and fixed tariff rates are cargo liners. Tramp ships do not have fixed schedules. Users charter them to haul loads. Generally, the smaller shipping companies and private individuals operate tramp ships. Cargo liners run on fixed schedules published by the shipping companies. Each trip a liner takes is called a voyage. Liners mostly carry general cargo.

- Liner business: typically (but not exclusively) container vessels (wherein "general cargo" is carried in 20 or 40-foot containers), operating as "common carriers", calling a regularly published schedule of ports. A common carrier refers to a regulated service where any member of the public may book cargo for shipment, according to long-established and internationally agreed rules.
- ☐ Tramp-tanker business: generally this is private business arranged between the shipper and receiver and facilitated by the vessel owners or operators, who offer their vessels for hire to carry bulk (dry or liquid) or break bulk (cargoes with individually handled pieces) to any suitable port(s) in the world, according to a specifically drawn contract, called a charter party.

4. Risk of Shipment:

The wine industry is an international business with a substantial turnover. The industry has invested heavily in research and development and many wine producing countries have dedicated wine technical organisations, which typically handle technical and commercial issues.

Following are the few risk which are encountered most commonly while transporting the alcoholic beverages:

- Oxidation: Oxidation is an obvious potential problem with any form of alcoholic beverages shipment but especially so when large volumes are shipped in a single container. A defective seal on an ISO tanker or the use of a flexitank material that is highly permeable to oxygen can allow oxygen entry leading to degradation of the entire shipment. Good housekeeping, careful checking of ISO tank seals and/or the selection of suitable and appropriate flexitanks can mitigate this risk.

- Contamination and Taint: Contamination and taint can be experienced in both bulk and bottled alcoholic shipments. Bulk wine shipped in reusable ISO tanks can be tainted by residues of previous cargoes or through the permeation of compounds found in the walls of single use flexitanks. Contamination and taint can be avoided or limited by ensuring that ISO tanks are thoroughly cleaned before re-use and that the structure of flexitanks includes barrier layers that do not allow the passage of taint compounds.

There are only 2 types of Taints:

- **TCA taint:** This refers to a set of undesirable smells or tastes that impart a musty or earthy smell to the alcoholic beverages that masks or dominates its fruity aroma and reduces the overall wine quality. The condition, invariably blamed on the cork, is the result of a mould that can be transferred to the beverages from a variety of sources including wooden barrels or racks, tanks, cardboard, plastic and other types of winery equipment or facilities.

- **Naphthalene Taint:** Naphthalene is a common organic compound that has many industrial uses. Traces of the vapour often can be found in many environments including shipping and storage facilities and it can sometimes diffuse into storage vessels and contaminate the contents. It has been experienced in wine transported in bulk from the 'New World' to Europe. The sources of naphthalene are numerous, but four potential instances during the loading and transportation have been identified as opportunities for taint: „ residues from prior cargos transported by shipping containers; „ fumigation of containers; „ insecticides placed in containers; and „ container “repairs” using sealants that could possibly contain traces of naphthalene.

The problem can be avoided by good industrial practice which includes: careful container selection, preparation and use of an EVOH barrier to be effective in avoiding naphthalene taint

- **Temperature:** Several factors can influence the quality of alcoholic beverages, temperature being perhaps the most important. Most experts agree that ideal storage temperature is 13° to 15°C. Alcoholic beverages are a complex chemical mixture in which the individual components continually interact with one another. These reactions are not necessarily unwanted, indeed many add to the flavour. Unfortunately, some reactions produce unwelcome products which can impair the taste or age the beverages. Normally an increase in temperature will speed up a chemical reaction. The rate of increase with temperature varies between reactions and this becomes an important consideration for wine storage. Storing the alcohol beverages at higher temperatures will accelerate some reactions more than others and in time will produce a different chemical mix in this alcohol than in alcohol stored at a lower temperature.
- ❑ **Issues in Bottle shipment:** Normally few alcoholic beverages are shipped in glass bottles with cork stoppers, packed twelve to a double-ply corrugated [cardboard](#) carton, and in most instances the individual bottles are protected on all sides by interleaved cardboard. Within a secure stow wine packed in cartons usually travels well; however, apart from straightforward claims for breakage due to impact of the carrying unit, where the cause of the damage is apparent, other factors can give rise to damage. Instances of incorrect stow, in that cartons have been loaded upside down, have caused leakage, which if severe enough will in turn cause deterioration of the cardboard packing and partial collapse of stow, breakage then occurs and loss can be considerable. This loss is not necessarily due to loss of alcohol beverages due to breakage, but to the contamination of sound bottles by discolouration of labels, unsightly appearance because of dried wine residue with glass splinters adhering and damage to the securing seals and cork stoppers. Cleaning of bottles should be considered, also replacement of labels, as long as there has been no damage to the stopper and surrounding seal.
- **Issues in Cask shipment:** Ordinary loss due to leakage varies with the type of wood used and the age of the cask. Chestnut casks show a higher ordinary loss than oak casks and new casks a higher loss than old casks. Excessive heating encourages fermentation and may cause staves of the cask to open up, with consequent leakage of contents. The air which displaces the alcoholic beverages which has been lost through leakage may cause the remainder of the contents in the barrel to oxidize.



Minimizing Packaging Damages: All goods subject to handling and transportation will suffer some degree of stress. Rough handling of a container will damage the contents be they in bottle form or bulked. Alcoholic beverages shipped in containers needs more handling as it is palletised and the bottles and labels may become scuffed. In some circumstances labels can become detached from the bottle. Bag-in-a-box format packaging can suffer from flex cracking due to handling which will then reduce its shelf life as it becomes more prone to oxidation. Bulk shipping and packaging in the consuming country minimizes the distance that a product travels in its packaged form, thus reducing the opportunity for damage to occur.

5. Cost of Shipment:

Unquestionably, alcohol is heavy— both from the liquid and the glass containers. Yet businesses in the industry have adopted the best practices to cope with higher

transportation costs while shortening the global supply chain. They have found that sustainable solutions not only lower costs, but also protect the environment.

Key types of Logistics cost :

- Direct costs (transport, storage, inventory, handling, communications) and indirect costs
- Fixed and variable costs,
- ☐ The cost of supply, production and distribution,
- Tangible and intangible costs,
- The cost of the development of logistics and projects recommended by the logistics,
- Strictly logistics costs.

Logistics costs are expressed in money the consumption of human labour, resources and objects of labour, financial expenses and other negative effects of events. They are caused by the flow of material goods in the enterprise and between enterprises, as well as during maintaining inventories.

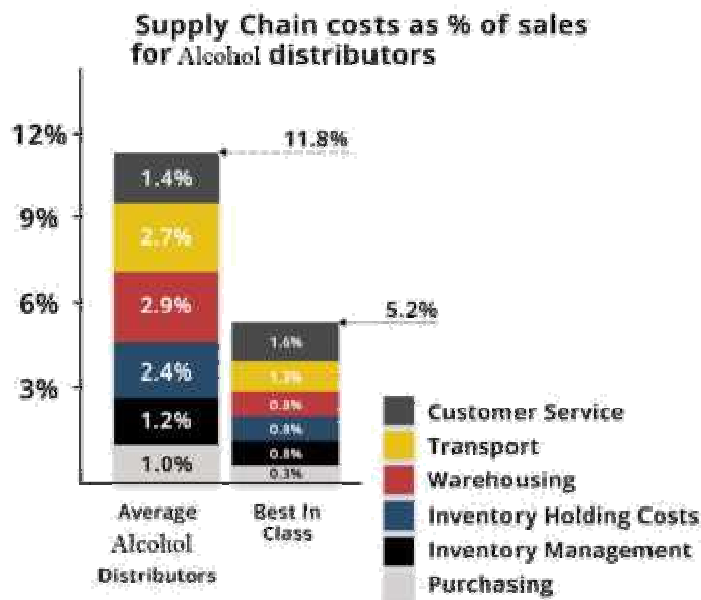
Logistics costs arise in the following stages of production:

- Acquisition of materials, intermediates and other products from suppliers,
- Storage of materials and waste,
- External and internal transport,



- ☐ Production planning,
- ☐ Storage of semi-finished products,
 - Storage of finished products,
- ☐ Transfer of finished products to customers.

According to the criterion of variability we can be on fixed and variable. To fixed costs include, among others, depreciation costs of storage, transportation, cash outflows from taxes and fees. Variable costs are labour costs, costs of involved capital, consumption of materials and fuels. Cost calculation allows to identify the threshold of profitability. Thus it is possible to determine the type and nature of the relationship between these logistics costs and overall company's performance.



Costs associated with safety :

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