

FLEXITANK: INNOVATING TRANSPORT¹

The Young Freight Forwarder of the Year Award, 1999

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Flexitanks have been on the market for more than 20 years now, yet awareness of its advantages is still insufficient. In the following pages the author will try to elaborate on the strengths of this fairly new packaging through a hypothetical case study in which Flexitanks will be benchmarked against traditional drums.

But what are Flexitanks? The Flexitank is a type of packaging which, when appropriately installed in a 20' container, enables the transport of non-flammable liquid bulk cargo. It has a capacity of up to 23 cubic metres, depending on the specific weight of the liquid, enabling a standard 20' container to take up to 21.5 tons of the product. Being made of nylon or polyester thread and covered on one or both sides with thermoplastic polymer, there is a different type of Flexitank for each type of liquid. In fact, for some products the interior is covered with an extra layer of polyvinyl fluor to ensure the integrity of more delicate liquids like wine or fruit concentrates. Its ability to be cleaned and folded into 2% of its maximum volume allows it to be sent as LCL cargo where it may be needed, thus avoiding expensive shipments of empty ISO tanks or 20' containers full of empty drums.

In addition to the obvious cost reductions of the Flexitank, the author would also like to stress on the increasing importance of two concepts, the second of which is partly a result of the first: environmental considerations and reverse logistics.

Although the proposed work hypothesis is valid in current market terms and all cost figures are as exact as possible, prices may have varied considerably since this paper was finished around mid April 1999. In addition, please note euro/dollar exchange

rate used is the one in force on April 20th, 1999: 1 US\$ = 1,0636 €.

Supposition

This study covers transport possibilities for the export of one and a half million litres of self-propulsion lubricant from a Cartagena based refinery to a customer in Singapore. The terms of contract include the split up of the oil into four parts of 375.000 litres each to be shipped as from July 1st 1999 in four months intervals. Both parties have agreed on DDU (Delivered Duty Unpaid) sale conditions.

Singapore is possibly the Asian country with most governmental concern for environmental issues. Consequently, there are laws making it compulsory for all importers of packaged goods to return the packaging to the country of origin or, alternatively, to recycle it. For benchmarking purposes, the latter is the option chosen, for it is cheaper than the repatriation of the drums.

Transportation Alternatives

The study of the transportation alternatives has been split into four sections.

First, the oil must be shipped from the customer's facilities to Valencia Port (around 300 Km). Cartagena's port could have also been selected but equipment shortage and sufficient inducement clauses are not worth the minor savings that could be obtained. Two options are taken into account: overland and railway transport, being US\$ 446 and US\$ 400 respectively the costs for these two possibilities. Due to obvious savings, acceptable transit time and flexible timetable of the railway system, the latter is chosen.

¹ This is a synthesis of the full paper so many details have been omitted. The complete version, which won the award, may be found at <http://personal.redestb.es/~jrc>. It may also be requested by email from jromeu@tiba.es, indicating the preferred language (English or Spanish).

Second, an ocean carrier must be selected to ship the containers to Singapore. After consulting several agents in Valencia, it was made clear that price differences are worthless and other factors like transit time, frequency and space availability should be considered. Also, since TIBA Internacional is related to Evergreen's agent in Spain, selecting this shipping line would allow producing larger profits for TIBA's shareholders whilst offering greater reliability to the client.

Next, decisions on the transport means in destination are in the hands of TIBA's agent in destination (R.T.W. Singapore Pte. Ltd). The importer does not have a rail branch line available so haulage from the port of Singapore to his facilities would have to be done, necessarily, by road. Should Flexitanks be used instead of drums, there would be an additional cost for the transport from the importer's facilities to TIBA's agent's to remove the Flexitank (stop-over).

Last but not least, it should be decided whether to use drums or Flexitanks. In the table to the right, the costs associated to both options are shown.

(cost in US\$)	Drums	Flexis
Costs Relative to Drums		
Price per drum	19	0
Recycling cost per drum	8	0
Drums per container	96	0
TOTAL PER CONTAINER	2.547	0
Costs Relative to Flexitank		
Purchase:		
Cost	0	1.438
In Origin:		
Installation of Flexitank in container	0	29
Cardboard supply	0	11
Pressure test	0	29
Technical assistance	0	21
In Destination:		
Removal	0	33
Washing & Desinfecting	0	29
Technical assistance	0	23
Inspection of received Flexitanks	0	17
Air drying	0	7
Stop-over (extra stop)	0	27
TOTAL PER CONTAINER	0	1.663
Comparison		
TOTAL PER CONTAINER	2.547	1.663
Difference per Container		-884
Difference per Container (%)		-34,7%

(cost in US\$ per shipment)	Drums	Flexis
Cost of Packagings		
Purchase & Removal/Recycling	48.393	28.271
Costs in Spain		
Railway (400\$ / 290 km)	7.600	6.800
Expenses in Valencia Port		
THC/L - Port Handling	2.850	2.550
Other Ship Agent Expenses	190	170
T/3 - Port Dues	1.083	969
Customs Clearance	437	391
Doc. and Miscellaneous	190	170
Ocean Freight		
Sea Freight	1.900	1.700
Freight Commission (2,5%)	-48	-43
Expenses in Singapore		
THC/D - Port Handling	2.185	1.955
Delivery Charges	570	510
Customs Clearance	304	272
Forwarder's Rate	760	680
Haulage (120 US\$ / 55 Km)	2.280	2.040
Total of Direct Costs	68.695	46.436

Although these are rough estimates, the 35% cost difference between both options should suffice to show how cost-effective Flexitanks are. Moreover, because Flexitanks

can maximise container capacity (22.162 vs. 19.680 litres), 17 instead of 19 containers per shipment are needed, resulting in obvious cost reductions. In the table to the left, this difference can be appreciated.

Apart from these direct costs, which depend on the number of 20' containers used, there are some fixed expenses, established for each shipment.

The following table details these additional costs. Please note that *Insurance Fee* is slightly higher for Flexitanks and that the percentage is applied to the price of the oil shipped, in this case, 375.000 litres at 1,2 US\$/litre.

Other Expenses	Drums	Flexis
Shipping Line Doc - B/L Fee	6	6
Miscellaneous	10	10
Insurance Fee (0,3% - 0,5%)	1.340	2.246
Comercial Expenses	61	54

Cost & Profit Decisions

Adding up all these figures, the total cost per shipment is obtained. This relates to the freight forwarder's cost, so a profit margin decision must still be taken.

Since the price difference between Flexitanks and drums is considerable, the freight forwarder may still increase its standard market profit. In fact, instead of the ordinary 5% margin, the author suggests applying an amazing 25% profit margin, effectively multiplying it by five whilst still reducing the price of the operation by a considerable 20% compared to the drums option.

Finally, a price offer must be communicated to the customer. The best way to avoid him trying to haggle on different items and lower the price is by offering a single total price per load unit (a lump sum). It is a question of hiding the cost details by offering just a price per litre, kilo or ton of lubricant to be shipped. Moreover, this makes the client's cost accounting work enormously easier.

that are not flexible enough to adjust to new technology appearing on the international transportation scene. On the other hand, it is a great advantage for freight forwarders who, like TIBA Internacional, have got ahead of the market and have been offering this new form of transport for some time now.

By this case study I also wish to underline the great importance of the freight forwarder. The hypothesis developed here is full proof of his well-earned reputation as a "transport architect". This is not science-fiction but the case study of an operation of great magnitude which, thanks to the involvement of a competent forwarder, TIBA Internacional, has gone from being unviable (due to cost and environmental problems) to being perfectly feasible (economic and environment friendly) and, therefore, the perfect solution for the client.

Profit & Price Offered	Drums	Flexis
Total Cost per Shipment	70.112	48.752
Gross Profit (5% - 25%)	3.506	12.188
Total Price per Shipment	73.618	60.938
Price per litre (US\$)	0,1969	0,1598
Price per litre (Pta)	31	25

The profit the freight forwarder would obtain for the whole operation (four shipments) would be just under 50.000 US\$, which would justify the author's wages for the two years the operation would last! On the other hand, the customer would save over 55.000 US\$ thanks to TIBA Internacional's Flexitank offer.

Conclusions

The use of the Flexitank can be understood as the response of its inventor to the growing and unsatisfied needs of the market: the continuous lowering of transportation costs. Until a short time ago, bulk liquid products were transported in ISO Tanks, in 205 kilo drums or in tanker vessels (with quite large shipments). The appearance of the Flexitank is like a double-edged sword.

On the one hand, it represents a threat to those freight forwarders or logistics operators