

“Flexitank Transports – A Critical Assessment”

- IUMI Webinar -

Nicolas Gabriel

Divisional Director/Consultant

Battermann & Tillery Global Marine GmbH

Agenda

- ✓ Overview & History
- ✓ Organization & Standards
- ✓ Standards vs. Reality
- ✓ Further Claims Issues
- ✓ Surveyor's Requirements
- ✓ Loss Prevention
- ✓ Future Prospects

Overview & History

Methods of transporting non-hazardous bulk liquids



Overview & History

Advantages

- Often cheaper solution compared to single-unit packaging (bottles, drums, etc.)
 - More transport volume per container compared to single-unit packaging
 - No return transport costs for drums, IBCs etc.
 - No cleaning costs
- Transport more easily organised due to limited availability of tank containers and tank trailers
- Transported volume worldwide cannot be ensured anymore by tank containers
(necessary transport system which has become some kind of industrial standard)

Overview & History

Not only advantages and opportunities, but also new risks and opportunities for damage which are to be considered!



Have you ever had a claim related to flexitanks?

Those risks were considered and presented to IUMI members as early as 2010.



Misuse of the Standard Box by Flexibags and the Results

Hapag-Lloyd AG
Captain Hans-Joachim Grasshoff
September 2010

12 TO 15 SEPTEMBER

Expansion of the Flexitank Transports



Apr. more than 250,000 Flexitank Movements were recorded in 2009

The expected growth has indeed taken place:

Around 1.5 million containers with flexitanks installed inside them are transported every year (around 50% of the transported cargo is wine) – a sixfold quantity within 11 years



A continued Growth is projected for the next Years

12 TO 15 SEPTEMBER

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Risk potential in the Transport Chain



Transport Chain

- **Truck** uneven roads, braking hard, narrow curves - The trucker should have experience in handling liquid cargo transports.
- **Rail** heavy collisions during shunting the wagons, up to 4G.
- **Barge** apart from the loading and discharging process relative safe.
- **Terminal** rough handling is usual, container bridge, loading, discharging, straddle-carrier.
- **Ocean Vessel** constant movement, can be extreme due to bad weather.

Potential in the Transport Chain



August 2009 in Hamburg

- A dog had crossed the street, the trucker kicked the brakes. The wave in the flexibag was so strong that the bag burst and many thousand liter red wine were floating the street.

Imagine what will happen if this is olive oil instead of red wine.



Overview & History

30 cm bulging and this will definitely reduce the stability of the container



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Overview & History

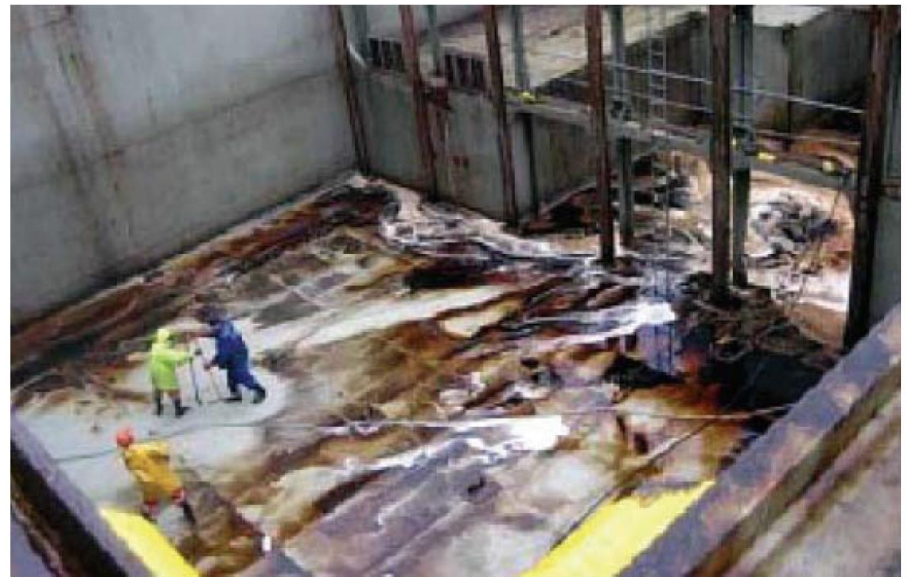
Leaked Liquids in the Cargo Hold



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Cleaning of the Cargo Hold after the Oil Leakage



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Aims and Measures



- We have established a working group with the C.O.A. (Container Owner Association) to set standards for a safe transport of flexibags in container.
- The quality of the flexibags will be improved with the rail tests.
- The combination bag, container and bulkhead is going to be improved continuously.
- Customers and Shipping companies will get a better choice.
- Flexibags with low quality should not be used.

The shipping companies can have a share in the improvement of the transport with flexibags by selection criteria for the bag, MSDS*, routing, stowage on the vessels.

- Stow flexibags on safe positions.
- flexibags are special cargo.
- Declaration is required, for planners to know where to stow the container.

* MSDS = Material Data Safety Sheet

What can the insurance companies do?



- **Has max payload been reduced?**
- **Has safety been sufficiently increased?**
- **Has quality of flexitanks and containers been sufficiently improved?**
- **Have emergency systems been implemented?**
- **Have requirements of ocean carriers been increased?**
- **Can suitable stowage positions still be considered?**

Organization & Standards

Since 2010, the COA (Container Owners Association) has developed the following regulations:

- Code of Practice – flexitank (operators)
- Code of Practice – flexitank (manufacturers)
- COA Quality Compliance e-FMQL document

Organization & Standards

The parties involved in flexitank transport may achieve COA Quality Compliance by:

The manufacturer may achieve the COA Quality Compliance by:

- Compliance with the COA Code of Practice V6-M
- Completion of five audit requirements:

Audit requirement	Remarks	CoP. Ref: Section
Declaration	Declaration. Ref: section 2	2
ISO 9001 quality management system		7.2
ISO 14001 environmental management	Or an equivalent policy or standard	7.3
Installation, operating and training instruction manual.	Includes the manufacturer's manual and added operator's specific functions	7.4
Materials Production Batch Test	PAS1008:2016	7.5
Rail impact test	PAS1008:2016	7.6

Organization & Standards

Binding standard to be considered:

IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units (CTU-Code)



Organization & Standards

Transport requirements as per COA

- Use of a “general purpose 20’ container”
- Minimum gross mass 30,480.00 kg (heavy duty)
- Maximum flexitank capacity 24,000.00 l
- Maximum flexitank weight 24,000.00 kg
- Reference to CTU-Code Chapter 5 and especially to Annex 7 Section 5.2.

Organization & Standards

Flexitank transport criteria as per CTU Code

- Ch. 7, 7.2.10:
“...However, CTUs used for such purposes should be suitably reinforced and prepared, operational restrictions regarding the permissible payload should be observed (see annex 7, section 5)”
- Annex 7, 5.2.2:
“During transport the contents of a flexitank will be subject to dynamic forces without significant retention from friction. These forces will act upon the boundaries of the CTU and may cause damage or complete failure.”

Organization & Standards

Container criteria as per CTU-Code

- Ch. 6, 6.2.4: The side walls are capable of withstanding a uniform load equal to 60% of the permitted payload
- Ch. 6, 6.2.4: The front wall and the door end are capable of withstanding a uniform load equal to 40% of the permitted payload
- Ch. 6, 6.2.4: The floor can withstand 100% of the payload uniformly distributed
- Ch. 6, 6.2.5:
 - MSL 10 kN (lashing points at the bottom), some newly-built containers MSL of 20 kN
 - MSL 5 kN (lashing points at the top in the container)

Organization & Standards

Consequences based on CTU Code

Side wall – ocean transport (mt)	Payload (mt)	Front wall – road transport (mt)
22.50	30.00	15.00
21.75	29.00	14.50
21.00	28.00	14.00
20.25	27.00	13.50
19.50	26.00	13.00
18.75	25.00	12.50
18.00	24.00	12.00

Maximum permissible load in combined transport road/sea for container
with payload 30.00 mt = **15.00 mt**

Organization & Standards

PAS 1008:2016

PAS 1008 specifies requirements for:

- The material properties of the flexitank film and, where fitted, the sleeve
- The leak tightness of the loading/discharging valve(s)
- The flexitank system's resistance to a rail impact defined as a 2g (gravitational unit) retardation or acceleration force
- The provision of flexitank information.

Organization & Standards

PAS 1008:2016

Rail impact test:

- 2g impact towards doors
- 2g impact towards front wall

Does this really reflect existing transport strains?



Standards vs. Reality

It's all about the money!

- Flexitanks usually have a capacity of 18,000.0 litres or 24,000.0 litres and containers have a payload of 30,480.00 kg (heavy duty container)
- Usage of flexitanks with smaller volume capacities = not a cost-effective transport solution!!!
- Nearly all transported flexitanks are overweight based on the weight restrictions as per CTU Code
- Any container damage and resulting leakages are simply accepted.
- Shipping companies accept the containers and pass the responsibility of compliance with the CTU Code on to the container packers. Refusal of any responsibility/liability by ocean carrier.
- Any costs resulting from leakage or container damage are claimed by the ocean carriers.

Standards vs. Reality

Consequences



Increasing damage and costs for cargo underwriters!!!!

Standards vs. Reality

Consequences

In addition: Who takes responsibility for this?



Should regulatory action be taken and international standards be developed to address shortcomings of flexitanks?

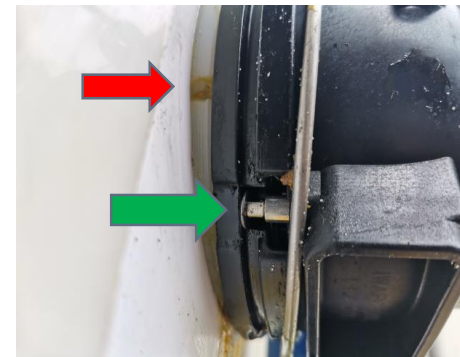
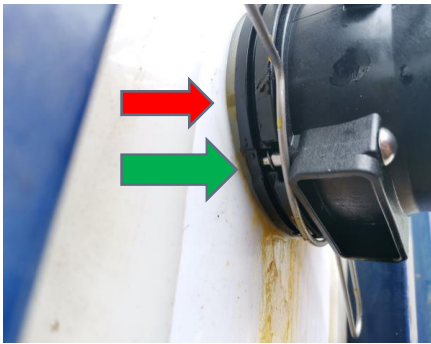
Further Claims Issues

- Numerous installation errors
- Flexitank production failures
- Excessive transport strains/handling damage
- Sharp edges/objects
- Overfilling/underfilling (swelling of the fluid product)
- Product not suitable for the type of tank used

Often extremely difficult to be identified after the leakage has occurred!

Further Claims Issues

Even the smallest deviation or discrepancy can cause leakages and result in high costs.



- Red arrow - the recess in which the valve pin should fit.
- Green arrow - the pin which is supposed to be locked.
- The pin should be positioned in the recess marked with the red arrow.

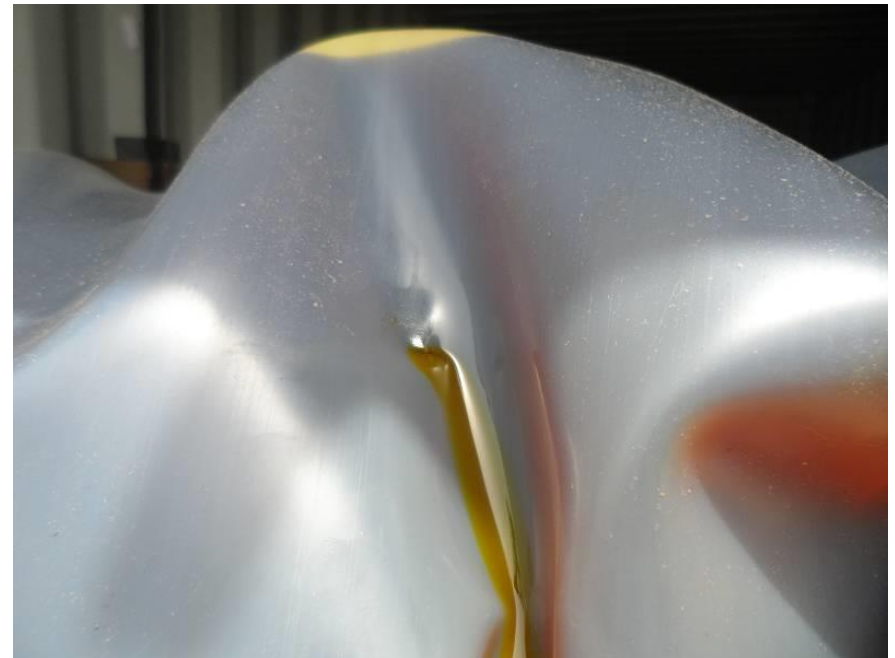
Further Claims Issues

Excessive temperature = sudden discharge



Further Claims Issues

Installation error: positioning of flexitank



Further Claims Issues

Incorrect usage of heating system



Further Claims Issues

Handling damage



Further Claims Issues

Unloading difficulties



Surveyor's Requirements

- Relevant documents to be provided before survey
 - MSDS cargo
 - Technical data sheet flexitank
 - Installation manual
 - Installation documentation
- Cooperation of all parties involved (refusal of delivery by consignee)
- Container and flexitank not to be tampered with

Surveyor's Requirements

Cooperation and assistance of parties involved is of paramount importance:

- Transshipment/unloading has to be undertaken immediately to prevent further product loss and possibilities of contamination from the product
- Transshipment/unloading has to be undertaken immediately to prevent increase in consequential costs (cleaning costs, container demurrage, etc.)
- Detailed survey to evaluate the cause of loss only possible once flexitank is completely emptied

Surveyor's Requirements

Successful survey impossible

– recovery possible?



Surveyor's Requirements

Lead time to survey – successful survey has to be prepared and supported.



Loss Prevention

- Frequently trained staff and checklist procedures
- Supplier selection program
- COA certified manufacturer including further improvement of standards, i.e. load distribution to container walls
- More rigid containers – Is that feasible?
- Use of 40' container with tanks of less height
- Emergency agreements to be implemented between parties involved

Future Prospects

- The demand for flexitank transports is further increasing due to the setting of industrial standards
- Development of various new flexitank systems = increasing complexity, i.e. flexitank usage in reefer containers, irradiated and sterile flexitank systems
- The use of 20' containers is being phased out; being replaced more and more by flexitanks in 40' containers
- Possible solution of the problems with the CTU Code through the development of self-supporting systems

Future Prospects

- Increasing plastic waste
 - Implementation of recycling system
 - Regulation/agreement regarding used polyethylene material





Thank you!