
COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS AND ON THE GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS

Sub-Committee of Experts on the Transport of Dangerous Goods

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PACKAGINGS (INCLUDING IBCs AND LARGE PACKAGING)

Drum Performance Statistics

Transmitted by the expert from Australia

Introduction

Over the past 5 years there have been several proposals to introduce new performance and type tests, including vibration tests, for packages intended for use to transport dangerous goods.

In the interests of providing some relevant data, the following performance information on the performance of drums when used to transport dangerous goods has been compiled.

The performance details are set out in some detail below but in brief:

- ~~///~~ Failures may be categorized into two groups – transport and handling;
- ~~///~~ The failure rate of packagings is extremely low in both groups;
- ~~///~~ There is no pattern to the failures nor any evidence of systemic failures;
- ~~///~~ There is no indication that any change to the current test regime would result in enhanced performance;
- ~~///~~ The absence of any pattern and the very low failure rate made it impossible to differentiate between the performance of drums from USA (where shock testing is mandatory) and the rest of the world.

Source of data

Drum failure information was collected from nine chemicals companies and three drum reconditioning companies in Australia. Most of the chemicals companies had international affiliations and transported products across Australia by road or rail. The data applies to some 400 000 movements of dangerous goods in 2003 and the journeys ranged from several kilometres to transnational journeys of up to 6000km.

The reconditioning companies collected and distributed drums Australia-wide.

Results

Chemicals industry

Description of failure - Transport	number of failures.
Rubbing of sides	10*
Bottom seam failure	5
Pierced by screw in truck	1
Total transport failures	16
Failure rate Transport	40 per million movements
Description of Failure - Handling	
Dropped while loading or unloading	7
Speared by forklift	2
Total handling failures	9
Failure Rate - Handling	22 per million movements

**NOTE: Eight of the transport failures were in one poorly stowed 6000km journey.*

Reconditioning industry

The information from the reconditioning industry was not as specific as that from the chemicals industry. It was not specific to a year, and was not as rigorously collected by all participants. However, it covered some 5 million movements per year.

What it confirmed were the following:

The failure rate was similar to that found by the chemicals industry (10-15 per million movements).

Poor stowage, inappropriate closures, and abrasion (projections) were the biggest contributors to failures in transport.

Poor handling operations were also significant contributors to failures.

Conclusions

Of all these failures, only the bottom seam failures may have been avoided by better performance in a vibration test. This amounts to 12 failures per million movements.

For accident avoidance, the industry would get a better return from investing more time in improving stowage of packagings, (27 failures per million movements), then directing its attention to improving handling operations (22 per million).
