PHMSA / Tobyhanna Test Report Database

RIPA Summary and Analysis

October 18, 2012
Definitions to Aid in Analysis

“Packaging”: The subject of a complete test project at LOGSA.

e.g., 1A2/Y1.2/100/05/USA/M1234
     or
     1A2/Y1.2/100/06/USA/M4321

Different “Packagings” can be of the same design-type; but different design-types cannot be the same packaging.

“Unit”: An individual drum or IBC.

“Series”: Units in a specific performance test such as the drop test (6 units) or hydro test (3 units).
The DOT / PHMSA / LOGSA Database

547 Packaging Test Projects Since 1996

(Closed cases only; through 2011)

Reconditioned Drums ("RL")

37 Packagings Tested

37 Packagings Failed

36 Packagings Marked for Liquids

15 1A1’s  21 1A2’s  1 1H2

24 of the 37 rated @ 1.2
New Drums

300+ New Drum Packagings Failed.

45 New Drum Packagings Passed.

24 of the 45 passed are marked for solids.

1 was dual marked.

20 of 45: Plastic Drum

9 of 45: 1A1

15 of 45: 1A2

1 of 45: Fiber
Closures

Closures on all drum packagings that passed *(only new packagings passed)* varied evenly among:

Rieke, TriSure, Drum Parts, and the "packaging’s manufacturer" *(THEIR entry)*.

No discernible trend or advantage seen for affecting Pass/Fail rate.
Composite IBCs (31HA1)

23 IBC Packagings Tested

16 New 14 Failed

7 “Recon” 6 Failed
Six IBC packagings were rated at 69 kPa, one was rated at 80 kPa, and one was rated at 41 kPa.

All others were rated at 100 kPa.

3 IBC packagings passed all tests. 2 were rated 100 kPa, one was rated 41 kPa.
**IBC PASS / FAIL Rate (individual units)**

*Multiple units were tested for some packagings*

<table>
<thead>
<tr>
<th>Test</th>
<th>Pass</th>
<th>Fail</th>
<th>Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop Test</td>
<td>12</td>
<td>16</td>
<td>38</td>
</tr>
<tr>
<td>Stack Test</td>
<td>18</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Leak Test</td>
<td>10</td>
<td>13</td>
<td>23</td>
</tr>
<tr>
<td>Hydro Test</td>
<td>6</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>Vibration Test</td>
<td>9</td>
<td>22</td>
<td>31</td>
</tr>
</tbody>
</table>

4 “No Test”
5 “No Test”
3 “No Test”
Compliance Testing at LOGSA (Tobyhanna)

Follows DOT Design-Type Qualification Testing.

With some additional units tested for information purposes.

6 drop test
3 stack test
3 leakproofness \( (\text{if applicable}) \)
3 hydrostatic \( (\text{if applicable}) \)
3 vibration \( (\text{capability test}) \)
6 additional for information purposes

24 total units
IBC Sample Size Taken to LOGSA

5 IBC units are selected for shipment.

2 units are required for principal testing.

These 2 are selected at random from the five received at the lab.

The 3rd unit is used for weights and measurements.

The 4th and 5th units are for additional, informative testing -- or other uses as needed.
Old and New Policy Re: Additional Testing

Old policy was to try and re-test for each failure. That has been abandoned very recently.

Additionally, for past 3 years, no additional tests if: two or more units in a series fail.

Example: One hydro failure - then one more test. Two hydro failures? Then no additional testing.
**Reading the Table Entries**

In the columns for specific test (series) results:

The first “top” number indicates the number of failed units in that test series – for instance the hydro test.

The second “bottom” number indicates all failures for the packaging across all series – i.e., the whole project.

Add all the top numbers for a packaging and it should equal the bottom number.
### Excerpted from the LOGSA Database on PHMSA’s Website

<table>
<thead>
<tr>
<th>Packaging</th>
<th>Drop</th>
<th>Stack</th>
<th>Leak</th>
<th>Hydro</th>
<th>Vibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A1/X1.8/250/05/USA/Mxxxx</td>
<td>4/6 Failed</td>
<td>Passed</td>
<td>1/6 Failed</td>
<td>1/6 Failed</td>
<td>Passed</td>
</tr>
<tr>
<td>1A1/X1.8/300/05/USA/Mxxxx</td>
<td>1/3 Failed</td>
<td>Passed</td>
<td>Passed</td>
<td>2/3 Failed</td>
<td>Passed</td>
</tr>
<tr>
<td>1A2/Y1.5/150/06/USA/Mxxxx</td>
<td>1/4 Failed</td>
<td>Passed</td>
<td>Passed</td>
<td>3/4 Failed</td>
<td>Passed</td>
</tr>
<tr>
<td>1A2/Y1.2/100/USA/Mxxxx/06 RL</td>
<td>4/14 Failed</td>
<td>Passed</td>
<td>4/14 Failed</td>
<td>6/14 Failed</td>
<td>Passed</td>
</tr>
<tr>
<td>1A1/Y1.2/200/USA/Rxxxx/06 RL</td>
<td>Passed</td>
<td>2/3 Failed</td>
<td>1/3 Failed</td>
<td>Passed</td>
<td>Passed</td>
</tr>
<tr>
<td>1A1/X1.3/250/05/USA/Mxxxx</td>
<td>8/8 Failed</td>
<td>Passed</td>
<td>Passed</td>
<td>Passed</td>
<td>Passed</td>
</tr>
</tbody>
</table>
Major Factors Affecting Pass / Fail

- Liquids vs. Solids?
- Open-Head vs. Tight-Head?
- Level of Performance Ratings?
- New vs. Reconditioned?
- Thickness? *(sparsely reported in the database)*

Further analysis of the LOGSA database by RIPA is needed to quantify the relative weight of these factors. Approximately, though, they are presented here in descending rank of significance.