



U.S. Department  
of Transportation

Research and  
Special Programs  
Administration

400 Seventh Street, S.W.  
Washington D.C. 20590

Q&A's 1992

QUESTIONS AND ANSWERS REGARDING  
TESTING AND CERTIFICATION

These questions and answers were compiled from a series of questions posed to RSPA by the DOT-approved third party certification agencies.

Q1. Has DOT initiated a program to put UN certifications on a database similar to the DOD programs now in progress? If not, is one being considered?

A1. A packaging manufacturer or distributor can voluntarily list its UN certified packagings on the Hazardous Materials Information Exchange (HMIX) under Topic 23, "RSPA International Activities Relating to the Transport of Dangerous Goods," in the category "UN Packagings." --No database program has been initiated for recording UN certifications issued by third party labs.

Q2. At the last third party testers meeting, DOT indicated they would be keeping all certifiers informed of interpretations issued related to package certification. What is the status and has HMIX been considered as a means for providing this service?

A2. On a number of occasions, DOT has sent out interpretations of general applicability. In addition, HMIX has been used to send out Q&A's. HMIX could be used in the future to disseminate information, with hard copies to those without access to HMIX.

- Q3. Could a mechanism be established for getting information to third party certifiers as it relates to position papers on package testing being submitted by other UN countries to the UN Subcommittee? Such a system would allow third party certifiers to provide input and recommendations to DOT on these proposals.
- A3. The UN papers are available for review in the public dockets. In addition, the text of U.S. papers, and the titles of papers submitted by other countries, can be accessed on the HMIX under Topic 23, "RSPA International Activities Relating to the Transport of Dangerous Goods." The HMIX is available to third party certifiers, and many trade associations, such as the Hazardous Materials Advisory Council, monitor these papers. U.S. papers for meetings of ICAO and IMO are also available on HMIX.
- Q4. Which quality assurance standards, if any, apply to the calibration program at the third party labs? (i.e., ANSI 45.1, MIL-STD-45662, or 10CFR50 App. B)
- A4. DOT does not apply any specific quality assurance standards for calibration.
- Q5. HM-181, ICAO and IMDG specifications are referenced in the UN third party packaging certification agencies letter dated January 16, 1992 from Mr. Jones. Please clarify which document supersedes the other.
- A5. It is not a question of whether a certain document "supersedes" another. It is a question of how a package is to be shipped and by what mode of transportation. For shipments within or through the United States, compliance with 49 CFR (HM-181) is required, except as provided in 49 CFR 171.11 and 171.12. To facilitate trade, particularly in Europe, it is recommended that the documentation certify compliance with performance packaging requirements of the IMDG Code and/or ICAO Technical Instructions.
- Q6. Is the IATA a specification that must be complied with for UN certification? Please clarify.
- A6. The IATA Dangerous Goods Regulations are not recognized by the U.S. DOT.

- Q7. How do we deal with products advertised as DOT certified i.e., plastic bags for pressure tests, that subsequently fail certification testing?
- A7. If you become aware of an instance of non-compliance with the Hazardous Materials Regulations, you should notify the Office of Hazardous Materials Enforcement (OHME) in writing at DHM-40, Research and Special Programs Administration, 400 Seventh St., S.W., Washington, DC 20590, or by phone at (202) 366-4700. You may also transmit the information to OHME on the HMIX or notify one of the Office of Hazardous Materials Enforcement Regional offices.
- Q8. For single or composite packagings, it is authorized to use a packaging certified for liquids for a solids application without retesting. Why are inner packagings of a combination packaging excluded from this provision?
- A8. Because the UN Recommendations (9.7.2.1) specifically state that, for combination packagings, separate testing is required for liquids and solids.
- Q9. A packaging which has been certified for Packing Group I hazardous liquids may be used to ship Packing Group II and III hazardous liquids with higher specific gravities (49 CFR 173.24a). In the case of combination packagings, can the gross mass of the Packing Group I marked package be exceeded when filled with a higher specific gravity of Packing Group II or III materials?
- A9. No. These provisions are for single and composite packagings only.
- Q10. Paragraph 178.503(a)(4)(ii) requires for packagings intended to contain solids that the authorized gross mass in kilograms be designated. Should this authorized gross mass appear as a whole number or carried out to one-tenth of a kilogram?
- A10. The maximum gross mass should generally appear as a whole number, except in cases where it must be carried out to a decimal (eg. for a mass less than one kilogram). If the gross mass appears as a whole number, it must be rounded down.

Q11. Is there or should there be a specific set of minimum requirements for the preparation of a test report? (i.e., does the report have to meet the requirements of DI-R-7127?)

A11. A test report must contain the information specified in paragraph 178.601(k). That is, specific types, dates, locations, packaging specifications, test specifics (drop heights, hydrostatic pressures, etc.), results, and test operators' names or name of person responsible for testing. Beyond that, we do not specify content or format of the test report. However, we stress the importance of complete documentation so that a packaging in transportation can be linked back to a specific test report. The test documentation must identify exactly what was tested.

We do not understand the reference to "DI-R-7127." ASTM has been working on guidelines for the preparation of test documentation under ASTM D 4919. DOT participated at the start of development of the standard; however, DOT has not been involved in any additional drafts. The UN Subcommittee of Experts agreed to minimum requirements for test documentation at a recent session. If those minimum requirements are adopted into the UN Recommendations, we will consider proposing them for adoption into 49 CFR.

Q12. If a 4 x 1 gallon metal paint can combination package is UN certified for air shipment, would the placement of a 1 quart glass bottle in this 1 gallon can be covered under the original certification? The 1 quart bottle will not meet the pressure test requirement and is being placed in the can as permitted by section 173.27(c)(3)(i).

A12. The addition of a 1 quart bottle inside the metal can would be covered under the original certification, provided the results of the tests would not be adversely affected. The glass bottle is considered incidental to the tested packaging.

Q13. If a single or composite plastic packaging has been UN certified and the manufacturer decides to change resin vendors selecting a resin with the same properties (i.e., melt flow, density, etc.) as that used in the original certification, would this situation constitute a design change and require recertification?

A13. Unless the manufacturer can ascertain that the resins are virtually identical, recertification is required.

Q14. On Pass/Fail criteria for combination packaging does DOT agree with the following sections - Section 9.6.2 of ASTM D4919 and Section 6.2 of CGSB-43.150 - as follows:

Section 9.6.2/ASTM D4919 There shall be no release of any of the inner packages from the outer packaging, but minor exposure of the inner packages which does not permit their withdrawal is acceptable...

Section 6.2/CAN/CGSB-43.150 None of the inner packagings shall be released from the outer packaging. A minor exposure of the inner packaging is acceptable provided that it is not possible to withdraw the inner packaging.

A14. The criteria for passing the drop test for combination packagings is in 49 CFR 178.603(f)(4). If damage to the outer packaging is likely to adversely affect safety during transport, the packaging fails the test. If the inner packagings are exposed, safety in transport may be adversely affected; the tester must use some judgement and discretion in determining whether a result is passing or failing. The test report should document the rationale for the determination that a test result is a pass or fail.

Q15. Has there been any change in the UN position regarding the vibration test requirement?

A15. The UN Recommendations do not contain a vibration test requirement. The U.S. presented a paper to the UN Subcommittee, proposing the addition of a vibration capability standard to Chapter 9. The paper was not adopted. However, a reference to vibration was added to the general requirements for packagings in 9.3.1.

Q16. Will 49 CFR be revised to accept dynamic compression testing versus a stacking test?

A16. 49 CFR was revised to authorize the use of dynamic compression testing in lieu of a stacking test for the periodic retest of packagings. The issue of dynamic compression testing was introduced at the UN Subcommittee, but was not accepted. The Subcommittee requires additional information regarding the correlation between dynamic and static testing. Until dynamic compression testing is accepted as an alternative to stacking by the UN Subcommittee, the U.S. has no plans to authorize dynamic compression testing for design qualification testing.

- Q17. Will 49 CFR be revised to accept inert gas leakage testing on fiberboard drums v. immersion?
- A17. As revised in HM-181 and its corrections and amendments, 49 CFR authorizes the use of helium testing and pressure differential testing as alternatives to immersion testing.
- Q18. When do the HM-181 periodic retest provisions become effective?
- A18. After October 1, 1991, any packaging manufactured and marked to a UN standard must comply with all requirements of HM-181. That means that any UN packaging manufactured after October 1, 1991 is subject to the periodic retesting provisions of 49 CFR 178.601(c), at the specified frequency. UN packagings manufactured prior to the October 1, 1991 effective date of HM-181 must be retested within 12 months or 24 months of that effective date, depending on the type of packaging.
- If a packaging is currently being marked with both a DOT specification and a UN standard, the packaging manufacturer must continue to follow the requirements for production testing in accordance with the DOT specification as well as meet all requirements for the UN standard.
- Q19. It is our understanding that all packages (both domestic and international going by air/surface) must be able to withstand the requirements of the vibration test described in HM-181. However, it has come to our attention that the actual test itself need not be performed if historical evidence or visual inspection can confirm the packaging's ability to withstand the test. Please discuss and clarify.
- A19. The vibration standard in HM-181 is a "capability" requirement. This means that all non-bulk packagings must be capable of withstanding the vibration standard, but actual testing is not mandatory. If past testing or transportation experience indicates that a packaging can withstand vibration, testing need not be performed. The test report or packaging certification should note the rationale behind the determination that a packaging meets the vibration standard.
- Q20. Paragraph 178.602(c) authorizes the use of bags of lead shot to be used to achieve the requisite solids mass, as long as they are placed so the test results are not affected. Would a water/lead shot solution be authorized when trying to simulate a liquid product with a high specific gravity provided this same requirement is met?
- A20. Yes.

Q21. When preparing samples intended to hold liquids for drop testing, water (with a specific gravity of 1.0) is authorized to simulate materials with specific gravities as much as 20% greater (up to 1.2). For -18 C drops, solutions containing alcohols used to meet the requirement of remaining liquid at this temperature, typically have specific gravities slightly below 1.0 (5% less). Is this acceptable?

A21. The solution used for testing must have a specific gravity of at least 1.0, or simulate the specific gravity of 1.0, as in Question 20 above.

Q22. The dynamic compression test authorized for periodic retesting states that tests must be conducted on empty, unsealed packagings. For an open head container, does this mean without its cover?

A22. No.

Q23. Does DOT recognize the use of shrink-wrapped or stretch wrapped packages for shipment of dangerous goods in limited quantities as provided for in Section 15.3.2 of the 7th edition of the UN Recommendations?

A23. Shrink and stretch wrap are not acceptable where a strong outside package is required.

Q24. On an open-head container, if the design certification tests are conducted on an open head cover which incorporates a closure, would this certification cover the identical package utilizing a solid cover?

A24. No.

Q25. Must single tested and approved packages (steel drums or cans) that must be overpacked for passenger aircraft be retested as a combination packaging?

A25. If the regulations specify that a UN standard combination packaging is required, the combination packaging must be tested.

Q26. The drop test in 49 CFR 178.603 specifies that a certain number of samples must be used, depending on the type of packaging. For example, five samples are specified for boxes. May I use just one sample for all five tests?

A26. Generally, no. A reduced number of samples is authorized only for periodic retesting of stainless steel, nickel, or monel packagings, or if specifically approved by the Associate Administrator for Hazardous Materials Safety.

Q27. If a shipper is certifying combination packagings (i.e., a corrugated fiberboard box with inner glass bottles), and the shipper has a number of different corrugated fiberboard box makers who supply the same specification boxes, must the shipper have each box maker's boxes certified?

A27. Yes, unless the shipper can ascertain that all boxes received from the different box makers are virtually identical (i.e., dimensions, bursting strength, basis weight, flute, caliper, closure system, etc.). The shipper then assumes liability for the integrity of the packagings which are certified in this way.

Q28. If a corrugated fiberboard box maker receives fiberboard stock from a number of different suppliers, must the box maker have each box, made from each suppliers stock, certified?

A28. Yes, unless it can be ascertained that the fiberboard stock is virtually identical and meets criteria which has been established for a board used in a box which successfully passed the required performance standards for a particular specification. For example, if the different suppliers are supplying fiberboard that is virtually identical (same components, manner of construction, burst strength, Cobb rating, etc.) it would not be necessary to retest.

12/30/92

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