

DOT SPECIFICATION 7A TYPE A PACKAGING CERTIFICATION STUDY:

GETTING READY FOR JULY 1, 1985

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ABSTRACT

The Department of Energy has funded Mound to revise the Type A Packaging Certification Study originally issued in June 1975. An updated document is necessary because, effective July 1, 1985, 49 CFR 173.412(b) requires that any Spec. 7A packaging designed, manufactured, or certified after that date must be certified according to the Type A packaging test given in 173.465. As a result, shippers of Spec. 7A packagings must test and analyze their packaging and prepare a certification document before July 1985 in order to continue uninterrupted operation. (It should be noted that existing Spec. 7A packages manufactured and certified prior to July 1, 1985, may be used as long as the packagings continue to meet the Spec. 7A requirements. However, a Type A packaging designed, manufactured, or certified after July 1, 1985, must meet the requirements of 49 CFR effective on July 1, 1985.) Mound will identify those Type A packagings commonly used by DOE contractors and will begin a testing and analysis program to determine which packagings meet the new Type A requirement. Those packagings certified as DOE Spec. 7A Type A packagings will be featured in a document for all of DOE to use.

INTRODUCTION

On July 1, 1985, the DOT Spec. 7A Type A packaging performance criteria, published July 1, 1983, become effective. The changes in Type A packaging performance criteria, 49 CFR 173.465, Type A Packaging Tests, are highlighted in Table I. A Type A package is one that meets or exceeds the requirements of 49 CFR 178.350 and contains not more than a Type A quantity of any radioactive material. For the purposes of this paper, a Type A package is a DOT Specification 7A package.

Specification 7A packaging designed in accordance with the requirements of 178.350 in effect on June 30, 1983, and constructed prior to July 1, 1985, may continue to be used. Packaging either designed or constructed after June 30, 1985, however, must meet the requirements of 178.350 applicable at the time of their design or construction. Thus, on July 1, 1985, and thereafter, all shippers of Type A packaging need to determine which category their Type A packagings are in and make two basic plans of action.

For those packagings meeting 178.350 in effect on June 30, 1983, and constructed prior to July 1, 1985, the shipper must have the Certification Document required per 173.415(a) and plans for determination that packagings used in future shipments do, in fact, meet the Type A packaging requirement. For those packagings designed or constructed after June 30, 1985, the shipper must have the Certification Document per 173.415(a), demonstrating that the packaging complies with the July 1, 1985, performance criteria.

In addition to the actual performance requirements, other changes have taken place since Mound completed the first study of Type A packagings ten years ago. These changes represent the regulatory approach to answering the questions, "What is a pass?" or "What is a failure?" As one might expect, the approach to determining whether there was a loss of contents [(173.412(m))] became much more rigorous.

TABLE I

Changes in Type A Packaging Performance Criteria	
<u>After July 1, 1985</u>	<u>Before July 1, 1985</u>
WATER SPRAY	
Required before each test 1 hr in duration 2 in./hr No exceptions	Required just before free drop ½ hr in duration Keep surfaces wet Several exceptions (wood, plastics, ceramics, metal)
FREE DROP	
4 ft	No change
CORNER DROP	
1 ft	No change, but this used to be listed as a separate test.
COMPRESSION TEST	
24 hr Package upright 5X gross weight 265 lb/ft ²	No change
PENETRATION TEST	
1 meter 13 lb bar	No change

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DOT SPEC. 7A TYPE CERTIFICATION PROGRAM

The certification program was funded at Mound by DOE's Transportation Branch in October 1984. The program is outlined in Table II and program milestones are discussed below.

TABLE II

Certification Program Implementation

1. Establish Program Ground Rules
2. Mail Contractor Questionnaire
3. Review Data
4. Begin Testing/Analysis
5. Conduct Information Meetings
6. Publish Certification Document
7. Hold Final Meetings
 - Disseminate Document
 - Discuss/Explain Compliance

1. Ground Rules for Study - Questions such as "How do we simulate contents?", "What is a loss of contents?", "What is a significant increase in radiation level?", "How many packages of one type need to be tested?", and others were discussed with the DOE, DOT, and NRC. These questions were answered as a basis for initiating the study.

2. DOE Contractor Questionnaire - Each DOE contractor identified the packages currently used as Type A packages, the number of such shipments, radioactive contents, QC programs, suppliers, cost per package, etc.

3 and 4. Data Review and Testing Analysis - Based on the contractor questionnaire, a test schedule was established to determine which packagings in fact met the Type A requirement. These packagings would then appear in the Certification Document to be provided to DOE contractors by July 1, 1985.

5. Information Meetings - A series of three meetings will be held to provide contractors with the program plan; provide them with an interim status report; and to disseminate the Certification Document and provide detailed instructions on its use. This final set of meeting will be held in late June 1985.

6. Publish the Certification Document - This document will be in the DOE contractors' hands in order to comply with the July 1, 1985, regulatory requirement and to ensure uninterrupted shipping.

7. Final Meeting - See 5 above.

Tables III and IV provide information on the types of metal drums and boxes used by DOE contractors which will be tested. This list gives a general view of the packagings, but is not intended to be complete. Several other categories of packagings will be tested [i.e., wooden boxes, fiberboard boxes, Spec 55s (to be recertified as Spec. 7A), gas cylinders]; however, the variety precludes a detailed listing here.

It is expected that most of the packaging in Tables III and IV will be certified, but that some, such as the Spec. 17H steel drums, will be "qualified passes." The qualification will relate to additional requirements to allow it to pass the reduced pressure test (173.412(i)) and to the probable requirement of a sealed plastic liner (4 mils or greater) in order to qualify for RAM with dispersible fine particulates.

The Certification Document for a Specification 7A Package

"Each shipper of a Specification 7A package must maintain on file for at least one year after the latest shipment and shall provide to the DOT on request a complete documentation of tests and an engineering evaluation or comparative data showing that the construction methods, packaging design, and materials of construction comply with Spec. 7A."

The above paragraph from 49 CFR tells what a Certification Document must do. Table V outlines the proposed format for the upcoming publication.

Planning for July 1, 1985

All shippers have to ask themselves:

- (1) What Type A packages will I be using after July 1, 1985?
- (2) If required, have these packages been certified against the "new" requirements?
- (3) Do I have an up-to-date "Certification Document" for each package I will be using?
- (4) Will there be any changes in the procedures for using these packages? If so, what training and communication might be necessary?

The implementation date of July 1, 1985, need not have a negative impact on a shipper's schedule or compliance status. However, all shippers of Type A packaging need to analyze their needs and plan ahead to ensure a smooth transition.

Based on past experience, we believe this revised Certification Document will be a valuable resource to industry as well as to DOE. Major benefits resulting from this study will be:

- (1) Cost savings by eliminating multiple testing of the same packaging;
- (2) Consistency in application of these methods and evaluation methodology;
- (3) A concise catalog/resource manual of Type A packaging; and
- (4) Information on a shipper's responsibilities with respect to regulatory requirements.

TABLE III

Metal Drums to be Tested and Analyzed

<u>DOT Specification</u>	<u>Volume</u>	<u>DOT Specification</u>	<u>Volume</u>
Spec. 17H	55 gal	Spec. 6C	5 gal
Spec. 17H	30 gal	Spec. 6C	10 gal
Spec. 17H	10 gal		
Spec. 17H	5 gal	MS-27684	4 gal
Spec. 17C	55 gal	MS-27683-21	80 gal
Spec. 17C	30 gal		
Spec. 17C	10 gal	MS-24347-37	2 gal
Spec. 17C	5 gal		
Spec. 37A	5 gal	MS-24347-7	2 gal
Spec. 37A	10 gal		

TABLE IV

Metal Boxes to be Tested and Analyzed

<u>User</u>	<u>Manufacturer</u>	<u>Size</u>
West Valley	Container Products Corp. Wilmington, North Carolina	4 x 4 x 7 ft 5.7 x 4.5 x 3.2 ft
Argonne National Laboratory - East	--	4.8 x 4.1 x 6 ft (M-4 Bin)
Battelle Columbus	--	11 x 6 x 6.5 ft (BCL-5)
MRC-Mound	--	Varied
MRC-Mound	RoGar Chemical & Nuclear Services, Inc. Livermore, California	4 x 4 x 7 ft
MRC-Mound	Capital Industries, Inc. Seattle, Washington	4 x 4 x 7 ft

TABLE V

The Certification Document

SECTION I	Introduction <ul style="list-style-type: none"> - Definitions - Responsibilities - How to Use the Document - Quality Control
SECTION II	Packaging <ul style="list-style-type: none"> - Sketch - Description - Dimensions - Common Name - Authorized Contents - Specifications and Restrictions
SECTION III	Test/Analysis Results <ul style="list-style-type: none"> - Performance - Certification
SECTION IV	Quality Control
SECTION V	Suppliers/Users/Manufacturers