PHOTO MARKETING ASSOCIATION
PMA
INTERNATIONAL

Selecting the Packaging

MODULE 3

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Introduction

A critical aspect of safe transportation is the packaging of hazardous materials into appropriate and approved containers. A hazardous material must be packaged in a container that is strong enough that the contents will not spill or leak under normal conditions of transport. The Hazardous Material Regulations (HMR) specify that shipping containers must be UN performance packaging meaning that hazardous materials cannot be packed into any old box, jug or drum.

UN Performance Packaging

Whether the package is a carton, bottle, tote or carboy, and whether it is made of glass, plastic, metal or cardboard, its design must have been tested and found compliant with the applicable standard for that type of package. Some of the tests include dropping and stacking, and subjecting the packaging to moisture and vibration.

Look for this UN mark on the outside of the package. The mark indicates the package conforms to the standard. The numbers and letters following the UN mark are a code that identifies the type of packaging, its construction materials, and the manufacturer. The shipper is responsible for checking the mark and ensuring that appropriate packaging has been used for a shipment. **Photo processors and digital imagers that reship hazardous materials must reship them in UN performance packaging.** You may reuse the original packaging materials, as received from the manufacturer, IF the materials are fully intact**.**

Sizes and Types of Packaging

There are many ways to designate a package. First, there are bulk and non-bulk packaging. Non-bulk packaging has:

- A maximum capacity of 450 liters (119 gallons) or less for liquid
- A maximum net mass of 400 kg (882 pounds) or less for solid
- A water capacity of 454 kg (1000 pounds) or less for gas.

Imaging labs receive and ship hazardous materials in non-bulk packaging. Packagings exceeding the capacities listed above are considered to be bulk packaging. Fuel trucks, rail cars and intermediate bulk containers are all considered to be bulk packaging. Bulk packaging is not subject to UN performance packaging requirements.

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Non-Bulk Packaging

Within the category of non-bulk packaging, there are three basic types, described and shown below:

- Single packaging - As the name implies, single packaging is a stand-alone packaging with no other components (e.g., a drum or jerrican).

- Combination packaging - Combination packaging has at least two components including an outer and an inner package (e.g., outside carton plus an inner bottle with cushioning and absorbents).

- Composite packaging - Composite packaging has an inner and outer packaging that are not separate, and have a single enclosure (e.g., photochemical cubetainers with inner polyethylene liner attached to an outer carton).

Single Packaging

Combination Packaging

Composite Packaging

Hazardous Materials Table

In module 2 we began to use the Hazardous Materials Table. We reviewed the information in columns (1) through (5) to identify the basic shipping description for a hazardous material. On the next page, we will again use the Hazardous Materials Table — this time to identify the correct packaging to use with a specific hazardous material. Please review this table.

Summary

By using proper packaging, you reduce the chance of spills and leaks when transporting hazardous materials. The UN mark and code on a package indicate the packaging meets a performance standard, and will provide protection to the contents of the package during normal conditions of transportation.

Hazardous Materials Table (49 CFR 172.101)															
							Packaging §173.***			Quantity Limitations		Vessel Stowage			
Symbols (1)	Hazardous Materials Descriptions and Proper Shipping Name (2)	Hazard Class or Divisison (3)	Identification Numbers (4)	PG (5)	Label Codes (6)	Special Provisions (7)	Ex-cep-tions (8A)	Non-bulk (8B)	Bulk (8C)	Passen-ger Aircraft/ Rail (9A)	Cargo Aircraft Only (9B)	Location (10A)	Other (10B)	ERG Guide # (11)	
G	**Corrosive liquids, n.o.s.**	8	UN1760	III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40	154	
G	**Corrosive liquid, acidic, organic, n.o.s.**	8	UN3265	III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40	153	
G	**Environmentally hazardous substances, liquid, n.o.s.**	9	UN3082	III	9	8, 146, IB3, T4, TP1, TP29	155	203	241	No limit	No limit	A		171	
R4	**Potassium hydroxide, solution**	8	UN1814	II	8	B2, IB2, T7, TP2	154	203	241	5 L	60 L	A		154	
	Printing ink	3	UN1210	III	3	B1, 1B3, T2, TP1	150	173	242	60 L	220 L	A		129	

Using the Hazardous Materials Table to Select the Packaging

We will review the first material listed on the table, (shaded in gray) and the information provided in columns (7), (8A), (8B). and (8C). The common name for this material is color paper bleach-fix. The basic shipping description is Corrosive liquids, n.o.s. (ferric ammonium EDTA), class 8, UN 1760, PG III.

- Column (7): This column lists the code numbers of any special provisions that are required. For example, the first code listed, **IB3**, states that when flexible intermediate bulk containers are use, they must be sift-proof and water-resistant.

- Column (8A): This column refers to packaging exceptions. For the hazardous material we're using for our example, there is an exception in 49 CFR 173.**154** for limited quantities of the material. According to the exception, if the package meets certain requirements, it does not have to be labeled as a hazardous material, packaged in UN performance packaging or be transported in a placarded vehicle.

- Column (8B): This column refers to requirements for non-bulk packaging, when UN performance packaging is to be used. 49 CFR 173.**203** identifies the specific types of authorized single and combination packagings that can be used with this hazardous material.

- Column (8C): This column refers to 49 CFR 173.**241**, which lists the types of bulk packagings that can be used. Imaging lab chemicals and inkjet inks are not packaged in bulk containers.

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Self Quiz Questions

1. There are 3 types of non-bulk packaging. Name them

_____

_____

_____

2. A hazardous material must be packaged in a container:
   a) that fits the product being shipped
   b) that is either white or brown
   c) strong enough that the contents will not spill or leak under normal transport condition
   d) provides adequate lateral support

3. Who is responsible for ensuring the appropriate packaging is used for a shipment of hazardous materials?
   a) the shipper
   b) the receiver
   c) the transport company
   d) the box manufacturer

4. The code following the UN in a circle mark on the outside of the packaging indicates:
   a) the box was made by the UN
   b) the type of packaging, its construction materials and the manufacturer
   c) the box can be used for ocean shipments
   d) this box can be stacked to a height of 27 feet