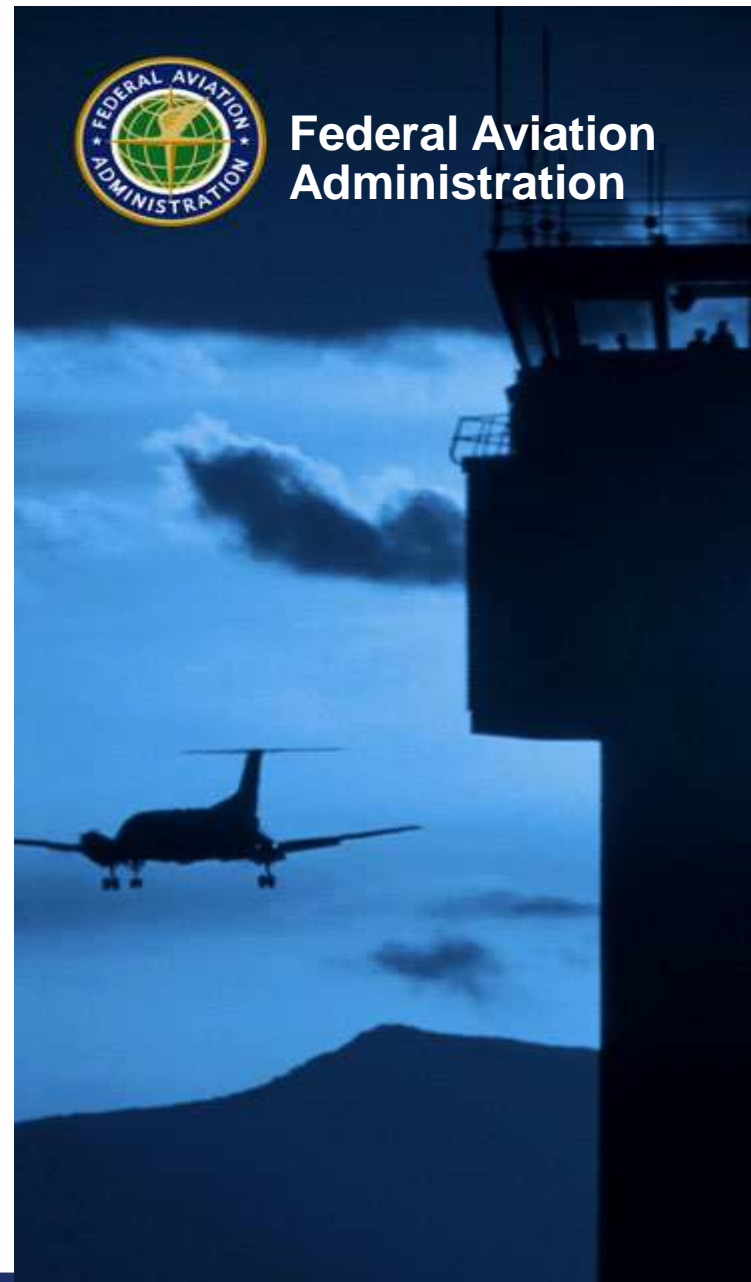


# Small Quantities Packaging Requirements and Exceptions

Presented to: The Office of Security and  
Hazardous Materials Safety, ASH

By: AXH

Date: May 2018



Federal Aviation  
Administration

# Structure

This presentation will review shipping methods, characteristics, and regulatory requirements for:

- ✓ Excepted Quantities
  - ✓ De Minimis Exceptions
  - ✓ Limited Quantities and
  - ✓ Consumer Commodity
- ✓ Each of the above methods will outline PHMSA's recent rulemaking for each of the shipping methods above
- ✓ ICAO/IATA similarities are noted with each method



# Excepted Quantities



# Excepted Quantities - Part 173.4a

**Definition:** Small quantities of hazardous materials meeting the provisions of 49 CFR 173.4a are not subject to **any additional requirements of this SUBCHAPTER** except for the information that is contained in this section.

**Reminder:** The term “SubChapter means Subchapter C and includes Parts 171-180





# Excepted Quantities - Part 173.4a

## Recent Rule Making Changes

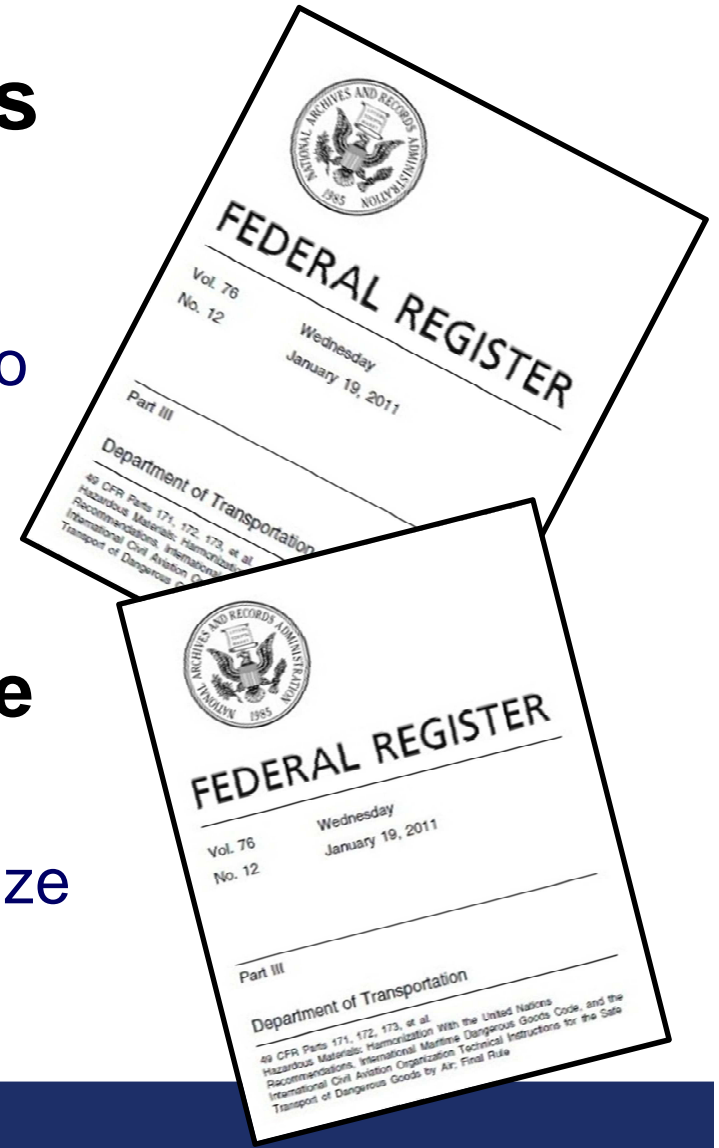
### Jan 2009 HM 215J - Final Rule

- ✓ Renames Small Quantity Exceptions to Excepted Quantities
- ✓ Adds New Excepted Quantity Marking

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### Jan 14, 2010 HM 215J - Final Rule

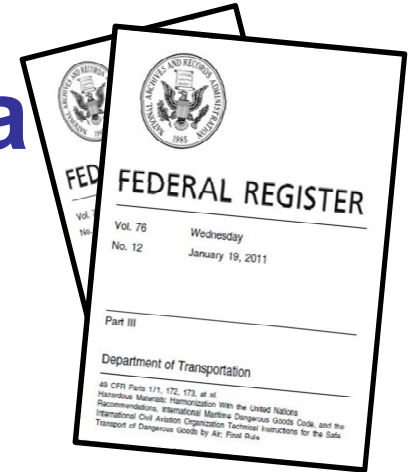
- ✓ Clarified quantity limits for class 6.1
- ✓ Clarified Excepted Quantity Marking size



# Excepted Quantities - Part 173.4a

## Recent Rule Making Changes

### Jan 2011 HM 215K - Final Rule



- ✓ Requires liquid Excepted Quantities to be capable of withstanding without leakage the pressure differential specified in 173.27(c)
- ✓ Exclusion of aerosols in class 2.2 (Final Rule – Alternately, aerosols can be shipped as Limited Quantities)
- ✓ Adds Polyester Resin Kits to the types of Division 5.2 (organic peroxide) material authorized as an excepted quantity
- ✓ Correcting the outer packaging aggregate quantity limit for Division 5.2 liquids from 250 mL to 500 mL
- ✓ Specific Overpack requirements (additional Excepted Quantity marking instead of the word “Overpack”)

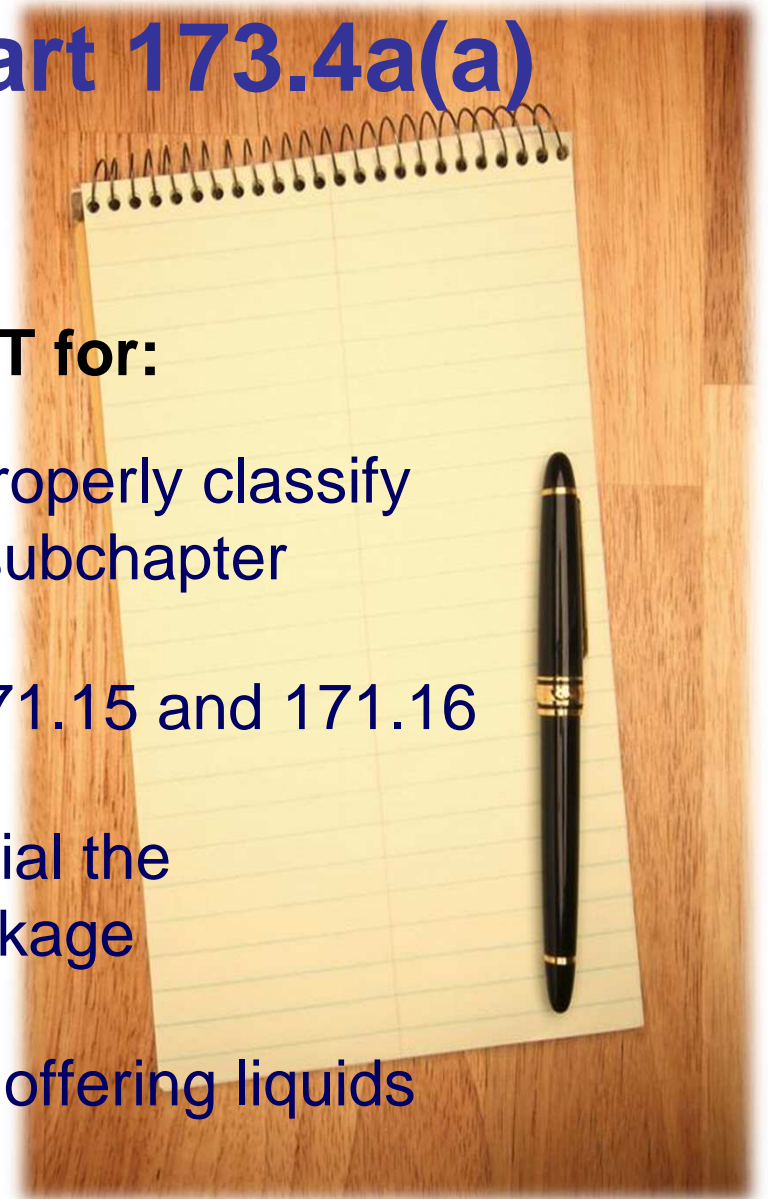


# Excepted Quantities - Part 173.4a(a)

## Shipper's Responsibilities

**No additional requirements EXCEPT for:**

1. The shipper's responsibilities to properly classify their material IAW 173.22 of this subchapter
2. Reporting of incidents Sections 171.15 and 171.16
3. For a Class 7 (Radioactive) material the requirements for an excepted package
4. Comply with Part 173.27(c) when offering liquids



# Excepted Quantities - Part 173.4a(b)

## Authorized Materials

Only materials authorized for transport aboard passenger aircraft and appropriately classed as:

1. 2.2 (does not include aerosols), 3, 4 PG II & III (no self reactive), 5.1 PG II & III, 5.2 (kits only), 6.1 (no PG I), 7 (Radioactive Material in Excepted Packages), 8 PG II & III (except for UN2803 (Gallium) and UN2809 (Mercury))" and 9 (except for UN1845, Lithium Batteries/cells).
2. Prohibited classes 1 and 2.1



# Excepted Quantities - Part 173.4a(c)

## Inner Packaging Limits

Quantity limits apply to:



1. Toxic Materials with a 6.1 primary or subsidiary risk  
1 gram for solids and 1 mL for liquids
2. Other than Toxic Materials except class 2  
(30 grams for solids or 30 mL or liquids)
3. For Gases - a water capacity of 30 mL  
(This means the cylinder's holding capacity)



# Excepted Quantities - Part 173.4a(d)

## Outer Packaging Aggregate Quantity Limits

1. The maximum \*aggregate quantity of hazardous material contained in each outer packaging (other than 2.2 or 5.2) must not exceed

- ✓PG I - 300g for solids or 300 mL for liquids
- ✓PG II - 500g for solids or 500 mL for liquids
- ✓PG III - 1 kg for solids or 1L for liquids
- ✓Class 2.2 - 1L (61 cubic inches)
- ✓5.2 - 500 grams for solids or 500 mL for liquids



\* The term Aggregate applies to the combined total of all inner packagings





# Excepted Quantities – ICAO/IATA

## Inner & Outer Packaging Quantity Limits

5.1.2 Dangerous goods which may be carried as excepted quantities in accordance with this chapter are shown in column 9 of the dangerous goods list by means of an alphanumeric code as indicated in Table 3-3 below:

**Table 3-3. Excepted quantity codes for Table 3-1**

| <i>Code</i> | <i>Maximum quantity per inner packaging</i> | <i>Maximum quantity per outer packaging</i> |
|-------------|---|---|
| E0          | Not permitted as Excepted Quantity          |   |
| E1          | 30 g/30 mL                                  | 1 kg/1 L                                    |
| E2          | 30 g/30 mL                                  | 500 g/500 mL                                |
| E3          | 30 g/30 mL                                  | 300 g/300 mL                                |
| E4          | 1 g/1 mL                                    | 500 g/500 mL                                |
| E5          | 1 g/1 mL                                    | 300 g/300 mL                                |

5.1.2.1 For gases, the volume indicated for inner packagings refers to the water capacity of the inner receptacle and the volume indicated for outer packagings refers to the combined water capacity of all inner packagings within a single outer package.

5.1.3 Where dangerous goods in excepted quantities for which different codes are assigned are packaged together, the total quantity per outer packaging must be limited to that corresponding to the most restrictive Code.

ICAO indicates Excepted Quantities in the table of Dangerous Goods using column “9”. The column indicates E-0 E-1 E-2 E-3 E-4 E-5, these codes match up to the table 3-3 in Part 3; Chapter 5.



# Excepted Quantities - Part 173.4a(d)

## Outer Packaging Aggregate Quantity Limits

2. For outer packaging's containing more than one hazardous material, the aggregate quantity of hazardous material must not exceed the lowest permitted maximum aggregate quantity

### Example:

Class 8 Packing Group III maximum aggregate quantity – 1L

Class 3 Packing Group I maximum aggregate quantity – 300 mL

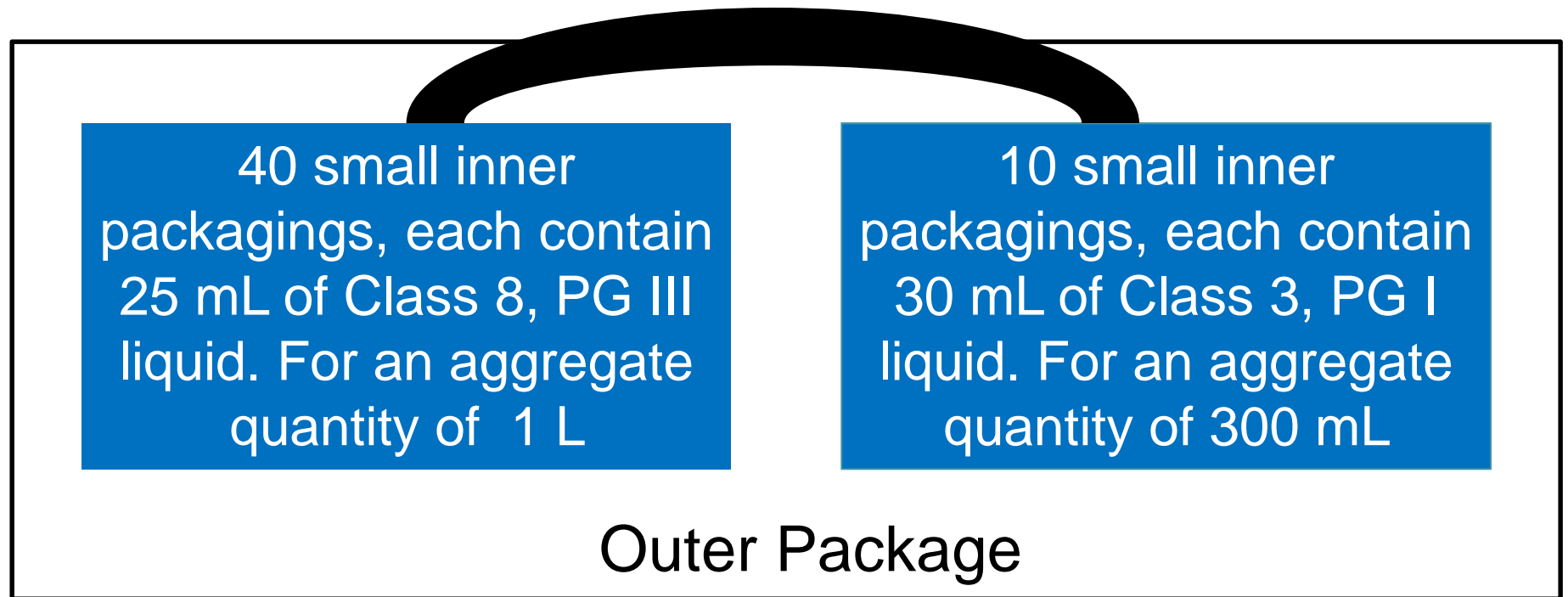
lowest permitted maximum aggregate quantity of 300 mL

*Practical Examples – See next two slides*





**Example:** Lowest permitted maximum aggregate quantity exceeded and not in compliance



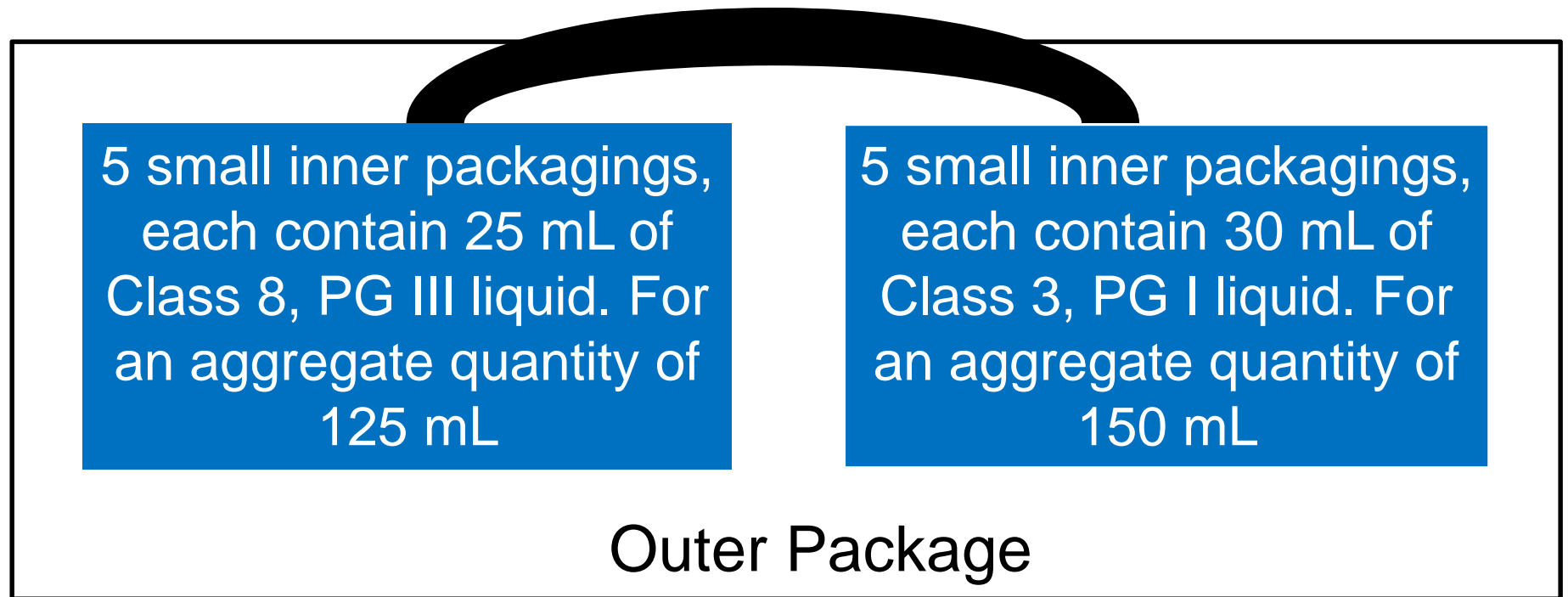
Class 8 Packing Group III maximum aggregate quantity – 1L

Class 3 Packing Group I maximum aggregate quantity – 300 mL

Lowest permitted maximum aggregate quantity = 300 mL



**Example:** Lowest permitted maximum aggregate quantity  
in compliance



Class 8 Packing Group III maximum aggregate quantity – 125 mL

Class 3 Packing Group I maximum aggregate quantity – 150 mL

Lowest permitted maximum aggregate quantity = **300** mL



# Excepted Quantities - Part 173.4a(e)

## Packagings Materials

Packagings used for the transport of Excepted Quantities must meet the following requirements:

1. Construction of plastic, glass, porcelain, stoneware, earthenware or metal

2. Closure held securely in place with wire, tape or other positive means



**The closure must not react chemically with the material**



# Excepted Quantities - Part 173.4a(e)

## Packaging Materials (continued)



3. Intermediate packaging with **cushioning material** that avoids breakage, puncturing or leakage

For liquid hazardous materials, the intermediate packaging must contain absorbent material that:

- ✓ Will absorb the entire contents
- ✓ Will not react dangerously with the material
- ✓ The absorbent material may be the cushioning material



# Excepted Quantities - Part 173.4a(e)

## Packaging Materials (continued)

4. The intermediate packaging must be securely packed in a strong, rigid outer packaging  
*(Non specification packaging)*
5. Placement must comply with Part 173.21  
(Compatibility)
6. Adequate space to apply all markings



# Excepted Quantities - Part 173.4a(e)

## Packaging Material(s)

Package is not opened or otherwise altered until it is no longer in commerce

Overpacks Permitted –  
Requires additional Excepted  
Quantity Marking instead of  
the requirements of Part  
173.25



# Excepted Quantities - Part 173.4a(f)

**Package Testing** - The completed package prepared for transport (**Filled**) must be capable of withstanding as demonstrated by testing which is appropriately documented, without breakage or leakage

1. Drop testing at 1.8 meters
2. Compression testing IAW Part 178.606(c)

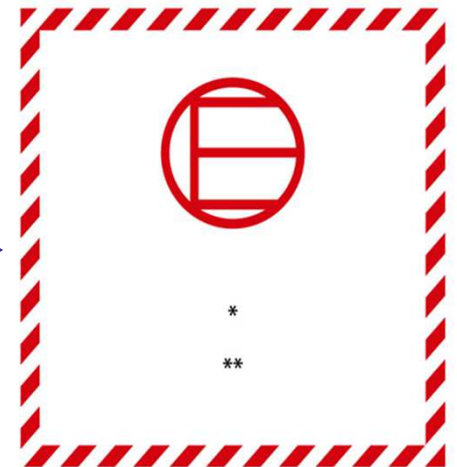
**Note:** Consult the packaging manufacture to verify



# Excepted Quantities - Part 173.4a(g)

**Marking** - Durably and legibly marked with the Excepted Quantity Marking

- \* replaced with Hazard class/division
- \*\* replaced with name of shipper/consignee  
if not shown else where on box



1. No less than 100 X 100 mm
2. Overpack Requirements - marked in the same manner as the package
  - Use an Excepted Quantity Marking instead of the word “Overpack”





# Excepted Quantities - Part 173.4a(h)

## Documentation for Excepted Quantities

Shipping paper not required if accompanied by a document, it must include **“Dangerous Goods in Excepted Quantities”** and indicate the number of packages

The image shows a DHL shipping label form, specifically the 'Shipment Air Waybill' section. The form is filled out with various details, including a barcode and the number 778 0344 795. The 'Full Description of Contents' section is highlighted in yellow and contains the text 'Dangerous Goods in Excepted Quantities'. The form also includes sections for 'To (Receiver)' and 'Shipper's Authorization'. The DHL logo is visible in the top left corner, and the text 'Process and Track your shipment online: http://www.dhl-usa.com' is in the top right corner.



Federal Aviation  
Administration

# Excepted Quantities - Part 173.4a(i)

## Training

- ✓ No formal training required
- ✓ Must know about the requirements of this section

**Note:** When the package is prepared improperly all requirements of a fully regulated shipment apply. This includes training.

**Note:** PHMSA Interpretation: Ref. No.: 09-0266

Concerns training, “although 172.700 training is not required most who use the exception find basic hazmat training useful to understand the exception’s requirements”



# Excepted Quantities - Part 173.4a(j)

## Restrictions

May not be carried in  
checked or carry-on  
baggage



# De Minimis Exceptions



# De Minimis Exceptions -173.4b

## Rule Making History

**Jan 2009 HM 215J**

- ✓ Introduces De Minimis Exception

**Feb 2010 HM 231**

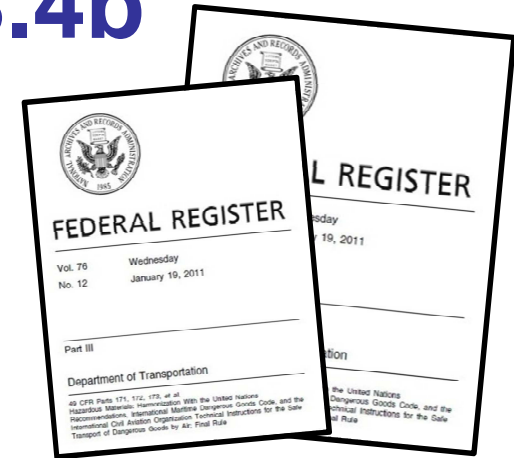
- ✓ The Term “Strong Outside Packaging” changed to “Strong Outer Packaging”

**Jan 2011 HM215K Final Rule**

- ✓ Added 173.4b(b) for Non-infectious specimens

**Jan 2013 HM215L**

- ✓ 173.4b(b) Non-infectious specimens permitted in carry-on and checked baggage





# De Minimis Exceptions -173.4b(a)

## Packing Group II and III materials

In Classes 3, 4.1, 4.2, 4.3, 5.1, 6.1, 8, and class 9 do not meet the definition of a hazardous material in part 171.8 of this subchapter when packaged in accordance with this section and are not subject to the requirements of this subchapter

1. The maximum quantity per inner receptacle or article is limited to: **1 mL for liquids and 1 g for solids**
2. Each inner receptacle with a removable closure has its closure held in place **by positive means**



# De minimis Exceptions -173.4b(a)

3. Cushioning and absorbent material required
  - ✓ Must not react with the material
  - ✓ Capable of absorbing the entire contents (if a liquid)
4. The inside packaging is securely packed in a strong outer packaging
5. The completed package is capable of sustaining a 1.8 drop test



# De Minimis Exceptions -173.4b(a)

6. Placement of the material in the package or packing different materials in the package does not result in a violation of 173.21

7. The **Aggregate** quantity per package does not exceed 100 g for solids or 100 mL for liquids



8. The gross mass of the completed package does not exceed 29 kg





# De minimis Exceptions -173.4b(a)

9. The package is not opened or otherwise altered until it is no longer in commerce
10. For transportation by aircraft
  - ✓ Authorized to be carried aboard passenger-carrying aircraft
  - ✓ Material packed IAW this section may not be carried in checked or carry-on baggage

**Note:** There is no requirement for Documentation, Marking or Labeling



# De minimis Exceptions -173.4b(b)

## Non-Infectious Specimens

Such as specimens of birds, reptiles, fish, and insects containing small quantities of Ethanol (UN1170), Formaldehyde solution, flammable (UN1198), Alcohols, n.o.s. (UN1987) and Isopropanol (UN1219) are not subject to the requirements of this subchapter provided the following are met:



# De minimis Exceptions -173.4b(b)

## 1. The Specimens are:

- ✓ Wrapped in a paper towel or cheesecloth moistened with alcohol or an alcohol solution and placed in a plastic bag that is heat-sealed. Free liquid in the bag must not exceed 30 mL
- ✓ Placed in vials or other rigid containers with no more than 30 mL of alcohol or alcohol solution. The containers are placed in a plastic bag that is heat-sealed



## De minimis Exceptions -173.4b(b)

7. Training – Each person who offers or transports excepted quantities of hazardous materials must know about the requirements of this section.
8. Restrictions – Except as provided in 175.10\*, for transportation by aircraft, hazardous materials packaged in accordance with this section may not be carried in checked or carry-on baggage by a passenger or crew member.

**Additional Information:** 175.10(a)(23) does allow non-infectious specimens transported in accordance with 173.4b(b) to be carried in baggage.



# De minimis Exceptions -173.4b(b)

6. Documentation - For transport by air, a shipping paper is not required, except that, if a document such as an air waybill accompanies a shipment of specimens containing hazardous materials excepted under the terms of this section, the document must include the statement:

The image shows a DHL Express shipping label. A yellow rectangular highlight is placed over the 'Full Description of Contents' section, which contains the text: 'Scientific research specimens, 49 CFR 173.4b applies'. The label includes various fields for shipping information, including 'Payee account number and shipment value protection details', 'From (Shipper)', 'To (Receiver)', 'Shipment Details', and 'Full Description of Contents'. The DHL logo and 'EXPRESS' text are visible at the top left. A tracking number '778 0344 795' is printed at the top right. The label is perforated along the right edge.

“Scientific research specimens, 49 CFR 173.4b applies” and the number of packages indicated.



## De minimis Exceptions -173.4b(b)

7. Training - Each person who offers or transports excepted quantities of hazardous materials must know about the requirements of this section.
8. Restrictions - Except as provided in 175.10\*, for transportation by aircraft, hazardous material packaged in accordance with this section may not be carried in checked or carry-on baggage by a passenger or crew member

**Additional Information:** 175.10(a)(23) does allow non-infectious specimens transported in accordance with 173.4b(b) to be carried in baggage.







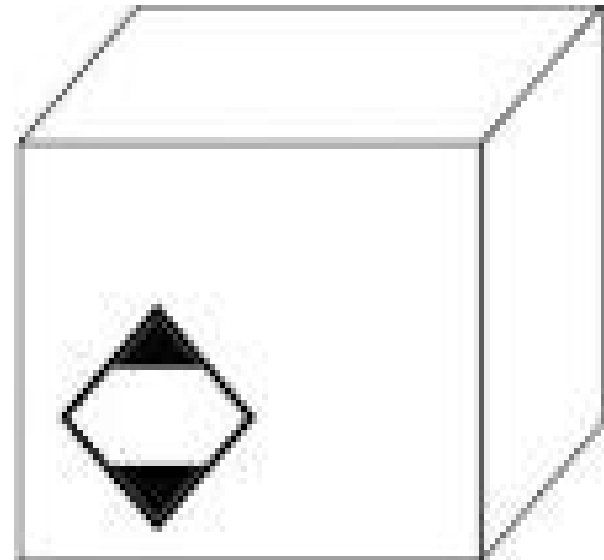
Limited Quantities



# Limited Quantities

## Definition:

**Limited Quantity.** When specified as such in a section applicable to a particular material, means the maximum amount of a hazardous material for which there is a specific labeling or packaging exception.





# Limited Quantities

## Rule Making History

### Jan 19, 2011 HM 215K - Final Rule

- ✓ Limited Quantities restricted to PG II and III
- ✓ Creates 173.27(f) Table 3 for inner and outer quantity limits
- ✓ Introduces “Y” Marking requirement
- ✓ Details elimination of ORM-D-AIR in air mode
- ✓ “Cartridge, power devices” must be successfully tested under the UN Test Series 6(d) criteria for reclassification as limited quantity material
- ✓ Affords limited quantities and excepted quantities relief from 175.75 inaccessible loading restrictions



# Limited Quantities

## Rule Making History

### December 30, 2011 HM 215K - Final Rule

- ✓ Clarifies the display of a “Y” marking on limited quantity packages that are not intended for transportation by aircraft (authorized)
- ✓ Clarifies Part 173.27(f) table 3 requirements for Class 1.4S explosives and class 7 radioactive materials IAW 173.63(b)



For example, packages of Class 7 are not marked with the limited quantity “Y” mark prescribed in 172.315 but rather as prescribed in 173.421 through 173.425, as appropriate



# Limited Quantities

## Rule Making History



### Oct 2, 2013 HM 215K Corrections - Final Rule

- ✓ Updates Class 8 list of articles and substances not authorized limited quantity status
- ✓ Corrected the Class 9 entries to include the identification numbers “UN3334” and “UN3335”

### Oct 31, 2013 HM 215K, 215L, 215G - Final Rule

- ✓ Modified 175.75(c) & (e) to indicate no inaccessible quantity limits for articles of Identification Numbers UN0012, UN0014

### March 18, 2014 HM 233C - Final Rule

- ✓ This rule making incorporated several Special Permits and Competent Authority Approvals into the HMR



# Limited Quantities

Starting point for preparing a Limited Quantity

- 172.101 Table of Hazardous Materials
- The packaging exceptions for most limited Quantities can be found 173.150 - 173.155, 173.63, and 173.306
  - All the above sections refer to Part 173.27, Specifically 173.27(f)(2)
  - General requirements for Packagings and Packages (173.24/24a) apply unless otherwise excepted



# Limited Quantities

## 172.101 Table of Hazardous Materials

| Sym-bols | Hazardous materials description s and proper shipping names | Hazard class or Divisio n | Identificati on Numbers | PG | Label Code | Special provisi ons (§172.1 02) | (8)                  |          |      | (9)  |                     |
|----------|---|---------------------------|-------------------------|----|------------|---------------------------------|----------------------|----------|------|--|---------------------|
|          |   |                           |                         |    |            |                                 | Packaging (§173.***) |          |      | Quantity limitations (see §§173.27 and 175.75) |                     |
|          |   |                           |                         |    |            |                                 | Except ions          | Non-bulk | Bulk | Passenger aircraft/rail                        | Cargo aircraft only |
| 1        | 2   | 3                         | 4                       | 5  | 6          | 7                               | 8A                   | 8B       | 8C   | 9A   | 9B                  |
|          | Acetone   | 3                         | UN1090                  | II | 3          |                                 | 150                  | 202      | 242  | 5 L  | 60 L                |
|          | Methylal  | 3                         | UN1234                  | II | 3          |                                 | None                 | 202      | 242  | 5 L  | 60 L                |

Column 8A indicates packaging exceptions - A “None” in this column indicates there are no packaging exceptions



# Limited Quantities

## ICAO Dangerous Goods List

| Name    | UN No. | Class or Division | Sub Risk | Labels   | State Variations | Special Provisions | UN PG | Excepted Quantity | Passenger Aircraft |                          | Cargo Aircraft   |                          |
|---------|--------|-------------------|----------|----------|------------------|--------------------|-------|-------------------|--------------------|--------------------------|------------------|--------------------------|
|         |        |                   |          |          |                  |                    |       |                   | Pack-aging Instr   | Max. Net QTY per package | Pack-aging Instr | Max. Net QTY per package |
| 1       | 2      | 3                 | 4        | 5        | 6                | 7                  | 8     | 9                 | 10                 | 11                       | 12               | 13                       |
| Acetone | 1090   | 3                 |          | Flam Liq | US               |                    | II    | E2                | 353                | 5 L                      | 364              | 60 L                     |
|         |        |                   |          |          |                  |                    |       |                   | Y341               | 1 L                      |                  |                          |

ICAO identifies Limited Quantities under passenger aircraft columns 10 and 11 with an additional packing instruction that has a “Y” Prefix



# Limited Quantities

## 172.203(b) Additional Descriptions

When a shipping paper is required; the description for a material offered for transportation as “limited quantity,” must include the words “Limited Quantity” or “Ltd Qty” following the basic description.

**UN 1263, Paint 3,  
PGIII, LTD QTY**





# Limited Quantities

**ICAO/IATA**  
indicates Limited  
Quantities on the  
declaration by using  
the “Y” prefix in the  
Packing Instruction

SHIPPER'S DECLARATION FOR DANGEROUS GOODS www.dgtraining.com

|   |                          |   |               |                                |   |               |
|---|--------------------------|---|---------------|--------------------------------|---|---------------|
| Shipper<br>Model Airplanes Inc.<br>205 West Endway<br>Dayton, Ohio 45459  |                          | Air Waybill No. 12345678910<br>Page 1 of 1 Pages<br>Shipper's Reference Number 11111  |               |                                |   |               |
| Consignee<br>My Model Store<br>1543 Gruns Drive<br>Columbus, Ohio 43220   |                          |   |               |                                |   |               |
| Two completed and signed copies of this Declaration must be handed to the operator  |                          | <b>WARNING</b><br>Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties. |               |                                |   |               |
| <b>TRANSPORT DETAILS</b><br>This shipment is within the limitations prescribed for: (delete non applicable)<br><div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">           PASSENGER AND CARGO AIRCRAFT         </div> <div style="border: 1px solid black; padding: 2px;">           XXX ONLY         </div> </div>                            |                          |   |               |                                |   |               |
| Airport of Departure<br>DAY   |                          | Shipment type: (delete non-applicable)<br>NON-RADIOACTIVE <input checked="" type="checkbox"/> <del>RA</del>   |               |                                |   |               |
| Airport of Destination: LCK   |                          |   |               |                                |   |               |
| <b>NATURE AND QUANTITY OF DANGEROUS GOODS</b>   |                          |   |               |                                |   |               |
| Dangerous Goods Identification  |                          |   |               |                                |   |               |
| UN or ID No.  | Proper Shipping Name     | Class or Division (Subsidiary Risk)   | Packing Group | Quantity and type of packaging | Packing Inst.   | Authorization |
| UN 1993   | Flammable liquid, n.o.s. | 3   | III           | 1 Fiberboard Box X, 3 mL       | Y344  |               |
| Additional Handling Information   |                          |   |               |                                |   |               |
| Emergency Telephone Number  |                          |   |               |                                |   |               |
| I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable International and National Governmental Regulations. I declare that all of the applicable air transport requirements have been met. |                          |   |               |                                | Name/Title of Signatory<br>John James - Cargo Manager<br>Place and Date<br>Dayton, Ohio March 3, 2014<br>Signature<br>(see warning above) <i>John James</i> |               |



# Limited Quantities

172.315(a) Limited Quantity Marking (modes other than air)

172.315(b) Limited Quantity Air Marking “Y” in Label center

- ✓ Placement – **Square-on-point**
- ✓ Description/Size - **“Y” in Label center 100 mm X 100 mm or 50 mm X 50 mm**
- ✓ Contrast - **color sufficiently contrasts the entire marking (the border, the “Y” and the inner black triangles)**



**Note:** ICAO Reference for Limited Quantity Air Marking is - Part 3 Chapter 4



# Limited Quantities

## 173.27 General requirements for transportation by aircraft

### 173.27(f)(2) - Limited Quantities



- i. Unless otherwise specified in this part, or in subpart **C** of part 171 of this subchapter, when a limited quantity of hazardous material packaged in a combination packaging is intended for air transportation
  - ✓ The inner and outer packagings must conform to the quantity limitations set forth in Table 3



## Example: 173.27(f)(3) - Table 3

Maximum net quantity of each inner and outer packaging for materials authorized for transportation as limited quantities

### Example indicates limitations for Class 8 Liquids and solids

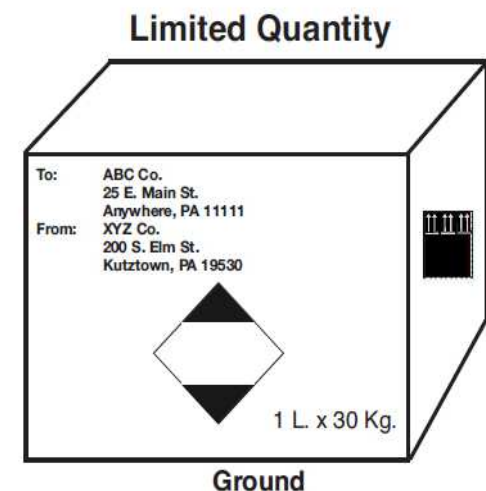
| Hazard Class or Division  | Maximum authorized net Quantity of each packaging |                                   | Maximum authorized net quantity of each outer package | Notes  |
|---------------------------|---|-----------------------------------|---|--|
|                           | Glass, earthen-ware or fiber inner packagings     | Metal or plastic inner packagings |   |  |
| Class 8                   | PG I: Forbidden                                   |                                   |   |  |
| Class 8 (Liquid Material) | PG II: 0.1L                                       | PG II: 0.1L                       | PG II: 0.5L   | For "Fuel cell cartridges containing corrosive substances" (UN3477), see §173.230 of this part.  |
|                           | PG III: 0.5L                                      | PG III: 0.5L                      | PG III: 1L  |  |
| Class 8 (Solid Material)  | PG II: 0.5 kg                                     | PG II: 0.5 kg                     | PG II: 5 kg   | *Maximum net quantity per outer package for UN2430 is 1.0 kg. UN2794, UN2795, UN2803, UN2809, UN3028 are not authorized as limited quantity. |
|                           | PG III: 1.0 kg                                    | PG III: 1.0 kg                    | PG III: 5.0 kg  |  |



# Limited Quantities

## 173.27(f)(2) - Limited Quantities

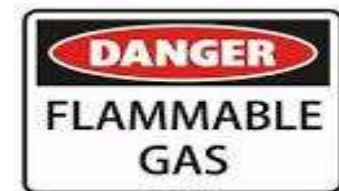
- ✓ Must be authorized for transportation aboard a passenger-carrying aircraft
- ✓ Unless otherwise excepted, packages must be **marked** and **labeled** in accordance with this section and any additional requirements in subparts D and E of part 172



# Limited Quantities

## 173.27(f)(2) - Limited Quantities

- ✓ Materials or articles **not authorized** as limited quantity by aircraft
  - A. Those in Packing Group I
  - B. Classes 1 & 7, other than those exceptions in Part 173.63(b) & Part 173.421- 426
  - C. 2.1 Flammable Gas (*except aerosols (UN1950)*) and 2.3 Toxic Gas





# Limited Quantities

- ✓ Materials or articles **not authorized** as limited quantity by aircraft (continued)

D. 4.1, 4.2 and 4.3,

E. 5.2 , Except for Chemical, First Aid or Polyester Resin kits, (Types, D, E, and F non-temperature controlled only).

F. Class 8 – UN2794, UN2795, UN2803, UN2809, UN 3028, UN3029 and UN3506.

G. All Class 9 (miscellaneous) materials except for UN1941, UN1990, UN2071, UN3077, UN3082, UN3316, UN3334, UN3335, and **ID8000, Consumer Commodities.**



# Limited Quantities

## 173.27(f)(2) Limited Quantities- by Aircraft

- ii. Must be marked with the Limited Quantity “Y” Marking
- iii. Strong Outer Packaging - 30 kg weight limit
- iv. A secondary means of closure or leak proof form of containment (liner)
- v. 1.2 m Drop Test
- vi. Stack Test with identical packages – 3 meters high including sample
- vii. Pressure differential test (ICAO Part 4;1.1.3)

**Note:** Consult packaging manufacture to verify package testing



# Limited Quantities

## 173.63 Packaging Exceptions (1.4s explosives exceptions)

Limited quantities of:

- “Cartridges, small arms”
- “Cartridges, power device”
- “Cartridges for tools, blank” and
- “Cases, cartridge, empty with primer”



# Limited Quantities

## Radioactive Material Exceptions – Parts 173.421-426

- ✓ Marked with UN Number
- ✓ Reporting of Incidents
- ✓ Must be Trained (172.700)
- ✓ 173.425 Table 4 requirements



# Limited Quantities

## 173.156 Exceptions for Limited Quantity and ORM (Provides little guidance for air shipments)

- a. Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the 172.101 Table or in a packaging section in this part
- b. Packagings for limited quantity and ORM-D are specified according to hazard class in Part 173.150 through 173.155, and 173.306
  - ✓ 173.156(b)(2)(iv) The package conforms to the general packaging requirements of subpart B of this part



# Limited Quantities

## 49 CFR Part 173.150(g)

Limited quantities of retail products containing Ethyl Alcohol to include:

Beverages, food, cosmetics and medicines, medical screening solutions, and concentrates sold as retail products.



### Two categories:

1. Containing **not more** than 70% ethyl alcohol by volume/weight

2. Containing **more than** 70% ethyl alcohol by volume/weight



# 49 CFR Part 173.150(g) - continued

1. Containing **not more** than 70% ethyl alcohol by volume/weight

## i. Non Glass Packagings

- A. Volume does not exceed 16 fluid ounces for liquids
- B. Volumes greater than 16 fluid ounces but not exceeding 1 gallon the company name and the words “Contains Ethyl Alcohol” are marked on the package
- C. Solids containing ethyl alcohol may be packaged in non-glass inner packagings not exceeding 1 pounds capacity;
- D. Weights greater than one pound up to 8 pounds the company name and the words “Contains Ethyl Alcohol” are marked on the package.





# 49 CFR Part 173.150(g) - continued

1. Containing **not more** than 70% ethyl alcohol by volume/weight



## ii. For Glass Packagings

- A. Volume does not exceed 8 fluid ounces in capacity for liquids
- B. Volumes greater than 8 fluid ounces to 16 fluid ounces the company name and the words “Contains Ethyl Alcohol” are marked on the package
- C. Solids containing ethyl alcohol may be packaged in glass inner packagings not exceeding 1/2 pound
- D. Weights greater than 1/2 pound up to 1 pound the company name and the words “Contains Ethyl Alcohol” are marked on the package

**Contains Ethyl Alcohol**



## 49 CFR Part 173.150(g)- continued

### iii. Outer Packaging Quantities and Other requirements



✓The net liquid contents of all inner packagings in any single outer packaging may not exceed 192 fluid ounces

✓The net solid contents of all inner packagings in any single outer packaging may not exceed 32 pounds

✓The gross weight of any single outer package shipped may not exceed 65 pounds

✓Inner packagings must be secured and cushioned to prevent breakage, leakage, and movement.



# 49 CFR Part 173.150(g) - continued

## 1. Containing **more** than 70% ethyl alcohol by volume/weight

- i. Inner packagings containing liquids the volume does not exceed 8 fluid ounces
- ii. Solids containing ethyl alcohol are not packed in inner packagings exceeding 1/2 pound in weight



## 49 CFR Part 173.150(g) - continued

### iii. Outer Packaging Quantities and Other requirements

- ✓ The net liquid contents of all inner packagings in any single outer packaging May not exceed 192 fluid ounces
- ✓ The net solid contents of all inner packagings in any single outer packaging may not exceed 32 pounds
- ✓ The gross weight of any single outer package shipped may not exceed 65 pounds
- ✓ Inner packagings must be secured and cushioned to prevent breakage, leakage, and movement.



# 49 CFR Part 173.150(g) -continued

## 3. Specific Air Transportation Requirements (Passenger and Cargo Aircraft)

- ✓ No outer package may be transported which contains an inner packaging net quantities exceeding:

16 fluid ounces of  
Flammable Liquid

OR

1 pound of solids  
containing  
flammable liquid





# Consumer Commodities



Federal Aviation  
Administration



# Consumer Commodities

Defined -171.8 and ICAO PI 963

**Consumer Commodity** - Means a material that is packaged and distributed in a form intended or suitable for sale through retail sales agencies or instrumentalities for consumption by individuals for purposes of personal care or household use. This term also includes drugs and medicines.





# Consumer Commodities

## Recent Rule Making

### Jan 19, 2011 HM 215K – Final Rule

- ✓ Outlines December 31, 2012 transition from ORM-D-Air to ID 8000 Consumer Commodities
- ✓ Created section - 173.167 Consumer Commodities
- ✓ Limited Quantity “Y” Marking requirement for Consumer Commodities
- ✓ Restricts hazmat classes for reclassification to Consumer Commodities



# Consumer Commodities

## Recent Rule Making

### Jan 7, 2013 HM 215K – Final Rule

- ✓ Corrected inconsistencies between ICAO Packing instruction Y963 and 173.167 (testing and absorbent material requirements)
- ✓ Clarifies friction type closures must be secured by positive means not secondary means

### Oct 31, 2013 HM–215K/L – Final Rule

- ✓ Revised 173.24(i) and 173.167



# Consumer Commodities

| Sym-<br>bols | Hazardous<br>materials<br>descriptions<br>and proper<br>shipping<br>names | Hazard<br>class or<br>Division | Identificat<br>ion<br>Numbers | PG | Label<br>Code | Special<br>provisions<br>(§172.102) | (8)                 |              |      | (9)   |                           |
|--------------|---|--------------------------------|-------------------------------|----|---------------|-------------------------------------|---------------------|--------------|------|---|---------------------------|
|              |   |                                |                               |    |               |                                     | Packaging (173.***) |              |      | Quantity<br>limitations<br>(see 173.27<br>and 175.75) |                           |
|              |   |                                |                               |    |               |                                     | Exception<br>s      | Non-<br>Bulk | Bulk | Passenger<br>aircraft/rail                            | Cargo<br>aircraft<br>only |
| 1            | 2   | 3                              | 4                             | 5  | 6             | 7                                   | 8A                  | 8B           | 8C   | 9A  | 9B                        |
|              | Consumer<br>Commodity   | 9                              | ID8000                        |    | 9             |                                     | 167                 | 167          | None | 30 kg<br>gross  | 30 kg<br>gross            |
|              | Consumer<br>Commodity   | ORM-D                          |                               |    | None          | 222                                 | 156,<br>306         |              |      | 30 kg<br>gross  | 30 kg<br>gross            |



# Consumer Commodities

## 173.167(a) Effective January 1, 2013, a “Consumer Commodity

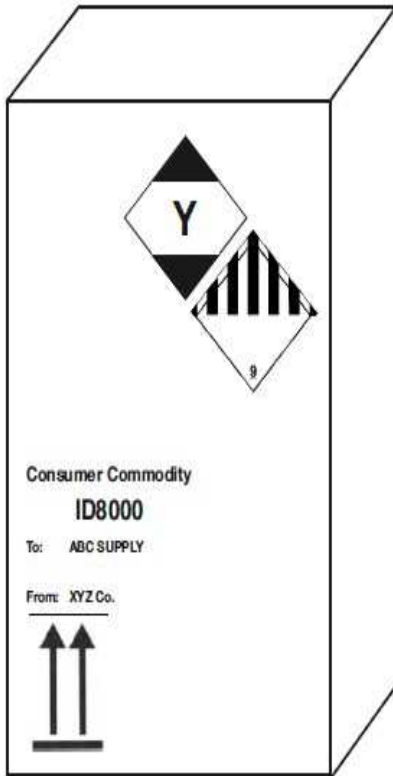


- a. When offered for air transportation limited to
- Class 2 (non toxic aerosols), 3 (PG II & III), 6.1 (PG III) & UN3077, UN3082, and UN3175 UN3334, and UN3335

- ✓ No subsidiary risk
- ✓ Authorized aboard a passenger-carrying aircraft
- ✓ ICAO/IATA - Special Provision A112 (Similar information)



# Consumer Commodities



## 173.167(a) - Continued

- ✓ Consumer Commodities are excepted from the specification packaging requirements
- ✓ Consumer Commodities prepared for Air
  - ✓ **Shipping papers required**
  - ✓ **Labeled appropriately**
- ✓ Except as indicated the completed package must conform to 173.24 and 173.24a
- ✓ Except for the pressure differential requirements in 173.27(c), the requirements of 173.27 do not apply



# Consumer Commodities

## 173.167(a) – Continued

1. Inner and outer packaging quantity limits
  - i. Non-toxic aerosols constructed in accordance with 173.306 of this part
    - ✓ In non-refillable, non-metal containers not exceeding 120 mL
    - ✓ In non-refillable metal containers not exceeding 820 mL
    - ✓ Flammable aerosols may not exceed 500 mL
  - ii. Liquids in inner packagings not exceeding 500 mL
  - iii. Solids in inner packagings not exceeding 500 g
  - iv. Any combination thereof not to exceed 30 kg gross weight (outer packaging limits)



# Consumer Commodities

## 173.167(a)

### 2. Closures



- ✓ Friction-type closures must be secured by positive means
- ✓ The body and closure must be constructed to adequately resist the effects of temperature and vibration
- ✓ The closure device must be so designed that it is unlikely that it can be incorrectly or incompletely closed





# Consumer Commodities

## 173.167(a) - Continued

### 3. Absorbent material

- ✓ Inner packagings must be tightly packaged in strong outer packagings
- ✓ Absorbent and cushioning material must not react dangerously with the contents of inner packagings
- ✓ Glass or earthenware inner packagings containing liquids of Class 3 or Division 6.1, sufficient absorbent material must be provided to absorb the entire contents



# Consumer Commodities

## 173.167(a) - Continued

### 3. Absorbent material

- Absorbent material is not required if the glass or earthenware inner packagings are sufficiently protected as packaged for transport that it is unlikely a failure would occur, and



- If a failure did occur, that it would be unlikely that the contents would leak from the outer packaging



# Consumer Commodities

## 173.167(a) - Continued

### 4. Drop test capability

- ✓ Packages of consumer commodities must be capable of withstanding a 1.2 m drop on solid concrete

### 5. Stack test capability

- ✓ Capable of withstanding, without failure or leakage of any inner packaging a force applied to the top surface for a duration of 24 hours



# Consumer Commodities

## 173.167(b)

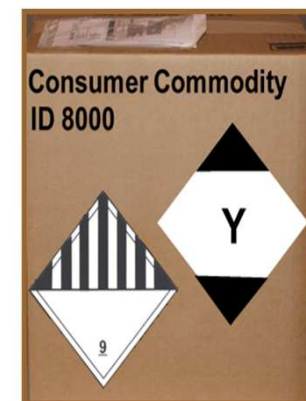
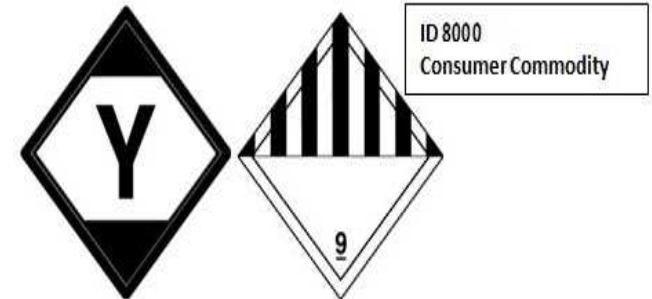
When offered for transportation by aircraft:

### 1. Marking & Label Requirements

- ✓ Marked as a limited quantity in accordance with 172.315(b)(1)
- ✓ Labeled as Class 9

### 2. Pressure differential capability

- ✓ Except for UN3082, inner packagings intended to contain liquids must be capable of meeting the pressure differential requirements



## Hazmat Questions?

For questions about hazardous materials (chemicals, batteries, battery-powered devices, gases, aerosols, flammables, etc.) you may contact the FAA Office of Hazardous Materials Safety via e-mail at [hazmatinfo@faa.gov](mailto:hazmatinfo@faa.gov). Please allow 1-2 business days for answers to e-mail questions.

# **This Concludes the Small Quantities Packaging brief.**

**To Review, this briefing discusses:**

- ✓ Excepted Quantities
- ✓ De Minimis Exceptions
- ✓ Limited Quantities and
- ✓ Consumer Commodity



Visit the attachments tab to view, find and save supporting documentation related to this briefing. .

**You may now exit the course.**

