



2011 Dangerous Goods Seminar Job Aid

Transportation by Air



Your Safety Is On Our Mind

DISCLAIMER

Proper training is required under federal and/or state regulations to handle dangerous goods and/or hazardous materials. All persons and entities must comply with all federal regulations, including but not limited to the specific training requirements of 49 C.F.R. §172.700 - §172.704.

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BASIC DANGEROUS GOODS SHIPPING INSTRUCTIONS

To prepare your shipment for transportation by air, follow these procedures in order, as they are listed.

Each step of this job aid is referenced directly from the appropriate IATA Subsection, where additional detailed instructions can be found.



1 Identify the Proper Shipping Name for the commodity you wish to ship.

- a. If you know the name of the commodity, go directly to the List of Dangerous Goods (IATA 4.2) found in the blue pages.
 - Proper Shipping Names are **shown in bold type**.
 - The spelling of the Proper Shipping Name used to identify your commodity (on the outside of the package and on the Shipper's Declaration) must agree with the spelling found in the IATA manual.

Alternative spelling, reflecting common usage around the world is acceptable for words such as sulfur for sulphur, etc. (IATA 8.1.3.5).

- a. The Numerical Cross Reference list IATA 4.3 provides a quick table for location of the Proper Shipping Name in Table 4.2 using the UN/ID number.

If you cannot find the Proper Shipping Name for the commodity you wish to ship in IATA Table 4.2, refer to "Shipping Unlisted Substances" found on pages 9 and 10 of this job aid.

2 Identify other information needed to prepare your commodity for shipment.

- a. The Primary and any Subsidiary Risk classifications associated with transportation of your commodity are listed in IATA 4.2 Column C.
- b. Hazard Labels that must be applied to the outside of your package are listed in IATA 4.2 Column D.
- c. The UN Packing Group assigned to your commodity is listed in IATA 4.2 Column E.
- d. Special provisions that apply to air transport of your commodity are listed in IATA 4.2 Column M, with the explanation found in IATA 4.4.



BASIC DANGEROUS GOODS SHIPPING INSTRUCTIONS

3 Select the Packing Instruction you will use to prepare your commodity for shipment.

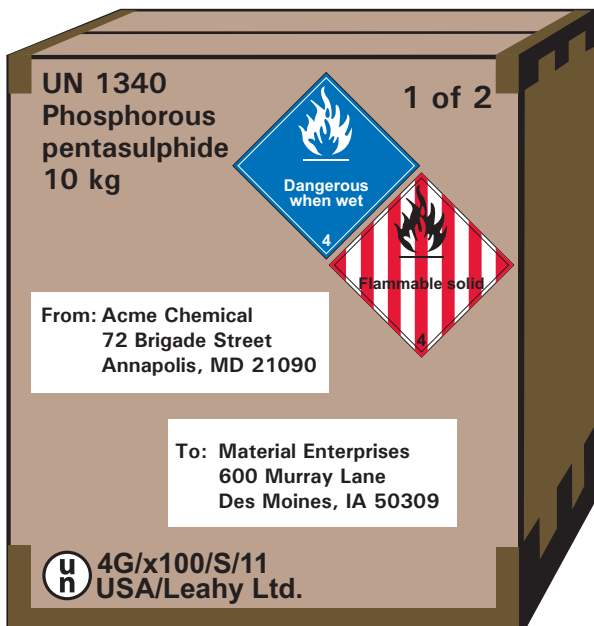
- a. Packing Instructions are based on Hazard Classification, Packing Group, and quantity. The General Packing Requirements found in IATA 5.0.2 apply to all shipments.
 - Packaging must be of good quality and must remain closed during transport (IATA 5.0.2.4).
 - Packaging must be resistant to any material being shipped inside (IATA 5.0.2.6).
 - Ullage/airspace must be left to allow liquids to expand without leaking or permanently distorting the package (IATA 5.0.2.8).
 - Inner packaging must be cushioned to prevent breakage (IATA 5.0.2.12.1).
- b. To select the appropriate Packing Instruction, first convert all quantities to their Metric equivalent. (Use the tables in IATA Appendix B.3 for assistance.)
- c. Refer to IATA 4.2 Columns G - L and determine the maximum net quantity of your commodity allowed per package for transport on a Passenger or Cargo Aircraft.
- d. Note and comply with additional Packing Instructions that must be followed to ship your commodity. (If appropriate, additional requirements are identified in IATA 4.2 Column M.)
- e. Finally, use the chart below to select the specific Packing Instruction you will use.

IF....	AND THE QUANTITY YOU ARE SHIPPING...		THEN...
UN Specification Packaging is NOT available	CAN be packaged in Excepted Quantities or Limited Quantities.	DOES NOT EXCEED the maximum allowed in Excepted Quantity or Limited Quantity	Select the appropriate packaging scenario from IATA 2.6 or the Y Packing Instruction
	CANNOT be offered using Excepted Quantity Provision CANNOT be offered using Limited Quantities Provision (forbidden or exceeds package quantity limits)		
UN Specification Packaging IS available	IS acceptable and DOES NOT exceed the maximum quantity per package limit for Passenger and Cargo Aircraft		Select the suitable "Passenger and Cargo Aircraft" Packing Instruction
	Passenger and Cargo Packing Instruction not available (FORBIDDEN or EXCEEDS package quantity limits)		Select the appropriate "Cargo Aircraft Only" Packing Instruction

BASIC DANGEROUS GOODS SHIPPING INSTRUCTIONS

4 Prepare your shipment in accordance with the Packing Instruction selected.

- a. Review State and/or Operator Variations which apply to your shipment. (State and/or Operator Variations are listed at the beginning of each Packing Instruction).
 - State Variations are listed in IATA 2.8.2.
 - Operator Variations are listed in IATA 2.8.3.
- b. Select the packaging option most appropriate for your shipment. (Each Packing Instruction shows acceptable packaging options).
 - IATA Table 5.0.C contains a list of UN Specification Packaging approved for use in air transportation.
 - For Combination Packaging, tables show acceptable outer packagings and:
 - The inner packaging required with that outer packaging.
 - The maximum quantity permitted in each inner packaging.



5 Mark your package in accordance with IATA Subsection 7.1.5.

- a. All markings must be readily visible, legible, and must not overlap or be partially obscured by labels.
- b. If required (by IATA Subsection 7.1), UN Specification markings must be stamped, printed, or otherwise marked on the package to provide adequate permanency.
- c. English must be used in addition to any other language which may be required by the state (country) of origin.
- d. Packages containing dangerous goods must be marked, durably and legibly on the outside of the package with each of the following:
 - Proper Shipping Name.
 - The UN/ID number (preceded by the letters "UN" or "ID" as appropriate).
 - The full name and address of the shipper.
 - The full name and address of the consignee. (i.e., the person/destination to which the package is being shipped).
 - Packages shipped under the Limited Quantity provisions of IATA Subsection 2.7 must be marked in accordance with IATA figure 7.1 A.
 - For Class 1, Explosives, the Proper Shipping Name may be supplemented by additional descriptive text to indicate commercial or military names.
 - **Additional markings** are required for infectious substances, environmentally hazardous substances, refrigerated liquefied gases, dry ice and some overpacks (see IATA 7.1.4, 7.1.5).
 - Except for ID 8000, Consumer commodity and packages containing radioactive material (Class 7) the NET QUANTITY of dangerous goods contained in each package **must** be shown for multiple piece shipments containing more than one package with dangerous goods contents. Where the maximum quantity shown in Columns H, J and L in Subsection 4.2 is a gross weight, the GROSS WEIGHT of the package must be shown. This quantity must be marked adjacent to the UN number and Proper Shipping Name.
 - Note: Not required if packages are identical dangerous goods.

BASIC DANGEROUS GOODS SHIPPING INSTRUCTIONS

Limited Quantities packages shipped under the Limited Quantity Provision of subsection 2.7 must be marked with the Limited Quantities mark (IATA Figure 7.1.A).



6 Label your packages with the appropriate labels.

- a. For each package requiring labelling:
 - Remove or obliterate any irrelevant labelling already on the package [IATA 7.1.1(a)].
 - Use only labels of durable quality and correct specification. (See IATA 7.3.)
 - Securely affix labels to your package in the correct location(s).

Ensure that labels are readily visible and not obscured or overlapped at all by any of the packaging or by any other label.
- b. Hazard Labels:
 - Labels identifying the primary and subsidiary hazards of the dangerous goods must bear the class or division number (IATA 7.2.3.2).
- c. Handling Labels:
 - The **Cargo Aircraft Only** label must be used on packages containing dangerous goods in quantities not permitted on passenger aircraft. (IATA 7.2.4.2) It must be affixed on the same surface of the package near the hazard label. (IATA 7.2.6.3) .
 - The **Cryogenic Liquid** label must be used in addition to the Non-flammable gas (Division 2.2) hazard label on packages containing cryogenic liquids (IATA Subsection 7.2.4.3).
 - The **Magnetized Material** label must be used on packages containing magnetized material (IATA 7.2.4.1).
 - Either the **IATA Package Orientation** (This Way Up) label or preprinted package orientation labels that meet IATA specifications must be used on combination packages and overpacks containing liquid dangerous goods.
 - The labels must be affixed or preprinted on at least two opposite sides so as to show proper package orientation (IATA 7.2.4.4).
 - The **"Keep Away From Heat"** handling label must be used on packages and overpacks

containing self-reactive substances in Division 4.1 and Division 5.2, Organic Peroxides. (IATA 7.2.4.5)

- **Lithium Batteries.** Packages containing lithium batteries packed according to Packing Instruction 965 to 970 that are not subject to other additional requirements of these Regulations must bear a "Lithium Battery" handling label (Figure 7.4.1) as required by the applicable packing instruction (IATA 7.2.4.7)

d. Label Location:

- Labels must be located on the same surface of the package near the Proper Shipping Name marking (IATA 7.2.6.2.1).
- When labels identifying the primary and subsidiary risk are required, they must be affixed adjacent to each other (IATA 7.2.6.2.3).


7 Complete the Documentation that will accompany your shipment.

- a. Follow the detailed instructions for completing the Shipper's Declaration found in IATA 8.1.6, or refer to "Completing the Shipper's Declaration" found on pages 5 through 8 of this job aid.
- b. The air waybill should be prepared as directed by the carrier; however, IATA 8.2 contains additional instructions on how to complete that portion of the air waybill concerning the information required for dangerous goods shipments.
Air waybills accompanying shipments for which a dangerous goods declaration is required should include the following statements, as applicable, in the "Handling Information" box:
 - *"Dangerous Goods as per attached Shipper's Declaration" or "Dangerous Goods as per attached DGD"*
 - *"Cargo Aircraft Only" or "CAO"*

COMPLETING THE SHIPPER'S DECLARATION

(Manual Form)

To manually prepare the documentation that must accompany your shipment, follow the procedures as they are listed in this job aid. Each step is referenced directly to the appropriate IATA Subsection where additional detailed instructions can be found.

Shipper <div style="text-align: center; font-size: 2em;">1</div>		Air Waybill No. <div style="text-align: center; font-size: 2em;">3</div> Page of Pages <div style="text-align: center; font-size: 2em;">4</div> Shipper's Reference Number <small>(optional)</small>									
Consignee <div style="text-align: center; font-size: 2em;">2</div>		<div style="text-align: center;">  </div>									
Two completed and signed copies of this Declaration must be handed to the operator		WARNING Failure to comply with all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.									
<table border="1" style="width: 100%;"> <tr> <th colspan="2">TRANSPORT DETAILS</th> </tr> <tr> <td style="width: 50%;"> This shipment is within the limitations prescribed for: <small>(delete non applicable)</small> <div style="text-align: center; font-size: 2em;">5</div> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">PASSENGER AND CARGO AIRCRAFT</td> <td style="width: 50%;">CARGO AIRCRAFT ONLY</td> </tr> </table> </td> <td style="width: 50%;"> Airport of Departure <div style="text-align: center; font-size: 2em;">6</div> </td> </tr> <tr> <td colspan="2"> Airport of Destination: </td> </tr> </table>				TRANSPORT DETAILS		This shipment is within the limitations prescribed for: <small>(delete non applicable)</small> <div style="text-align: center; font-size: 2em;">5</div> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">PASSENGER AND CARGO AIRCRAFT</td> <td style="width: 50%;">CARGO AIRCRAFT ONLY</td> </tr> </table>	PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY	Airport of Departure <div style="text-align: center; font-size: 2em;">6</div>	Airport of Destination:	
TRANSPORT DETAILS											
This shipment is within the limitations prescribed for: <small>(delete non applicable)</small> <div style="text-align: center; font-size: 2em;">5</div> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">PASSENGER AND CARGO AIRCRAFT</td> <td style="width: 50%;">CARGO AIRCRAFT ONLY</td> </tr> </table>	PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY	Airport of Departure <div style="text-align: center; font-size: 2em;">6</div>								
PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY										
Airport of Destination:											
		Shipment type: <small>(delete non-applicable)</small> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">NON-RADIOACTIVE</td> <td style="width: 50%;">RADIOACTIVE</td> </tr> </table>		NON-RADIOACTIVE	RADIOACTIVE						
NON-RADIOACTIVE	RADIOACTIVE										

- 1

Enter the full name and address of the shipper. *Information must be entered by the shipper.* The name and address which appears on the Shipper's Declaration may differ from that on the Air Waybill (IATA 8.1.6.1).
- 2

Enter the full name and address of the consignee. *Must be entered by the shipper* (IATA 8.1.6.2).
- 3

Enter the number of the Air Waybill to which the Shipper's Declaration will be attached. *This information may be entered or changed by the shipper, the shipper's agent, the airline or the airline's handling agent* (IATA 8.1.6.3).
- 4

Enter the page number and total number of pages. *Information must be entered by the shipper.* If there is no extension list, enter "Page 1 of 1" (IATA 8.1.6.4).
- 5

Indicate whether the shipment is packed to comply with limitations for passenger aircraft. *Information must be entered by the shipper.* Delete either "Passenger and Cargo Aircraft" or "Cargo Aircraft Only" to indicate whether or not the shipment can be carried on passenger aircraft, or must be carried only on cargo aircraft (IATA 8.1.6.5).
- 6

Enter the full name of the airport or city of departure. *This information may be entered or changed by the shipper, the shipper's agent, the airline or the airline's handling agent* (IATA 8.1.6.6).

COMPLETING THE SHIPPER'S DECLARATION

(Manual Form)

Airport of Destination: 7				Shipment type: (delete non-applicable) 8 <input type="checkbox"/> NON-RADIOACTIVE <input type="checkbox"/> RADIOACTIVE		
NATURE AND QUANTITY OF DANGEROUS GOODS						
Dangerous Goods Identification				Quantity and type of packaging	Packing Inst.	Authorization
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Pack-ing Group			
9a	9b	9c	9d	9e	9f	9g

7 Enter the full name of the airport or city of destination. This information may be entered or changed by the shipper, shipper's agent, the airline or the airline's handling agent. (IATA 8.1.6.7)

8 Delete "Radioactive" to indicate the shipment does not contain radioactive material. Information must be entered by the shipper. Radioactive material must not be included on the same Declaration form as other dangerous goods, except as authorized in IATA 8.1.6.8. Exception: Special Provision A130.

9 Enter the required information strictly in accordance with IATA 8.1.6.9.
nm NOTE: Columns indicated are those in the List of Dangerous Goods (IATA 4.2).

- UN Number or ID Number** (Column A), preceded by "UN" or "ID" as appropriate.
- Proper Shipping Name** (Column B), with technical name(s) if appropriate.
- Class Number or Division Number** as appropriate, for Class 1 - Compatibility Group (Column C). Subsidiary Risk(s) as indicated (Column D) in parentheses following the class or division.
- The applicable **Packing Group** (Column E).

and content) and their type of packaging (spelled out in full) **and the net quantity** (as specified in IATA 8.1.6.9.2 Step #6).

When two or more different dangerous goods items are packed in the same outer package, the words "**All Packed in One**" must immediately follow the relevant entries.

When an overpack is used, the wording "**Overpack Used**" must be inserted on the declaration form immediately after all relevant entries relating to the packages within the overpack.

f. Number of the Packing Instruction or of the Limited Quantity Packing Instruction (Column G, I, or K as appropriate).

g. Authorizations as applicable (in accordance with IATA 8.1.6.9.4 Step #9).

- The Special Provision Number if the special provision is **A1, A2, A51, A81, A88, A99** or **A130** [IATA 8.1.6.9.4(a)].
- Authorizations and/or exemptions which must accompany your shipment must either be in English, or be accompanied by an accurate translation in English.

e. Number of packages (of the same packaging type

COMPLETING THE SHIPPER'S DECLARATION

(Manual Form)

Additional Handling Information 10	
<p>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.</p>	Name/Title of Signatory 11
	Place and Date 12
Emergency Telephone Number	Signature (see warning above) 13
<small>[A typed signature may be used if the origin and destination are in the United States or its territories.]</small>	
<small>FOR RADIOACTIVE MATERIAL SHIPMENT ACCEPTABLE FOR PASSENGER AIRCRAFT, THE SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN OR INCIDENT TO RESEARCH, MEDICAL DIAGNOSIS, OR TREATMENT. ADR EUROPEAN TRANSPORT STATEMENT: CARRIAGE IN ACCORDANCE WITH 1.1.4.2.1</small>	

10 Enter any special handling information relevant to your shipment. *Information must be entered by the shipper.*

- a. All dangerous goods shipments to, from, within, or transiting through the U.S. must include a 24-hour emergency response telephone number (IATA 2.8.1, USG-12).

UN 1845, UN 2807, UN 2857, UN 2969, UN 3166, UN 3171, UN 3358, ID 8000 and Other Regulated Materials (ORM-D) as defined in 49 CFR 173.144 are exempt from this requirement.

As specified under §172.604 (a), a person offering hazardous material for transit must provide an emergency response telephone number, including the area code, or for telephone members outside of the United States, the international access code or the "+" (plus) sign, country code, as appropriate, for use in the event of an emergency involving the hazardous material.

The telephone numbers is required by §172.604(a) must be either:

- ✓ *The number of the person offering the hazardous material for transportation when that person is also the ERI provider:*

Or

- ✓ *The number of an agency or organization capable of, and accepting responsibility for, providing the detailed information required by §172.604 (a)(2).*

- b. When shipping Division 4.1 self-reactive substances, other substances having similar properties, and Division 5.2 organic peroxides with Special Provision A20, the shipper must indicate that the packages containing such substances must be protected from direct sunlight and stored away from all heat sources in a well ventilated area (IATA 8.1.6.11.1).
- c. When a sample of a self-reactive substance or an organic peroxide is transported, a statement to

this effect must be included in the "Additional Handling Information" box.

- d. Infectious Substances and Controlled Substances. The name and telephone number of a responsible person must be included on the Shipper's Declaration. (IATA 8.1.6.11.4)
- e. The statement "I declare that all of the applicable air transport requirements have been met" must either be after the certification statement or in the Additional Handling section. (IATA 8.1.6.12.2)

11 Enter the name and title of the person actually signing the Declaration. The title of the person or the name of the department he/she is employed with is acceptable. *Information which must be entered by the shipper, may be printed or stamped* (IATA 8.1.6.13).

12 Enter the place and date of signing the form. *Information must be entered by the shipper* (IATA 8.1.6.14).

13 Sign the Shipper's Declaration. *Information must be entered by the shipper* (IATA 8.1.6.15).

- a. The signature should be written by hand; however, facsimile signatures are acceptable where applicable laws and regulations recognize the legal validity of facsimile signatures (IATA 8.1.4.1).
- b. Typewritten signatures are not acceptable. **FedEx Express requires all Shipper's Declarations to be prepared using one of the following methods:**
- FedEx recognized vendor software application.
 - FedEx recognized shipper proprietary software.
 - Certain FedEx® electronic shipping solutions that have dangerous goods error checks.

FX-18 excludes:

- Shipments originating in non-U.S. locations as well as US territories.
- Shipments originating on a 023 air waybill. This includes FedEx International Premium (IP1), FedEx International Express Freight (IXF), and FedEx Airport-to-Airport (ATA). *Contact FedEx Express Dangerous Goods Hotline for additional inquiries.*

COMPLETING THE SHIPPER'S DECLARATION

(Manual Form)

SHIPPER'S DECLARATION FOR DANGEROUS GOODS				(Provide at least three copies to the airline.)		
Shipper <div style="text-align: center; font-size: 24px; font-weight: bold;">1</div>				Air Waybill No. <div style="text-align: center; font-size: 24px; font-weight: bold;">3</div> Page of Pages <div style="text-align: center; font-size: 24px; font-weight: bold;">4</div> Shipper's Reference Number <small>(optional)</small>		
Consignee <div style="text-align: center; font-size: 24px; font-weight: bold;">2</div>						
<i>Two completed and signed copies of this Declaration must be handed to the operator</i>				<div style="text-align: center; font-weight: bold;">WARNING</div> <p>Failure to comply with all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.</p>		
<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <div style="font-weight: bold; font-size: 10px;">TRANSPORT DETAILS</div> <div style="font-size: 8px;">This shipment is within the limitations prescribed for: <small>(delete non applicable)</small></div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px; font-size: 8px;">PASSENGER AND CARGO AIRCRAFT</div> <div style="border: 1px solid black; padding: 2px; font-size: 8px;">CARGO AIRCRAFT ONLY</div> </div> </div> <div style="width: 35%;"> <div style="font-weight: bold; font-size: 10px;">Airport of Departure</div> <div style="text-align: center; font-size: 24px; font-weight: bold;">6</div> </div> </div> </div>				<div style="font-size: 24px; font-weight: bold;">8</div>		
<div style="font-size: 24px; font-weight: bold;">7</div>				<div style="font-size: 10px;">Shipment type: <small>(delete non-applicable)</small></div> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px; font-size: 8px;">NON-RADIOACTIVE</div> <div style="border: 1px solid black; padding: 2px; font-size: 8px;">RADIOACTIVE</div> </div>		
NATURE AND QUANTITY OF DANGEROUS GOODS						
Dangerous Goods Identification						
UN or ID No.	Proper Shipping Name	Class or Division <small>(Subsidiary Risk)</small>	Pack- ing Group	Quantity and type of packaging	Packing Inst.	Authorization
9a	9b	9c	9d	9e	9f	9g
<div style="font-weight: bold;">Additional Handling Information</div> <div style="text-align: center; font-size: 24px; font-weight: bold;">10</div>						
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.				<div style="font-size: 24px; font-weight: bold;">11</div>		
<div style="font-size: 24px; font-weight: bold;">12</div>				<div style="font-size: 24px; font-weight: bold;">13</div>		
<div style="font-size: 10px;">Emergency Telephone Number</div>				<div style="font-size: 8px;">[A typed signature may be used if the origin and destination are in the United States or its territories.]</div>		
FOR RADIOACTIVE MATERIAL SHIPMENT ACCEPTABLE FOR PASSENGER AIRCRAFT, THE SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN OR INCIDENT TO RESEARCH, MEDICAL DIAGNOSIS, OR TREATMENT. ADR EUROPEAN TRANSPORT STATEMENT: CARRIAGE IN ACCORDANCE WITH 1.1.4.2.1						

SHIPPING UNLISTED SUBSTANCES

To prepare your shipment for transportation by air, follow these procedures in order, as they are listed.

Each step of this job aid is referenced directly from the appropriate IATA Subsection, where additional detailed instructions can be found.

1 Determine that the substance is not forbidden for air transportation.

- a. If your substance meets any of the criteria found in IATA Subsection 2.1.1, it must not be carried on aircraft under any circumstance.
- b. If it is listed in 4.2 List of Dangerous Goods as Forbidden for both Passenger and Cargo Aircraft Only.

2 Classify the substance by comparing its properties, as described on the MSDS with the classification criteria described in IATA Section 3.

- a. Obtain a copy of the Material Safety Data Sheet (MSDS) for your substance. (**Note:** In the United States, OSHA 29CFR 1910.1200 (a) (2) requires manufacturers/importers to produce an MSDS for each hazardous substance they manufacture/import.)
- b. Use the MSDS to obtain a description of the physical characteristics associated with your substance. Among other information required by law, each MSDS includes the following:
 - The identity of substance (chemical and common names).
 - Physical/chemical characteristics of the substance.
 - Physical hazards (potential for fire, explosion, etc.).
 - Information on exposure limits.
 - Precautions for safe handling.
 - Date of MSDS preparation, or most recent change.
- c. Use the decision table on the next page to determine the proper UN Hazard Classification and appropriate Packing Group.



3 Select the generic or n.o.s. Proper Shipping Name that most accurately describes the article or substance and prepare your commodity for shipment.

- a. Using IATA Table 4.1.A, find the UN Hazard Classification selected in Step 2 and select the most appropriate **generic chemical name** (preferred) or **hazard description**.

Generic or n.o.s. (not otherwise specified) Proper Shipping Names that require the addition of the technical chemical name in parentheses immediately following the proper shipping name are marked with the symbol “★” in the List of Dangerous Goods (IATA 4.2).

- b. Using the “**Basic Dangerous Goods Shipping Instructions**” found on pages 1 through 4 of this job aid, refer to Step 2 and continue processing your commodity for shipment.

SHIPPING UNLISTED SUBSTANCES

If the MSDS characteristics of the unlisted substance indicate that it is:	Then, to determine	
	UN Hazard Class, refer to	Packing Group, refer to
EXPLOSIVE Prior to transport, the classification of all new explosive devices, together with compatibility group assignment and the proper shipping name, must be approved by the appropriate authority of the State of manufacture. Within the U.S., this is the Department of Transportation, Office of Hazardous Materials Special Permits and Approvals.	IATA 3.1 Table 3.1 A	-
GAS	IATA 3.2	-
FLAMMABLE LIQUID	IATA 3.3	IATA 3.3.2 Table 3.3 A Table 3.3 B
FLAMMABLE SOLID	IATA 3.4	IATA 3.4.2.4
OXIDIZING SUBSTANCES OR ORGANIC PEROXIDE	IATA 3.5	IATA 3.5.1.4
TOXIC AND INFECTIOUS SUBSTANCE	IATA Subsection 3.6 IATA 3.6.2	IATA 3.6.1.3 IATA 3.6.1.5 Table 3.6 A Table 3.6 B Figure 3. 6 C
RADIOACTIVE MATERIAL	IATA 3.7 IATA Section 10	-
CORROSIVES	IATA 3.8	IATA 3.8.2
MISCELLANEOUS DANGEROUS GOODS	IATA 3.9	-
ARTICLES AND SUBSTANCES WITH MULTIPLE HAZARDS	IATA 3.10 Table 3.10 A	-

SHIPPING VARIATIONS

In most situations, preparing your dangerous goods packages in accordance with basic shipping instructions will be adequate; however, certain types of shipments will require additional processing.

Each step of this job aid (which is designed to assist you in identifying when additional shipping information is required) is referenced directly to the appropriate IATA Subsection, where detailed instructions can be found.

Mixtures and Solutions not listed by name (IATA 4.1.3)

- a. Classify your substance by comparing its properties, as described on the MSDS, with the classification criteria in IATA Section 3 and determine the Proper Shipping Name.
- b. Ensure your mixture or solution is described (on the package and Shipper's Declaration) by the most appropriate Proper Shipping Name.
 - A mixture or solution containing a predominant substance listed by name in the IATA List of Dangerous Goods, together with one or more substances not subject to regulation, and/or traces of one or more substances not subject to regulation, must be identified by name in the List of Dangerous Goods. The qualifying word "mixture" or "solution" as appropriate must be added to the proper shipping name (IATA 4.1.3.1)

Overpacks (IATA 5.0.1.5)

- a. Ensure that each package contained in the overpack has been properly packaged, marked and labeled and that the overpack does not contain packages of different substances which might react dangerously with each other or of dangerous goods which require segregation according to IATA Table 9.3.A/ 49 CFR 177.848.
- b. Marking for overpack should be in accordance with IATA 7.1.4.

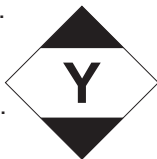
- Unless all markings representative of all dangerous goods in the overpack are clearly visible, the overpack must be marked with the word "Overpack", and all the package markings required by 7.1.5. These markings must be reproduced on the outside of the overpack.
 - Packaging specification markings must not be reproduced on the overpack. The overpack marking is an indication that packages contained within comply with prescribed specifications.
 - When your complete shipment consists of more than one overpack, the total quantity of dangerous goods contained in each overpack, as described on the Shipper's Declaration, must be indicated on the overpack.
 - To facilitate identification, loading and notification, an identification mark (which can be any alpha-numeric format) should be indicated on the Shipper's Declaration and marked on the package. Where an overpack contains more than one UN number, the total quantity of dangerous goods should be shown by UN number.
- c. Ensure that all labels required on packages in the overpack are clearly visible on the outside of the overpack (IATA 7.2.7).
 - d. List individual package information on the Shipper's Declaration (*in the **Nature and Quantity of Dangerous Goods** section*) first and include the wording "Overpack Used" immediately after all relevant entries related to the packages within the overpack.

Multiple overpacks with identical contents should be identified as "Overpack Used X (*number of identical overpacks*)," while multiple overpacks with different contents should be listed separately (IATA 8.1.6.9.2 Step 7).

SHIPPING VARIATIONS

Consumer Commodities (IATA Packing Instruction Y963)

- a. Ensure your commodities are packaged in a form intended or suitable for retail sale for purposes of personal care or household use.
- b. Prepare your commodity for shipment in accordance with Packing Instruction Y963. Although items prepared under this instruction are exempt from the General Packing Requirements of IATA 5.0, they must meet the standards outline listed in the instruction, to include:
 - Passing a 4-foot drop test.
 - Sufficient outage to prevent leakage.
 - Closures held securely in place.
 - Sufficient cushioning and absorbent materials.
- c. Mark and label your package as:
 - **Consumer Commodity** (which is the Proper Shipping Name found in IATA 4.2).
 - ID 8000 (note the letters "ID").
 - Miscellaneous (Class 9) label.
 - Limited Quantity Mark (IATA 7.1A).
- d. Ensure the gross weight of your shipment is shown on the Shipper's Declaration:
 - For a single package, use the actual gross weight of the package.
 - For more than one package, use either the actual gross weight of each package or the average weight of the packages.
- e. Consumer Commodity shipments are exempt from the USG-12 requirement to provide a 24-hour emergency telephone number



Dangerous Goods in Excepted Quantities

Dangerous goods in Excepted Quantities are exempt from normal dangerous goods marking, labelling, documentation and loading requirements; however, they must be shipped in accordance with IATA 2.6.

- a. Using the EQ Code from Column F of 4.2, go to Table 2.6.A to determine maximum inner and outer capacities for your commodity.
- b. Ensure your packaging complies with IATA 2.6.5 and IATA 2.6.6:
 - Strong, rigid, well-constructed outer package.
 - Passing drop and stacking tests.
 - Watertight intermediate packaging for each inner container.
 - Closures held securely in place.
 - Sufficient cushioning and absorbent materials.
- c. Complete and apply the Excepted Quantities package marking (IATA Figure 2.6.B) to your package. This may be in label form. (IATA 2.6.B) A Shipper's Declaration is not required for Dangerous Goods in Excepted Quantities (IATA 2.6.8.1).
- d. Enter the words "*Dangerous Goods in Excepted Quantities*" in the **Nature and Quantity of Goods** section of your Air Waybill (IATA 2.6.8.2).
- e. A package containing dangerous goods in excepted quantities must not contain other dangerous goods that require a shipper's declaration. (IATA 2.6.5.2)

SHIPPING VARIATIONS

Infectious Substances (IATA 3.6.2)

Infectious substances are substances containing micro-organisms that are known or reasonably expected to cause disease in humans or animals.

- a. Determine the Proper Shipping Name:
 - **Infectious substance, affecting humans** UN2814.
 - **Infectious substance, affecting animals** only UN2900.

Special Provision 140 requires the technical name of the hazard to be entered in brackets on the Declaration form, following the PSN, but not on the package.

- b. Use IATA Packing Instruction 620.
 - Ensure your packaging complies with IATA 5.0.2, meets the testing requirements outlined in IATA and includes:
 - A watertight primary receptacle with sufficient room for expansion of liquids.
 - A watertight secondary receptacle.
 - Absorbent material between the primary and secondary receptacle (must be sufficient to absorb the entire contents of all primary receptacles).
 - An outer packaging.
 - Place an itemized list of the package contents between the secondary and outer packaging.
- c. Ensure that, in addition to other marking and labeling requirements (IATA Table 6.5.A), THE NAME AND TELEPHONE NUMBER OF A PERSON RESPONSIBLE FOR THE SHIPMENT is included in the package markings [IATA 7.1.5.1(e)].
- d. Ensure the Shipper's Declaration includes:
 - The name and telephone number of a responsible person to be contacted in an emergency.



Dry Ice (UN 1845) Shipped by Itself or used as a Refrigerant

- a. Use IATA Packing Instruction 954.
- b. Ensure your packaging complies with IATA 5.0.2 and is designed to permit the release of carbon dioxide gas (to prevent build-up of pressure that could rupture the package).
- c. Ensure that, in addition to other marking and labeling (Class 9 - Miscellaneous) requirements, the net weight (in kilograms) of dry ice within the shipment is marked on the outside of the package.

A Shipper's Declaration is not required if shipping Dry Ice Carbon Dioxide Solid with no other hazard class in the package or when shipping ONLY Dry Ice.
- d. Enter the following in the Nature and Quantity of Goods section of the air waybill.

Example:

Nature and Quantity of Goods
(Incl. Dimensions of Volume)

Carbon dioxide, solid
UN 1845
2 x 25 kg (*Number of pieces x net quantity in kg*)

SHIPPING DIFFERENT DANGEROUS GOODS (IN ONE PACKAGE)

To prepare shipments of different dangerous goods packed in one outer package for transportation by air, follow the procedures in order, as they are listed.

Each step of this job aid is referenced directly from the appropriate IATA Subsection, where additional detailed instructions can be found.

1 Identify the Proper Shipping Name for each commodity you wish to ship.

- a. Ensure the dangerous goods do not react dangerously with each other and cause:
 - Combustion and/or evolution of considerable heat.
 - Evolution of flammable, toxic or asphyxiant gases.
 - The formation of corrosive or unstable substances.
- b. The dangerous goods do not require segregation (IATA Table 9.3.A/ 49 CFR 177.848).
- c. The package does not contain 6.2 and unrelated types of dangerous goods.
- d. The inner packaging and quantity used for each item of dangerous goods and the quantity complies with each dangerous goods packaging instruction.
- e. The outer package is permitted by each dangerous good.
- f. The package as prepared for shipment meets the specification performance test for the most restrictive packing group of a substance contained in the package.
- g. The quantities of different dangerous goods must be such that "Q" does not exceed the value of 1.



2 Calculate the Q Value for the commodities you have selected. (IATA 5.0.2.11)

- a. To calculate the Q Value, use the following formula:

$$Q = \frac{n^1}{M^1} + \frac{n^2}{M^2} + \frac{n^3}{M^3} \dots$$

- **n¹** represents the quantity of the first commodity that you wish to ship.
- **M¹** represents the maximum quantity of your first commodity which can be shipped in accordance with the applicable Packing Instruction.

SHIPPING DIFFERENT DANGEROUS GOODS (IN ONE PACKAGE)

- n^2 represents the quantity of the second commodity that you wish to ship.
 - M^2 represents the maximum quantity of your second commodity which can be shipped in accordance with the applicable Packing Instruction.
- b. The Q Value calculated must not exceed 1.0 and be rounded up to the first decimal place (IATA 8.1.6.9.2, Step 6 (g)). If the Q Value exceeds 1.0 you may:
- Try to calculate the Q Value using “Cargo Aircraft Only” Packing Instructions.
 - **Ship the items in separate packages.**
- c. The following dangerous goods do not need to be taken into account in the calculation of the “Q” value:
- Dry Ice UN 1845.
 - Those where Columns H, J, and L of the List of Dangerous Goods indicate “No Limit.”
 - Those with the same UN number, packing group and physical state (i.e. solid or liquid), provided they are the only dangerous goods in the package and the total net quantity does not exceed the maximum net quantity shown in the list of dangerous goods.
- d. For packages containing dangerous goods where the letter “G” follows the quantity amount in Column J, or L in the list of dangerous goods, the gross weight of the completed package does not exceed the lowest applicable gross weight.

SHIPPING DIFFERENT DANGEROUS GOODS (IN ONE PACKAGE)

Sample Q Value Calculation

Substance Proper Shipping Name	Net Quantity per package to be Shipped (n ₁)	Q Value Calculation								
		Passenger or Cargo Aircraft				Cargo Aircraft Only				
		Packing Instruction	Maximum Qty (M ₁)	n ₁ /M ₁	Package Q Value	Packing Instruction	Maximum Qty (M ₁)	n ₁ /M ₁	Package Q Value	
Ferrosilicon UN 1408 (with 50% silicon)	10 kgs	485	25 kg	10 kg/25 kg	.4	491	100 kg	10 kg/100 kg	.1	
Ethyl Formate UN 1190	4 L	353	5L	4 L/5 L	.8	364	60 L	4 L/60 L	.07	
		Total Q Value of Shipment (Cannot combine - Q value greater than 1.0)				1.2		Total Q Value of Shipment (Cannot combine - Q value greater than 1.0)		.17 Q = 0.2

Substance Proper Shipping Name	Net Quantity per package to be Shipped (n_1)	Q Value Calculation								
		Passenger or Cargo Aircraft				Cargo Aircraft Only				
		Packing Instruction	Maximum Qty (M_1)	n_1/M_1	Package Q Value	Packing Instruction	Maximum Qty (M_1)	n_1/M_1	Package Q Value	
		Total Q Value of Shipment (Cannot combine - Q value greater than 1.0)				Total Q Value of Shipment (Cannot combine - Q value greater than 1.0)				

SHIPPING DIFFERENT DANGEROUS GOODS (IN ONE PACKAGE)

3 Prepare your shipment using the Packing Instructions selected.

Review State and/or Operator Variations which apply to the Packing Instruction applicable to each commodity in your shipment.

(State and/or Operator Variations are listed at the beginning of each Packing Instruction.)

4 Mark your package in accordance with IATA 7.1.5.

5 Label your package in accordance with IATA 7.2.

6 Complete the Shipper's Declaration in accordance with IATA 8.1.5.

Questions?

Call us at
1.800.GoFedEx 1.800.463.3339
Say “Dangerous Goods”
or
Press “81” (which will provide
direct access to the FedEx Dangerous
Goods/Hazardous Materials Hotline).

