DEPARTMENT OF DEFENSE
DEPLOYMENT OF HAZARDOUS MATERIALS BY VESSEL
JOB AID

MILITARY SURFACE DEPLOYMENT AND DISTRIBUTION COMMAND
(SDDC)

UNITED STATES COAST GUARD
CONTAINER INSPECTION TRAINING & ASSISTANCE TEAM
(CITAT)

March 2014

DOD HAZARDOUS MATERIALS BY VESSEL JOB AID
Note to user:

This job aid is only authorized for hazardous material transportation by land and sea. The focus of this guide is for vessel bound international shipments. This guide does not include Hazardous Material (HAZMAT) transportation by air or the transport of ammunition.

This guide is intended for use by personnel trained and certified to package, mark, label, placard and complete shipping documentation for HAZMAT shipments. The objective of this guide is to be used as a tool in conjunction with the 49 CFR and the International Maritime Dangerous Goods (IMDG) Code to eliminate HAZMAT discrepancies occurring during military moves. This guide is not meant to be “all inclusive” and cover every detail. Instead, the guide focuses on those items common to most units and issues frequently associated with them. **This job guide is not intended to take the place of the various regulatory requirements governing the transportation of hazardous materials.** Rather, its purpose is to assist in the classification, segregation, documentation, and containerization of hazardous material.

Questions, comments, and suggestions concerning this job aid are always welcome.

Submit comments to:
CITAT at (405) 954-8985, Fax: 405-954-9217, E-mail: CGI-PF-CITAT_MSG@uscg.mil
Or
SDDC Business Services at (618) 220-6359, Fax: 618-220-6054,
E-mail: SDDC-OPS-HAZMAT@us.army.mil

Mailing Address:

USCG Container Inspection Training and Assistance Team (RTI-120)
6500 S. MacArthur Blvd.
Oklahoma City, OK 73169

SDDC
ATTN: AMSSD-SBD-BS
HAZMAT Section
1 Soldier Way
Scott AFB, IL 62225
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</tbody>
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**Purpose:**

- Assist Department of Defense (DOD) personnel interpret applicable U.S. & International regulations regarding the transportation of DOD hazardous materials by vessel (referred to as "Dangerous Goods" in the IMDG).
- Provide accessible HAZMAT tool in a clear, easy-to-understand format.
- Provide a "living document" that continues to evolve, due to user feedback, and as regulations changes dictates.
- Provide a single point of contact for DOD HAZMAT transportation and documentation issues, by vessel.

**Objective:**

- The objective of the Hazardous Material Job Aid is to significantly reduce or eliminate recurring issues related to the correct shipment of DOD hazardous materials internationally by sea.

**Applicability:**

- This guide currently applies primarily to Hazard Classes 2, 3, 4, 5, 6, 8 & 9.
- Class 7 is addressed for "excepted packaging."

**Authority:**

- This guide **DOES NOT SUPERSEDE OR REPLACE** any regulatory requirements governing 49 Code of Federal Regulations (CFR) for CONUS surface moves. Nor does the guide, replace International Maritime Dangerous Goods Code (IMDG) and International Carriage of Dangerous Goods by Road (ADR) for OCONUS moves.
- This guide is a tool designed and maintained by the U.S. Coast Guard Container Inspection, Training and Assistance Team (CITAT) in coordination with the Military Surface Deployment and Distribution Command, (SDDC), Office of Mobilization and Reserve Affairs and G9, Business Services.
- This guide does not alleviate the requirements or responsibility for HAZMAT training and certification.
- **49 CFR 171.22(c)** – A material designated as a hazardous material under 49 CFR which is not otherwise subject to the IMDG Code must be shipped in accordance with the provisions of 49 CFR (172/173)
**Job aid Instructions**

*The 49 CFR and IMDG Code are still the ultimate authority for all the HAZMAT procedures.*

1. HAZMAT Certifiers are REQUIRED to certify the shipment by 49 CFR and IMDG. This Job aid is for **SURFACE DEPLOYMENT ONLY** with an emphasis on international vessel bound cargo transport, and will not be used as a guide for commercial or military air transport.

2. This job aid is meant to be self-explanatory and used in conjunction with applicable regulations and international conventions to assist movement operations.

3. Common HAZMAT addressed in this guide are current at the time of printing. If the HAZMAT you are shipping is not listed, refer to the 49 CFR and the IMDG Code or contact your unit HAZMAT Certifier for direction.


**Commercial Air:** Refer to International Air Transport Association (IATA) Dangerous Goods Regulation.

**Container Serviceability:** Refer to DOD MIL-HDBK-138B for complete inspection criteria and procedures.

**Important Job aid Notes**

**Preparation:**
- Inventory all items being prepared for shipment to determine which items are listed in the 49 CFR, Part 172.101 and/or the IMDG Code Dangerous Goods List.

- This guide does not cover all Department of Transportation (DOT) or International Maritime Organization (IMO) regulated hazardous materials.

- Some items may require special marking, labeling or packaging.

- Determine packing provisions and special provisions for the HAZMAT and procure the appropriate packaging prior to loading.

- Items may take several days to prepare in order to minimize labor and documentation requirements.

**Milvan/Container:** All HAZMAT items in this guide are assumed to be loaded into a transport unit. Examples of transport units would be:

1. Quad-Con/Tri-Con/Bi-Con
2. MILVAN/Freight Container
3. Vehicles
4. Flat Rack
5. CK/MK
6. BOH Units

**ISU 60/90:** Designed for aircraft transport and are **FORBIDDEN** from carrying HAZMAT by vessel unless the ISU is placed inside of a CSC-approved shipping container or on a flat rack for shipping. (see SDDC Customer Advisory 10-07/29-0177)
Important Job aid Notes (Cont.)

Limited Quantities:

- **Packaging:** HAZMAT transported in limited quantities are excepted from Performance Oriented Packaging (POP—see pg.4), but can only be packed in combination packaging (a separate inner, intermediate if applicable, and outer package). The outside package must be a “strong outer package.”

- **Weights:** The limited quantity amounts listed herein for each HAZMAT (under bullet II. Packaging) are the maximum quantities—capacities—per “inner” package, and differ depending on the HAZMAT (120 ml – 5 L). The maximum total gross weight for the “outer” package is constant and cannot exceed 30 kg (66 lbs).

- **Amount:** There is no limit to the number of outer packages that can be placed in a MILVAN.

- **Shipping Paper:** The words “Limited Quantity” or "LTD QTY" must be annotated on the DD Form 2890 following the proper shipping description.

  *Example:* UN1950, Aerosols, 2.2, LTD QTY

- **Marking:** Packages of limited quantities are not required to be marked with the marine pollutant mark, proper shipping name or UN number of the contents provided it bears the limited quantity mark illustrated below. Minimum dimensions: 100 mm x 100 mm (~3.94”).

  ![Limited Quantity Mark](image)

  → **Note:** The transport unit shall be marked with the above limited quantity marking on both sides and both ends with minimum dimensions of 250 mm x 250 mm (~9.85 in), unless placed in a container that has an additional HAZMAT that requires a placard. Then the limited quantity becomes an implied hazard.

  *Example:* A Class 3 does not meet the LTD QTY requirements and a Class 2.2 does, it is not necessary to mark the container with the limited quantity mark when there is a placard required for the Class 3 already.

**Orientation Arrows:**
Orientation arrows are required on combination packages containing liquids or single packages fitted with vents. The mark shall be legibly marked as shown on two opposite vertical sides of the package with the arrows in the correct upright direction.

**Port Call Messages:**
SDDC issues a Port Call Message for every unit deploying. This port call message contains specific guidance instructions regarding the unit’s deployment.
Important Job aid Notes (Cont.)

Properties, Flash Points, and Boiling Points:
Material properties such as flash points and boiling points can most often be determined from information contained on the material package and then referencing the Hazardous Materials Information Resource System (HMIRS DOD 6050.5L). A Material Safety Data Sheet (MSDS) for the product will provide the most accurate information. Ensure that you have obtained the specific manufacturers MSDS.

Note: The HMIRS is not used to determine transportation requirements.

Overpacks:
Tough-boxes, cardboard inserts and crates are commonly used, and may be appropriate to consolidate, protect and, or provide convenience in handling one or more HAZMAT items. This measure may be used only if all required marks and labels of the HAZMAT(s) within is/are also marked on the outer package (overpack). The overpack must also be marked with the word “OVERPACK” (see 49 CFR 173.25/IMDG Code 5.1.2 for specific instruction(s)).

HAZMAT Transportation Needs:
HAZMAT packaging can be obtained through the normal DOD supply processes. The POP program contains stock numbers for these packages. HAZMAT packaging, Label/Placard Kits are available through commercial sources. Identify your requirements and determine the procedure for obtaining these materials in your locality.

→Refer to pgs 48–56 of this guide for links and examples of Dangerous Goods Shipping Paper/Declaration (DD Form 2890/2781) and Emergency Response Information.

SDDC Customer Advisories:
The SDDC periodically releases customer advisories affecting deploying units. The advisories communicate deployment concerns and provide specific movement guidance and, or requirements. It is highly recommended that UMO’s and HAZMAT certifiers review all customer advisories for any additional requirements that may be in effect.
Ask For Assistance:

A unit HAZMAT Certifier is not expected to know everything for deploying. One objective of this job aid is to take advantage of combined experience, learn from it and pass it along. If parts of this guide are not clear, please bring it to our attention so we can improve it. Never hesitate to ask for assistance on any aspect in preparing HAZMAT for unit movement, no matter how seemingly insignificant or minor. There are many HAZMAT experts located throughout DOD and within the Coast Guard who would be more than happy to help. Here are some points of contact:

<table>
<thead>
<tr>
<th>Name</th>
<th>Agency</th>
<th>DSN</th>
<th>Comm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Craig Coffman</td>
<td>U.S. Army LOGSA PSCC,</td>
<td>795-7070</td>
<td>(570) 615-7070</td>
</tr>
<tr>
<td>Matthew Ober</td>
<td>U.S. Army LOGSA PSCC,</td>
<td>795-7144</td>
<td>(570) 615-7144</td>
</tr>
<tr>
<td>Kim Morrison</td>
<td>SDDC Business Services,</td>
<td>770-6359</td>
<td>(618) 220-6359</td>
</tr>
<tr>
<td>Robert Lang</td>
<td>SDDC, Business Services</td>
<td>770-6359</td>
<td>(618) 220-6359</td>
</tr>
</tbody>
</table>

For unit movements originating CONUS contact CITAT at (405) 954-8985. Any instructor on duty will be able to assist.

Prepare, Prepare, Prepare!

This can't be emphasized enough. Our experience shows most units have very little hazardous material expertise; but somehow, we always find creative ways not to package what we have correctly!! Not identifying these materials early, identifying any special packaging/preparation requirements, obtaining packaging/labeling materials in advance, and not preparing a plan (how and where these items are to be packed) can cause significant problems, lost time, and wasted money. When these problems are multiplied by each deploying unit the cost and time lost can increase dramatically.
### Conversion Tables

#### Mass Conversion Constants

<table>
<thead>
<tr>
<th>Unit</th>
<th>Conversion Factor</th>
<th>To Unit</th>
<th>Unit</th>
<th>Conversion Factor</th>
<th>To Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grams</td>
<td>x .03527</td>
<td>= Ounces</td>
<td>Ounces</td>
<td>x 28.35</td>
<td>= Grams</td>
</tr>
<tr>
<td>Grams</td>
<td>x .033818</td>
<td>= Fluid Ounces</td>
<td>Fluid ounces</td>
<td>x 29.57</td>
<td>= Grams</td>
</tr>
<tr>
<td>Kilograms</td>
<td>x 35.27</td>
<td>= Ounces</td>
<td>Ounces</td>
<td>x .02835</td>
<td>= Kilograms</td>
</tr>
<tr>
<td>Kilograms</td>
<td>x 2.20462</td>
<td>= Pounds</td>
<td>Pounds</td>
<td>x .45359</td>
<td>= Kilograms</td>
</tr>
<tr>
<td>Metric ton</td>
<td>x 1.10231</td>
<td>= Net Ton</td>
<td>Net ton</td>
<td>x .90719</td>
<td>= Metric Tons</td>
</tr>
<tr>
<td>Metric tons</td>
<td>x .984221</td>
<td>= Gross Ton</td>
<td>Gross ton</td>
<td>x 1.01605</td>
<td>= Metric Tons</td>
</tr>
</tbody>
</table>

#### Liquid/Volume Conversion Constants (approximate)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Conversion Factor</th>
<th>To Unit</th>
<th>Unit</th>
<th>Conversion Factor</th>
<th>To Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>liters</td>
<td>x .2643</td>
<td>= US gallons</td>
<td>US gallons</td>
<td>x 3.7853</td>
<td>= liters</td>
</tr>
<tr>
<td>liters</td>
<td>x 2.113</td>
<td>= US pints</td>
<td>US pints</td>
<td>x .473</td>
<td>= liters</td>
</tr>
<tr>
<td>US gallons</td>
<td>x 8</td>
<td>= US pints</td>
<td>US pints</td>
<td>x .125</td>
<td>= US gallons</td>
</tr>
<tr>
<td>liters</td>
<td>x 1.05668821</td>
<td>= US quarts</td>
<td>US quarts</td>
<td>x .946353</td>
<td>= US liters</td>
</tr>
<tr>
<td>liters</td>
<td>x 33.8140227</td>
<td>= Ounces</td>
<td>Ounces</td>
<td>x .02957353</td>
<td>= liters</td>
</tr>
</tbody>
</table>

#### Temperature Conversion Table

<table>
<thead>
<tr>
<th>From</th>
<th>To Fahrenheit</th>
<th>To Celsius</th>
<th>To Kelvin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fahrenheit (F)</td>
<td>F</td>
<td>(F - 32) x 5/9</td>
<td>(F - 32) x 5/9 + 273.15</td>
</tr>
<tr>
<td>Celsius (C or °)</td>
<td>(C x 9/5) + 32</td>
<td>C</td>
<td>C + 273.15</td>
</tr>
<tr>
<td>Kelvin (K)</td>
<td>(K - 273.15) x 9/5 + 32</td>
<td>K</td>
<td></td>
</tr>
</tbody>
</table>

#### Miscellaneous Conversion (approximate)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Conversion Factor</th>
<th>To Unit</th>
<th>Unit</th>
<th>Conversion Factor</th>
<th>To Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>kg/m^3</td>
<td>x .06243</td>
<td>= lb/ft^3</td>
<td>lb/ft^3</td>
<td>x 16.0185</td>
<td>= kg/m^3</td>
</tr>
<tr>
<td>cu ft</td>
<td>x 28.32</td>
<td>= liters</td>
<td>liters</td>
<td>x .0353</td>
<td>= cu ft</td>
</tr>
<tr>
<td>TBq</td>
<td>x 27</td>
<td>= Curies</td>
<td>Curies</td>
<td>x .037</td>
<td>= TBq</td>
</tr>
<tr>
<td>Gallons</td>
<td>x 8.35</td>
<td>= Pounds</td>
<td>liters</td>
<td>x 1</td>
<td>= kilograms</td>
</tr>
</tbody>
</table>
**Cylinder Chart**: Calculating Net Quantity & Gross Mass

What are common oxygen cylinder sizes?
Figure 1 shows high-pressure cylinder sizes. In addition to oxygen, helium, hydrogen, nitrogen, carbon dioxide and argon are supplied in the same high-pressure cylinders.

![Cylinder Chart](image)

Figure 1. Oxygen cylinder sizes.

What are common acetylene cylinder sizes?
See Figure 2.

![Cylinder Chart](image)

Figure 2. Acetylene cylinder sizes.
### Cylinder Guide: Calculating Net Quantity and Gross Mass (Cont.)

<table>
<thead>
<tr>
<th>PROPER SHIPPING NAME</th>
<th>UN #</th>
<th>CYLINDER SIZE (INCHES)</th>
<th>CYLINDER SIZE (CODE)</th>
<th>EMPTY CYLINDER WEIGHT (Kg)</th>
<th>GROSS WEIGHT (Kg)</th>
<th>NET QUANTITY (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen, compressed</td>
<td>1072</td>
<td>9 x 56</td>
<td>A</td>
<td>52.27</td>
<td>96.07</td>
<td>43.8</td>
</tr>
<tr>
<td>Oxygen, compressed</td>
<td>1072</td>
<td>8.5 x 3.1</td>
<td>B</td>
<td>27.27</td>
<td>44.47</td>
<td>17.2</td>
</tr>
<tr>
<td>Oxygen, compressed</td>
<td>1072</td>
<td>2 x 15</td>
<td>LB</td>
<td>1.81</td>
<td>2.25</td>
<td>0.44</td>
</tr>
<tr>
<td>Oxygen, compressed</td>
<td>1072</td>
<td>4 x 18</td>
<td>D</td>
<td>5.44</td>
<td>7.9</td>
<td>2.46</td>
</tr>
<tr>
<td>Acetylene, dissolved</td>
<td>1001</td>
<td>12 x 46</td>
<td>XF</td>
<td>81.81</td>
<td>142.71</td>
<td>60.9</td>
</tr>
<tr>
<td>Argon, compressed</td>
<td>1006</td>
<td>9.25 x 60</td>
<td>K</td>
<td>61.36</td>
<td>111.26</td>
<td>49.9</td>
</tr>
<tr>
<td>Argon, compressed</td>
<td>1006</td>
<td>9 x 56</td>
<td>A</td>
<td>52.27</td>
<td>95.27</td>
<td>43</td>
</tr>
<tr>
<td>Nitrogen, compressed</td>
<td>1066</td>
<td>9.25 x 60</td>
<td>K</td>
<td>61.36</td>
<td>111.26</td>
<td>49.9</td>
</tr>
<tr>
<td>Nitrogen, compressed</td>
<td>1066</td>
<td>9 x 56</td>
<td>A</td>
<td>52.27</td>
<td>95.27</td>
<td>43</td>
</tr>
<tr>
<td>Helium, compressed</td>
<td>1046</td>
<td>9.25 x 60</td>
<td>K</td>
<td>61.36</td>
<td>111.26</td>
<td>49.9</td>
</tr>
<tr>
<td>Helium, compressed</td>
<td>1046</td>
<td>9 x 56</td>
<td>A</td>
<td>52.27</td>
<td>95.27</td>
<td>43</td>
</tr>
<tr>
<td>Hydrogen, compressed</td>
<td>1049</td>
<td>9.25 x 60</td>
<td>K</td>
<td>61.36</td>
<td>111.26</td>
<td>49.9</td>
</tr>
<tr>
<td>Hydrogen, compressed</td>
<td>1049</td>
<td>9 x 56</td>
<td>A</td>
<td>52.27</td>
<td>95.27</td>
<td>43</td>
</tr>
<tr>
<td>Propane</td>
<td>1978</td>
<td>9 x 56</td>
<td>A</td>
<td>52.27</td>
<td>95.27</td>
<td>43</td>
</tr>
<tr>
<td>Propane</td>
<td>1978</td>
<td>8.5 x 31</td>
<td>B</td>
<td>27.27</td>
<td>44.47</td>
<td>17.2</td>
</tr>
<tr>
<td>Propane</td>
<td>1978</td>
<td>6 x 24</td>
<td>C</td>
<td>12.27</td>
<td>19.15</td>
<td>6.88</td>
</tr>
<tr>
<td>Propane</td>
<td>1978</td>
<td>14.5 x 50</td>
<td>XL</td>
<td>34.09</td>
<td>142.09</td>
<td>108</td>
</tr>
</tbody>
</table>

**UN cylinder markings:** 49 CFR 178.71(o) and (p) and IMDGC 6.2.2.7

**DOT cylinder markings** for DOT Spec Number, Service Pressure, and Manufacturers Mark 49 CFR 178.35(f)
Hazardous Material Label/Placard ID List
Reference: 49 CFR 172.411 – .450; .521 – .560 & IMDG 5.2.2.2.2; 5.3.1

Class 1 – Explosive Substances or Articles
Class 2.1 – Flammable Gases
Class 2.2 – Non-Flammable Gases
Class 2.3 – Toxic Gases
Class 3 – Flammable Liquids
Class 4.1 – Flammable Solids
Class 4.2 – Spontaneous Combustible Substance
Class 4.3 – Water Reactive Substances
Class 4.1 – Oxidizing Substances
Class 5.1 – Organic Peroxides
Class 5.2 – (Non Inhalation Hazard) Toxic Substances
Class 5.1 – Infectious Substances
Class 6.1 – Water Reactive Substances
Class 6.2 – Infectious Substances
Class 7 – Radioactive Material
Class 8 – Corrosive Substances
Class 9 – Misc. Dangerous Substances
Segregation Table for Hazardous Materials
Reference: IMDG Code 7.2.4 & 49 CFR, Part 176.83

The table on this page shows the general requirements for segregation between the various classes of regulated hazardous materials. Segregation must include consideration for ALL hazards associated with a product, both Primary and Subsidiary. Note: NO segregation requirements for “Limited Quantities” of HAZMAT in freight containers.

Note: IMDG 7.3.4.1/49 CFR 176.83(d) Segregation in Transport units: Two hazardous materials for which any segregation is required (in red below) shall not be stowed in the same cargo transport unit.

<table>
<thead>
<tr>
<th>Class</th>
<th>1.1 1.2 1.5</th>
<th>1.3 1.6</th>
<th>1.4</th>
<th>2.1</th>
<th>2.2</th>
<th>2.3</th>
<th>3</th>
<th>4.1</th>
<th>4.2</th>
<th>4.3</th>
<th>5.1</th>
<th>5.2</th>
<th>6.1</th>
<th>6.2</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explosives</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<td>2</td>
<td>X</td>
</tr>
<tr>
<td>Explosives</td>
<td>1.4</td>
<td>*</td>
<td>*</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
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<td>4</td>
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<tr>
<td>Flammable Gas</td>
<td>2.1</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>1</td>
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<td>X</td>
<td>2</td>
<td>2</td>
<td>X</td>
<td>4</td>
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<tr>
<td>Non-toxic, non-flammable gases</td>
<td>2.2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>1</td>
<td>X</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>1</td>
<td>X</td>
<td>2</td>
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</tr>
<tr>
<td>Toxic Gases</td>
<td>2.3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td>2</td>
<td>X</td>
<td>2</td>
<td>X</td>
<td>4</td>
<td>2</td>
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<tr>
<td>Flammable Liquids</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<td>X</td>
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<td>X</td>
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<td>X</td>
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<tr>
<td>Flammable Solids</td>
<td>4.1</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>X</td>
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<td>3</td>
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</tr>
<tr>
<td>Substances liable to spontaneous combustion</td>
<td>4.2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<td>1</td>
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<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>X</td>
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<tr>
<td>Substances which, in contact with water, emit flammable gases</td>
<td>4.3</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>X</td>
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<td>Oxidizing substances (agents)</td>
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<td>X</td>
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<td>Organic Peroxides</td>
<td>5.2</td>
<td>4</td>
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<td>2</td>
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<td>Toxic Substances</td>
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<td>X</td>
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<td>X</td>
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<td>Infectious Substances</td>
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<td>Corrosives</td>
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<td>2</td>
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<td>2</td>
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</tr>
<tr>
<td>Miscellaneous dangerous substances</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Numbers and symbols relate to the following terms as defined in this section:

1 - “Away from”
2 - “Separated from”
3 - “Separated by a complete compartment or hold from”
4 - “Separated longitudinally by an intervening complete compartment or hold from”
X - The segregation, if any, is shown in individual schedules
* - See subsection 6.2 (IMDG) of the introduction to class 1 for segregation within class 1.
** - Including self-reactive and related substances and desensitized explosives.

Note: For information regarding Dangerous Goods Segregation for Highway/Rail CONUS movements see 49 CFR §177.848. For OCONUS per Host Country Requirements.

Note: Additional segregation requirements can be found in column 16 of the dangerous goods list in the IMDG Code and in column 10B in 49CFR. The applicable citation (cite) should be checked to ensure that additional segregation is not needed for your shipment.
Container Structure Inspection Guidance
(MIL-HDBK-138b General Cargo/HAZMAT Inspection Criteria)

Note: The above, major defect, criterion indicates damage thresholds for dents and bends in each structural component, for containers carrying general cargo and HAZMAT.**

**For containers carrying Explosives, the damage criteria for each component is set to 3/4 inch (19mm).

Major defects: Include dents or bends exceeding thresholds, and any cracks, breaks, cuts, tears, punctures, or corrosive failure in any structural component. An intermodal container with any major defect is UNACCEPTABLE and requires repair prior to shipping DOD material.

DD Form 2282: Containers MUST have current (non-expired) DD Form 2282, Convention for Safe Containers inspection sticker on or near the CSC Data Plate. You may want to ensure the 2282 will be valid thru your units redeployment to prevent frustration while OCONUS.
Note: Must be AMMO-43 certified to inspect/approve containers.

Refer to MIL-HDBK-138b or contact installation support personnel for additional information regarding container serviceability and repairs.
**Milvan/Container Packing Guidelines**

The following information should be considered whenever loading MILVANS or containers to prevent damage and ensure hazardous material safety.

**Documentation For Transport Units:**
1. **DD Form 2890**, DOD Multimodal Dangerous Goods Declaration (Current Edition)
2. **Emergency Response Information with basic description and technical name given**, Emergency Response Guidebook (ERG) page and, or MSDS for each commodity (Current Edition)
4. **DA Form 5748-R**, Packing List and Load Diagram (Current Edition)
5. **DD Form 1750**, Packing List (Current Edition)
6. **DD Form 1907**, (Required for Sensitive Items ONLY) (Current Edition)

→ A complete packet of the above forms must be located:
   1. 1 – Inside Container
   2. 1 – Outside Container
   3. 1 – Port
   4. 1 – HAZMAT Certifier
   5. 1 – Installation

*Check your installation policies for any additions or exemptions from the above documentation.

**Expected Conditions for Cargo In Transit:**

- **Shifting:** Containers are tilted 30 to 45° in all directions during normal operations (use proper blocking and bracing).
- **Cold:** Cooled to the lowest temperature encountered (temperature sensitivity- freezing concerns).
- **Heat:** Heated to 30° above the highest temperature encountered (temperature sensitivity heat concerns).
- **Vibration:** Subject to constant vibration throughout the transit (consider fragility of item, use proper packaging).
- **Moisture:** The interior of the container will collect condensation, creating a damp or wet environment inside the container. Protect sensitive electronics from moisture.
**Protection of Cargo:**
- The MILVAN is loaded so the weight is evenly distributed and will not shift.
- Recommended HAZMAT is packed near the doors to allow visual inspection.
- Cargo is secured to prevent shifting in any direction (Up/Down and Side to Side).
- Cargo will not crush items below due to weight and G-Forces.
- Soaked or damaged packaging may not be used for shipment of HAZMAT.
- No damaged or leaking packages (dry or liquid).
- HAZMAT is properly packaged, placarded, labeled, and marked IAW 49 CFR or IMDG.
- Only compatible HAZMAT is allowed in a MILVAN/Container (49 CFR 176.83(d)/IMDG Code 7.2.4).
- DA 5748-R accurately describes items in the container. HAZMAT items that have been altered (i.e. Drain and Batteries Disconnected) must be annotated on the packing list. Example: "Generator – Drained, Batteries Disconnected with terminals and leads taped to prevent short circuit."

**Cylinders: Crated—No Exception!**
Cylinders shall be vertically stowed in a six sided wooden crate. Cylinders must be packed tight and protected from contacting each other.

**Welding Trailers and Forward Repair Shops (FRS):**
Cylinders mounted to FRS systems and inside welding trailers must be removed and shipped separately in accordance with applicable transportation regulations and conventions.

**HAZMAT items (this list is not all inclusive):**

- Any Aerosol Can
- Paint
- Car Batteries
- Alcohol Wipes/Prep Pads
- Paint Markers
- Fuel Cans
- Cologne/Perfume
- Shaving Cream
- Body Spray
- Cold Packs
- Air Fresheners (Glade sprays)
- Cigarette Lighters
- Lithium Metal Batteries
- Bleach (Industrial Strength)
- Cooking burners
- Fuel Hoses
- Isopropyl Alcohol
- Mouthwash (> 24% alcohol)
- Nail Polish
- Portable Cook Stove
- Canned Air (Dust Off)
- WD-40
- Lithium Ion Batteries
- White out (liquid)
- JP-8 fueled heaters
- Fuel Pumps
- Hand Sanitizer
- Waterless Hand Cleaner
- Nail Polish Remover

**GENERAL CARGO items (this list is not all inclusive):**

- Alkaline Batteries
- Glow Sticks
- Electric Stoves
- Nickel Metal Hydride Batteries
- Permanent Markers
- Household Refrigerators
- Electric Heaters
- White out (tape)
- Soap Bar
## List of Common HAZMAT Transported by Vessel

<table>
<thead>
<tr>
<th>ITEM #</th>
<th>Proper Shipping Name (Common Item name in parenthesis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>1,1-Difluoroethane</strong> (Example: Canned air, “Power Duster” “Dust Off”)</td>
</tr>
<tr>
<td>2.</td>
<td><strong>1,1,1,2-Tetrafluoroethane</strong> (Example: Canned air, “Duster Spray” “Blaster”) (R-134a)</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Aerosols</strong> (Example: Starting fluid, WD40, Spray Paint, Shaving Cream, Bug Spray etc…)</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Acetylene, Dissolved</strong></td>
</tr>
<tr>
<td>5.</td>
<td><strong>Argon, Compressed</strong></td>
</tr>
<tr>
<td>6.</td>
<td><strong>Batteries, Wet, Filled with Acid</strong></td>
</tr>
<tr>
<td>7.</td>
<td><strong>Batteries, Wet, Filled With Alkali</strong></td>
</tr>
<tr>
<td>8.</td>
<td><strong>Batteries, Wet Non-Spillable</strong></td>
</tr>
<tr>
<td>9.</td>
<td><strong>Calcium Hypochlorite, Hydrated</strong></td>
</tr>
<tr>
<td>10.</td>
<td><strong>Chlorodifluoromethane (R-22)</strong></td>
</tr>
<tr>
<td>11.</td>
<td><strong>Dangerous Goods in Apparatus</strong> (Fuel hose, Stoves, Non Electric Heaters, Burner Units)</td>
</tr>
<tr>
<td>12.</td>
<td><strong>Engines, Internal Combustion, Flammable Liquid Powered</strong> (Generators, Gators)</td>
</tr>
<tr>
<td>13.</td>
<td><strong>Ethanol Solutions</strong> (Hand Sanitizer)</td>
</tr>
<tr>
<td>14.</td>
<td><strong>Ethyl Methyl Ketone</strong></td>
</tr>
<tr>
<td>15.</td>
<td><strong>Fire Extinguishers</strong></td>
</tr>
<tr>
<td>16.</td>
<td><strong>Fire Extinguishers, Carbon Dioxide</strong></td>
</tr>
<tr>
<td>17.</td>
<td><strong>Flammable Liquid, N.O.S.</strong> (Example: Permethrin)</td>
</tr>
<tr>
<td>18.</td>
<td><strong>Fuel, Aviation, Turbine Engine,</strong> (JP-8) (Jerricans)</td>
</tr>
<tr>
<td>19.</td>
<td><strong>Fuel, Aviation, Turbine Engine,</strong> (Bulk-Empty Road Tank Vehicle)</td>
</tr>
<tr>
<td>20.</td>
<td><strong>Helium, compressed</strong></td>
</tr>
<tr>
<td>21.</td>
<td><strong>Hypochlorite Solution</strong> (Bleach)</td>
</tr>
<tr>
<td>22.</td>
<td><strong>Isopropanol</strong> (Isopropyl Alcohol)</td>
</tr>
<tr>
<td>23.</td>
<td><strong>Lithium Ion Batteries</strong></td>
</tr>
<tr>
<td>24.</td>
<td><strong>Lithium Metal Batteries/Lithium Metal Batteries Contained in Equipment</strong></td>
</tr>
<tr>
<td>25.</td>
<td><strong>Methanol</strong></td>
</tr>
<tr>
<td>26.</td>
<td><strong>Nitrogen, Compressed</strong></td>
</tr>
<tr>
<td>27.</td>
<td><strong>Oxygen, Compressed</strong></td>
</tr>
<tr>
<td>28.</td>
<td><strong>Propane</strong></td>
</tr>
<tr>
<td>29.</td>
<td><strong>Radioactive Material Excepted. Package-Instruments</strong></td>
</tr>
</tbody>
</table>
# 1 – 1,1-Difluoroethane
(Example: Canned air, “Power Duster”)

I. **UN Identification Number:**
   - UN 1030

II. **Packaging:**
   - Packing Group: N/A
   - Limited Quantity: None
   - Recommended Pkg: Original Packaging
   - U.S. Regulation: 49 CFR 173.304

III. **Package Marking:**
   - 1,1-Difluoroethane, UN1030

IV. **Shipping Paper Description (DD Form 2890):**
   - UN1030, 1,1-Difluoroethane, 2.1

V. **IMDG Observations/Information:**
   - Packing Instructions: As per IMDG Code P200

VI. **Emergency Response:**
   - ERG #: 115
   - IMDG: EmS#: F-D,S-U

VII. **Notes:**
   - Much heavier than air
   - No limited quantity amount for international shipments

VIII. **Segregation:**
   - Class 2.1: cannot be in the same container as classes 3, 4.1, 4.2, 5.1, 5.2, 6.2, 7, 8
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
I. **UN Identification Number:**
   - UN 3159

II. **Packaging:**
   - Packing Group: N/A (cylinders)
   - Limited Quantity: 120 milliliters (ml)
   - Recommended Pkg: Original Packaging
   - U.S. Regulation: 49 CFR 173.306 and 173.304

III. **Package Marking:**
   - 1,1,1,2-Tetrafluoroethane, UN 3159

IV. **Shipping Paper Description (DD Form 2890):**
   - UN3159, 1,1,1,2-Tetrafluoroethane, 2.2

V. **IMDG Observations/Information:**
   - Packing Instructions: As per IMDG Code P200
   - Special Packing Provisions: N/A

VI. **Emergency Response:**
   - ERG #: 126
   - IMDG: EmS#: F-C, S-V

VII. **Notes:**
   - Non-flammable gas with a mild ether-like odor
   - Much heavier than air (3.5)
   - Ensure the cylinder heads are protected from damage. IMDG 4.1.6.1.8

VIII. **Segregation:**
   - Class 2.2: cannot be in the same container as classes 3, 4.2, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
# 3 – AEROSOLS
(WD40, Spray paint, Shaving Cream, Bug Spray etc...)

I. UN Identification Number:
   - UN 1950

II. Packaging Requirements:
   - Packing Group: N/A
   - Limited Quantity: 1 liter (L); 120ml for Toxic substances
   - Recommended Pkg: If Aerosol is 1L or less, may package in fiberboard or wooden box
   - U.S. Regulation: 49 CFR 173.306

III. Package Marking:
   - Aerosols, UN 1950

IV. Shipping Paper Description (DD Form 2890):
   - UN 1950, Aerosols, 2.1 OR 2.2

V. IMDG Observations:
   - Special Provisions: 63, 277, 190 – Aerosol dispensers shall be provided with protection against inadvertent discharge.
   - Packing Instructions: P003 – Material shall be placed in suitable outer package designed and constructed to prevent inadvertent discharge during normal transport conditions.
   - Special Packing Provision: PP17 Packages shall not exceed 55 kg net mass for fiberboard or 125 kg for other packages.

VI. Emergency Response:
   - ERG #: 126
   - IMDG: EmS#: F-D, S-U

   - Notes:
     - 49 CFR 171.23(b)(1) states an Aerosol must meet the definition for an “aerosol” found in 49 CFR 171.8.

   - Segregation:
     - Class 2.1: cannot be in the same container as classes 3, 4.1, 4.2, 5.1, 5.2, 6.2, 7, 8
     - Class 2.2: cannot be in the same container as classes 3, 4.2, 5.2, 6.2, 7
     - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
     - No Segregation for Limited Quantities (LTD QTY)
# 4 - Acetylene, Dissolved

I. **UN Identification Number:**
   - UN 1001

II. **Packaging:**
   - **Packing Group:** N/A (cylinders)
   - **Limited Quantity:** None
   - **Recommended Pkg:** Steel cylinders (8 or 8AL)
   - **U.S. Regulation:** 49 CFR 173.303

III. **Package Marking:**
   - Acetylene, Dissolved, UN 1001

IV. **Shipping Paper Description (DD Form 2890):**
   - UN 1001, Acetylene, Dissolved, 2.1

V. **IMDG Observations/Information:**
   - **Packing Instructions:** 49 CFR 171.23(a) and IMDG Code P200
   - **Special Packing Provisions:** N/A
   - Rough handling & exposure to local heating should be avoided (could result in delayed explosion). **MUST** cover from radiant heat
   - Empty cylinders must be carried w/same precautions as filled
   - **Explosive Limits:** 2.1% - 80%

VI. **Emergency Response:**
   - **ERG #:** 116
   - **IMDG:** EmS#: F-D, S-U

VII. **Notes:**
   - Vessel: On deck stowage only! No below deck stowage allowed.
   - Vessel: Empty Acetylene cylinders are required to be marked, labeled and placarded.
   - Ensure the cylinder heads are protected from damage. IMDG 4.1.6.1.8

VIII. **Segregation:**
   - **Class 2.1:** cannot be in the same container as classes 3, 4.1, 4.2, 5.1, 5.2, 6.2, 7, 8
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
# 5 - Argon, Compressed

I. **UN Identification Number:**
   - UN 1006

II. **Packaging:**
   - **Packing Group:** N/A (cylinders)
   - **Limited Quantity:** 120 milliliters (ml)
   - **Recommended Pkg:** Steel Cylinder (8, 8AL)
   - **U.S. Regulation:** 49 CFR 173.302 & 306

III. **Package Marking:**
   - Argon, Compressed, UN 1006

IV. **Shipping Paper Description (DD Form 2890):**
   - UN 1006, Argon, Compressed, 2.2

V. **IMDG Observations/Information:**
   - **Packing Instructions:** 49 CFR 171.23(a) and IMDG Code **P200**

VI. **Emergency Response:**
   - **ERG #:** 121
   - **IMDG:** EmS#: F-C, S-V

VII. **Notes:**
   - Inert Gas – Heavier than air (1.4)
   - Ensure the cylinder heads are protected from damage. IMDG 4.1.6.1.8

VIII. **Segregation:**
   - **Class 2.2:** cannot be in the same container as classes 3, 4.2, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
# 6 - Batteries, Wet, Filled With Acid

I. UN Identification Number:
   - UN 2794

II. Packaging Requirements:
   - Packing Group: None
   - Limited Quantity: 1 liter (L)
   - Recommended Pkg:
     - gross weight of 55 Kg or less: 4G fibreboard box
     - gross weight of 400 Kg or less: 4 C/D /F wood box
   - U.S. Regulation: 49 CFR 173.159

III. Package Marking:
   - Batteries, Wet, Filled with Acid, UN 2794

IV. Shipping Paper Description (DD Form 2890):
   - UN 2794, Batteries, Wet, Filled with Acid, 8

V. IMDG Observations/Information:
   - Special Provision: 295 – Batteries need not be individually marked and labeled if pallet bears the appropriate mark and label.
   - Packing Instructions: P801 –
     - Use rigid outer packaging; or wooden slatted crates, or pallets
     - Used storage batteries may also be transported loose in stainless steel or plastic battery boxes capable of containing any free liquid
     - Protect terminals against short circuits
     - If stacked, secure in tiers, separated by a layer of non-conductive material; terminals shall not support the mass of other superimposed loads
     - Packaged or secured to prevent inadvertent movement, capable of passing tilt test at 45° angle with no liquid spillage

VI. Emergency Response:
   - ERG #: 154
   - IMDG: EmS#: F-A, S-B

VII. Note:
   - This item applies only to batteries shipped separately and not installed in a vehicle. Batteries installed in vehicles are not regulated (49 CFR 173.220 & IMDG Special Provision 961/962).

VIII. Segregation:
   - Class 8: cannot be in the same container as classes 2.1, 4.1, 4.2, 4.3, 5.1, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
# 7 - Batteries, Wet, Filled With Alkali

I. **UN Identification Number:**
   - UN 2795

II. **Packaging:**
   - Packing Group: None
   - Limited Quantity: 1 liter (L)
   - Recommended Pkg:
     - gross weight of 55 Kg or less: 4G fibreboard box
     - gross weight of 400 Kg or less: 4C/D /F wood box
   - U.S. Regulation: 49 CFR 173.159

III. **Package Marking:**
   - Batteries Wet, Filled with Alkali, UN 2795

IV. **Shipping Paper Description (DD Form-2890):**
   - UN 2795, Batteries Wet, Filled with Alkali, 8

V. **IMDG Observations/Information:**
   - Special Provision: 295 – Batteries need not be individually marked and labeled if pallet bears the appropriate mark and label.
   - Packing Instructions: P801 –
     - Use rigid outer packaging; or wooden slatted crates, or pallets
     - Used storage batteries may also be transported loose in stainless steel or plastic battery boxes capable of containing any free liquid.
     - Protect terminals against short circuits
     - If stacked, secure in tiers, separated by a layer of non-conductive material; terminals shall not support the mass of other superimposed loads
     - Packaged or secured to prevent inadvertent movement; capable of passing tilt test at 45° angle with no liquid spillage

VI. **Emergency Response:**
   - ERG #: 154
   - IMDG: EmS#: F-A, S-B

VII. **Notes:**
   - This item applies only to batteries shipped separately and not installed in a vehicle.

VIII. **Segregation:**
   - Class 8: cannot be in the same container as classes 2.1, 4.1, 4.2, 4.3, 5.1, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
# 8 - Batteries, Wet, Non-Spillable

I. UN Identification Number:
   - UN 2800

II. Packaging Requirements:
   - Packing Group: None
   - Limited Quantity: 1 liter (L)
   - Recommended Pkg: Insulate terminals against short circuits and securely pack in strong outer package
   - U.S. Regulation: 49 CFR 173.159

III. Package Marking:
   - Batteries, Wet Non-Spillable, UN 2800

IV. Shipping Paper Description (DD Form 2890):
   - UN 2800, Batteries, Wet Non-Spillable, 8

V. IMDG Observations / Information:
   - Special Provisions: 238 – Non-spillable batteries are excepted from the IMDG Code if at temperature of 55 °C, the electrolyte will not flow from ruptured or cracked case and when packaged for transport, terminals are protected from short circuit. Non-spillable batteries, which are integral to and necessary for the operation of mechanical or electronic equipment, shall be securely fastened in the battery holder and protected in such a manner as to prevent damage and short circuits. Check MSDS
   - Able to withstand IMDG vibration & pressure differential tests found in Vol. II, Pg. 184
   - Packing Instructions: P003 – Batteries shall be placed in suitable outer package designed and constructed to prevent inadvertent discharge during normal transport conditions.
   - Special Packaging Provision: PP16 Protect/insulate terminals against short-circuiting

VI. Emergency Response:
   - ERG #: 154
   - IMDG: EmS#: F-A, S-B

VII. Notes:
   - Batteries installed in vehicles are not regulated (49 CFR 173.220 & IMDG Code special provision 961/962), provided battery and terminals are protected from damage and short circuit.

VIII. Segregation:
   - Class 8: cannot be in the same container as classes 2.1, 4.1, 4.2, 4.3, 5.1, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
# 9 – Calcium Hypochlorite, Hydrated

I. **UN Identification Number:**
   - UN 2880

II. **Packaging:**
   - Packing Group: II
   - Limited Quantity: 1 Kilogram (kg)
   - Recommended Pkg: Original Packaging
   - U.S. Regulation: 49 CFR 173.152 & 212

III. **Package Marking:**
   - RQ (if applicable), Calcium Hypochlorite, Hydrated, UN2880

IV. **Shipping Paper Description (DD Form 2890):**
   - RQ (if applicable), UN 2880, Calcium Hypochlorite, Hydrated, 5.1, II, SADT: …°C

V. **IMDG Observations/Information:**
   - Packing Instructions: As per IMDG P002

VI. **Emergency Response:**
   - ERG #: 140
   - IMDG: EmS#: F-H, S-Q

VII. **Notes:**
   - White or yellowish solid (powder, granules, or tablets) with chlorine-like odor. May cause fire when in contact with organic material or ammonium compounds.
   - **RQ:** Calcium Hypochlorite has a reportable quantity (RQ) of 10 lbs per package. If package exceeds 10 lbs, RQ must be marked on the package and annotated on the shipping papers before the proper shipping description. (Appendix A to 172.101).
   - **SADT:** Calcium Hypochlorite exhibits a self-accelerating decomposition temperature (SADT), which MAERSK (shipping line) requires to be indicated on the shipping papers. The SADT may be found on the product MSDS. As noted in IV, the indication is as follows: “SADT: …°C”

VIII. **Segregation:**
   - **Class 5.1:** cannot be in the same container as classes 2.1, 3, 4.1, 4.2, 4.3, 5.2, 6.1, 6.2, 7, 8
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
#10 – Chlorodifluoromethane
(R-22 Freon)

I. UN Identification Number:
- UN 1018

II. Packaging:
- Packing Group: N/A (cylinders)
- Limited Quantity: 120 milliliters (ml)
- Recommended Pkg: Steel Cylinder (8,8AL)
- U.S. Regulation: 49 CFR 173.304 & 306

III. Package Marking:
- Chlorodifluoromethane, UN1018

IV. Shipping Paper Description (DD Form 2890):
- UN 1018, Chlorodifluoromethane, 2.2

V. IMDG Observations/Information:
- Packing Instructions: 49 CFR 171.23(a) and IMDG Code P200
- P200 – Cylinders or pressure drums
- See VII. notes for exception to shipping requirements

VI. Emergency Response:
- ERG #: 126
- IMDG: EmS#: F-C, S-V

VII. Notes:
- Liquefied non-flammable, non-toxic gas. Much heavier than air (3.0).
- Special Provision 119: Refrigerating machines and refrigerating machinery including machines or other appliances which have been designed for the specific purpose of keeping food or other items at a low temperature in an internal compartment, and air-conditioning units. Refrigerating machines and refrigerating machine components are not subject to the provisions of this Code if they contain less than 12kg of gas in class 2.2 or less than 12L of ammonia solution.
- Ensure the cylinder heads are protected from damage. IMDG 4.1.6.1.8

VIII. Segregation:
- Class 2.2: cannot be in the same container as classes 3, 4.2, 5.2, 6.2, 7
- See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
- No Segregation for Limited Quantities (LTD QTY)
# 11 – Dangerous Goods in Apparatus
(Examples: Fuel Hose, Stoves, Non Electric Heaters, Modern Burner Units)

I. UN Identification Number:
   - UN 3363

II. Packaging:
   - Packing Group: None
   - Limited Quantities: See LTD QTY for referenced product
   - Recommended Pkg: Follow IMDG packing instruction P907.

III. Package Marking:
   - Dangerous Goods In Apparatus, UN 3363

IV. Shipping Paper Description (DD Form 2890):
   - UN 3363, Dangerous Goods In Apparatus, 9 (Flashpoint °C c.c. if applicable)

V. IMDG Observations / Information:
   - Special Provisions: 301 – This entry only applies to Apparatus (App) containing dangerous substances as a residue or an integral element of the App. It shall not be used for App for which a Proper Shipping Name already exists in the Dangerous Goods List. App transported under this entry shall only contain dangerous goods which are authorized to be transported IAW the provisions in chapter 3.4 (limited quantity). The quantity of dangerous goods in App shall not exceed the quantity specified in col. 7 of the Dangerous Goods List for each item of dangerous goods contained. If the App contains more than one item of dangerous goods, the individual substances shall not be capable of reacting dangerously with one another. When it is required to ensure liquid dangerous goods remain in their intended orientation, package orientation arrows shall be marked on at least two opposite sides. The transport of dangerous goods in App where the quantity of dangerous goods exceeds the quantity specified in col. 7 or the DGL is authorized only when approved by the competent authority.
   - Packing Instructions: P907 – If the apparatus (App) is constructed and designed so the receptacles containing the dangerous goods are afforded adequate protection and secured to prevent leakage, an outer package is not required.

VI. Emergency Response:
   - ERG #: 171 (General Guide Number for Class 9)
   - IMDG: EmS#: F-A, S-P

VII. Notes:
   - When shipped IAW with these provisions, the amount of hazardous material contained in the apparatus cannot exceed the limited quantity amounts given for that commodity.
   - Flashpoint: If the dangerous good that was previously contained within the equipment had a flashpoint of 60°C or less, the flashpoint is required on the documentation. See IMDG 5.4.1.4.3.6/ 49 CFR 172.203(i)(2)

VIII. Segregation: There are no segregation requirements for Class 9 materials.
# 12 - Engines, Internal Combustion
OR Vehicle, Flammable Liquid Powered
(Spare/Used Engines, Generators, Gators/ATV)

I. UN Identification Number:
   • UN 3166

II. Packaging:
   • Packing Group: N/A
   • Limited Quantity: N/A
   • Recommended Pkg: Wood Crate
   • U.S. Regulation: 49 CFR 173.220

III. Package Marking: (as appropriate)
   • Engines, Internal Combustion, UN 3166 or
   • Vehicle, Flammable Liquid Powered, UN 3166 or
   • Vehicle, Flammable Gas Powered, UN 3166

IV. Shipping Paper Description (DD Form 2890): (as appropriate)
   • If Note does not apply ship as: UN 3166, Engines, Internal Combustion, 9 or UN 3166, Vehicle, Flammable Liquid Powered, 9 or Vehicle, Flammable Gas Powered, 9

V. IMDG Observations/Information:
   • Special Provisions: 961 – …Vehicles and equipment are not subject to the provisions of this Code if ANY of the following conditions are met:
     1. The vehicle will be driven onto a vessel or placed in a space designated for vehicles
     2. (If containerized) The fuel tank(s) of the vehicle or equipment powered by a flammable liquid fuel is empty and installed batteries are protected from short circuit;
     3. The vehicle or equipment is solely powered by a wet or dry electric storage battery or a sodium battery, and the battery is protected from short circuit.

VI. Emergency Response:
   • ERG #: 128
   • IMDG: EmS#: F-E, S-E for liquids; F-D, S-U for gases

VII. Notes:
   • If you run/drain the engine, generator, or vehicle until empty, and tape the battery terminals and cables, it can be shipped as general cargo.
   • Vehicles or equipment not meeting the conditions of special provision 961 shall be assigned to class 9 and shall meet the requirements described in special provision 962 of the IMDG Code.

VIII. Segregation: There are no segregation requirements for Class 9 materials.
# 13 - Ethanol Solutions
(Hand Sanitizer)

I. UN Identification Number:
   - UN 1170

II. Packaging:
   - Packing Group: PG III
   - Limited Quantities: 5 liters (L)
   - Recommended Pkg: Original packaging
   - U.S. Regulation: 49 CFR 173.203

III. Package Marking:
   - Ethanol Solutions, UN 1170
   - Orientation arrows on two opposing sides

IV. Shipping Paper Description (DD Form 2890):
   - UN 1170, Ethanol Solutions, 3, III (Flashpoint °C c.c.)

V. IMDG Observations/Information:
   - Packing Instructions: As per IMDG Code P001 LP01 – Authorized large package 3 cubic meters
   - Flashpoint: 23°-61° C (closed cup test)
   - Explosive Limits: 3.3%-19%

VI. Emergency Response:
   - ERG #: 127
   - IMDG: EmS#: F-E, S-D

VII. Notes:
   - Colorless, volatile liquid. Miscible with water
   - Flashpoint and packing group will change based on the properties of the commodity being shipped. The PG provided in IV (shipping paper description) is accurate if you are shipping hand sanitizer. If you are shipping any other type of ethanol solution you must check the flashpoint to determine packing group.
   - Orientation arrows (see IMDG Code 5.2.1.7/49 CFR 172.312) must be marked on combination packages and, or overpacks containing liquid HAZMAT.

VIII. Segregation:
   - Class 3: cannot be in the same container as classes 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
I. **UN Identification Number:**
   - UN 1193

II. **Packaging Requirements:**
   - **Packing Group:** II
   - **Limited Quantity:** 1 liter (L)
   - **Recommended Package:** Steel, Aluminum, or Plastic drums
   - **U.S. Regulation:** 49 CFR 173.202

III. **Package Marking:**
   - Ethyl Methyl Ketone, UN 1193
   - Orientation arrows (On two opposing sides if combination package is used)

IV. **Shipping Paper Description (DD Form 2890):**
   - UN 1193, Ethyl Methyl Ketone, 3, II (Flashpoint -1°C c.c.)

V. **IMDG Observations/Information:**
   - **Special Provision:** 144 – An aqueous solution containing not more than 24% alcohol by volume is not subject to the provisions of the IMDG Code.
   - **Packing Instructions:** As per IMDG Code P001
   - **Explosive Limits:** 1.8%-11.5%
   - **Flashpoint:** -1°C (closed cup test)

VI. **Emergency Response:**
   - **ERG #:** 127
   - **IMDG:** EmS#: F-E, S-D

VII. **Notes:**
   - Ethyl Methyl Ketone has a reportable quantity (RQ) of 5000 lbs (2270 Kg) per package. If package exceeds 5000 lbs, RQ must be marked on the package and annotated on the shipping papers before the proper shipping description. (see Appendix A to 172.101).
   - Orientation arrows (see IMDG Code 5.2.1.7/49 CFR 172.312) must be marked on combination packages and, or overpacks containing liquid HAZMAT.

VIII. **Segregation:**
   - **Class 3:** cannot be in the same container as classes 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
# 15 - Fire Extinguishers
(Dry Chemical)

I. **UN Identification Number:**
   - UN 1044

II. **Packaging:**
   - **Packing Group:** N/A (cylinders)
   - **Limited Quantity:** 120 milliliters (ml)
   - **Recommended Pkg:** Steel cylinders
   - **U.S. Regulation:** 49 CFR 173.309

III. **Package Marking:**
   - Fire Extinguishers, UN 1044

IV. **Shipping Paper Description (DD Form 2890):**
   - UN 1044, Fire Extinguishers, 2.2

V. **IMDG Observations/Information:**
   - **Special Provision:** 225 – Fire extinguishers under this entry may include installed actuating cartridges (Class 1.4C or 1.4S) without changing the classification provided the total quantity of explosives does not exceed 3.2 g per extinguisher.
   - **Packing Instructions:** **US Cylinders must be used. P003** – Material shall be placed in suitable outer package. The type of package required for a particular HAZMAT item can be determined using the "Performance Oriented Packaging Program (POP)", which is accessible at http://www.ddc.dla.mil/ddcpop/client.

VI. **Emergency Response:**
   - **ERG #:** 126
   - **IMDG:** EmS#: F-C, S-V

VII. **Notes:**
   - **SDDC Specific:** Highly recommend extinguishers are kept in vehicles and secured in their authorized mounts. As such, no documentation is required. This is at the unit commander's discretion.
   - May use any fiberboard box, roughly the size of the individual fire extinguisher. The box must be complete and properly closed. This is sufficient as long as the box is secured, marked and labeled appropriately, and only one fire extinguisher is used per box. 
   - Pre-labeled fire extinguisher shipping boxes are available through supply.
   - See Special Provision 18 (49 CFR 172.101) to ensure the fire extinguisher meets the provisions of this card.

VIII. **Segregation:**
   - **Class 2.2:** cannot be in the same container as classes 3, 4.2, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
# 16 – Fire Extinguishers
(Carbon Dioxide)

I. UN Identification Number:
   - UN 1013

II. Packaging:
   - Packing Group: N/A (cylinders)
   - Limited Quantity: 120 milliliters (ml)
   - Recommended Pkg: Steel cylinders
   - U.S. Regulation: 49 CFR 173.309

III. Package Marking:
   - Carbon Dioxide, UN 1013

IV. Shipping Paper Description (DD Form 2890):
   - UN 1013, Carbon Dioxide, 2.2

V. IMDG Observations/Information:
   - Packing Instructions: US Cylinders must be used.

VI. Emergency Response:
   - ERG #: 120
   - IMDG: EmS#: F-C, S-V

VII. Notes:
   - SDDC Specific: Highly recommend extinguishers are kept in vehicles and secured in their authorized mounts. As such, no documentation is required. This is at the unit commander's discretion.
   - May use any fiberboard box, roughly the size of the individual fire extinguisher. The box must be complete and properly closed. This is sufficient as long as the box is secured, marked and labeled appropriately, and only one fire extinguisher is used per box.
   - Pre-labeled fire extinguisher shipping boxes are available through supply.
   - Ensure the cylinder heads are protected from damage. IMDG 4.1.6.1.8

VIII. Segregation:
   - Class 2.2: cannot be in the same container as classes 3, 4.2, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
# 17 – Flammable Liquid, N.O.S.
(Example: Permethrin)

I. UN Identification Number:
   - UN 1993

II. Packaging:
   - Packing Group: See note in VII
   - Limited Quantities: PG I not allowed, PG II 1 L, PG III 5 L
   - Recommended Pkg: Original Packaging
   - U.S. Regulation: 49 CFR 173.201 – .203

III. Package Marking:
   - Flammable Liquid, n.o.s. (Technical Name), UN 1993
   - Marine Pollutant mark (see right) may be required depending on the product (technical name).
   - Orientation arrows (if combination package is used)

IV. Shipping Paper Description (DD Form 2890):
   - UN 1993, Flammable Liquid, n.o.s. (Technical Name), 3, (Flashpoint C° c.c.)

V. IMDG Observations/Information:
   - Special Provisions: 274/318 – For documentation and package marking, the Proper Shipping Name shall be supplemented with the technical name (IMDG Code 3.1.2.8.1)
   - Packing Instructions: As per IMDG Code P001
   - Flashpoint: The flashpoint will vary based on the material.

VI. Emergency Response:
   - ERG #: 128
   - IMDG: EmS#: F-E,S-E

VII. Notes:
   - *Packing group may change based on chemical properties.
   - May be hazardous substance (RQ) depending on material and amount (see Appendix A to 172.101). RQ must be marked on the package and annotated on the shipping papers before the proper shipping description.
   - Orientation arrows (see IMDG Code 5.2.1.7/49 CFR 172.312) must be marked on combination packages and, or overpacks containing liquid HAZMAT.

VIII. Segregation:
   - Class 3: cannot be in the same container as classes 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
# 18 - Fuel, Aviation, Turbine Engine, (Empty JP-8 Jerricans)

I. **UN Identification Number:**
- UN 1863

II. **Packaging:**
- Packing Group: III
- **Limited Quantity:** 5 Liters (See note below)
- **Recommended Pkg:** Plastic Jerricans (3H1 or 3H2)
- **U.S. Regulation:** 49 CFR 173.203

III. **Package Marking:**
- Fuel, Aviation, Turbine Engine, UN 1863

IV. **Shipping Paper Description (DD Form 2890):**
- UN 1863, Fuel, Aviation, Turbine Engine, 3, III, RESIDUE LAST CONTAINED (Flashpoint 38°C c.c.)

V. **IMDG Observations/Information:**
- **Packing Instructions:** P001
- **Flashpoint:** 38°C closed cup

VI. **Emergency Response:**
- **ERG #:** 128
- **IMDG:** EmS#: F-E, S-E

VII. **Notes:**
- **LIMITED QUANTITY:** Empty jerricans **cannot** be shipped as a limited quantity.
- Used jerricans, previously containing fuel, will be shipped as a hazardous material. All required labels, markings, placards and shipping papers must be used. Simply emptying and air drying a fuel can is not sufficient to nullify any hazard as the IMDG code requires.
- ***Plastic jerricans are only allowed to be shipped for a period of 5 years from the date of manufacture. The year of manufacture can be found in the performance oriented packaging code (3H1/Y1.4/150/11/USA/VL824—on the side bottom of the jerrican), and the month will be marked elsewhere on the package, generally in a dial format indicating the month of manufacture with an arrow; reference 173.28(b)(7)(iv)(B)/IMDG 4.1.1.15.
- Previously used jerricans are considered HAZMAT whether they are on a vehicle or in a container, documentation, marking, labeling, and placarding is required
- *** SDDC requirement: Mounting brackets in vehicles must come as original equipment. Jerricans cannot be stored in “add-on” brackets. ***

VIII. **Segregation:**
- Class 3: **cannot be in the same container as classes** 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7
- See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
- **No Segregation for Limited Quantities (LTD QTY)**

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DOD HAZARDOUS MATERIALS BY VESSEL JOB AID
32
# 19 – Fuel, Aviation, Turbine Engine
(Bulk packages, Empty Road Tank Vehicle)

I. UN Identification Number:
   • UN 1863

II. Packaging:
   • Packing Group: III
   • Bulk Quantity: Greater than 450 Liters
   • Recommended Pkg: IMO Type 4 Tank
   • U.S. Regulation: 49 CFR 173.242

III. Package Marking: IAW 49 CFR 172.332
   • Class 3 placards, displaying 1863 ; or
   • Class 3 placards in association with Orange panel displaying 1863 in black numerals

IV. Shipping Paper Description (DD Form 2890):
   • UN 1863, Fuel, Aviation, Turbine Engine, 3, III EMPTY UNCLEANED
     (Flashpoint 38° C c.c.)

V. IMDG Observations/Information:
   • Packing Instructions: IMDG Code Chapter 4.2

VI. Emergency Response:
   • ERG #: 128
   • IMDG: EmS#: F-E, S-E

VII. Notes:
   • Road Tank Vehicles that have been professionally cleaned and purged with certifying documentation are general cargo.
   • Used fuel blivets are not performance oriented packaging and are NOT ALLOWED to be transported unless professionally cleaned and purged with certifying documentation or emptied and placed into an approved UN Specification Portable Tank.

VIII. Segregation:
   • Class 3: cannot be in the same container as classes 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7
   • See Segregation Table in 49 CFR 176.83(b)
   • No Segregation for Limited Quantities (LTD QTY)
# 20 – Helium, Compressed

I. UN Identification Number:
   - UN 1046

II. Packaging:
   - Packing Group: N/A (cylinders)
   - Limited Quantity: 120 milliliters (ml)
   - Recommended Pkg: Steel Cylinder (8,8AL)

III. Package Marking:
   - Helium, Compressed, UN 1046

IV. Shipping Paper Description (DD Form 2890):
   - UN 1046, Helium, Compressed, 2.2

V. IMDG Observations/Information:
   - Packing Instructions: 49 CFR 171.23(a) and IMDG Code P200

VI. Emergency Response:
   - ERG #: 121
   - IMDG: EmS#: F-C, S-V

VII. Note:
   - Inert gas – Much lighter than air (0.14)
   - Ensure the cylinder heads are protected from damage. IMDG 4.1.6.1.8

VIII. Segregation:
   - Class 2.2: cannot be in the same container as classes 3, 4.2, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
#21 – Hypochlorite Solution
(Bleach)

I. UN Identification Number:
   - UN 1791

II. Packaging:
   - Packing Group: III
   - Limited Quantity: 5 liters (L)
   - Recommended Pkg: Original Packaging
   - U.S. Regulation: 49 CFR 173.154 & 203

III. Package Marking:
   - Hypochlorite Solution, UN1791
   - Orientation arrows (if combination package is used)

IV. Shipping Paper Description (DD Form 2890):
   UN1791, Hypochlorite Solution, 8, III

V. IMDG Observations/Information:
   - Packing Instructions: IMDG Code P001

VI. Emergency Response:
   - ERG #: 154
   - IMDG: EmS#: F-A, S-B

VII. Notes:
   - Liquid with chlorine odor. In contact with acid, evolves very irritating and corrosive gases. Mildly corrosive to most metals. Causes burns to skin, eyes, and mucous membranes.
   - Orientation arrows (see IMDG Code 5.2.1.7/49 CFR 172.312) must be marked on combination packages, and or overpacks containing liquid HAZMAT.
   - Check the MSDS to determine whether the specific product is or is not regulated.

VIII. Segregation:
   - Class 8: cannot be in the same container as classes 2.1, 4.1, 4.2, 4.3, 5.1, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
# 22 – Isopropanol
(Isopropyl Alcohol)

I. **UN Identification Number:**
   - UN 1219

II. **Packaging:**
   - Packing Group: II
   - **Limited Quantity:** 1 liter (L)
   - **Recommended Pkg:** Original Packaging
   - **U.S. Regulation:** 49 CFR 173.202

III. **Package Marking:**
   - Isopropanol, UN 1219
   - Orientation arrows (if combination package is used)

IV. **Shipping Paper Description (DD Form 2890):**
   - UN 1219, Isopropanol, 3, II (Flashpoint 12° C c.c.)

V. **IMDG Observations/Information:**
   - **Packing Instructions:** IMDG Code P001
   - **Explosive, Limits:** 2.0%-12%
   - **Flashpoint:** 12° C (closed cup test)

VI. **Emergency Response:**
   - **ERG #:** 129
   - **IMDG:** EmS#: F-E, S-D

VII. **Notes:**
   - Colorless mobile liquid, miscible with water.
   - Orientation arrows (see IMDG Code 5.2.1.7/49 CFR 172.312) must be marked on combination packages and, or overpacks containing liquid HAZMAT.

VIII. **Segregation:**
   - **Class 3:** cannot be in the same container as classes 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 172.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
# 23 - Lithium Ion Batteries OR
Lithium Ion Batteries Contained in Equipment

I. **UN Identification Number:**
   - UN 3480 or UN 3481

II. **Packaging:**
   - **Packing Group:** II
   - **Limited Quantity:** None
   - **Recommended Pkg:**
     - Use Fiberboard box (4G) or Wooden Box (4C/D/F)
     - Each battery shall be protected from short circuit

III. **Package Marking:**
   - Lithium Ion Batteries, UN 3480 or
   - Lithium Ion Batteries Contained In Equipment, UN 3481

IV. **Shipping Paper Description (DD Form 2890):**
   - UN 3480, Lithium Ion Batteries, 9, II or
   - UN 3481, Lithium Ion Batteries Contained In Equipment, 9, II

V. **IMDG Observations/Information:**
   - **Special Provisions:** SP 188 provides exceptions for shippers, requiring only package markings and basic shipping documentation. See below for DOD rules to follow for batteries which are authorized to follow SP 188. Batteries in the table identified by SP 188 may follow these provisions. SP 188 requires only good quality, strong packaging be used.

VI. **Emergency Response:**
   - **ERG #:** 147
   - **IMDG:** EmS#: F-A, S-I

VII. **Notes:**
   - Each different battery type should be a separate line item on the DD 2890.
   - **See Table below (cont. on next page) for information by battery type.** This list is not all inclusive. For batteries not listed, an MSDS or manufacture information will be needed to determine lithium content (See key below table for additional information).

VIII. **Segregation:** There are no segregation requirements for Class 9 materials.
## Lithium Ion Batteries

<table>
<thead>
<tr>
<th>Type or Part No.</th>
<th>MAX Battery Li Content (kg)</th>
<th>DOT Class</th>
<th>UN ID</th>
<th>Gross Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>AN/PRC-148 (MBITR 4.8 Ah)</td>
<td>0.00432</td>
<td>SP 188</td>
<td>**</td>
<td>0.04 kg</td>
</tr>
<tr>
<td>AN/PRC-148 (MBITR 5.8 Ah)</td>
<td>0.00522</td>
<td>SP 188</td>
<td>**</td>
<td>0.04 kg</td>
</tr>
<tr>
<td>AN/PRC-152</td>
<td>0.036</td>
<td>9</td>
<td>UN 3480</td>
<td>1 kg</td>
</tr>
<tr>
<td>LBB</td>
<td>0.211</td>
<td>9</td>
<td>UN 3481</td>
<td>29 kg</td>
</tr>
<tr>
<td>UBI-2590/U</td>
<td>0.01728</td>
<td>9</td>
<td>UN 3480</td>
<td>1.2 kg</td>
</tr>
<tr>
<td>BB-2001 A/U</td>
<td>0.00468</td>
<td>SP 188</td>
<td>**</td>
<td>0.44 kg</td>
</tr>
<tr>
<td>BB-2590/U</td>
<td>0.00066</td>
<td>9</td>
<td>UN 3480</td>
<td>1.36 kg</td>
</tr>
<tr>
<td>BB-2600/U</td>
<td>0.00276</td>
<td>SP 188</td>
<td>**</td>
<td>0.32 kg</td>
</tr>
<tr>
<td>BB-2600A/U</td>
<td>0.002</td>
<td>SP 188</td>
<td>**</td>
<td>0.32 kg</td>
</tr>
<tr>
<td>BB-2800/U</td>
<td>0.00216</td>
<td>SP 188</td>
<td>**</td>
<td>0.27 kg</td>
</tr>
<tr>
<td>BB-2847/U</td>
<td>0.00297</td>
<td>SP 188</td>
<td>**</td>
<td>0.38 kg</td>
</tr>
<tr>
<td>BB-2847A/U</td>
<td>0.00396</td>
<td>SP 188</td>
<td>**</td>
<td>0.38 kg</td>
</tr>
<tr>
<td>Shadow 200 UAV</td>
<td>0.03528</td>
<td>9</td>
<td>UN 3480</td>
<td>3.72 Kg</td>
</tr>
</tbody>
</table>

**Key:** Lithium content is *NET* amount per battery (# of batteries x Lithium content is reflected on DD-2890 under NET MASS); DOT Class provides regulatory status; Gross mass is *NET* + WEIGHT of battery (reflected on DD-2890 under GROSS MASS).

### SP 188 Requirements:

**Package Marking:**
Each package shall be marked with the marking to the right. The marking shall be capable of withstanding 3 months of immersion in the sea and the outside border must be red in color. Fill the bottom line in with the Point of Contact’s phone number.

**Documentation:**
A DD-2890 is not required for these shipments, however documentation is still required. See page 54 for the required documentation template. You must also complete a DA-2781.
I. **UN Identification Number:**
   - UN 3090 or UN 3091

II. **Packaging:**
   - **Packing Group:** II
   - **Limited Quantity:** None
   - **Recommended Pkg:**
     - Up to 250 Kg use Fiberboard box (4G)
     - Over 250 Kg use Wooden Box (4C/D/F)

III. **Package Marking:**
   - Lithium Metal Batteries, UN 3090 or
   - Lithium Metal Batteries Contained In Equipment, UN 3091

IV. **Shipping Paper Description (DD Form 2890):**
   - UN 3090, Lithium Metal Batteries, 9, II or
   - UN 3091, Lithium Metal Batteries Contained In Equipment, 9, II

V. **IMDG Observations/Information:**
   - **Special Provisions:** SP 188 provides exceptions for shippers, requiring only package markings and basic shipping documentation. See below for DOD rules to follow for batteries which are authorized to follow SP 188. Batteries in the table identified by SP 188 may follow these provisions. SP 188 requires only good quality, strong packaging be used.

VI. **Emergency Response:**
   - **ERG #:** 138
   - **IMDG:** EmS#: F-A, S-I

VII. **Notes:**
   - Each different battery type should be a separate line item on the DD 2890
   - **See Table below (cont. on next page) for information by battery type.** This list is not all inclusive. For batteries not listed, an MSDS or manufacture information will be needed to determine lithium content.

VIII. **Segregation:** There are no segregation requirements for Class 9 materials.
# 24 - Lithium Metal Batteries OR
Lithium Metal Batteries Contained in Equipment (Cont.)

<table>
<thead>
<tr>
<th>Type or Part No.</th>
<th>MAX Battery Li Content (kg)</th>
<th>DOT Class</th>
<th>UN ID</th>
<th>Gross Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-5093/U, BA-5093 A/U</td>
<td>0.02</td>
<td>9</td>
<td>UN 3090</td>
<td>0.64 kg</td>
</tr>
<tr>
<td>BA-5290/U</td>
<td>0.0294</td>
<td>9</td>
<td>UN 3090</td>
<td>1.02 kg</td>
</tr>
<tr>
<td>BA-5301 A/U</td>
<td>0.0005</td>
<td>SP 188</td>
<td>**</td>
<td>0.282 kg</td>
</tr>
<tr>
<td>BA-5312/U</td>
<td>0.006</td>
<td>9</td>
<td>UN 3090</td>
<td>0.27 kg</td>
</tr>
<tr>
<td>BA-5347/U</td>
<td>0.005</td>
<td>9</td>
<td>UN 3090</td>
<td>0.30 kg</td>
</tr>
<tr>
<td>BA-5360/U</td>
<td>0.0097</td>
<td>9</td>
<td>UN 3090</td>
<td>0.4 kg</td>
</tr>
<tr>
<td>BA-5367/U</td>
<td>0.00035</td>
<td>SP 188</td>
<td>**</td>
<td>0.02 kg</td>
</tr>
<tr>
<td>BA-5368/U</td>
<td>0.0012</td>
<td>SP 188</td>
<td>**</td>
<td>0.14 kg</td>
</tr>
<tr>
<td>BA-5372/U</td>
<td>0.00028</td>
<td>SP 188</td>
<td>**</td>
<td>0.002 kg</td>
</tr>
<tr>
<td>BA-5374/U</td>
<td>0.00098</td>
<td>SP 188</td>
<td>**</td>
<td>0.07 kg</td>
</tr>
<tr>
<td>BA-5380/U</td>
<td>0.0068</td>
<td>9</td>
<td>UN 3090</td>
<td>0.40 kg</td>
</tr>
<tr>
<td>BA-5390/U</td>
<td>0.034</td>
<td>9</td>
<td>UN 3090</td>
<td>1.36 kg</td>
</tr>
<tr>
<td>BA-5390A/U</td>
<td>0.034</td>
<td>9</td>
<td>UN 3090</td>
<td>1.36 kg</td>
</tr>
<tr>
<td>BA-5557/U</td>
<td>0.009</td>
<td>9</td>
<td>UN 3090</td>
<td>0.41 kg</td>
</tr>
<tr>
<td>BA-5557A/U</td>
<td>0.008</td>
<td>9</td>
<td>UN 3090</td>
<td>0.41 kg</td>
</tr>
<tr>
<td>BA-5567A/U</td>
<td>0.00035</td>
<td>SP 188</td>
<td>**</td>
<td>0.64 kg</td>
</tr>
<tr>
<td>BA-5588/U</td>
<td>0.0068</td>
<td>9</td>
<td>UN 3090</td>
<td>0.63 kg</td>
</tr>
<tr>
<td>BA-5588A/U</td>
<td>0.0068</td>
<td>9</td>
<td>UN 3090</td>
<td>0.29 kg</td>
</tr>
<tr>
<td>BA-5590A/U</td>
<td>0.025</td>
<td>9</td>
<td>UN 3090</td>
<td>1.02 kg</td>
</tr>
<tr>
<td>BA-5590B/U</td>
<td>0.025</td>
<td>9</td>
<td>UN 3090</td>
<td>1.02 kg</td>
</tr>
<tr>
<td>BA-5598/U</td>
<td>0.014</td>
<td>9</td>
<td>UN 3090</td>
<td>0.66 kg</td>
</tr>
<tr>
<td>BA-5598A/U</td>
<td>0.014</td>
<td>9</td>
<td>UN 3090</td>
<td>0.66 kg</td>
</tr>
<tr>
<td>BA-5599A/U</td>
<td>0.0075</td>
<td>9</td>
<td>UN 3090</td>
<td>0.45 kg</td>
</tr>
<tr>
<td>BA-5600A/U</td>
<td>0.0075</td>
<td>9</td>
<td>UN 3090</td>
<td>0.7 kg</td>
</tr>
<tr>
<td>BA-5609/U</td>
<td>0.0515</td>
<td>9</td>
<td>UN 3090</td>
<td>1.59 kg</td>
</tr>
<tr>
<td>BA-5800A/U</td>
<td>0.005</td>
<td>9</td>
<td>UN 3090</td>
<td>0.20 kg</td>
</tr>
<tr>
<td>BA-5847B/U</td>
<td>0.005</td>
<td>9</td>
<td>UN 3090</td>
<td>0.25 kg</td>
</tr>
<tr>
<td>BB-2557/U</td>
<td>0.00576</td>
<td>9</td>
<td>UN 3090</td>
<td></td>
</tr>
<tr>
<td>BB-2588/U</td>
<td>0.00288</td>
<td>9</td>
<td>UN 3090</td>
<td></td>
</tr>
<tr>
<td>CR123A, DL123A, K123LA</td>
<td>0.00057</td>
<td>SP 188</td>
<td>**</td>
<td>0.02 kg</td>
</tr>
<tr>
<td>CR2025; DL2025</td>
<td>0.00008</td>
<td>SP 188</td>
<td>**</td>
<td>0.01 kg</td>
</tr>
</tbody>
</table>

**Key:** Lithium content is *NET* amount per battery (# of batteries x Lithium content is reflected on DD-2890 under NET MASS); DOT Class provides regulatory status; Gross mass is *NET* + WEIGHT of battery (reflected on DD-2890 under GROSS MASS).
SP 188 Requirements:

Package Marking:
Each package shall be marked with the markings below. The markings shall be capable of withstanding 3 months of immersion in the sea and the outside border of the marking on the left must be red in color. Fill the bottom line in with the Point of Contact’s phone number.

Documentation:
A DD-2890 is not required for these shipments, however documentation is still required. See page 54 for the required documentation template. You must also complete a DA-2781.
# 25 - Methanol

I. UN Identification Number:
- UN 1230

II. Packaging:
- Packing Group: II
- Limited Quantity: 1 liter (L)
- Recommended Pkg: Original Packaging
- U.S. Regulation: 49 CFR 173.202

III. Package Marking:
- Methanol, UN 1230
- Orientation arrows (if combination package is used)

IV. Shipping Paper Description (DD Form 2890):
- UN1230, Methanol, 3 (6.1), II, (Flashpoint 12° C c.c.)

V. IMDG Observations/Information:
- Special Provision: 279 – Methanol is assigned this classification or packing group based on human experience rather than strict application of class criteria
- Packing Instructions: IMDG Code P001
- Explosive Limits: 6.0%-36.5%
- Flashpoint: 12° C (closed cup test)

VI. Emergency Response:
- ERG #: 131
- IMDG: EmS#: F-E, S-D

VII. Notes:
- Methanol has a reportable quantity (RQ) of 5000 lbs (2270 Kg) per package. If package exceeds 5000 lbs, RQ must be marked on the package and annotated on the shipping papers before the proper shipping description. (see Appendix A to 172.101).
- Orientation arrows (see IMDG Code 5.2.1.7/49 CFR 172.312) must be marked on combination packages and, or overpacks containing liquid HAZMAT.
- The product is miscible with water.
- The product is toxic if swallowed, and may cause blindness.
- Avoid skin contact with this product.

VIII. Segregation:
- Class 3: cannot be in the same container as classes 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7
- Class 6.1: cannot be in the same container as classes 4.2, 5.1, 5.2, 6.2
- See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
- No Segregation for Limited Quantities (LTD QTY)
# 26 - Nitrogen, Compressed

I. **UN Identification Number:**
   - UN 1066

II. **Packaging:**
   - Packing Group: N/A (cylinder)
   - Limited Quantity: 120 milliliters (ml)
   - Recommended Pkg: Steel cylinder (8,8AL)
   - U.S. Regulation: 49 CFR 173.302 and 306

III. **Package Marking:**
   - Nitrogen, Compressed, UN 1066

IV. **Shipping Paper Description (DD Form 2890):**
   - UN1066, Nitrogen, Compressed, 2.2

V. **IMDG Information:**
   - Packing Instructions: 49 CFR 171.23(a) and IMDG Code P200

VI. **Emergency Response:**
   - ERG #: 121
   - IMDG: EmS#: F-C, S-V

VII. **Notes:**
   - Non-Flammable, odorless gas
   - Lighter than air (0.7)
   - Nitrogen in weapons is normally not regulated
   - Ensure the cylinder heads are protected from damage. IMDG 4.1.6.1.8

VIII. **Segregation:**
   - Class 2.2: cannot be in the same container as classes 3, 4.2, 5.2, 6.2, 7
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
   - No Segregation for Limited Quantities (LTD QTY)
# 27 - Oxygen, Compressed

I. **UN Identification Number:**
   - UN 1072

II. **Packaging:**
   - Packing Group: N/A (cylinder)
   - Limited Quantity: None
   - Recommended Pkg: Steel Cylinder (8A/AL)
   - U.S. Regulation: 49 CFR 173.302

III. **Package Marking:**
   - Oxygen, Compressed, UN 1072

IV. **Shipping Paper Description (DD Form 2890):**
   - UN1072, Oxygen, Compressed, 2.2 (5.1)

V. **IMDG Information:**
   - Packing Instructions: 49 CFR 171.23(a) and IMDG Code P200 – Not contaminated with oil, pressure may not exceed 3000 psi @70 °F

VI. **Emergency Response:**
   - ERG #: 122
   - IMDG: EmS#: F-C, S-W

VII. **Notes:**
   - Must use both 2.2 (non-flammable gas) and 5.1 (oxidizer—subsidiary risk) labels and placards. **For Domestic Transportation Only,** the "Oxygen" Placard/Label may be used in lieu of both the 2.2 and 5.1 placards/labels.
   - Non-flammable, odorless gas
   - Strong oxidizing agent
   - Heavier than air (1.1)
   - NO BUBBLE WRAP MAY BE USED
   - Ensure the cylinder heads are protected from damage. IMDG 4.1.6.1.8

VIII. **Segregation:**
   - Class 2.2: cannot be in the same container as classes 3, 4.2, 5.2, 6.2, 7
   - Class 5.1: cannot be in the same container as classes 2.1, 3, 4.1, 4.2, 4.3, 5.2, 6.1, 6.2, 7, 8
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
# 28 - Propane

I. **UN Identification Number:**
   - UN 1978

II. **Packaging:**
   - **Packing Group:** N/A (cylinder)
   - **Limited Quantity:** None
   - **Recommended Pkg:** Steel Cylinders
   - **U.S. Regulation:** 49 CFR 173.304

III. **Package Marking:**
   - Propane, UN 1978

IV. **Shipping Paper Description (DD Form 2890):**
   - UN1978, Propane, 2.1

V. **IMDG Observations/Information:**
   - **Packing Instructions:** 49 CFR 171.23(a) and IMDG Code **P200**
   - **Explosive. Limits:** 2.3%-9.5%

VI. **Emergency Response:**
   - **ERG #:** 115
   - **IMDG:** EmS#: F-D, S-U

VII. **Notes:**
   - Flammable hydrocarbon gas
   - Heavier than air (1.56)
   - **For domestic transportation only,** the identification number “UN 1075” may be used
   - Ensure the cylinder heads are protected from damage. IMDG 4.1.6.1.8

VIII. **Segregation:**
   - **Class 2.1:** cannot be in the same container as classes 3, 4.1, 4.2, 5.1, 5.2, 6.2, 7, 8
   - See Segregation Table in 49 CFR 176.83(b)/IMDG Code 7.2.4.
# 29 - Radioactive Material, Excepted Package - Instruments

I. **UN Identification Numbers:**
   - UN 2911

II. **Packaging:**
   - Packing Group: None
   - Limited Quantity: N/A
   - Recommended Pkg: IMDG Section 4.1.9
   - U.S. Regulation: 49 CFR 173.422 & 424

III. **Package Marking:** (IMDG 5.2.1.5)
   - UN 2911
   - Unit (Co./Trp., Battalion) Name

IV. **Shipping Paper Description (DD Form 2890):**
   - UN 2911, Radioactive Material, Excepted Package – Instruments or Articles, 7

V. **IMDG Observations/Information:**
   - **Section 4.1.9** – Radioactive material, packages shall meet the provisions of chapter 6.4. The quantity of radioactive material shall not exceed the limits specified in 2.7.2.2, 2.7.2.4.1, 2.7.2.4.4, 2.7.2.4.5, 2.7.2.4.6, and 4.1.9.3.
   - Packages shall not contain other items except articles and documents that are necessary for the use of the radioactive material.

VI. **Emergency Response:**
   - ERG #: 161
   - IMDG: EmS#: F-I, S-S

VII. **Notes:**
   - "Common" unit equipment containing radioactive materials, i.e. Chemical Agent Monitors and Alarm Kits, are typically "excepted packages". As such, segregation, labeling, and placarding requirements do not apply. The following page identifies "common" unit equipment containing radioactive material. This list is not exhaustive, but should provide a good start in identifying unit equipment that contains radioactive material. If your NBC item is listed on the following page (other than “Not Regulated”) it requires proper documentation and marking.
   - An instrument or article with a source that has a specific activity of 70 Bq or greater must be shipped in accordance with applicable regulations.

Label & Placard
No label or placard required.
Package must be marked as noted in III.
#29 - Radioactive Material, Excepted Package – Instruments (Cont.)

- **Further Assistance:** Refer to Tech Bulletin (TB 43-0137), call your installation HAZMAT/Radiation Protection Officer, or call the DA HAZMAT focal points, Craig Coffman/Matt Ober at the Logistics Support Activity, Packaging, Storage, and Containerization Center, Attn: AMXLS-AT (Mr. Craig Coffman/Mr. Matt Ober), 11 Hap Arnold Blvd, Tobyhanna PA 18466-5097, 570-895-7070/7144 (DSN 795-7070/7144).

- Refer to the 2012 IMDG 5.1.5.4 for DD form 2890 block 14 requirements.

VIII. **Segregation:**

- Items listed in the table on the next page are **excepted** from segregation requirements.

### Common Unit Radioactive Equipment

<table>
<thead>
<tr>
<th>ITEM</th>
<th>WEIGHT</th>
<th>ISOTOPE</th>
<th>ACTIVITY</th>
<th>UN CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICAM</td>
<td>1.81 kg</td>
<td>Ni-63</td>
<td>370 MBq</td>
<td>UN 2911</td>
</tr>
<tr>
<td>M22 ACADA</td>
<td>6.8 kg</td>
<td>Ni-63</td>
<td>740 MBq</td>
<td>UN 2911</td>
</tr>
<tr>
<td>AN/PDR-77</td>
<td>6.35 kg</td>
<td>Th-232</td>
<td>2.2 KBq</td>
<td>UN 2911</td>
</tr>
<tr>
<td>M43A1/M8A1</td>
<td>10 kg</td>
<td>Am-241</td>
<td>9.25 MBq</td>
<td>UN 2911</td>
</tr>
<tr>
<td>AN/VDR 2</td>
<td>2.5 kg</td>
<td>Th-232</td>
<td>2.2 KBq</td>
<td>UN 2911</td>
</tr>
<tr>
<td>M58 Sight</td>
<td>1.35 kg</td>
<td>H3</td>
<td>185 GBq</td>
<td>UN 2911</td>
</tr>
<tr>
<td>M59 Sight</td>
<td>1.35 kg</td>
<td>H3</td>
<td>333 GBq</td>
<td>UN 2911</td>
</tr>
<tr>
<td>ACOG Sight/ M-150</td>
<td>0.5 kg</td>
<td>H3</td>
<td>370 GBq</td>
<td>UN 2911</td>
</tr>
<tr>
<td>AN/PDR-75</td>
<td>11.2 kg</td>
<td></td>
<td>NOT REGULATED</td>
<td></td>
</tr>
<tr>
<td>AN/UDR-13</td>
<td>241 g</td>
<td></td>
<td>NOT REGULATED</td>
<td></td>
</tr>
<tr>
<td>M256A1</td>
<td>.5 kg</td>
<td></td>
<td>NOT REGULATED</td>
<td></td>
</tr>
<tr>
<td>M42 Alarm</td>
<td>3.15 kg</td>
<td></td>
<td>NOT REGULATED</td>
<td></td>
</tr>
</tbody>
</table>

### Shipping Paper Entry Examples

<table>
<thead>
<tr>
<th>DESCRIPTION OF GOODS</th>
<th>NET MASS/ QTY</th>
<th>GROSS MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN 2911, Radioactive Material, Excepted Package - Instruments, Class 7, (Ni-63, plated, solid), 1 Box, (6 ea ICAMS)</td>
<td>2220 MBq</td>
<td>10.86 kg</td>
</tr>
<tr>
<td>UN 2911, Radioactive Material, Excepted Package - Instruments, Class 7, (Ni-63, foil, solid), 2 Box, (4 ea M22 ACADAs)</td>
<td>2960 MBq</td>
<td>27.2 kg</td>
</tr>
<tr>
<td>UN 2911, Radioactive Material, Excepted Package - Instruments, Class 7, (Th-232, foil, solid), 5 Box, (10 ea AN/PDR-77)</td>
<td>22 KBq</td>
<td>63.5 kg</td>
</tr>
<tr>
<td>UN 2911, Radioactive Material, Excepted Package - Instruments, Class 7, (Am-241, special form), 1 Box, (5 ea M43A1/M8)</td>
<td>46.3 MBq</td>
<td>50 kg</td>
</tr>
<tr>
<td>UN 2911, Radioactive Material, Excepted Package - Instruments, Class 7, (Th-232, foil, solid), 1 Box, (2 ea AN/VDR-2)</td>
<td>4.4 KBq</td>
<td>5 kg</td>
</tr>
<tr>
<td>UN 2911, Radioactive Material, Excepted Package-Instruments, Class 7, (H3, Gaseous Form), 1 Plastic Box, (4 ea M58)</td>
<td>740 GBq</td>
<td>5.4 kg</td>
</tr>
<tr>
<td>UN2911, Radioactive Material, Excepted Package-Instruments, Class 7, (H3, Gaseous Form), 1 Plastic Box, (4 ea ACOG Sights)</td>
<td>1480 GBq</td>
<td>2 kg</td>
</tr>
</tbody>
</table>

Notes: NET = 370 MBq (Activity per package) x 6 (# of ICAMS) GROSS = 1.81 kg (weight per package) x 6 (# of ICAMS)
Appendix A – Materials of Special Interest

Fire Extinguishers in Vehicles:
Fire extinguishers may remain in original manufacturer, permanently mounted brackets in vehicles, trailer mounted generators, FRS, TWIPS and CK’s for safety purposes, due to the internal combustion engine (See 49 CFR 176.905(j), IMDG sp 961/962).

Fuel Blivots/Bladders:
Used Fuel Blivots MUST EITHER be professionally cleaned and purged prior to transportation with certifying documentation, OR be packaged in the Approved Bulk Container. Fuel Blivots are not designed and tested for transportation of hazardous materials. There are NO current exemptions or special permits issued by the U.S. Department of Transportation.

ITAS/LRAS
ITAS/LRAS are not regulated and may be shipped in general cargo. The batteries, however, are HAZMAT and must be shipped IAW applicable regulations. (i.e # 23 - Lithium Ion Batteries Contained in Equipment).

Refrigerators and Air Conditioners:
In general, household refrigerators and A/C’s are not regulated as “Refrigerating Machines” for their Freon content (Machines with less than 12 kg (26.5 lbs) of Freon are not regulated).

Empty uncleaned or drained HAZMAT (Jerricans, Heaters, Fuel Hoses, etc):
Used empty packages (unless professionally purged) still contain residue of HAZMAT. Under this circumstance, the statement “Residue Last Contained” must supplement the proper shipping name. In addition, “Residue” should be listed as the NET QTY amount on the DD2890. The number and package description will be listed as what the package is: “5 Heaters” “8 Hoses” “36 Jerricans” “4 Burners” etc.

Examples:
UN1863, Fuel, Aviation, Turbine Engine, 3, III, Residue Last Contained
(Flashpoint 38 ° C c.c.), 36 Jerricans “NET QTY” column: Residue

UN3363, Dangerous Good in Apparatus, 9 “NET QTY” column: Residue
(Flashpoint 38 ° C c.c.), 8 Fuel Hoses

LTD QTY/Limited Quantity:
It is recommended best practice to include not only the number of handling packages, but the number of inner packages, in association with the basic shipping description, with a statement stating it does not exceed the LTD QTY amount found in the 49 CFR or IMDG.

Examples:
UN1950, Aerosols, 2.2, LTD QTY,
2 Boxes, (12 cans each contain less than 1 L)

UN1219, Isopropanol, 3, II, LTD QTY, (Flashpoint 23 ° C c.c.),
2 Boxes, (8 bottles each contain less than 1 L)
HAZMAT Documentation

Accurate documentation of hazardous materials in transportation is absolutely essential in order to communicate the hazard and assist in rapid incident response in the event of an emergency.

Proper documentation consists of two components: properly identifying the hazard, and providing emergency response information. DD Form 2890 is the primary document used to identify hazardous materials. Emergency response telephone numbers are provided on the DD Form 2890 and the applicable number must be indicated (circled). Also required, a container packing certificate—DD2781—declares that the container is in good condition and properly packed. The Hazmat Certifier must also provide either a Material Safety Data Sheet for each different hazardous material offered for transportation or a copy of the page from the Emergency Response Guide Book with the basic description, and technical name if applicable, for each material listed on your 2890. Each of these four documents can be found on the Internet or by using the links below.

→Documentation requirements may vary from installation to installation so be sure to check with the appropriate Directorate of Logistics or Deployment Support Brigade representative.

DD Form 2890 (DOD Multimodal Dangerous Goods Declaration by Vessel)  
http://www.dtic.mil/whs/directives/infomgt/forms/forminfo/forminfopage3242.html

DD Form 2890C (DOD Multimodal Dangerous Goods Declaration Continuation Sheet by Vessel)  

DD Form 2781 (Container/Vehicle Packing Certificate)  
http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd2781.pdf#search=%22dd%202781%22

Material Safety Data Sheets http://www.dlis.dla.mil/hmirs, then click on HMIRS Registration Forms in order to access authorization for registration.


The next 9 pages contain examples of DD forms and guides, which can assist, and are needed when deploying HAZMAT. (See Customer Advisory 10-08/02-0181-Amended for SDDC specific information regarding transport documentation).
# DD Form 2890 Job Aid

## DOD MULTIMODAL DANGEROUS GOODS DECLARATION

This form may be used as a dangerous goods declaration as it meets the requirements of SOLAS 74, Chapter VII, regulation 54; MARPOL 79/85, Annex III, Regulation 4.

### 1. SHIPPER/CONSIGNEE/SENDER

UNIT (ex. B Co. 1-36 CAV, 4th ID)  
Location (where you are currently at), Telephone #

### 2. TRANSPORT DOCUMENT NUMBER

### 3. PAGE 1 OF 1 PAGES

### 4. SHIPPER’S REFERENCE (TCN)

A[UIC]S9[SUN]0XX

### 5. FREIGHT FORWARDER’S REFERENCE

### 6. CONSIGNEE

UIC or Same as block 1 with destination location

### 7. CARRIER (To be completed by the carrier)

### 8. 24-HOUR EMERGENCY ASSISTANCE TELEPHONE NUMBERS: CIRCLE ALL APPLICABLE

- [ ] DOD NON-EXPLOSIVE, HAZMAT
  - (800) 851-8061  
  - (800) 279-3131
  - AT SEA: COLLECT: (800) 279-3131
- [ ] DOD HAZ CLASS 1 (EXPLOSIVES) ONLY:
  - (703) 697-0218/0219
  - or DSN: 227-0218
  - (Watch Officer)
- [ ] CHEMICAL/BIOLOGICAL, WARFARE MATERIAL:
  - (410) 436-6200
  - DSN: 584-6200
- [ ] DOD SECURE HOLDING:
  - (800) 826-0794
  - (For TSP/driver’s emergency secure holding issues, accidents, delays, and incidents)
- [ ] OIL CHEMICAL SPILLS:
  - NRC & TERRORIST HOTLINE:
  - (800) 424-8802
- [ ] DOD RADIOACTIVE, MATERIALS:
  - COLLECT: (703) 697-0218
  - USAF: (202) 767-4011
  - DLA: (800) 851-8061
  - AT SEA: COLLECT: (804) 279-3131
  - USN/NC: Use 24-hour emergency response number provided by activity.

### 9. CONTAINER PACKING CERTIFICATE OR VEHICLE PACKING DECLARATION, DD FORM 2781, IS ATTACHED

X This is a separate form

### 10. VESSEL DOCUMENT NUMBER AND SAILING DATE (To be completed by the carrier)

### 11. PORT/PLACE OF LOADING

Port the container is put on the vessel

### 12. PORT/PLACE OF DISCHARGE

Port the container is taken off the vessel

### 13. DESTINATION

Final Location that the shipment is going to

### 14. SHIPPING MARKS

- UN 1865, Fuel Aviation, Turbine Engine, 3, PG III (FP 38°C, c.c.), 10 Jars/units
  - Risk Class
  - UN #, Proper Shipping Name, Hazard Class, Packing Group, Additional Info., & Type of Package
  - Residue 30.00

- UN 1219, Isopropanol, 3, PG II, LTD QTY (FP 38°C, c.c.), 2 boxes
  - 8 bottles each containing less than 1 L
  - Total # of inner pkgs
  - Limited Quantity Amount
  - Total # of Batteries, you must insert a separate entry for each different type of battery
  - UN 3090, Lithium Metal Batteries, 9, PG II, 8 Boxes
  - 100 BA-5590 B/U batteries
  - Total 2.5 Kg 102.00

### 15. CONTAINER IDENTIFICATION NO./VEHICLE REGISTRATION NO.

- ex USAU 123456 7
- UN 1865, ERG 128 Attached, EmS F-E, S-E
- UN 1219, ERG 129 Attached, EmS F-E, S-D
- UN 3090, ERG 138 Attached, EmS F-A, S-I

### 16. SEAL NUMBER(S)

- Taken from the seals used when the doors are closed
- Quadren/Trienn/Bison/Milvan/Tank/Flatrack/etc.
- Found on the container door

### 17. CONTAINER/VEHICLE AND TYPE

- 800.00

### 18. TARE MASS (kg)

- Add for each different UN # listed in block 14: UN #, ERG #, EmS #, #

### 19. ADDITIONAL HANDLING INFORMATION

- a. RECEIVING ORGANIZATION REMARKS

### 20. RECEIVING ORGANIZATION RECEIPT

- b. Hauler’s Name
- c. Vehicle Registration No.
- d. Signature and Date
- e. Driver’s Signature

### 21. SHIPPER PREPARING THIS FORM

- a. NAME OF COMPANY/MILITARY UNIT
- Same as block #1 (ex. B Co. 1-36 CAV, 4th ID)
- b. NAME/STATUS OF DECLARANT/CERTIFIER
- Same as block #1 & Date (ex. Ft. Hood, TX, 20 Oct 13)
- d. SIGNATURE OF DECLARANT/CERTIFIER

---

**DD FORM 2890, AUG 2013**

**PREVIOUS EDITION IS OBSOLETE.**
DD FORM 2890 Job Aid

INSTRUCTIONS FOR COMPLETING DD FORM 2890,
DOD MULTIMODAL DANGEROUS GOODS DECLARATION

Item 1. Shipper/Consignor/Sender. Enter the address and telephone number where the HAZMAT was certified.

Item 2. Transport Document Number (Ocean container shipments only). The vessel manifest number to which the Multimodal Dangerous Goods Declaration will be attached may be entered in this block. The shipper need not enter this number. The accepting operator may enter it at the time it is assigned. Leave blank for breakbulk shipments. Shipper enters container "V" number.

Item 3. Page ___ of ___ Pages. Enter the page number and total number of pages. Example: Page 1 of 1.

Item 4. Shipper's Content Reference Number (TCN). Enter the 17-character TCN.

Item 5. Freight Forwarder's Reference. Leave blank.

Item 6. Consignee. Enter the six-digit DODAAC and the in-the-clear geographical location of the ultimate consignee (if known). For shipments of infectious substances, enter also the full address, name and telephone number of a responsible person for contact in an emergency.

Item 7. Carrier. Enter Vessel Carrier Name. To be completed by the carrier.

24 Hour Assistance Telephone Number(s). Circle applicable emergency number(s). 

Item 8. Shipments Within the Limitations Prescribed for Military Vessel/Commercial Vessel/Highway/Rail. Mark X in the appropriate block.

Item 9. Container Certification/Vehicle Declaration. Declarant must mark X if applicable. U.S. Coast Guard or port officials may require verification of the container certification/vehicle declaration. DD Form 2781 is a detailed checklist which meets USCG/Custums requirements. DD Form 2781 must be signed and attached to DD Form 2890.

Item 10. Voyage Document Number and Sailing Date (To be completed by the carrier). Enter the voyage document number and the date of sail.

Item 11. Port/Place of Loading. Enter the three-digit POE code and/or the in-the-clear geographical location of the port of embarkation.

Item 12. Port/Place of Discharge. Enter the three-digit POD code and/or the in-the-clear geographical location of the port of debarkation.

Item 13. Destination (in the clear). Enter destination address.

Item 14. Shipping Marks (Continued).
7. Except for transportation by aircraft, the total quantity of hazardous materials covered by the description must be indicated in mass or volume, or by activity for Class 7 materials and must include an indication of the applicable unit of measurement, for example, "200 kg" (440 pounds) or "500 ml" (16 ounces). The following provisions also apply. For Class 1 materials, the quantity must be the net explosive mass. For an explosive that is an article, such as Cartridges, small arms, the net explosive mass may be expressed in terms of the net mass of either the article or the explosive materials contained in the article.
8. Ammunition transported by Government Vehicle, Unit will enter the total net quantity for non-explosive material in metric measure. U.S. measure may be added in parentheses underneath the metric measure. For ammunition, enter the total number of rounds/articles and NEW in kg. Exception: Net total quantity is not required for bulk packages, empty packages, and cylinders of Class 2.
9. Radioactive material. The description for a shipment of a Class 7 (radioactive) material must include the following additional entries as appropriate:
a. The name of each radionuclide in the Class 7 (radioactive) material that is listed in Section 173.435 of this subchapter. For mixtures of radionuclides, the radionuclides required to be shown must be determined in accordance with Section 173.433(g) of this subchapter. Abbreviations, e.g., "99 Mo", are authorized.
b. A description of the physical and chemical form of the material, if the material is not in special form (generic chemical description) is acceptable for chemical form.
c. The activity contained in each package of the shipment in terms of the appropriate SI units (e.g., Becquerels (Bq), Terabecquerels (TBq), etc.).
10. The activity may also be stated in appropriate customary units (Curies (Ci), milliCuries (mCi), microCuries (μCi), etc.) in parentheses following the SI units. Abbreviations are authorized. Except for plutonium-239 and plutonium-241, the weight in grams or kilograms of fissile radionuclides may be inserted instead of activity units. For plutonium-239 and plutonium-241, the weight in grams of fissile radionuclides may be inserted in addition to the activity units.
11. Container ID Number/Vehicle Registration Number. Enter the container number or vehicle registration number. A dash (-) or blank space is acceptable before the check digit.
12. Seal Number(s). Enter seal number that is installed on container.
13. Container/Vehicle and Type. Enter type and size of container (20 or 40 ft.) or vehicle description (e.g., HUMVEE).
14. Tare Mass (kg). Enter tare weight of the container.
15. Additional Handling Information. If applicable, provide additional handling instructions. Enter the Emergency Response Guide (ERG) Number(s) of the HAZMAT and attach the specific ERG page to DD Form 2890.
16. If applicable, drivers transporting regulated HAZMAT on European highways must be provided Transport Emergency Cards (TREC or CARDs) in the host nation language which must be attached to the shipping papers.
17. Recipient Organization Receipt. Leave blank as this will be filled out by the receiving organization. Signing this block states that the shipment is in good order, unless otherwise noted.
18. Shipper Preparing This Form. a. Name of Company/Military Unit. Enter the name of the company. b. Name/Status of Declarant/Certifier. Enter the name and status of the person signing the form. c. Place and Date. Enter the place and date the material was certified. d. Signature of Declarant/Certifier. The person who certifies on behalf of DoD that the shipment complies with the applicable regulatory requirements must sign the form.
DOD MULTIMODAL DANGEROUS GOODS DECLARATION

(Continuation Sheet)

1. SHIPPER/CONSIGNEE/SENDER
   Same as box #1 of DD 2890

2. TRANSPORT DOCUMENT NUMBER

3. PAGE OF PAGES

4. SHIPPER'S REFERENCE (TCN)
   A[101][SUN][0XX]

14. SHIPPING MARKS

DESCRIPTION OF GOODS (UN No., PSN, HC, SHC, PG, number and kind of package, and additional information as required by regulation)

<table>
<thead>
<tr>
<th>NET MASS/QTY</th>
<th>GROSS MASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(kg)</td>
<td>(kg)</td>
</tr>
</tbody>
</table>

Continuation of box #14 of the DD 2890 form
DD Form 2781 Job Aid

CONTAINER PACKING CERTIFICATE OR
VEHICLE PACKING DECLARATION

Person responsible for packing the cargo transport unit (vehicle/container) will complete the checklist. Cross out "vehicle" or "container", as applicable. After completion, sign the certificate. (Initial all blocks that apply)

1. It is declared that the undersigned has visually inspected (Container/vehicle) Number: USAU 1234567 (cross out whichever item does NOT apply) and it has been loaded/packed in accordance with the provisions of 5.4.2.1 (IMDG) and CFR 49 and that (indicate “N/A” for all items that do NOT apply):

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>FML</strong> a.</td>
<td>The cargo transport unit (container/vehicle) was clean, dry, and apparently fit to receive the goods.</td>
</tr>
<tr>
<td><strong>N/A</strong> b.</td>
<td>If the consignment includes goods of class 1, other than 1.4, the cargo transport unit (container/vehicle) is structurally serviceable in conformity with 7.4.6 (IMDG).</td>
</tr>
<tr>
<td><strong>FML</strong> c.</td>
<td>Goods that should be segregated, have not been packed together onto or in the cargo transport unit (container/vehicle) (unless approved by the competent authority concerned in accordance with 7.2.2.3 (IMDG)).</td>
</tr>
<tr>
<td><strong>FML</strong> d.</td>
<td>All packages have been externally inspected for damage, leakage, or sifting, and only sound packages have been packed.</td>
</tr>
<tr>
<td><strong>FML</strong> e.</td>
<td>Drums have been stowed in an upright position, unless otherwise authorized by the competent authority. N/A if no drums in the container</td>
</tr>
<tr>
<td><strong>FML</strong> f.</td>
<td>All packages have been properly packed onto or in the cargo transport unit (container/vehicle) and secured.</td>
</tr>
<tr>
<td><strong>N/A</strong> g.</td>
<td>When dangerous goods are transported in bulk packagings, the cargo has been evenly distributed.</td>
</tr>
<tr>
<td><strong>FML</strong> h.</td>
<td>The cargo transport unit (container/vehicle) and packagings therein are properly marked, labeled, and placarded.</td>
</tr>
<tr>
<td><strong>N/A</strong> i.</td>
<td>When solid carbon dioxide (CO2 - dry ice) is used for cooling purposes, the cargo transport unit (container/vehicle) is externally marked or labeled in a conspicuous place, such as the door, and with the words: &quot;DANGEROUS CO2 - GAS (DRY ICE) INSIDE. VENTILATE THOROUGHLY BEFORE ENTERING&quot;.</td>
</tr>
<tr>
<td><strong>FML</strong> j.</td>
<td>The dangerous goods transport document required in 5.4.1 (IMDG) has been received for each dangerous goods consignment packed in the cargo transport unit (container/vehicle).</td>
</tr>
</tbody>
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2. PERSON RESPONSIBLE FOR PACKING

<p>| | | | |</p>
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<thead>
<tr>
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<tbody>
<tr>
<td>a. <strong>PRINTED NAME</strong> (Last, First, Middle Initial)</td>
<td>b. <strong>RANK/GRADE</strong></td>
<td>c. <strong>TITLE</strong></td>
<td>d. <strong>ORGANIZATION</strong></td>
</tr>
<tr>
<td>Little, Francis M.</td>
<td>E-5/Sgt</td>
<td>Sergeant/ Hazmat Certifier</td>
<td>B. Co 1-36 CAV, 4th ID</td>
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<tr>
<td>e. <strong>PLACE PACKED</strong></td>
<td>f. <strong>SIGNATURE</strong></td>
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<td>Fort Hood, TX</td>
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<td>g. <strong>DATE (YYYY/MM/DD)</strong></td>
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<td>20131024</td>
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DD FORM 2781, AUG 2013 PREVIOUS EDITION IS OBSOLETE.

Latest Edition

DOD HAZARDOUS MATERIALS BY VESSEL JOB AID
53
Lithium Battery SP 188 Documentation
LITHIUM BATTERY DOCUMENT TEMPLATE

Use this document as an example/template to comply with the additional documentation requirement for lithium battery shipments which require the lithium battery handling label. Circle either lithium ion or lithium metal according to which type of batteries are being shipped.

TCN:_________________________________________________ Date:____________________

This package contains Lithium Ion / Lithium Metal batteries packaged IAW (Check applicable regulation):

☐ 49 CFR Special Provision 188
☐ IMDG Special Provision 188
☐ ICAO/IATA Packing Instructions 965, 966, 967, 968, 969, 970, Section II
☐ AFMAN 24-204 A3.3.9.2.4

WARNING

A FLAMMABILITY HAZARD EXISTS IF THE PACKAGE IS DAMAGED
THIS PACKAGE MUST BE HANDLED WITH CARE

- If this package is damaged in transportation, it must not be loaded until the condition of the contents can be verified.
- The batteries contained in this package must be inspected for damage and may only be repacked if they are intact and protected against short circuits.
- For more information about the batteries contained in this package contact:

  - Name________________________________________
  - Address_______________________________________
  - Telephone #___________________________________

- DOD NON-EXPLOSIVE HAZMAT CONTACT: 24-hour Emergency Assistance Telephone Numbers:

  - 1-(800) 851-8061 or 1-(804) 279-3131
  - AT SEA COLLECT 1 (804) 279-3131
<table>
<thead>
<tr>
<th>CARGO LOC. NO.</th>
<th>CONTENTS (Description and Nomenclature)</th>
<th>TYPE PKG.</th>
<th>PKG. QTY.</th>
<th>PKG. WEIGHT.</th>
<th>TOTAL PKG. WEIGHT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td></td>
<td>c</td>
<td>d</td>
<td>e</td>
<td>f</td>
</tr>
</tbody>
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14. **CERTIFICATION.** This certifies that items listed hereon are contained within the specified packages.

a. Typed Name  
b. Grade  
c. Title  
d. Signature  
e. Date

DA FORM 5748-R, MAR 89
15. LOAD DIAGRAM (Sketch cargo storage in space below)

16. REMARKS

REVERSE OF DA FORM 5748-R, MAR 89
## DD 1750

<table>
<thead>
<tr>
<th>BOX NO. (a)</th>
<th>CONTENTS - STOCK NUMBER AND NOMENCLATURE (b)</th>
<th>UNIT OF ISSUE (c)</th>
<th>INITIAL OPERATION (d)</th>
<th>RUNNING SPARES (e)</th>
<th>TOTAL (f)</th>
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0. THIS CERTIFIES THAT THE ITEMS LISTED HEREON ARE WITHIN THE SPECIFIED BOXES

<table>
<thead>
<tr>
<th>TYPED NAME AND TITLE</th>
<th>SIGNATURE</th>
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DD Form 1750, SEP 70
NOTES TO CONSIGNEE

The list shown on the reverse side, together with pertinent notations relative to each item included, is furnished for your information and guidance only. In the case of lists covering equipment sets, one copy may be retained for reference and used as a supporting document to property books and the other copy retained with the equipment as a component parts listing. For the purpose of clarification, explanations of the various entries on this Packing List are furnished.

ITEM 1. The number of boxes in a set.

ITEMS 2a. & b. The requisition number appearing on the DD Form 1348-1 or order number will be indicated in this entry. The number so referenced should be cited in any correspondence regarding this shipment.

ITEM 3. The stock number, nomenclature, type number (when available), and the directive under which the end item was assembled. Not applicable to shipments consisting only of miscellaneous repair parts and accessories for the assembly, set or unit in which case this entry will contain such a notation in lieu of the information cited above (See 5.3.1.1).

ITEM 4. Date of preparation.

ITEM 5. Self-explanatory.

Column a. This column will be used when two or more boxes are required for the equipment. It will indicate the number of the container in which the items are packed.

Column b. This space contains a listing of items contained within the box, which are identified by stock number and nomenclature. When an FSN is not applicable, the manufacturer’s code (See 5.2.2.10) and part number shall be used.

NOTE: As required, due to out of stock position within the DOD supply system, a component parts shortage which will hinder operational functions may be waived by higher authority and will be so indicated to the right of the nomenclature. Waivers noted thereon should be requisitioned through normal supply channels.

Column c. Self-explanatory.

Column d. “Initial Operation” - Items which are required for operation of the equipment.

Column e. “Running Spares” - Those items shipped concurrently with the equipment as spare parts and accessories.

NOTE: Columns d and e will be used on an optional basis.

“Total” - Self-explanatory.

Both Emergency Response Guide pages will need to accompany the paperwork. On the top of each ERG page you need to write the UN # and Proper Shipping Name to identify which material this emergency info relates to.
Resources

Title 49 Code of Federal Regulations

USDOT Hazardous Materials Information
- Information 1-800-467-4922

USCG Container Inspection Training & Assistance Team
- Information (405) 954-8985 or CGI-PF-CITAT_MSG@USCG.MIL

International Maritime Organization (IMO)
- http://www.imo.org/

DOD Forms

U.S. Customs

Bureau of Alcohol Tobacco and Firearms (BATF)
- http://www.atf.gov/contact/service-centers/
- Firearms & Explosives Imports Branch (202) 927-8320

United States Postal Service (USPS)
- http://www.usps.com/

United States Department of Agriculture

U.S. Food and Drug Administration
- http://www.fda.gov/ora/import/default.htm

References

Emergency Response Guide Book (current edition)

Code of Federal Regulations, Title 49, Parts 100-185 (current edition)

Department of Defense Regulation 4500.9R Part II, Cargo Movement


International Maritime Dangerous Goods (IMDG) Code (current edition)

SDDC Customer Advisories (CA-10-08/02-0181-A; CA-10-08/02-0182; CA-10-07/29-0177)