

**DEPARTMENT OF DEFENSE  
DEPLOYMENT OF HAZARDOUS MATERIALS  
FIELD GUIDE**

**MILITARY SURFACE DEPLOYMENT  
AND DISTRIBUTION COMMAND  
(MSDDC)**



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



**October 2007**

**DEPARTMENT OF DEFENSE  
DEPLOYMENT HAZARDOUS MATERIAL  
FIELD GUIDE**

Note to user:

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

This guide is intended for use by the HAZMAT trained “user” in the typical unit who is responsible for packaging and documenting hazardous material. The objective of this guide is to eliminate HAZMAT discrepancies occurring during military moves, and to keep the guide as simple as possible. 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 field 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 field guide are always welcome.

Submit comments to CITAT at (405) 954-8985, Fax: 405-954-9217, E-mail: [citat@tsi.jccbi.gov](mailto:citat@tsi.jccbi.gov) or Ms. Lisa Taylor, SDDC at (757) 878-8049, Fax: 757-878-7422, E-mail: [nnvhazmat@sddc.army.mil](mailto:nnvhazmat@sddc.army.mil).

Or mail:

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

SDDC  
ATTN: GDD/Domestic Business Services  
HAZMAT Section  
661 Sheppard Place  
Fort Eustis, VA 23604-1644

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## PURPOSE:

- Assist Department of Defense (DOD) personnel interpret applicable U.S. & International regulations regarding the transportation of DOD hazardous materials (referred to as "Dangerous Goods" under international regulations).
  - Provide accessible HAZMAT guidance 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 all DOD HAZMAT transportation and documentation issues.
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## OBJECTIVE:

The objective of the Hazardous Material Field Guide (HMFG) is to significantly reduce or eliminate recurring issues related to the correct shipment of DOD hazardous materials internationally by sea.

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## APPLICABILITY:

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

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## AUTHORITY:

- This guide is 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, Deployment Support Command (SDDC-DSC), Office of Mobilization and Reserve Affairs.
  - This guide is utilized by the U.S. Coast Guard Redeployment Assistance, Inspection Detachment (RAID) Team, Kuwait and SDDC's HAZMAT personnel.
  - 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 does not alleviate the requirements or responsibility for HAZMAT training and certification.
  - **49 CFR 171.12(b)(3) – 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) [paraphrase].** For example, internal combustion engines, and viscous flammable liquids having a flash point of 23 degrees C or greater and less than or equal to 60.5 degrees C.
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## FIELD GUIDE INSTRUCTIONS

This field guide is meant to be self-explanatory. Common hazardous materials (HAZMAT) addressed in this guide will be updated as frequently as information is gathered from the field. If the HAZMAT you are shipping is not listed, refer to your HAZMAT standards, (i.e. 49 CFR, the IMDG Code, etc.) or your local HAZMAT representative for direction.

THESE REGULATIONS ARE STILL THE ULTIMATE AUTHORITY FOR ALL THE HAZMAT PROCEDURES. HAZMAT officers should have these documents available for reference and guidance. This Field Guide 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. For mil-air refer to Air Force Interservice Manual (AJMAN), 24-204, TM 38-250, NAVSUP PUB 505, MCO P-4030.19H, DLAI 4145.3, Preparing Hazardous Materials for Military Air shipments. For commercial air, refer to International Air Transport Association (IATA) Dangerous Goods Regulation. Henceforth, and for practical reasons only, this field guide will refer to any type of military move as a deployment.

### REFERENCES:

<b>49 CFR:</b>	<b>Current Edition</b>
<b>IMDG Code:</b>	<b>2006 Edition</b>
<b>Emergency Response Guidebook:</b>	<b>2004 Edition</b>

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## IMPORTANT FIELD GUIDE NOTES

**PREPARATION:** It is **EXTREMELY** important that the unit HAZMAT certifier inventory all items in his unit to determine which items are regulated IAW 49 CFR, Part 172.101 or the IMDG Code. 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. The time for unit movement is **NOT** the time to find out your regulated materials are not packaged, labeled or marked IAW to applicable regulation. Some items take several days prior to unit movement to prepare in order to minimize labor and documentation requirements. For example, if you are shipping lithium batteries, you will have to know what types of batteries you have, as well as how many of each type you have. This will take time. This information is needed to determine the gross weight of the lithium being shipped, and whether or not the batteries are regulated at all. The point is -- **A LITTLE ADVANCE PLANNING AND PREPARATION CAN MAKE THE WHOLE UNIT MOVEMENT PROCESS MUCH EASIER.**

**NOTE:** Unit movements are two-way trips. Be sure to have enough packing materials on hand for both.

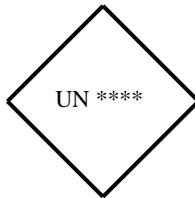
**MILVAN:** All HAZMAT items in this guide are assumed to be loaded into a transport unit.

Examples of transport units would be:

1. Quad-Con
2. Tri-Con
3. MILVAN
4. Freight Container
5. Vehicles
6. BOH units

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**LIMITED QUANTITY:** Limited quantities can only be used in combination packaging (a separate inner and outer package). The total gross weight of the outer package cannot exceed 30 kg (66 lbs). There is no limit to the number of outer packages that can be placed in a MILVAN. The outside package does not have to meet the specification package requirements (i.e. 4G/4D/1A1; however, the outer package must be sturdy). The statement "Limited Quantity" or "LTD QTY" must be annotated on the shippers declaration as part of the proper shipping name description. Packaging of limited quantities are not required to be marked with the proper shipping name provided it is marked with the ID number (UN number). Packages of limited quantities will be marked as below. \*\*\*\* corresponds to the correct UN number within the package.



**Exceptions: The IMDG allows limited quantities of dangerous goods for personal or household use that are packaged and distributed in a form intended or suitable for sale through retail agencies to be exempted from marking of the UN Number on the package. This exception applies to most of the limited quantities that the Army ships. These shipments of limited quantities are still required to be documented on the DD2890 and if the transport unit contains only hazardous materials in limited quantities, the transport unit must be marked with LTD QTY or Limited Quantities marked on both sides and both ends in lettering at least 2.55 inches high. So if you are shipping hazardous materials in limited quantities that are for personal use and are in a form (original packaging) that could be sold on the shelf at a local merchant (spray paint, bug spray, hand sanitizer, etc.), you do not have to place the marking shown above on the package or overpack.**

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**PORT CALL MESSAGES:** The Deployment Support Command issues a Port Call Message for every unit deploying to or from a particular port. This message usually contains specific instructions for deployment, dependent on the port of embarkation, deployment ship, or port of debarkation. The Port Call message specifies items such as vehicle preparation, fuel in tanks, fuel in jerricans, and more. Because Port Call messages are tailored to a specific unit movement, the instructions contained in the message will take precedence over information contained in this field guide - for that specific movement.

**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). **NOTE:** The HMIRS is not used to determine transportation requirements.

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**PERFORMANCE ORIENTED PACKAGING:** The package type 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>. The program contains information about DOD tested packaging configurations conforming to UN Specifications for shipment of non-bulk hazardous materials.

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**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.

Dangerous Goods Shipping Paper/Declaration and Emergency Response Information for Hazardous Materials Transported by Government Vehicles, **DD Form 2890 (Latest Version)**, can be found at the link provided below:

DD Form 2890 (DOD Multimodal Dangerous Goods Declaration by Vessel)  
<http://www.dtic.mil/whs/directives/infomgt/forms/forminfo/forminfo3242.html>

DD Form 2890C (DOD Multimodal Dangerous Goods Declaration Continuation Sheet by Vessel) <http://www.dtic.mil/whs/directives/infomgt/forms/forminfo/forminfo3243.html>

DD Form 2781 (Container Packing Certificate)  
<http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd2781.pdf>

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**ASK FOR ASSISTANCE:** A unit HAZMAT certifier is not expected to know all nuances and subtleties for deploying HAZMAT, which can only be gained through experience. One objective of this field guide 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 glad to help. Here are some points of contact:

**Bill Craze:** U.S. Army LOGSA PSCC, DSN: 795-7070, Comm: (570) 895-7070  
**Bruce Sampson:** U.S. Army LOGSA PSCC, DSN: 795-7147, Comm: (570) 895-7867  
**C.E. Radford:** SDDC Operations, DSN: 826-8040, Comm: (757) 878-8040  
**Lisa Taylor:** SDDC Operations, DSN: 826-8049, Comm: (757) 878-8049

<b>POC</b>	<b>Location</b>	<b>DSN Number</b>	<b>Cell Number</b>
<b>HAZMAT Inspector</b>	<b>Port Al Shuaiba, Kuwait</b>		<b>694-4184</b>
<b>U.S.C.G. Raid Team</b>	<b>Camp Arifjan, Kuwait</b>	<b>972-9147</b>	<b>972-5728</b>
<b>U.S.C.G. Raid Team</b>	<b>Camp Doha, Kuwait</b>		<b>971-8627</b>

<b>Fuel Tanker Purging Location</b>	<b>DSN Number</b>
<b>Camp Arifjan, Kuwait</b>	<b>430-5415/5477</b>
<b>Camp Doha, Kuwait</b>	<b>438-2019</b>

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

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**PREPARE, PREPARE, PREPARE!** This can't be emphasized enough. 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.

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## CONVERSION TABLES

<b>Weight Conversion Constants</b>					
Grams	x 981	= Dynes	Dynes	x .0010193	= Grams
Grams	x 15.432	= Grams	Grams	x .0648	= Grams
Grams	x .03527	= Ounces	Ounces	x 28.35	= Grams
Grams	x .033818	= Fluid Ounces	Fluid ounces	x 29.57	= Grams
Kilograms	x 35.27	= Ounces	Ounces	x .02835	= Kilograms
Kilograms	x 2.20462	= Pounds	Pounds	x .45359	= Kilograms
Metric ton	x 1.10231	= Net Ton	Net ton	x .90719	= Metric Tons
Metric tons	x .984221	= Gross Ton	Gross ton	x 1.01605	= Metric Tons

<b>Length Conversion Constants</b>					
Millimeters	x .039370	= Inches	Inches	x 25.4001	= Millimeters
Meters	x 39.370	= Inches	Inches	x .0254	= Meters
Meters	x 3.2808	= Feet	Feet	x .30480	= Meters
Meters	x 1.09361	= Yards	Yards	x .91440	= Meters
Kilometers	x 3,280.8	= Feet	Feet	x .0003048	= Kilometers
Kilometers	x .62137	= Statute Miles	Statute Miles	x 1.60935	= Kilometers
Kilometers	x .53959	= Nautical Miles	Nautical Miles	x 1.85325	= Kilometers

<b>Temperature Conversion Table</b>			
<b>From</b>	<b>To Fahrenheit</b>	<b>To Celsius</b>	<b>To Kelvin</b>
Fahrenheit (F)	F	$(F - 32) * 5/9$	$(F - 32) * 5/9 + 273.15$
Celsius (C or °)	$(C * 9/5) + 32$	C	C + 273.15
Kelvin (K)	$(K - 273.15) * 9/5 + 32$	K - 273.15	K

**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.

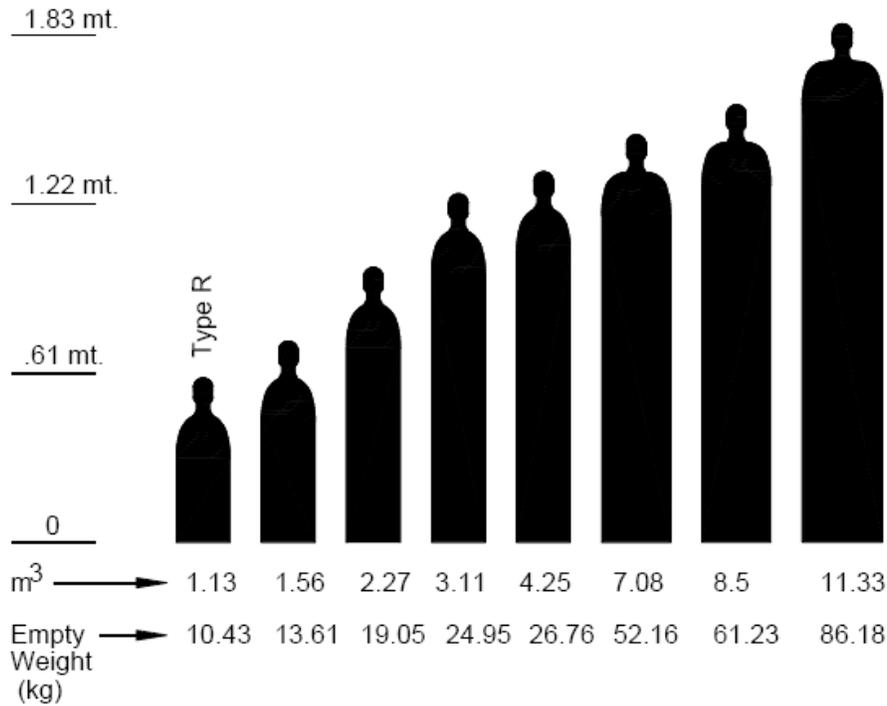


Figure 1. Oxygen cylinder sizes.

**What are common acetylene cylinder sizes?**

See Figure 2.

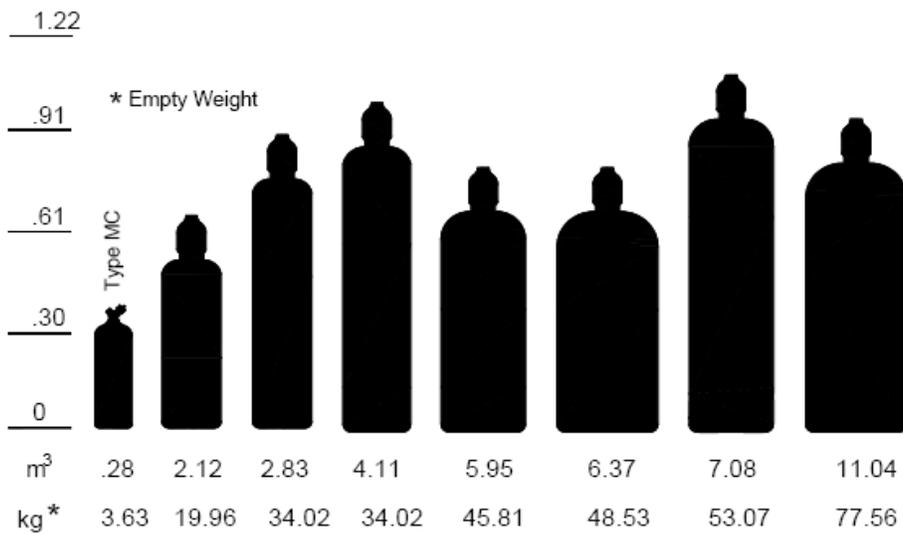


Figure 2. Acetylene cylinder sizes.

# HAZARDOUS MATERIAL PLACARDS LIST

**Reference: 49 CFR 172.500 & IMDG 5.2.2.2.2 & 5.1**

**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 5.1 – Oxidizing Substances**

**Class 5.2 – Organic Peroxides**

**Class 6.1 – (Non Inhalation Hazard) Toxic Substances**

**Class 6.2 – Infectious Substances**

**Class 7 – Radioactive Material**

**Class 8 – Corrosive Substances**

**Class 9 – Misc. Dangerous Substances**

## SEGREGATION TABLE FOR HAZARDOUS MATERIALS, IMDG 7.2.1.16 & 49 CFR, Part 176.83

The table on this page shows the general requirements for segregation between the various classes of regulated hazardous materials. Remember, dangerous goods with subsidiary hazards must be separated to the highest degree of segregation. **NOTE: NO segregation requirements for “Limited Quantities” of HAZMAT in freight containers.**

Class	1.1 1.2 1.5	1.3 1.6	1.4	2.1	2.2	2.3	3	4.1	4.2	4.3	5.1	5.2	6.1	6.2	7	8	9
Explosives 1.1,1.2,1.5	*	*	*	4	2	2	4	4	4	4	4	4	2	4	2	4	X
Explosives 1.3,1.6	*	*	*	4	2	2	4	3	3	4	4	4	2	4	2	2	X
Explosives 1.4	*	*	*	2	1	1	2	2	2	2	2	2	X	4	2	2	X
Flammable gases 2.1	4	4	2	X	X	X	2	1	2	X	2	2	X	4	2	1	X
Non-toxic, non-flammable gases 2.2	2	2	1	X	X	X	1	X	1	X	X	1	X	2	1	X	X
Toxic gases 2.3	2	2	1	X	X	X	2	X	2	X	X	2	X	2	1	X	X
Flammable liquids 3	4	4	2	2	1	2	X	X	2	1	2	2	X	3	2	X	X
Flammable solids(**) 4.1	4	3	2	1	X	X	X	X	1	X	1	2	X	3	2	1	X
Substances liable to spontaneous combustion 4.2	4	3	2	2	1	2	2	1	X	1	2	2	1	3	2	1	X
Substances which, in contact with water, emit flammable gases 4.3	4	4	2	X	X	X	1	X	1	X	2	2	X	2	2	1	X
Oxidizing substances (agents) 5.1	4	4	2	2	X	X	2	1	2	2	X	2	1	3	1	2	X
Organic peroxides 5.2	4	4	2	2	1	2	2	2	2	2	2	X	1	3	2	2	X
Toxic substances 6.1	2	2	X	X	X	X	X	X	1	X	1	1	X	1	X	X	X
Infectious substances 6.2	4	4	4	4	2	2	3	3	3	2	3	3	1	X	3	3	X
Radioactive materials 7	2	2	2	2	1	1	2	2	2	2	1	2	X	3	X	2	X
Corrosives 8	4	2	2	1	X	X	X	1	1	1	2	2	X	3	2	X	X
Miscellaneous dangerous substances 9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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

- 1 1 - "Away from"
- 2 2 - "Separated from"
- 3 3 - "Separated by a complete compartment or hold from"
- 4 4 - "Separated longitudinally by an intervening complete compartment or hold from"
- X 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 Table for Highway/Rail Movement CONUS 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 and in column 10B in 49CFR. The applicable cite should be checked to ensure that additional segregation is not needed for your shipment.**

## **CONTAINER INSPECTION GUIDELINES**

**To be able to certify a container for use, you must complete and pass the Army Ammo-43 Course.**

## MILVAN/CONTAINER PACKING GUIDELINES

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

### TRANSPORT UNITS MUST HAVE THE FOLLOWING ITEMS:

- Have current **DD Form 2890**, DOD Multimodal Dangerous Goods Declaration (5 copies when required).
  - ❖ 1-Inside Container, 1-Outside Container, 1-Port, 1-Hazmat Certifier, 1-Supporting Instillation.  
(Be aware that any containers going to Afghanistan may not have paperwork on the outside)
- Have **Emergency Response Information with basic description and technical name given**, Emergency Response Guidebook page and or MSDS for each commodity (depending on base requirements).
  - ❖ 1-Inside Container, 1-Outside Container, 1-Port, 1-Hazmat Certifier, 1-Supporting Instillation
- Have current **DD Form 2781**, Container Packing Certificate/Vehicle Packing Declaration (5 copies)
  - ❖ 1-Inside Container, 1-Outside Container, 1-Port, 1-Hazmat Certifier, 1-Supporting Instillation.
- Have current **DA Form 5748-R**, Packing List (5 copies when required).
  - ❖ 1-Inside Container, 1-Outside Container, 1-Port, 1-Hazmat Certifier, 1-Supporting Instillation.
- Have current **DD Form 1907**, Sensitive Items (3 copies when required)
  - ❖ 1-Inside Container, 1-Port, 1-Shipper  
(All will have Inventory Attached).
- Have current **DD Form 2282**, Convention for Safe Containers inspection sticker (on the container)
  - ❖ **(MUST BE AMMO-43 CERTIFIED** to inspect/approve containers)
- Not exhibit any significant structural damage (e.g. broken welds, tears, fractures, etc.).

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### EXPECTED CONDITIONS FOR CARGO IN TRANSIT:

- Tilted 30 degrees in all directions (use proper shoring).
- Cooled to the lowest temperature encountered (temperature sensitivity- freezing concerns).
- Heated to 30 degrees above the highest temperature encountered (temperature sensitivity heat concerns).
- Required to support four MILVANS (160 tons) on top of it (container certification).
- Subject to constant vibration throughout the transit (consider fragility of item, use proper packaging).
- Develop its own weather system - humidity trapped in a MILVAN will collect on the ceiling during the day and rain down on the cargo at night. Consider storage length and sensitivity to water damage - use a waterproof cover for sensitive items.

## **PROTECTION OF CARGO:**

- The MILVAN is loaded so the weight is evenly distributed and will not shift (required for highway transport and lifting stability).
  - Proper shoring/tie downs are in place to secure loads.
  - HAZMAT is loaded near the door for inspection and easy access.
  - HAZMAT is available for visual inspection (items are not "buried" under or behind other cargo). If plywood is used for shoring, cut 6" diameter holes to allow access for visual inspection. Bottom line: **You don't want to unpack the container or remove shoring if an inspection is required.**
  - Cargo is secured so it will not move when the container is tilted during lifting or ship movement.
  - Cargo will not crush items below it when twice the weight is applied.
  - Items next to each other will not cause damage when the load is vibrated over time.
  - Wet items are not stowed with dry items.
  - Nothing is leaking, or will leak. (One leaky container may prompt an inspection of all containers).
  - HAZMAT is properly packaged, placarded, labeled, and marked IAW 49 CFR or IMDG.
  - HAZMAT in the MILVAN is **compatible**. Non-compatible items cannot be shipped in the same container, even if they meet the "Away From" distance in 49 CFR.
  - Container packing list **accurately** describes items in the container to prevent confusion whether or not an item is HAZMAT. An item marked "space heater", "engine", or "lantern" may invoke an inspection if it is not listed properly on the DOD Multimodal Dangerous Goods Shipping Declaration, DD Form 2890. If the items can be listed more accurately on the container packing list as "space heater – electric," "engine – new," or "lantern, kerosene - purged" the need for an inspection can be avoided.
  - **ALL CYLINDERS WILL BE VERTICALLY STOWED IN A SIX SIDED WOODEN BOX OR CRADLE, NO METAL TO METAL CONTACT BETWEEN CYLINDERS AND BLOCKING AND BRACING, NO EXCEPTION!**
-

# LIST OF COMMON HAZMAT MATERIALS TRANSPORTED

<u>ITEM #</u>	<u>DOD MATERIAL NAME</u>
1.	<u>1,1,1,2-Tetrafluoroethane</u>
2.	<u>1,1-Difluoroethane</u>
3.	<u>Aerosols (example: Starting fluid, WD40, Spray Paint etc...)</u>
4.	<u>Acetylene, Dissolved</u>
5.	<u>Argon, Compressed</u>
6.	<u>Batteries, Wet, Filled with Acid</u>
7.	<u>Batteries, Wet, Filled With Alkali</u>
8.	<u>Batteries, Wet Non-Spillable</u>
9.	<u>Calcium Hypochlorite, Hydrated</u>
10.	<u>Chlorodifluoromethane</u>
11.	<u>Dangerous Goods in Apparatus (Fuel hose, Stoves, Non Electric Heaters)</u>
12.	<u>Diesel Fuel, Gasoline or Oil (Jerricans)</u>
13.	<u>Engines, Internal Combustion, Flammable Liquid Powered</u>
14.	<u>Ethanol Solutions (Hand Sanitizer)</u>
15.	<u>Ethyl Methyl Ketone</u>
16.	<u>Fire Extinguishers</u>
17.	<u>Flammable Liquid, N.O.S.</u>
18.	<u>Flares or pyrotechnics</u>
19.	<u>Fuel, Aviation, Turbine Engine, (JP-8) (Jerricans)</u>
20.	<u>Fuel Bladder/Fuel Pods</u>
21.	<u>Helium, compressed</u>
22.	<u>Hypochlorite Solutions (Bleach)</u>
23.	<u>Isopropanol (Isopropyl Alcohol)</u>
24.	<u>Lithium Batteries</u>
25.	<u>Methanol</u>
26.	<u>Nitrogen, Compressed</u>
27.	<u>Oxygen, Compressed</u>
28.	<u>Propane</u>
29.	<u>Radioactive Material Excepted. Package-Instruments</u>

## # 1 – 1,1-Difluoroethane

### I. UN Identification Number:

- UN 1030

### II. Packaging:

- Packing Group: N/A
- Limited Quantities: none (L)
- 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 P200

### VI. Emergency Response:

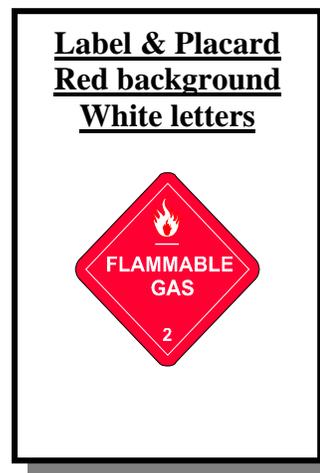
- ERG #: 115
- IMDG: EmS#: F-D,S-U

### VII. Notes:

- Much heavier than air
- No limited quantities amount for international shipments

### VIII. Segregation:

- **1,1-Difluoroethane.** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3, 4.1, 4.2, 5.1, 5.2, 6.1, 7, 8



## # 2 – 1,1,1,2-Tetrafluoroethane

### I. UN Identification Number:

- UN 3159

### II. Packaging:

- Packing Group: N/A (cylinders)
- Limited Quantity (IMDG): 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 **P200**
- Special Packing Provisions: N/A

### VI. Emergency Response:

- ERG #: 126
- IMDG: EmS#: F-C, S-V

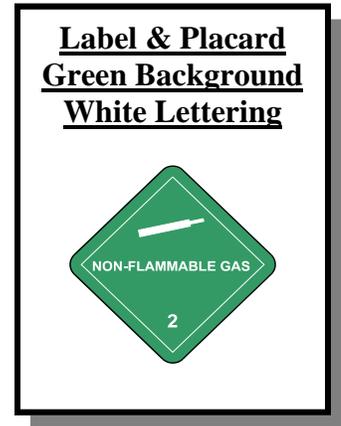
### VII. Notes:

- Non-flammable gas with a mild ether-like odor
- Much heavier than air (3.5)

### VIII. Segregation:

- 1,1,1,2 Tetrafluoroethane must **not** be placed in the same container with the following hazard classes: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3, 4.2, 5.2, 6.2, 7

**NOTE:** No segregation required for “Limited Quantities” within MILVANS



## # 3 – AEROSOLS-(Starting fluid, WD40, Spray paint, etc..)

### I. UN Identification Number:

- UN 1950

### II. Packaging Requirements:

- Packing Group: N/A
- Limited Quantity (IMDG): 1000 ml.(120ml Toxic substance)
- Recommended Pkg: If Aerosol is 1000 cm<sup>3</sup> or less, can package in fiberboard or wooden box
- U.S. Regulation: 49 CFR 173.306

### III. Package Marking:

- **49 CFR:** AEROSOLS, FLAMMABLE, N.O.S, UN 1950
- **IMDG:** AEROSOLS, UN1950
- **LTD QTY Shipments-** UN 1950 within diamond

### IV. Shipping Paper Description (DD Form 2890):

- **49 CFR:** UN 1950, AEROSOLS, FLAMMABLE, 2.1, or UN1950, AEROSOLS, NON-FLAMMABLE, 2.2
- **IMDG:** 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**

### VII. Notes:

- 49 CFR 171.12(b)(17) states an Aerosol must meet the definition for an “aerosol” found in 49 CFR 171.8.
- The vast majority of the aerosols that the Army ships fall well within the limited quantity exception and do not require labeling or placarding if they are being declared as a limited quantity shipment. The shipper is responsible for determining if the aerosol is classified as a 2.1 or 2.2 Hazard Class..

### VIII. Segregation:

- Segregate as a class 9. NO SEGREGATION REQUIREMENTS FOR CLASS 9

**NOTE:** Stow (away from) a minimum of 10 ft from heat sources. Also, stow (separated from) a minimum of 20ft from class 1 explosives (except 1.4). Aerosols MAY NOT be stowed in the same transport unit as class 1 explosives (except 1.4)



## # 4 - Acetylene, Dissolved

### I. UN Identification Number:

- UN 1001

### II. Packaging:

- Packing Group: N/A (cylinders)
- Limited Quantity (IMDG): None allowed
- 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: **US Cylinders must be used**
- 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:

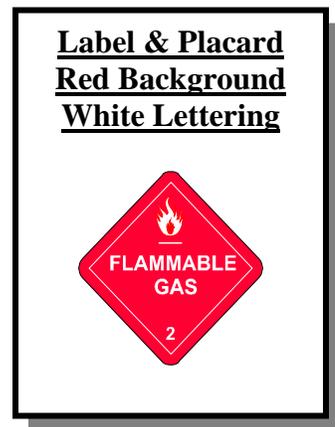
- ERG #: 116
- IMDG: EmS#: **F-D, S-U**

### VII. Notes:

- Empty Acetylene containers, for domestic surface moves (rail/highway) do not have to be placarded (173.29(c)).
- A placard is required for all other instances, i.e., container contains residue, when container is moving by water.

### VIII. Segregation:

- **Acetylene** must **not** be placed in the same container with the following hazard classes: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3, 4.1, 4.2, 5.1, 5.2, 6.2, 7, 8



## # 5 - Argon, Compressed

### I. UN Identification Number:

- UN 1006

### II. Packaging:

- Packing Group: N/A (cylinders)
- Limited Quantity (IMDG): 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: US Cylinders must be used

### VI. Emergency Response:

- ERG #: 121
- IMDG: EmS#: F-C, S-V

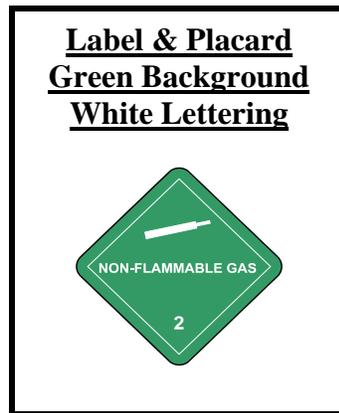
### VII. Notes:

- Inert Gas – Heavier than air (1.4)

### VIII. Segregation:

- **Argon, Compressed** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3, 4.2, 5.2, 6.2, 7

**NOTE:** No segregation required for “Limited Quantities” within MILVANS



## # 6 - Batteries, Wet, Filled With Acid

### I. UN Identification Number:

- UN 2794

### II. Packaging Requirements:

- Packing Group: III
- Limited Quantity (IMDG): 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, III

### 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 degree 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).

### VIII. Segregation:

- **Batteries, wet, filled with acid** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 4.1, 4.2, 4.3, 5.1, 5.2, 6.2, and 7

**Note:** No segregation required for “Limited Quantities” within MILVANS



## # 7 - Batteries, Wet, Filled With Alkali

### I. UN Identification Number:

- UN 2795

### II. Packaging:

- Packing Group: III
- Limited Quantity (IMDG): 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, III

### 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 degree angle with no liquid spillage

### VI. Emergency Response:

- ERG #: **154**
- IMDG: EmS#: **F-A, S-B**

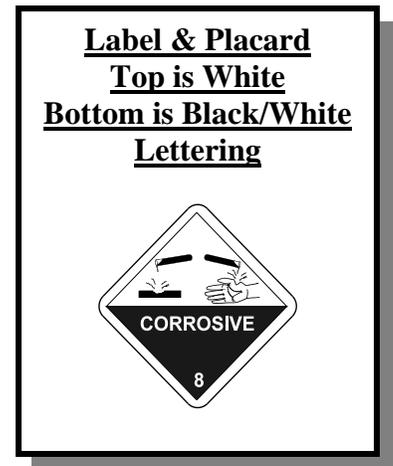
### VII. Notes:

- This item applies only to batteries shipped separately and not installed in a vehicle.
- Batteries installed in vehicles are not regulated (49 CFR 173.220)

### VIII. Segregation:

- **Batteries, wet, filled with alkali** must **not** be placed in the same container with other acids or the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 4.1, 4.2, 4.3, 5.1, 5.2, 6.2, and 7

**Note:** No segregation required for “Limited Quantities” within MILVANS



## # 8 - Batteries, Wet, Non-Spillable

### I. UN Identification Number:

- UN 2800

### II. Packaging Requirements:

- Packing Group: III
- Limited Quantity (IMDG): 5 liters (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, III

### V. IMDG Observations / Information:

- Special Provisions: **29, 238** – Non-spillable batteries are exempt from IMDG if at temperature of 55 degrees C, the electrolyte will not flow from ruptured or cracked case. 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.
- 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:

- 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).
- Non-spillable batteries are excepted from all other requirements of 49 (49 CFR 173.159(d)) if they meet the following conditions: Battery marked "NONSPILLABLE BATTERY" or "NONSPILLABLE" on the battery and the outer package, protected from short circuits and securely packaged; capable of withstanding vibration test/pressure differential tests.

### VIII. Segregation:

- **Batteries, Wet, Non-Spillable** must **not** be placed in the same container with other acids or the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 4.1, 4.2, 4.3, 5.1, 5.2, 6.2, and 7

**NOTE:** If excepted (see VII Notes) no segregation required from other dangerous goods



## # 9 – Calcium Hypochlorite, Hydrated

### I. UN Identification Number:

- UN 2880

### II. Packaging:

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

### III. Package Marking:

- CALCIUM HYPOCHLORITE, HYDRATED, UN2880

### IV. Shipping Paper Description (DD Form 2890):

- UN 2880, CALCIUM HYPOCHLORITE, HYDRATED, 8, II

### 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.

### VIII. Segregation:

- **Calcium Hypochlorite, Hydrated** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 3, 4.1, 4.2, 4.3, 5.2, 6.1, 6.2, 7, 8

**Note:** No segregation required for “Limited Quantities” within MILVANS



## #10 – CHLORODIFLUOROMETHANE (R-22 Freon)

### I. UN Identification Number:

- UN 1018

### II. Packaging:

- Packing Group: N/A (cylinders)
- Limited Quantity (IMDG): 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: **US Cylinders must be used.**
- **P200** – Cylinders or pressure drums
- **See Section 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.

### VIII. Segregation:

- **Chlorodifluoromethane** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3, 4.2, 5.2, 6.2, 7

**Label & Placard**  
**Green background**  
**White letters**

*Note: Refrigerators and air conditioners may be excepted. See notes below.*



# # 11 – Dangerous Goods in Apparatus or Machinery (examples: Fuel Hose, Stoves, Non Electric Heaters, Burner Units)

## I. UN Identification Number:

- UN 3363

## II. Packaging:

- Packing Group: None
- Limited Quantities: See specific LTD QTY for referenced product
- Recommended Pkg: Follow 49 CFR special provision 136 and packaging authorization in 49 CFR 173.222. Fuel hoses must be capped on both ends to prevent leakage. Rags stuffed in the ends are not authorized.

## III. Package Marking:

- DANGEROUS GOODS IN APPARATUS  
UN 3363
- Note: May require **Marine Pollutant** mark (see right) depending on concentrations of pollutants.

## IV. Shipping Paper Description (DD Form 2890):

- UN 3363, DANGEROUS GOODS IN APPARATUS, 9

## V. IMDG Observations / Information:

- Special Provisions: **301** – This entry only applies to Machinery or Apparatus (M&A) containing dangerous substances as a residue or an integral element of the M&A. It shall not be used for M&A for which a Proper Shipping Name already exists in the Dangerous Goods List. M&A 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 M&A shall not exceed the quantity specified in col. 7 of the Dangerous Goods List for each item of dangerous goods contained. If the M&A 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 labels shall be affixed on at least two opposite sides. The transport of dangerous goods in M&A where the quantity of dangerous goods exceeds the quantity specified in col. 7 or the DGL is authorized when approved by the competent authority.
- Packing Instructions: **P907** – If the machinery or apparatus (M&A) is constructed and designed so the receptacles containing the dangerous goods are afforded adequate protection, an outer package is not required.

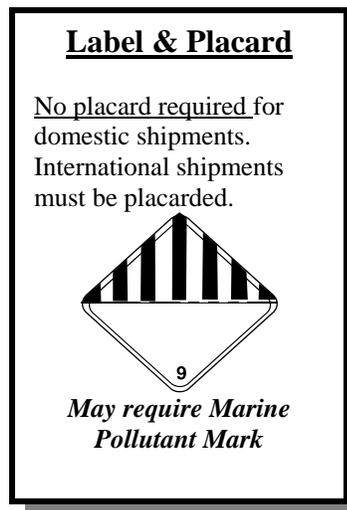
## VI. Emergency Response:

- 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 machinery or apparatus cannot exceed the limited quantity amounts given for that commodity.

## VIII. Segregation: There are no segregation requirements for Class 9 materials



## # 12 - Diesel Fuel or Gas Oil (Jerricans)

### I. UN Identification Number:

- UN 1202

### II. Packaging:

- Packing Group: III
- Limited Quantity (IMDG): 5 Liters
- Recommended Pkg: Jerricans (3H1 or 3H2)  
**Note** - Steel containers not authorized
- U.S. Regulation: 49 CFR 173.203

### III. Package Marking:

- GAS OIL or DIESEL FUEL, UN 1202

### IV. Shipping Paper Description (DD Form 2890) when shipped empty:

- UN 1202, RESIDUE LAST CONTAINED GAS OIL, 3, III (Flashpoint)
- *Or:* UN 1202, RESIDUE LAST CONTAINED, DIESEL FUEL, 3, III (Flashpoint)

### V. IMDG Observations/Information:

- Packing Instructions: As per IMDG **P001**  
**LP01** – Authorized large package 3 cubic meters
- Flashpoint: 23°-61° C (closed cup test)

### VI. Emergency Response:

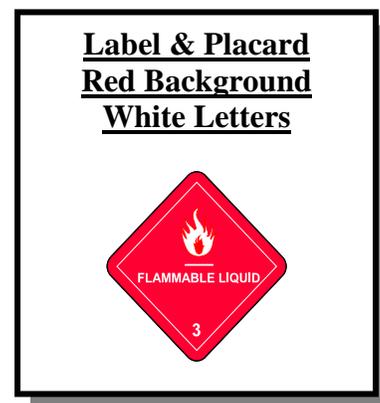
- ERG # : **128**
- IMDG: EmS#: **F-E, S-E**

### VII. Notes:

- Refer to the SDDC Port Call message for specific guidance concerning fuel and fuel containers mounted on deploying vehicles. Often, when jerricans are carried in their vehicle mountings per the SDDC Port Call instructions, no documentation is required.
- **\*\*\* SDDC requirement: Mounting brackets in vehicles must come as original equipment. Jerricans may not be stored in “add-on brackets. \*\*\***
- If a jerrican previously contained fuel it will be shipped as a hazardous material unless it has been certified purged. As it is not cost effective to purge used jerricans should be shipped as a hazardous material. All required labels, markings, and placards must be used. Simply emptying and air drying a fuel can is not sufficient to nullify any hazard as the IMDG code requires.
- Purged fuel containers/tanks are not regulated. However, clearly mark the MILVAN packing list to avoid potential HAZMAT confusion (example: list on packing list as "Fuel Container - Purged" or "Jerrican - Purged"). All HAZMAT markings or labels on the container must be removed.
- Plastic jerricans are only allowed to be shipped for a period of five years from the date of manufacture. The year of manufacture can be found in the performance oriented packaging code (3H1/Y1.4/150/06/USA/VL824), and the month will be marked elsewhere on the package, generally in a dial format indicating the month of manufacture with an arrow.

### VIII. Segregation:

- Gas Oil or Diesel Fuel must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7



# # 13 - Engines, Internal Combustion, (Spare/Used Engines, Generators) OR Vehicle, Flammable Liquid Powered (Gators/ATV)

## I. UN Identification Number:

- UN 3166

## II. Packaging:

- Packing Group: N/A
- Limited Quantity (IMDG): 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

## 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

## V. IMDG Observations/Information:

- Not regulated under IMDG. **49 CFR APPLIES**

## VI. Emergency Response:

- ERG #: 128

## VII. Notes:

- If new, i.e., has not run, no fuel has been added, then the engine is not regulated.
- If applicable, batteries must be securely installed in their mounts (terminals and cables taped w/insulation tape) in an upright position and protected against short circuit.
- If applicable, fuel tanks must be drained, but not dried. Wet fuel residue is permitted up to 17oz (500ml) may remain in the line.
- 49 CFR 171.12(b)(3) says that a material that is designated a hazardous material by 49 CFR and not by IMDG (engines, vehicles) must be shipped in accordance with 49 CFR. Since engines and vehicles are regulated by 49 CFR and not by IMDG you must use 49 when shipping these items. Be sure to check if the following exception applies.
- **49 CFR 176.905** (i) (1) & (2) state “A motor vehicle or mechanical equipment is excepted from the requirements of this subchapter if: it has an internal combustion engine using liquid fuel that has a flash point less than 38 degrees C, the fuel tank is empty, and **the engine is run until it stalls for lack of fuel**....and there are no fuel leaks in any portion of the fuel system.”
- If you run the engine, generator, or vehicle until it stalls, and tape the battery terminals and cables, it can be shipped as general cargo.

## VIII. Segregation: There are no segregation requirements for Class 9 materials



## # 14 - Ethanol Solutions (Hand Sanitizer)

### I. UN Identification Number:

- UN 1170

### II. Packaging:

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

### III. Package Marking:

- ETHANOL SOLUTIONS, UN 1170
- LTD QTY Shipments: UN 1170 within diamond

### IV. Shipping Paper Description (DD Form 2890):

- UN 1170, ETHANOL SOLUTIONS, 3, III (Flashpoint)
- LIMITED QUANTITY IMDG SHIPMENT: UN 1170, ETHANOL SOLUTIONS, 3, III (Flashpoint) LTD QTY

### V. IMDG Observations/Information:

- Packing Instructions: As per IMDG **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**

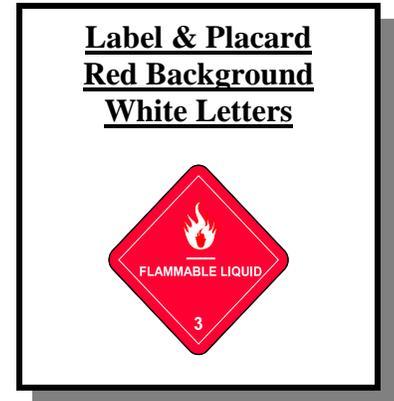
### VII. Notes:

- Colorless, volatile liquid. Miscible with water
- Flashpoint and packing group will change based on the properties of the commodity being shipped. The information provided in the shipping paper description block 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.

### VIII. Segregation:

- **Ethanol Solutions**, must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7

**Note:** No segregation required for “Limited Quantities” within MILVANS



## # 15 - Ethyl Methyl Ketone

### I. UN Identification Number:

- UN 1193

### II. Packaging Requirements:

- Packing Group: II
- Limited Quantity (IMDG): 1 liter (L) per inner package
- Recommended Package: Steel, Aluminum, or Plastic drums
- U.S. Regulation: 49 CFR 173.202

### III. Package Marking:

- ETHYL METHYL KETONE, UN 1193

### IV. Shipping Paper Description (DD Form 2890):

- UN 1193, ETHYL METHYL KETONE, 3, II (-1° C c.c.)

### V. IMDG Observations/Information):

- Packing Instructions: As per IMDG **P001**
- Explosive Limits: 1.8%-11.5%
- Flashpoint: -1 C (closed cup test)

### VI. Emergency Response:

- ERG # : 127
- IMDG: EmS#: F-E, S-D

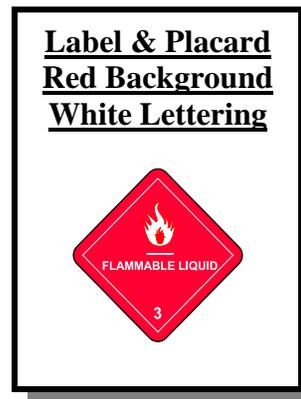
### VII. Notes:

- If greater than or equal to 5000 lbs (2270 Kg), an RQ is required. (Appendix A to 172.101).

### VIII. Segregation:

- **Ethyl Methyl Ketone** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7

**Note:** No segregation required for “Limited Quantities” within MILVANS



## # 16 - Fire Extinguishers

### I. UN Identification Number:

- UN 1044

### II. Packaging:

- Packing Group: N/A (cylinders)
- Limited Quantity (IMDG): 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:

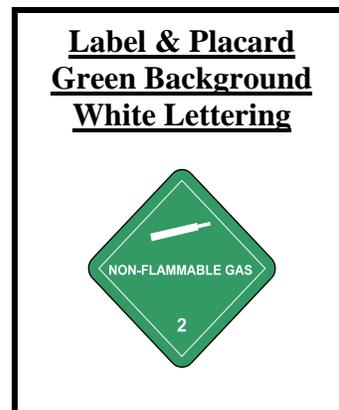
- ERG # : 126
- IMDG: EmS#: F-C, S-V

### 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, cut and roughly shaped to fit the individual fire extinguisher. This is sufficient as long as the box is secured, 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.
- If you are shipping a carbon dioxide fire extinguisher, it must be shipped as UN1013 Carbon Dioxide.

### VIII. Segregation:

- **Fire extinguishers** must **not** be placed in the same container with the following hazard classes: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3, 4.2, 5.2, 6.2, 7



## # 17 - Flammable Liquid, N.O.S.

### I. UN Identification Number:

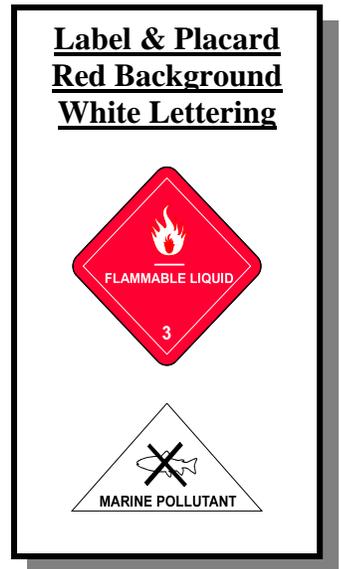
- UN 1993

### II. Packaging:

- Packing Group: See note Sect VII
- Limited Quantities: PG I not allowed, PG II 1 L, PG III 5 L
- Recommended Pkg: Steel Drum (1A1 or 2) or Jerricans
- U.S. Regulation: 49 CFR 173.202

### III. Package Marking:

- FLAMMABLE LIQUID, N.O.S. (**Technical Name**) UN 1993
- **Note:** May require **Marine Pollutant** mark (see right) depending on concentrations of pollutants.



### IV. Shipping Paper Description (DD Form 2890):

- UN 1993, FLAMMABLE LIQUID, N.O.S. (**Technical Name**), 3, \*, (flashpoint)

### V. IMDG Observations/Information:

- Special Provisions: **274, 944** – If the material or substance is a severe marine pollutant, the figure in column 7 (limited quantity), shall be changed to 500 g for solids or 500 ml of liquids.  
PG III-Special provisions 223, 955
- Packing Instructions: As per IMDG **P001**
- Flashpoint: The flashpoint will vary based on the flashpoint of the material.

### VI. Emergency Response:

- ERG #: **128**
- IMDG: EmS#: **F-E,S-E**

### VII. Notes:

- \*Flash point and packing group may change based on chemical properties.
- IMDG & 49CFR require documenting flashpoint if below 61°C closed cup test.
- **49 CFR:** May be Hazardous Substance (RQ) if large enough quantity (see Appendix A to 172.101).

### VIII. Segregation:

- **Flammable Liquid N.O.S.** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7

**Note:** No segregation required for “Limited Quantities” within MILVANS

## # 18 – Flares or Pyrotechnics

### I. UN Identification Number:

- Multiple UN numbers

### II. Packaging:

- Packing Group: II
- Limited Quantities: none
- Recommended Pkg: As per specific product
- U.S. Regulation: 49 CFR 173.62  
When specific use is for the safety of the operator or passengers 49 CFR 173.220 (d) may be used (EX. Road Flares).

### III. Package Marking:

- (Example) FLARES, SURFACE UN 0092

### IV. Shipping Paper Description (DD Form 2890):

- (Example) UN 0092, FLARES, 1.3G, PGII

### V. IMDG Observations / Information:

- See glossary of terms in IMDG Appendix B for “Flares, Aerial and Flares, Surface”.
- Flares or pyrotechnics, which are integral components of the vehicle, engine or mechanical equipment and are necessary for the operation of the vehicle, engine or equipment or for the safety of its operator or passengers, must be securely installed. Such items are not otherwise subject to the requirements. See 49 CFR 173.220(d).
- **P135** –Inner packages: Paper/plastic bags, Receptacles, or Sheets; Intermediate package not necessary; Outer packages: Boxes, Drums

### VI. Emergency Response:

- ERG # : **112 for Divisions 1.1, 1.2, 1.3, 1.5 and 1.6. ERG# 114 for Division 1.4**
- IMDG: EmS#: **F-B, S-X**

### VII. Notes:

- If the requirements of 49 CFR 173.220(d) are met, pyrotechnics are excepted from the rest of 49 CFR (i.e. ejection seat charge). However, if the materials are removed from the aircraft and shipped separately, they must be shipped as an explosive.
- **Due to the variety of materials, the Hazmat liaison should be contacted to determine the additional requirements that need to be followed.**

### VII. Segregation:

- Per 49 CFR Segregation Charts (49 CFR 176.83 and 49 CFR 176.144)
- Per IMDG Code Segregation Charts (7.2.1.16 and 7.2.7.2.1.4)



## # 19 - Fuel, Aviation, Turbine Engine, (JP-8, Jerricans)

### I. UN Identification Number:

- UN 1863

### II. Packaging:

- Packing Group: III
- Limited Quantity (IMDG): 5 Liters (see notes Section VII)
- Recommended Pkg: Plastic Jerricans (3H1 or 3H2) or Steel drums (1A1 or 1A2)
- 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 (38 degrees C closed cup)

### V. IMDG Observations/Information:

- Packing Instructions: As per IMDG P001
- Flashpoint: 38° C closed cup

### VI. Emergency Response:

- ERG # : 128
- IMDG: EmS#: F-E, S-E

### VII. Notes:

- Refer to the SDDC Port Call message for specific guidance concerning fuel and fuel containers mounted on deploying vehicles. Often, when jerricans are carried in their vehicle mountings per the SDDC Port Call instructions, no documentation is required.
- \*\*\* SDDC requirement: Mounting brackets in vehicles must come as original equipment. Jerricans cannot be stored in “add-on brackets. \*\*\*
- If a jerrican previously contained fuel it will be shipped as a hazardous material unless it has been certified purged. As it is not cost effective to purge used jerricans, they should 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.
- Purged fuel containers/tanks are not regulated. However, clearly mark the MILVAN packing list to avoid potential HAZMAT confusion (example: list on packing list as "Fuel Container - Purged" or "Jerrican - Purged"). All HAZMAT markings or labels on the container must be removed.
- Plastic jerricans are only allowed to be shipped for a period of five years from the date of manufacture. The year of manufacture can be found in the performance oriented packaging code (3H1/Y1.4/150/06/USA/VL824), and the month will be marked elsewhere on the package, generally in a dial format indicating the month of manufacture with an arrow.
- Empty jerricans are not allowed to be shipped as a limited quantity.

### VIII. Segregation:

- **Fuel, aviation, turbine engine** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7



## # 20 - Fuel Bladders/Fuel Pods

Contact your Hazmat Liaison if you have any doubts about the shipment.

### I. UN Identification Number:

- UN 1863 or 1202

### II. Packaging:

- Packing Group: III
- Limited Quantity (IMDG): 5 Liters
- Recommended Pkg: Approved IBC
- U.S. Regulation: 49 CFR 173.203

### III. Package Marking:

- FUEL AVIATION, TURBINE ENGINE, UN 1863
- or
- DIESEL FUEL, UN1202

### IV. Shipping Paper Description (DD Form 2890):

- UN 1863, RESIDUE LAST CONTAINED, FUEL AVIATION, TURBINE ENGINE, 3, III (38° C c.c.)
- or
- UN 1202, RESIDUE LAST CONTAINED, DIESEL FUEL, 3 (Flashpoint)

### V. IMDG Observations/Information:

- Packing Instructions: As per IMDG **P001**

### VI. Emergency Response:

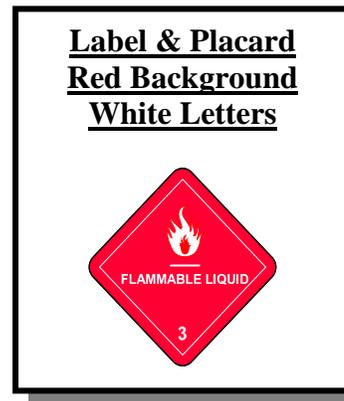
- ERG #: 128
- IMDG: EmS#: F-E, S-E

### VII. Notes:

- If the fuel bladders contain any fuel, or previously contained fuel, they must be placed in appropriate bulk packages, i.e. Intermediate Bulk Containers, marked, labeled, the freight container must be placarded, and shipping papers must be done.
- Shipping a used fuel bladder that has not been purged will prove to be extremely difficult. IBC's are expensive, and not commonly found on Army installations.
- Currently the Port of Al Shuaiba requires the purging of all tankers and fuel bladders for redeploying units.

### VIII. Segregation:

- **Class 3 Flammable Liquids** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7



## # 21 – Helium, Compressed

### I. UN Identification Number:

- UN 1046

### II. Packaging:

- Packing Group: N/A (cylinders)
- Limited Quantity (IMDG): 120 milliliters (ml)
- RecommendedPkg: Steel Cylinder (8,8AL)
- U.S. Regulation: 49 CFR 173.302 & 306, 314

### 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: **US Cylinders must be used**

### VI. Emergency Response:

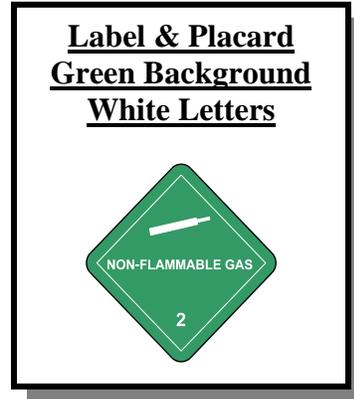
- ERG # : **121**
- IMDG: EmS#: **F-C, S-V**

### VII. Note:

- Inert gas – Much lighter than air (0.14)

### VIII. Segregation:

- **Helium, Compressed** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3, 4.2, 5.2, 6.2, 7



## #22 – Hypochlorite Solutions (Bleach)

### I. UN Identification Number:

- UN 1791

### II. Packaging:

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

### III. Package Marking:

- HYPOCHLORITE SOLUTIONS, UN1791

### IV. Shipping Paper Description (DD Form 2890):

UN1791, HYPOCHLORITE SOLUTIONS, 8, III

### V. IMDG Observations/Information:

- Packing Instructions: As per IMDG 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 gasses. Mildly corrosive to most metals. Causes burns to skin, eyes, and mucous membranes.

### VIII. Segregation:

- **Hypochlorite Solutions** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 4.2, 4.3, 5.1, 5.2, 6.2, 7

**Note:** No segregation required for “Limited Quantities” within MILVANS



## # 23 – Isopropanol (Isopropyl Alcohol)

### I. UN Identification Number:

- UN 1219

### II. Packaging:

- Packing Group: II
- Limited Quantities: 1 liter (L) per inner package
- Recommended Pkg: Steel, Aluminum, or Plastic drums
- U.S. Regulation: 49 CFR 173.202

### III. Package Marking:

- ISOPROPANOL, UN 1219

### IV. Shipping Paper Description (DD Form 2890):

- UN 1219, ISOPROPANOL, 3, II FP12°C

### V. IMDG Observations/Information:

- Packing Instructions: As per IMDG **P001**
- Explosive. Limits: 2.0%-12%
- Flashpoint: 12° C (closed cup test)

### VI. Emergency Response:

- ERG #: **129**
- IMDG: EmS#: **F-E, S-D**

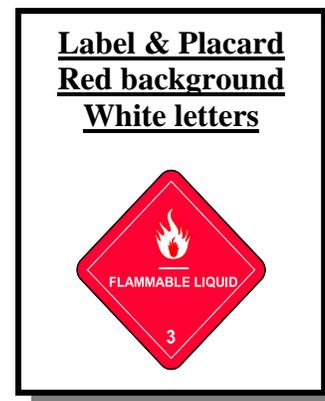
### VII. Notes:

- Colorless mobile liquid, miscible with water.

### VIII. Segregation:

- **Isopropanol** must **not** be placed in the same container with the following hazard classes: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7

**Note:** No segregation required for “Limited Quantities” within MILVANS



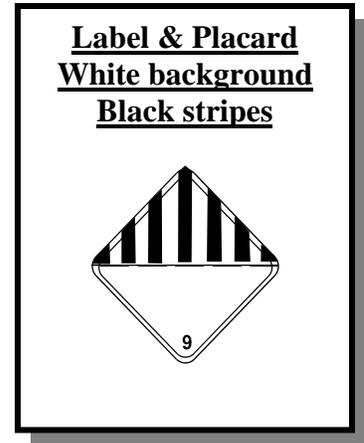
## # 24 - Lithium Batteries

### I. UN Identification Number:

- UN 3090

### II. Packaging:

- Packing Group: II
- Limited Quantities: None
- Recommended Pkg:
  - Original manufactures packaging is preferred
  - Up to 250 Kg use Fiberboard box 4G
  - Over 250 Kg use Wooden Box 4C/D/F
- U.S. Regulation: 49 CFR 173.185



### III. Package Marking:

- LITHIUM BATTERIES, UN 3090

### IV. Shipping Paper Description (DD Form 2890):

- UN3090, LITHIUM BATTERIES, 9, II

### V. IMDG Observations/Information:

- Special Provisions: **188** – Lithium batteries are not subject to other provisions of this Code if they meet the following: For a lithium metal or lithium alloy cell, the lithium content is not more than 1 gram, and for a lithium-ion cell, the equivalent lithium content is not more than 1.5 grams; For a lithium metal or lithium alloy battery, the total lithium content is not more than 2 g, and for a lithium-ion battery is not more than 8 g; batteries are separated to prevent short circuits and are packed in strong packages, except when installed in equipment; each package containing more than 12 lithium batteries shall also: have special procedures to be followed in the event the package is damaged; Each shipment shall be accompanied with a document indicating packages contain lithium batteries and each package is capable of withstanding a 1.2 m drop test without damage to the batteries and without shifting the contents; packages may not exceed 30 kg; **230** – each cell or battery incorporates safety venting device, or is designed to not violently rupture under normal transport conditions, each cell and battery is equipped with an effective means of preventing external short circuits, and each battery containing cells or series of cells connected in parallel is equipped with effective means to prevent reverse current flow (i.e. diodes, fuses),

### IMDG Lithium Battery Shipments

Lithium Battery Max. Lithium Content	Lithium-Ion Battery Max. Lithium Content	Hazard Class	Special Package Marking
2.0 Grams	8.0 Grams	Excepted	Yes (see note 2)
> 2.0 Grams	>8.0 Grams	Class 9	Yes (PSN,UN3090)

- Packing Instructions: **P903** – When lithium batteries are packed with equipment, they shall be packed in inner fiberboard packages meeting the provisions for packing group II. When lithium batteries included in class 9 are contained in equipment, the equipment shall be packed in strong outer packages in such a manner as to prevent accidental operation during transport.
- Must meet multiple requirements of 49 CFR 173.185 .

## # 24 - Lithium Batteries (cont.)

### VI. Emergency Response:

- ERG # : 138
- IMDG: EmS#: F-A, S-I

### VII. Notes:

- Domestic shipments of lithium batteries must be prepared in accordance with **173.185**. 49 CFR allows more lithium per battery to be shipped as an excepted package than the IMDG. Check 173.85(b) &(c) for allowable lithium contents for domestic shipments.
- If you are shipping batteries that, **based on their lithium content, have been determined to be excepted from the regulations** (general cargo) there are still several provisions of the IMDG and 49 CFR that have to be met. Once again, the following requirements are for excepted shipments of lithium batteries only.
  1. A package containing 12 or more excepted lithium batteries must be marked to indicate that it contains lithium batteries and that special procedures must be followed in the event the package is damaged. The statement “Lithium Batteries- If package is damaged, batteries must be quarantined, inspected and repacked”, or “Lithium-Ion Batteries- If package is damaged batteries must be quarantined, inspected and repacked” depending on the type of battery being shipped, is an acceptable marking.
  2. Packages that contain a shipment of excepted lithium batteries must be marked “PRIMARY LITHIUM BATTERIES- FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT.”
  3. Each shipment must be accompanied by a document that details special procedures to be followed in the even a package is damaged. (MSDS or ERG with the basic description listed)
  4. Batteries must be packaged securely in strong outer packages.
  5. Except for lithium batteries packed with equipment, packages may not exceed 30kg (66 lbs).
- Keep new batteries in their original battery package until ready for use. Keep original battery package to use for expended batteries.
- The practical difference between a Lithium battery and a Lithium-ion battery is that most Lithium-ion batteries are rechargeable. From a chemical standpoint Lithium batteries contain lithium in its metal form.. Lithium-ion batteries use lithium compounds which are much more stable than the pure form of lithium. All of the batteries listed in the following chart are lithium batteries.
- **See next page for lithium weights by battery type.** This list is definitely not all inclusive. If you don't see a battery model number on the list you will have to do some research to find out the lithium content of the battery in order to determine the shipping requirements. This information can be obtained from the battery manufacturer or possibly from an MSDS.

### VIII. Segregation: There are no segregation requirements for Class 9 materials.

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Type or Part No.	MAX Battery Li Content	DOT Class	UN ID	Gross Weight
UB1426, LM-04/11, 600164	0.3 g	exempt		
U9VL		exempt		
TO6/51, LS14500	0.7 g	exempt		
TL-2100/T	0.5 g	exempt		
LSH-20, LSH20BA	4.0 g	9	UN 3090	.1 kg
LSH14BA	1.7 g	exempt		
LS14250, 185-5643, 47B198P004	0.3 g	exempt		
L92	0.5 g	exempt		
L91	0.98 g	exempt		
DL1/3N, CR1/3N, 2L76	0.06g	exempt		
CR2025; DL2025	0.08g	exempt		
CR123A, DL123A, K123LA	0.49 g	exempt		
BB-2847A/U	3.96 g	exempt(Li Ion)		
BB-2847/U	2.97 g	exempt(Li Ion)		
BB-2800/U	2.16 g	exempt(Li Ion)		
BB-2600A/U	2.88 g	exempt(Li Ion)		
BB-2600/U	2.76 g	exempt(Li Ion)		
BB-2590/U	15.84	9	UN 3090	1.36 kg
BB-2588/U	2.88 g	exempt		
BB-2557/U	5.76 g	exempt		
BA-5847B/U	5.0 g	9	UN 3090	.25 kg
BA-5800A/U	5.0 g	9	UN 3090	.20 kg
BA-5699/U	51.5 g	9	UN 3090	1.59 kg
BA-5600A/U	7.5 g	9	UN 3090	.7 kg
BA-5599A/U	7.5 g	9	UN 3090	.45 kg
BA-5598A/U	14 g	9	UN 3090	.66 kg
BA-5598/U	14 g	9	UN 3090	.66 kg
BA-5590B/U	25 g	9	UN 3090	1.02 kg
BA-5590A/U	25 g	9	UN 3090	1.02 kg
BA-5588A/U	6.8 g	9	UN 3090	.29 kg
BA-5588/U	6.8 g	9	UN 3090	.63 kg
BA-5567A/U	0.35 g	exempt		0.64 kg
BA-5557A/U	8 g	9	UN 3090	.41 kg
BA-5557/U	9 g	9	UN 3090	.41 kg

Type or Part No.	MAX Battery Li Content	DOT Class	UN ID	Gross Weight
BA-5390A/U	34 g	9	UN 3090	1.36 kg
BA-5390/U	34.0 g	9	UN 3090	1.36 kg
BA-5380/U	6.8 g	9	UN 3090	.40 kg
BA-5374/U	0.98 g	exempt		
BA-5372/U	0.28 g	exempt		.002 kg
BA-5368/U	1.2 g	exempt		
BA-5367/U	0.35 g	exempt		
BA-5360/U	9.7 g	9	UN 3090	.4 kg
BA-5347/U	5.0 g	9	UN 3090	.30 kg
BA-5316/U			UN 3090	
BA-5312/U	6.0 g	9	UN 3090	.27 kg
BA-5290/U	29.4 g	9	UN 3090	1.02 kg
BA-5112A/U	3.5 g	9	UN 3090	.20 kg
BA-5093A/U	20 g	9	UN 3090	.64 kg
BA-5093/U	20 g	9	UN 3090	.64 kg
3B35-CSC93-D	4.6 g	9	UN 3090	.12 kg
1794AS0953	5.88g	9	UN 3090	.27 kg

## # 25 - Methanol

### I. UN Identification Number:

- UN 1230

### II. Packaging:

- Packing Group: II
- Limited Quantities: 1 liter (L) per inner package
- Recommended Pkg: Steel, Aluminum, or Plastic drums
- U.S. Regulation: 49 CFR 173.202

### III. Package Marking:

- METHANOL, UN 1230

### IV. Shipping Paper Description (DD Form 2890):

- UN1230, METHANOL, 3, (6.1), II, (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: As per IMDG **P001**
- Explosive. Limits: 6.0%-36.5%
- Flashpoint: 12° C (closed cup test)

### VI. Emergency Response:

- ERG #: **131**
- IMDG: EmS#: **F-E, S-D**

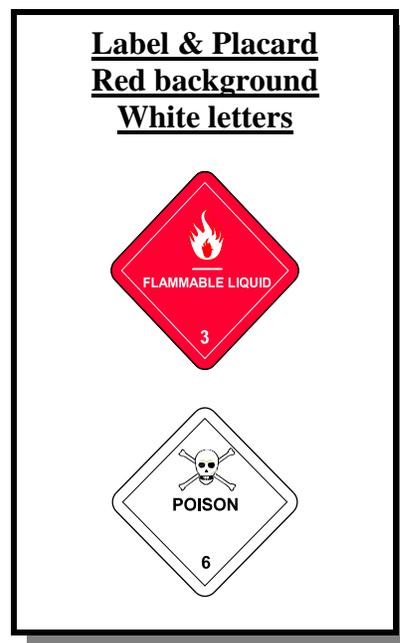
### VII. Notes:

- IMDG & 49CFR require flashpoint if below 61°C c.c.
- If greater than or equal to 5000 lbs (2270 Kg), a RQ is required
- Miscible with water
- Toxic if swallowed, may cause blindness
- Avoid skin contact

### VIII. Segregation:

- **Methanol** must **not** be placed in the same container with the following hazard classes: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 4.2, 4.3, 5.1, 5.2, 6.2, 7

**Note:** No segregation required for “Limited Quantities” within MILVANS



## # 26 - Nitrogen, Compressed

### I. UN Identification Number:

- UN 1066

### II. Packaging:

- Packing Group: N/A (cylinder)
- Limited Quantities: 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. IDMG Information:

- Packing Instructions: US Cylinders must be used

### VI. Emergency Response:

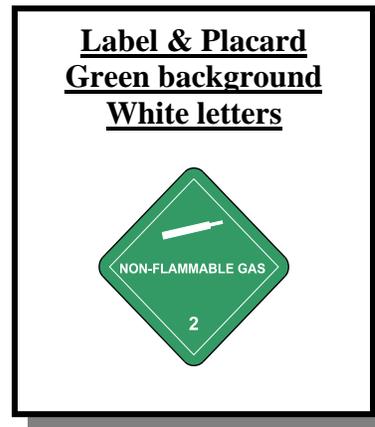
- ERG #: 121
- IMDG: EmS#: F-C, S-V

### VII. Notes:

- Non-Flammable, odorless gas
- Lighter than air (0.7)
- Nitrogen in weapons is normally not regulated

### VIII. Segregation:

- **Nitrogen, compressed** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3, 4.2, 5.2, 6.2, 7



## # 27 - Oxygen, Compressed

### I. UN Identification Number:

- UN 1072

### II. Packaging:

- Packing Group: N/A (cylinder)
- Limited Quantities: N/A
- 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. IDMG Information:

- Packing Instructions: **US Cylinders must be used P200(s)** Not contaminated with oil, pressure may not exceed 3000 psi @70 degrees F

### VI. Emergency Response:

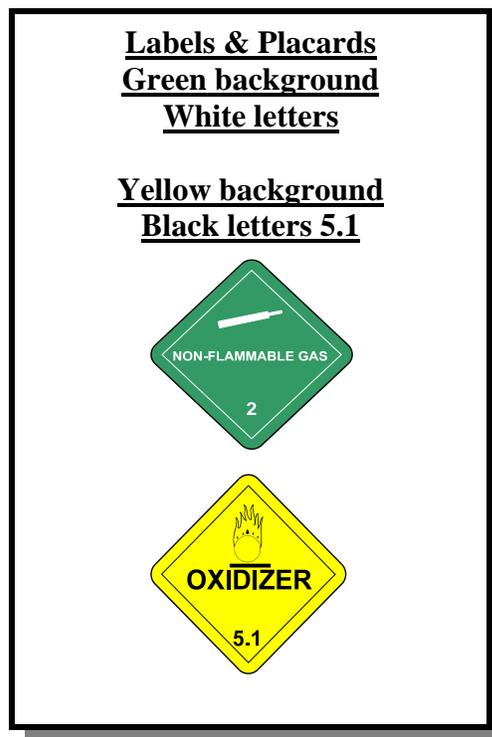
- ERG # : 122
- IMDG: EmS#: **F-C, S-W**
- Must use both "non-flammable gas" and "oxidizer" (subsidiary risk) label/placard. **For domestic transportation only**, the "Oxygen Placard/Label" may be used in lieu of both the 2.2 and 5.1 placards/labels

### VII. Notes:

- Non-flammable, odorless gas
- Strong oxidizing agent
- Heavier than air (1.1)

### VIII. Segregation:

- **Oxygen, compressed** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 3, 4.1, 4.2, 4.3, 5.2, 6.2, 7, 8



## # 28 - Propane

### I. UN Identification Number:

- UN 1978

### II. Packaging:

- Packing Group: N/A (cylinder)
- Limited Quantities: N/A
- 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: **US Cylinders must be used**
- Explosive. Limits: 2.3%-9.5%

### VI. Emergency Response:

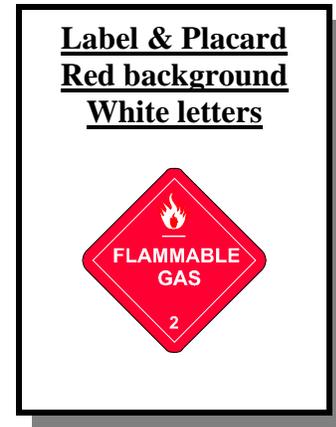
- ERG #: **115**
- IMDG: EmS#: **F-D, S-U**

### VII. Notes:

- Flammable hydrocarbon gas
- Heavier than air (1.56)
- For domestic transportation only, the identification number “UN 1075” may be used

### VIII. Segregation:

- **Propane** must **not** be placed in the same container with the following hazard classes:  
1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3, 4.1, 4.2, 5.1, 5.2, 6.2, 7, 8



## # 29 - Radioactive Material, (Excepted Package - Instruments)

### I. UN Identification Numbers:

- UN 2911

### II. Packaging:

- Packing Group: None
- Limited Quantities: None
- Recommended Pkg: IMDG Section 4.1.9
- U.S. Regulation: 49 CFR 173.422 & 424

### III. Package Marking: (IMDG 2.7.9.1)

- UN 2911
- Unit Name

#### Label & Placard

No label or placard required.

Package must be marked as stated in Section III.

### 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 2.7.7.1.
- 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 most likely "excepted package". As such, the documentation and segregation requirements are significantly relaxed. 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.
- Some kits are regulated, make sure you check with the HAZMAT liaison, any radioactive material or source that has a specific activity of 70 Bq or greater must be shipped in accordance with applicable regulations.
- If further assistance is required, you may refer to the item's original shipping documentation, call your installation HAZMAT/Radiation Protection Officer, or call the DA HAZMAT liaison, Art Miekowski at the U.S. Army Materiel Command Logistics Support Activity, Tobyhanna, PA, 570-895-7867/7070 (DSN 795-7867/7070).
- The term **“Excepted Package”** regarding UN2910 & UN2911 means the items are excepted from segregation from other hazardous materials, and container placarding requirements, reference IMDG Chapter 2.7.9 for the list of requirements that have to be met.
- The radioactive isotope and a description of the physical and chemical form of the material should be placed after the basic shipping description. Isotopes and forms for known radioactive equipment are provided on the next page.

### VIII. Segregation:

- These items are excepted from segregation from other hazardous materials

# Common Unit Radioactive Equipment

ITEM	Weight	Isotope	Activity	UN Code
ICAM	1.81 kg	Ni-63	370 MBq	UN 2911
M22 ACADA	6.8 kg	Ni-63	740 MBq	UN 2911
AN/PDR-77	6.35 kg	Th-232	2.2 KBq	UN 2911
M43A1/M8	10 kg	Am-241	9.25 MBq	UN 2911
AN/VDR 2	6.35 kg	Th-232	2.2 KBq	UN 2911
AN/PDR-75	11.2 kg	NOT REGULATED		
AN/UDR-13	241 g	NOT REGULATED		
M256A1	1.2 lbs	NOT REGULATED		

## Shipping Paper Entries

UN 2911, Radioactive Material, Excepted Package - Instruments,  
Class 7, (Ni-63, plated, solid)  
x6 ea ICAMS

GW= 10.86 kg [=1.81(weight per package)x6(# of ICAMS)]

Net Mass= 2200 MBq [=370MBq (Activity per package)x6 (# of ICAMS)]

UN 2911, Radioactive Material, Excepted Package - Instruments,  
Class 7, (Ni-63, foil, solid)  
x4 ea M22 ACADAs

UN 2911, Radioactive Material, Excepted Package - Instruments, Class 7,  
(Th-232, foil, solid)  
x10 ea AN/PDR-77

UN 2911, Radioactive Material, Excepted Package - Instruments,  
Class 7, (Am-241, special form)  
x5 ea M43A1/M8

UN 2911, Radioactive Material, Excepted Package - Instruments, Class 7,  
(Th-232, foil, solid)  
x2 ea AN/VDR-2

## **HAZMAT Documentation**

The 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. The primary document used to identify hazardous materials and communicate the hazard is DOD Form 2890. DOD HAZMAT documentation must also contain emergency response information. Emergency response telephone numbers are provided on the DD Form 2890. A container packing certificate, DD2781, is required for hazmat shipments. The Unit Movement Officer 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. 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/forminfo3242.html>

DD Form 2890C (DOD Multimodal Dangerous Goods Declaration Continuation Sheet by Vessel) <http://www.dtic.mil/whs/directives/infomgt/forms/forminfo/forminfo3243.html>

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.dljs.dla.mil/hmirs> then click on HMIRS Registration Forms in order to access authorization for registration.  
Emergency Response Guide Book <http://hazmat.dot.gov/pubs/erg/gydebook.htm>

Following are examples of DD forms and guides, which can assist, and are needed when deploying HAZMAT.

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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 79/78, Annex III, Regulation 4.			
1. SHIPPER/CONSIGNOR/SENDER		2. TRANSPORT DOCUMENT NUMBER	3. PAGE 1 OF PAGES
5. FREIGHT FORWARDER'S REFERENCE	6. CONSIGNEE		7. CARRIER (To be completed by the carrier)
<b>24-HOUR EMERGENCY ASSISTANCE TELEPHONE NUMBERS:</b> DOD NON-EXPLOSIVE HAZMAT: 1-800-861-8061 AT SEA: COLLECT (804) 279-3131 DOD HAZ CLASS 1 (EXPLOSIVES) ONLY: COLLECT (703) 697-0218/0219 CHEMICAL/BIOLOGICAL WARFARE MATERIAL: (410) 436-3044/7211/6455 AFTER DUTY HOURS: (410) 436-2148 - Ask for TEU S3 DOD SECURE HOLDING: 1-800-524-0331 OIL/CHEMICAL SPILLS: NRC & TERRORIST HOTLINE: 1-800-424-8802 AT SEA: COLLECT 202-267-2675 DOD RADIOACTIVE MATERIALS: COLLECT ARMY: (703) 697-0218 USAF: (202) 767-4011 DLA: 1-800-861-8061 AT SEA: COLLECT 1-804-279-3131 USN/MC: Use 24-hour emergency response number provided by activity.			
8. THIS SHIPMENT IS WITHIN THE LIMITATIONS PRESCRIBED FOR: (X as applicable)			9. CONTAINER PACKING CERTIFICATE OR VEHICLE PACKING DECLARATION, DD FORM 2781, IS ATTACHED (X if applicable)
<input type="checkbox"/> MILITARY VESSEL	<input type="checkbox"/> COMMERCIAL VESSEL	<input type="checkbox"/> HIGHWAY/RAIL	
10. VOYAGE DOCUMENT NUMBER AND SAILING DATE (To be completed by the carrier)		11. PORT/PLACE OF LOADING	
12. PORT/PLACE OF DISCHARGE		13. DESTINATION	
14. SHIPPING MARKS	DESCRIPTION OF GOODS (UN No., PSN, HC, SHC, PG, number and kind of package, and additional information as required by regulation)		NET MASS/QTY (kg/l)
			GROSS MASS (kg)
15. CONTAINER IDENTIFICATION NO./VEHICLE REGISTRATION NO.	16. SEAL NUMBER(S)	17. CONTAINER/VEHICLE AND TYPE	18. TARE MASS (kg)
19. ADDITIONAL HANDLING INFORMATION			
20. RECEIVING ORGANIZATION RECEIPT Received the above number of packages/containers/trailers in apparent good order and condition, unless stated hereon:			
a. RECEIVING ORGANIZATION REMARKS			
b. HAULER'S NAME	c. VEHICLE REGISTRATION NO.	d. SIGNATURE AND DATE	e. DRIVER'S SIGNATURE
21. SHIPPER PREPARING THIS FORM			
SHIPPER'S DECLARATION. I hereby declare that the contents of this consignment are fully and accurately described above by the Proper Shipping Name, and are classified, packaged, marked, and labeled/placarded and are in all respects in proper condition for transport according to the international and national government regulations.			
a. NAME OF COMPANY/MILITARY UNIT		b. NAME/STATUS OF DECLARANT/CERTIFIER	
c. PLACE AND DATE		d. SIGNATURE OF DECLARANT/CERTIFIER	

DD FORM 2890, OCT 2006

PREVIOUS EDITION IS OBSOLETE.

Reset

Adobe Professional 7.0

**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/or 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. Shipment 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/Customs 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.**

1. Enter the UN Number preceded by the letters "UN".
2. Enter the Proper Shipping Name.
3. Enter the primary hazard class and division number. For Class 1 material include the compatibility group letter. Any assigned subsidiary hazard class or division will be entered following the primary class in parenthesis.
4. Enter the Packing Group when assigned.
5. Enter additional information from the IMDG, Chapter 5.4, as required (i.e. Marine Pollutant, Flashpoint, Toxic Inhalation Hazard, RQ, etc.).
6. Enter the number and kind of packaging.

**Item 14. Shipping Marks** (Continued).

7. Enter the total quantity of dangerous goods of each item of HAZMAT bearing a different Proper Shipping Name, UN Number or Packing Group. For Class 1 material this quantity will be the net explosive mass/weight (NEW) (number of rounds shipped X NEW per round = net mass/weight/qty). Gross mass/weight is the total weight of the shipment including packaging and related items, e.g., dunnage. Net mass is expressed in kilograms or liters, and gross mass in kilograms.

8. Enter the gross weight of the shipment for each item of HAZMAT bearing a different Proper Shipping Name, UN Number or Packing Group.

**Item 15. Container ID Number/Vehicle Registration Number.** Enter ID number of the container or vehicle registration number. A dash (-) or blank space is acceptable before the check digit.

**Item 16. Seal Number(s).** Enter seal number installed on container.

**Item 17. Container/Vehicle and Type.** Enter type and size of container (20 or 40 ft.) or vehicle description (e.g., HUMVEE).

**Item 18. Tare Mass (kg).** Enter tare weight of the container.

**Item 19. Additional Handling Information.** Optional.

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.

If applicable, drivers transporting regulated HAZMAT on European highways must be provided Transport Emergency Cards (TREM CARDS) in the host nation language which must be attached to the shipping papers.

**Item 20. Receiving 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.

**Item 21. Shipper Preparing This Form.**

- a. Name of Company/Military Unit. Enter the name of 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.

DD FORM 2890. OCT 2006

**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.

**1. It is declared that the undersigned has visually inspected (Container/Vehicle) Number: \_\_\_\_\_ (cross out whichever item does NOT apply) and it has been loaded/packed in accordance with the provisions of 5.4.2.1 (IMDGC) and CFR 49 and that (indicate "N/A" for all items that do NOT apply):**

- a. The cargo transport unit (container/vehicle) was clean, dry, and apparently fit to receive the goods.
- b. 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 (IMDGC).
- c. 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 (IMDGC)).
- d. All packages have been externally inspected for damage, leakage, or sifting, and only sound packages have been packed.
- e. Drums have been stowed in an upright position, unless otherwise authorized by the competent authority.
- f. All packages have been properly packed onto or in the cargo transport unit (container/vehicle) and secured.
- g. When dangerous goods are transported in bulk packagings, the cargo has been evenly distributed.
- h. The cargo transport unit (container/vehicle) and packagings therein are properly marked, labeled, and placarded.
- i. When solid carbon dioxide (CO<sup>2</sup> - 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: "**DANGEROUS CO<sup>2</sup> - GAS (DRY ICE) INSIDE. VENTILATE THOROUGHLY BEFORE ENTERING**".
- j. The dangerous goods transport document required in 5.4.1 (IMDGC) has been received for each dangerous goods consignment packed in the cargo transport unit (container/vehicle).
- k. If container is stowed with a vehicle and/or mechanical equipment with fuel in the tank, a warning label has been affixed to access doors legibly reading: "**WARNING - MAY CONTAIN EXPLOSIVE MIXTURES WITH AIR - KEEP IGNITION SOURCES AWAY WHEN OPENING**" in accordance with §176.905(a)(5), 49 CFR.

**2. PERSON RESPONSIBLE FOR PACKING**

a. PRINTED NAME ( <i>Last, First, Middle Initial</i> )	b. RANK/GRADE	c. TITLE	d. ORGANIZATION
e. PLACE PACKED	f. SIGNATURE		g. DATE (YYYYMMDD)

DD FORM 2781, JUN 2005

PREVIOUS EDITION IS OBSOLETE.

MOTOR VEHICLE INSPECTION (TRANSPORTING HAZARDOUS MATERIALS)													
<i>(Read Instructions before completing this form.)</i>													
<b>This form applies to all vehicles which must be marked or placarded in accordance with Title 49 CFR.</b>					1. GOVERNMENT BILL OF LADING/TRANSPORTATION CONTROL NUMBER								
SECTION 1 - DOCUMENTATION			ORIGIN a.			DESTINATION b.							
2. CARRIER/GOVERNMENT ORGANIZATION													
3. DATE/TIME OF INSPECTION													
4. LOCATION OF INSPECTION													
5. OPERATOR(S) NAME(S)													
6. OPERATOR(S) LICENSE NUMBER(S)													
7. MEDICAL EXAMINER'S CERTIFICATE*													
8. <i>(X if satisfactory at origin)</i>						9. CVSA DECAL DISPLAYED ON COMMERCIAL EQUIPMENT*							
a. MILITARY HAZMAT ENDORSEMENT		d. ERG OR EQUIVALENT COMMERCIAL:		YES		NO							
b. VALID LEASE*		e. DRIVER'S VEHICLE INSPECTION REPORT*				a. TRUCK/TRACTOR		YES NO					
c. ROUTE PLAN		f. COPY OF 49 CFR PART 397				b. TRAILER		YES NO					
SECTION 11 - MECHANICAL INSPECTION													
<i>All items shag be checked on empty equipment prior to loading. Items with an asterisk shag be checked on all incoming loaded equipment.</i>													
10. TYPE OF VEHICLE(S)					11. VEHICLE NUMBER(S)								
12. PART INSPECTED <i>(X as applicable)</i>		ORIGIN (1)		DESTINATION (2)				ORIGIN (1)		DESTINATION (2)		COMMENTS (3)	
		SAT	UNSAT	SAT	UNSAT			SAT	UNSAT	SAT	UNSAT		
a. SPARE ELECTRICAL FUSES						k. EXHAUST SYSTEM							
b. HORN OPERATIVE						l. BRAKE SYSTEM*							
c. STEERING SYSTEM						m. SUSPENSION							
d. WINDSHIELD/WIPERS						n. COUPLING DEVICES							
e. MIRRORS						o. CARGO SPACE							
f. WARNING EQUIPMENT						p. LANDING GEAR*							
g. FIRE EXTINGUISHER*						q. TIRES, WHEELS, RIMS							
h. ELECTRICAL WIRING						r. TAILGATE/DOORS*							
i. LIGHTS AND REFLECTORS						s. TARPULIN*							
j. FUEL SYSTEM*						t. OTHER (Specify)							
13. INSPECTION RESULTS (X one) ACCEPTED <input type="checkbox"/>					REJECTED <input type="checkbox"/>								
<i>(If rejected give reason under "Remarks". Equipment will be approved if deficiencies are corrected prior to loading.)</i>													
14. SATELLITE MOTOR SURVEILLANCE SYSTEM: (X one) ACCEPTED <input type="checkbox"/>					REJECTED <input type="checkbox"/>								
15. REMARKS													
16. INSPECTOR SIGNATURE (Origin)					17. INSPECTOR SIGNATURE (Destination)								
SECTION III - POST LOADING INSPECTION													
This section applies to Commercial and Government/Military vehicles. All items will be checked prior to release of loaded equipment and shall be checked on all incoming loaded equipment.						ORIGIN (1)		DESTINATION (2)		COMMENTS (3)			
						SAT	UNSAT	SAT	UNSAT				
18. LOADED IAW APPLICABLE SEGREGATION/COMPATIBILITY TABLE OF 49 CIFR													
19. LOAD PROPERLY SECURED TO PREVENT MOVEMENT													
20. SEALS APPLIED TO CLOSED VEHICLE; TARPULIN APPLIED ON OPEN EQUIPMENT													
21. PROPER PLACARDS APPLIED													
22. SHIPPING PAPERS/DD FORM 836 FOR GOVERNMENT VEHICLE SHIPMENTS													
23. COPY OF DID FORM 626 FOR DRIVER													
24. SHIPPED UNDER DOT EXEMPTION 889													
25. INSPECTOR SIGNATURE (Origin)					26. DRIVER(S) SIGNATURE (Origin)								
27. INSPECTOR SIGNATURE (Destination)					28. DRIVER(S) SIGNATURE (Destination)								

## INSTRUCTIONS

### SECTION I - DOCUMENTATION

#### General Instructions.

All items (2 through 9) will be checked at origin prior to loading. Items with an asterisk (\*) apply to commercial operators or equipment only. Only Items 2 through 7 are required to be checked at destination.

Items 1 through 5. Self explanatory.

Item 6. Enter operator's Commercial Driver's License (CDL) number or Military OF-348 License Number. CDL and OF-348 must have the HAZMAT and other appropriate endorsements IAW Part 383.

Item 7. \*Enter the expiration date listed on the Medical Examiner's Certificate.

Item 8.a. APPLIES TO MILITARY OPERATORS ONLY. Military Hazardous Materials Certification. In accordance with applicable service regulations, ensure operator has been certified to transport hazardous materials.

b. \*Valid Lease. Shipper will ensure a copy of the appropriate contract of lease is carried in all leased vehicles and is available for inspection. (Defense Transportation Regulation (DTR) requirement.)

c. Route Plan. Prior to loading any Hazard Class/Division 1.1, 1.2, or 1.3 (Explosives) for shipment, ensure that the operator possesses a written route plan in accordance with 49 CFR Part 397. Route Plan requirements for Hazard Class 7 (Radioactive) materials are found in 49 CFR 397.101.

d. Emergency Response Guidebook (ERG) or Equivalent. Commercial operators must be in possession of an ERG or equivalent document. Shipper will provide applicable ERG page(s) to military operators.

e. \*Driver's Vehicle Inspection Report. Review the operator's Vehicle Inspection Report. Ensure that there are no defects listed on the report that would affect the safe operation of the vehicle.

f. Copy of 49 CFR Part 397. Operators are required by regulation to have in their possession a copy of 49 CFR Part 397 (Hazardous Materials Driving and Parking Rules). If military operators do not possess this document, shipper may provide a copy to operator.

Item 9. \*Commercial Vehicle Safety Alliance (CVSA) Decal. Check to see if equipment has a current CVSA decal and mark applicable box. Vehicles without CVSA, check documentation of the last vehicle periodic inspection.

### SECTION 11 - MECHANICAL INSPECTION

#### General Instructions.

All items (12.a. through 12.t.) will be checked on all incoming empty equipment prior to loading. All UNSATISFACTORY conditions must be corrected prior to loading. Items with an asterisk (\*) shall be checked on all incoming loaded equipment. Unsatisfactory conditions that would affect the safe off-loading of the equipment must be corrected prior to unloading.

### SECTION 11 (Continued)

Item 12.a. Spare Electrical Fuses. Check to ensure that at least one spare fuse for each type of installed fuse is carried on the vehicle as a spare or vehicle is equipped with an overload protection device (circuit breaker). (49 CFR 393.95)

b. Horn Operative. Ensure that horn is securely mounted and of sufficient volume to serve purpose. (49 CFR 393.81)

c. Steering System. The steering wheel shall be secure and must not have any spokes cracked through or missing. The steering column must be securely fastened. Universal joints shall not be worn, faulty or repaired by welding. The steering gear box shall not have loose or missing mounting bolts or cracks in the gear box mounting brackets. The pitman arm on the steering gear output shaft shall not be loose. Steering wheel shall turn freely through the limit of travel in both directions. All components of a power steering system must be in operating condition. No parts shall be loose or broken. Belts shall not be frayed, cracked or slipping. The power steering system shall not be leaking. (49 CFR 396 Appendix G)

d. Windshield/Wipers. Inspect to ensure that windshield is free from breaks, cracks or defects that would make operation of the vehicle unsafe; that the view of the driver is not obscured and that the windshield wipers are operational and wiper blades are in serviceable condition. Defroster must be operative when conditions require. (49 CFR 393.80, 393.78 and 393.79)

e. Mirrors. Every vehicle must be equipped with two rear vision mirrors located so as to reflect to the driver a view of the highway to the rear along both sides of the vehicle. Mirrors shall not be cracked or dirty. (49 CFR 393.80)

f. Warning Equipment. Equipment must include three bidirectional emergency reflective triangles that conform to the requirements of FMVSS No. 125. FLAME PRODUCING DEVICES ARE PROHIBITED. (49 CFR 393.95)

g. Fire Extinguisher. Military vehicles must be equipped with two serviceable fire extinguishers with an Underwriters Laboratories rating of 10 BC or more. (Commercial motor vehicles must be equipped with one serviceable 10 BC Fire Extinguisher). Fire extinguisher(s) must be located so that it is readily accessible for use and securely mounted on the vehicle. The fire extinguisher must be designed, constructed and maintained to permit visual determination of whether it is fully charged. (49 CFR 393.95)

h. Electrical Wiring: Electrical wiring must be clean and properly secured. Insulation must not be frayed, cracked or otherwise in poor condition. There shall be no uninsulated wires, improper splices or connections. Wires and electrical fixtures inside the cargo area must be protected from the lading. (49 CFR 393.28, 393.32, 393.33)

## INSTRUCTIONS

### SECTION 11 (Continued)

i. Lights/Reflectors. (Head, tail, turn signal, brake, clearance, marker and identification lights, Emergency Flashers). Inspect to see that all lighting devices and reflectors required are operable, of proper color and properly mounted. Ensure that lights and reflectors are not obscured by dirt or grease or have broken lenses. High/Low beam switch must be operative. Emergency Flashers must be operative on both the front and rear of vehicle. (49 CFR 393)

j. Fuel System. Inspect fuel tank and lines to ensure that they are in serviceable condition, free from leaks, or evidence of leakage and securely mounted. Ensure that fuel tank filler cap is not missing. Examine cap for defective gasket or plugged vent. Inspect filler necks to see that they are in completely serviceable condition and not leaking at joints. (49 CFR 393.83 and 396 Appendix G)

k. Exhaust System. Exhaust system shall discharge to the atmosphere at a location to the rear of the cab or if the exhaust projects above the cab, at a location near the rear of the cab. Exhaust system shall not be leaking at a point forward of or directly below the driver compartment. No part of the exhaust system shall be located where it will burn, char or damage electrical wiring, fuel system or any other part of the vehicle. No part of the exhaust system shall be temporarily repaired with wrap or patches. (49 CFR 393.83 and 396 Appendix G)

l. Brake System (to include hand brakes, parking brakes and Low Air Warning devices). Check to ensure that brakes are operational and properly adjusted. Check for audible air leaks around air brake components and air lines. Check for fluid leaks, cracked or damaged lines in hydraulic brake systems. Ensure that parking brake is operational and properly adjusted. Low Air Warning devices must be operative. (49 CFR 396 Appendix G)

m. Suspension. Inspect for indications of misaligned, shifted or cracked springs, loosened shackles, missing bolts, spring hangers unsecured at frame and cracked or loose U-bolts. Inspect for any unsecured axle positioning parts, and sign of axle misalignment, broken torsion bar springs (if so equipped). (49 CFR 396 Appendix G)

n. Coupling Devices (Inspect without uncoupling). Fifth Wheels: Inspect for unsecured mounting to frame or any missing or damaged parts. Inspect for any visible space between upper and lower fifth wheel plates. Ensure that the locking jaws are around the shank and not the head of the kingpin. Ensure that the release lever is seated properly and safety latch is engaged. Pintle Hook, Drawbar, Towbar Eye and Tongue and Safety Devices: Inspect for unsecured mounting, cracks, missing or ineffective fasteners (welded repairs to pintle hook is prohibited). Ensure safety devices (chains, hooks, cables) are in serviceable condition and properly attached. (49 CFR 396 Appendix G)

o. Cargo Space. Inspect to ensure that cargo space is clean and free from exposed bolts, nuts, screws, nails or inwardly projecting parts that could damage the lading. Check floor to ensure it is tight and free from holes. Floor shall not be permeated with oil or other substances. (49 CFR 177.815(e)(1) and 398.34)

p. Landing Gear. Inspect to ensure that landing gear and assembly are in serviceable condition, correctly assembled, adequately lubricated and properly mounted.

### SECTION 11 (Continued)

q. Tires, Wheels and Rims: Inspect to ensure that tires are properly inflated. Flat or leaking tires are unacceptable. Inspect tires for cuts, bruises, breaks and blisters. Tires with cuts that extend into the cord body are unacceptable. Thread depth shall not be less than: 4/32 inches for tires on a steering axle of a power unit, and 2/32 inches for all other tires. Mixing bias and radial on the steering axle is prohibited. Inspect wheels and rims for cracks, unseated locking rings, broken, loose, damaged or missing lug nuts or elongated stud holes. (49 CFR 396 Appendix G)

r. Tailgate/Doors. Inspect to see that all hinges are tight in body. Check for broken latches and safety chains. Doors must close securely. (49 CFR 177.835(h))

s. Tarpaulin. If shipment is made on open equipment, ensure that lading is properly covered with fire and water resistant tarpaulin. (49 CFR 177.835(h))

t. Other Unsatisfactory Condition. Note any other condition which would prohibit the vehicle from being loaded with hazardous materials.

Item 14. For AA&E and other shipments requiring satellite surveillance, ensure that the Satellite Motor Surveillance System is operable. Shipper will instruct the driver to send a "test" emergency message to DTTS by having the driver activate the "emergency (panic) button". Shipper will contact DTTS at 1-800-826-0794 to verify that test message was received. Message must be received by DTTS for system to be considered operational.

### SECTION III - POST LOADING INSPECTION

#### General Instructions.

All items will be checked prior to the release of loaded equipment. Shipment will not be released until deficiencies are corrected. All items will be checked on incoming loaded equipment. Deficiencies will be reported in accordance with applicable service regulations.

Item 18. Check to ensure shipment is loaded in accordance with 49 CFR Part 177.848 and the applicable Segregation or Compatibility Table of 49 CFR 177.848.

Item 19. Check to ensure the load is secured from movement in accordance with applicable service outload drawings.

Item 20. Check to ensure seal(s) have been applied to closed equipment; fire and water resistant tarpaulin applied on open equipment.

Item 21. Check to ensure each transport vehicle has been properly placarded in accordance with 49 CFR Part 172 Subpart F.

Item 22. Check to ensure operator has been provided shipping papers that comply with 49 CFR Part 172 Subpart C. For shipments transported by Government vehicle, shipping paper will be DD Form 836.

Item 23. Ensure operator(s) sign DD Form 626, are given a copy and understand the hazards associated with the shipment.

Item 24. Applies to Commercial Shipments Only. If shipment is made under DOT Exemption 868, ensure that shipping papers are properly annotated and copy of Exemption 868 is with shipping papers.

## UN1044 Fire Extinguishers, 2.2

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**GASES - COMPRESSED OR LIQUEFIED  
(INCLUDING REFRIGERANT GASES)**

**ERG2004**

### POTENTIAL HAZARDS

#### FIRE OR EXPLOSION

- Some may burn, but none ignite readily.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

#### HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating, corrosive and/or toxic gases.

### PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

#### PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

#### EVACUATION

##### Large Spill

- Consider initial downwind evacuation for at least 500 meters (1/3 mile).

##### Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

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**EMERGENCY RESPONSE****FIRE**

- Use extinguishing agent suitable for type of surrounding fire.

**Small Fires**

- Dry chemical or CO<sub>2</sub>.

**Large Fires**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- Some of these materials, if spilled, may evaporate leaving a flammable residue.

**SPILL OR LEAK**

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Ventilate the area.

**FIRST AID**

- Move victim to fresh air. • Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

## **Deployment of Major End Items Examples**

### **Motor Vehicles (Wheeled and Tracked)**

- Free of fuel leaks and identifiable electrical faults, which could result in an unintended source of ignition.
- Fuel tank not more than ¼ full unless authorized by Department of Transportation's Exemption.  
49 CFR §176.905
- Fuel cap secure. 49 CFR §176.905
- Wet Batteries securely installed in an upright position and protected from short circuit. 49 CFR §176.905
- HEMTT wreckers w/welding equipment-segregate flammable and nonflammable gasses for vessel transportation. Port Call messages are more than likely going to require that compressed gasses (except fire extinguishers mounted in their proper brackets) be removed from all vehicles, crated and shipped in containers.

### **Fuel Tankers (HEMTTs, and 5,000 Tankers) w/JP-8**

- HEMTT not more than 75% full. (CA2002120017)
- 5,000 gallon trailer tankers not more than 75% full (3,750gal.). (CA2002120017)  
Check with Division Transportation Officer (DTO) and the Installation Transportation Officer (ITO) to verify maximum authorized fuel levels.

To the reader, these are just a few annotations regarding the deployment of certain Major End Items. For any further assistance regarding Major End Items such as combat vehicles, major weapons systems, and/or any item that represents a hazard check with the DTO/ITO to verify authorization.

## Redeployment Considerations

### U.S. Bureau of Customs and Border Protection (CBP) and U.S. Food and Drug Administration (FDA)

During redeployment from OCONUS locations military shipments may require inspection and/or approval by a representative of the CBP and FDA or an authorized representative. These organizations are charged with preventing the induction of dangerous pests of medical, economical or agricultural importance and soil containing plant pests and animal disease organisms in retrograde cargo.

The following **are not authorized** in retrograde cargo unless specifically approved by the theater FDA or US Department of Agriculture representative:

- O Plants
- O Vegetables
- O Fruit
- O OCONUS procured
  - Pets/Mascots
  - Fish
  - Reptiles
- O Soil
- O Tobacco Products

### U.S. CBP, Bureau of Alcohol Tobacco and Firearms (BATF) and U.S. Postal Service (USPS)

#### **War Trophies**

A war trophy is any item of enemy public or private property used as war material that is acquired within a combat zone. In order to retain and transport war trophies, military members must receive written permission from the theater commander. The Bureau of Alcohol, Tobacco and Firearms and the U.S. CBP must approve firearms or shell casings that were not brought by the unit. **By federal law**, the acquisition of souvenirs in a combat theater must not blemish the conduct of combat operations, result in mistreatment of enemy personnel, dishonor dead enemies, or involve unbecoming conduct by United States Army personnel. **Article 103 of the Uniform Code of Military Justice** states that military members must reasonably secure all public property taken from the enemy and turn over abandoned or captured property to the proper U.S. military representatives. Failure to carry out these duties or looting, pillaging or disposing of captured property for personal benefit is punishable by court-martial. The return of war trophies must be in accordance with AR 608-4 (War Trophies) and documented on DOD Form 603-1 (War Trophy Registration/Authorization). The importation of firearms must be in accordance with DOD 4500.34 R (Importation of Firearms).

## Resources

### HAZMAT

#### Title 49 CFR

- <http://hazmat.dot.gov/regs/rules.htm> or
- <http://www.access.gpo.gov/nara/cfr/cfr-table-search.html#page1>

#### USDOT Hazardous Materials Information

- Web site <http://hazmat.dot.gov>
- Information 1-800-467-4922

#### USCG Container Inspection Training & Assistance Team

- Web site <http://www.uscg.mil/hq/citat/citat.html>
- Information (405) 954-8985

### DOD Forms

- <http://www.dtic.mil/whs/directives/infomgt/forms/formsprogram.htm>

### U.S. Customs

- <http://www.customs.ustreas.gov/xp/cgov/import/>

### Bureau of Alcohol Tobacco and Firearms (BATF)

- <http://www.atf.treas.gov/>
- Firearms & Explosives Imports Branch (202) 927-8320

### United States Postal Service (USPS)

- <http://www.usps.com/>

### United States Department of Agriculture

- <http://www.usda.gov>

### U.S. Food and Drug Administration

- <http://www.fda.gov/ora/import/default.htm>

## **References**

2004 Emergency Response Guide Book

Code of Federal Regulations, Title 49, Parts 100-185

Department of Defense Regulation 4500.9R Part II, Cargo Movement

Department of Defense Military Handbook 138B (MIL HDBK 138B)

Federal Hazardous Materials Transportation Law

International Maritime Dangerous Goods Code (IMDG) 2006 Edition