

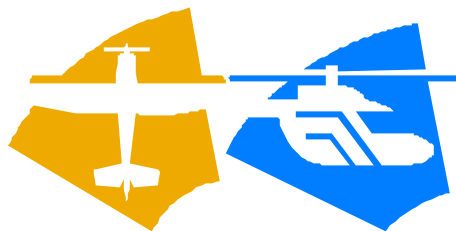
A publication of the
**National Wildfire
Coordinating Group**



NWCG Standards for Aviation Transport of Hazardous Materials

PMS 513

FEBRUARY 2018



Document Approval

This document, *NWCG Standards for Aviation Transport of Hazardous Materials*, as authorized in 350 DM 2, establishes the Department of the Interior (DOI) Interagency aviation transport of hazardous materials program. This document sets forth the objectives, policies, and standards for the transport of hazardous materials in aircraft under the exclusive direction and operational control of the DOI.

DOI Document Properties

Reference Documents: 350 DM 2

Approved by:

Name: Harry Humbert

A handwritten signature in black ink, appearing to read "Harry Humbert", is written over a solid black horizontal line.

Title: Deputy Assistant Secretary, Public Safety, Resource Protection and Emergency Services

Effective Date:

A handwritten date "6/20/18" is written in black ink over a solid black horizontal line.

Document Custodian: Chief, Technical Services, Office of Aviation Services (OAS), Department of the Interior

**File Code:** 5700**Date:** JUL 03 2018**Route To:****Subject:** Approval of the 2018 NWCG Standards for Aviation Transport of Hazardous Materials - PMS 513**To:** Regional Foresters, Regional Fire Directors, Regional Aviation Officers, and Regional Aviation Safety Managers

The 2018 National Wildfire Coordinating Group Standards for Aviation Transport of Hazardous Materials - PMS 513 is approved for Agency use, and establishes agency policy with respect to the handling and transport of hazardous materials.

The guidance document PMS 513 and supporting documents can be found on the National Wildfire Coordinating Group website: <https://www.nwcg.gov/publications/513>.

Forest Service employees shall comply with the standards and procedures stipulated in PMS 513 as well as the supporting documents:

Special Permit Authorization DOT-SP 9198 and,
Individual Authorization Letter to FS

Access to PMS 513, the Individual Authorization Letter to Forest Service and the Special Permit Authorization DOT-SP 9198 must be accessible for reference during all aviation transport of hazardous materials operations.

Change recommendations, clarification and questions should be directed to the Branch Chief, Aviation Safety Management Systems, John Kent Hamilton at (208) 387-5614 or johnkhamilton@fs.fed.us.



PATRICIA HIRAMI

Acting Deputy Chief, State and Private Forestry

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NWCG Standards for Aviation Transport of Hazardous Materials

FEBRUARY 2018
PMS 513

The *NWCG Standards for Aviation Transport of Hazardous Materials* establishes the standards for the transport of hazardous materials in aircraft under the exclusive direction and operational control of federal, state, and local agencies.

The National Wildfire Coordinating Group (NWCG) provides national leadership to enable interoperable wildland fire operations among federal, state, tribal, territorial, and local partners. NWCG operations standards are interagency by design; they are developed with the intent of universal adoption by the member agencies. However, the decision to adopt and utilize them is made independently by the individual member agencies and communicated through their respective directives systems.

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Chapter 1 General Information

1.1 Scope

Hazardous material, as defined in 49 CFR, “means a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce. The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (see 49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions in part 173 of Subchapter C of this chapter.”

1.2 Objective

The objective of the aviation transport of hazardous materials program is to ensure the safety of flight when transporting hazardous materials aboard, including attached to or suspended from (49 CFR 175.1(a)) government aircraft under the exclusive direction and operational control of the Department of Interior (DOI) or U.S. Forest Service (USFS). DOI or USFS will provide:

- A. Technical advice on hazardous materials, handling procedures, and air transportation methods.
- B. Technical training in the handling, storage, dispensing, and transportation of hazardous materials.
- C. Information on innovations and procedures to transport hazardous materials.

1.3 Mandatory vs. Optional Compliance

The use of the verb "must" conveys mandatory compliance. The use of "should" conveys required compliance except for documented justifiable reasons. In addition, the use of "may" and "can" convey optional compliance.

1.4 Hazmat Employee

As defined in 49 CFR 171.8, a hazmat employee is a person who is employed by a hazmat employer and who in the course of employment directly affects hazardous materials transportation safety. This term includes an individual, including a self-employed individual, employed by a hazmat employer who, during the course of employment:

- A. Loads, unloads, or handles hazardous materials;
- B. Manufactures, tests, reconditions, repairs, modifies, marks, or otherwise represents containers, drums or packaging as qualified for use in the transportation of hazardous materials;
- C. Prepares hazardous materials for transportation;
- D. Is responsible for safety of transporting hazardous materials; or
- E. Operates a vehicle used to transport hazardous material.

1.5 Applicability

The procedures established in this document will be utilized in the support of DOI and USFS operations involving aircraft that are government-owned and/or contract vendor-owned, flown by either a government or a vendor pilot, under the exclusive direction and operational control of DOI or USFS. Hazardous materials not specified in this document must comply with 49 CFR Parts 171-180.

Crew members whose presence is required to perform or is associated with the performance of a governmental function such as national defense, intelligence missions, firefighting, search and rescue, law enforcement (including transport of prisoners, detainees, and illegal aliens), aeronautical research, or biological or geological resource management are allowed to be aboard an aircraft performing public aircraft operations while transporting hazardous material (Public Aircraft Operations AC 00-1.1A).

1.6 Hazardous Material Identification

Information on the contents of a product suspected of containing hazardous materials can be obtained by contacting the manufacturer of the product and requesting a Safety Data Sheet (SDS). If a product is suspected of containing hazardous materials, it must be identified before being transported ([Appendix 1](#)).

1.7 Limiting Exposure

Personnel must minimize the hazards associated with transporting hazardous materials by:

- A. Carrying hazardous materials aboard aircraft only when other means of transportation are impracticable.
- B. Limiting personnel on aircraft carrying hazardous materials to those crewmembers essential to mission accomplishment.
- C. Avoiding hazardous materials flights over populated areas.
- D. Restraining packages placed aboard aircraft including cargo compartments and external cargo racks from movement while in transit.
- E. Prohibiting smoking or the use of any item that could cause an open flame or spark when explosives, flammable solids, flammable liquids, or gases are being loaded and unloaded, and during flight.

1.8 Notification of Pilot-In-Command (NOPIC) of Hazardous Materials

A NOPIC must occur using the Hazardous Materials Manifest Form ([Appendix 1](#)) to include:

1. Common name,
2. Proper Shipping Name (PSN),
3. Hazard class,
4. Emergency Response Guidebook number,
5. Quantity, and
6. Location of hazardous materials placed aboard the aircraft.

Notification standards:

7. Initial: a written NOPIC will be completed during the aircraft pre-use inspection.
8. Daily: load calculations or manifest documentation completed.
9. Verbal: external jettisonable load operations or HAZMAT changes during the mission cycle.

The NOPIC will be given to the pilot before the first flight of the day. Thereafter, verbal notification of changes in hazardous materials is acceptable for ongoing missions.

For external jettisonable load operations, verbal notification of the type and quantity of hazardous materials is acceptable.

1.9 Pilot-In-Command (PIC) Authority

The assigned PIC is directly responsible and is the final authority for the safe operation of the aircraft to include the acceptance of hazardous materials. Before each flight:

- A. Inform all personnel of the location of hazardous materials aboard the aircraft.
- B. Prohibit any activity that could cause an open flame or sparks.

1.10 Exceptions

Packaging, markings, labeling, and shipping paper requirements of 49 CFR, Subchapter C, do not apply to hazardous materials transported in accordance with the standards provided herein when aboard aircraft for government purposes when under exclusive direction and operational control of DOI or USFS. Hazardous materials not specified in this document must be transported in accordance with the requirements of 49 CFR Parts 171-180.

1.11 Packaging

Packages must be inspected for damage or leaks during loading and unloading. Packages with holes, leakage, or other indications of damage affecting integrity must not be placed aboard an aircraft. Damaged or leaking packages discovered on board the aircraft should be handled only as necessary to minimize further damage or injury. Leaking packages must be reported in accordance with paragraph 1.18. Packages containing hazardous materials must:

1. Be compatible with the product to be contained,
2. Have all closures secured (49 CFR 173.24(f)(1)),
3. Not leak, and
4. Not allow the contents to come in contact with the aircraft or personnel (packaging must be compatible with the provisions of 49 CFR, Subchapter C, or have an equivalent level of safety.).

1.12 Hazardous Communication Marking

Unless otherwise noted in the control measures, hazardous materials visibly recognizable, such as a fire extinguisher outside of a box or packing, do not require marking. When unrecognizable, a hazardous material label, PSN, or common name must be displayed. Hazardous materials in original retail packaging do not require additional marking, e.g., a retail box of fuses.

1.13 Incompatible Hazardous Materials

Hazardous materials that might react dangerously with one another must be segregated using separate flights, separate compartments, or separate packaging that prevents the interaction of the two materials (see 49 CFR 175.78).

1.14 Backhaul

Backhaul of hazardous materials, unless sufficiently cleaned of residue and vapor to remove potential hazards, must meet the requirements of 1.12.

1.15 Training Requirements

Prior to handling or transporting hazardous materials, all personnel operating under this document must complete A-110, Aviation Transport of Hazardous Materials, found at <https://www.iat.gov/>.

1.16 Special Provisions

A copy, electronic or print, of the following materials must be carried aboard each aircraft transporting hazardous materials.

- *NWCG Standards for Aviation Transport of Hazardous Materials*, PMS 513
- *Emergency Response Guidebook (ERG)*
<https://www.phmsa.dot.gov/hazmat/erg/emergency-response-guidebook-erg>
- Department of Transportation, Special Permit (DOT-SP) 9198.

A copy, electronic or print, of the *NWCG Standards for Aviation Transport of Hazardous Materials* (PMS 513) and the ERG must be maintained at each facility where the hazardous materials are offered or reoffered for transportation. For helicopter field operations away from fixed facilities, these requirements are deemed to have been met when the helicopter is loaded or reloaded under the direct supervision of an agency employee trained in accordance with the standards contained herein.

1.17 Deviations

Users of this document do not have the authority to grant deviations.

1.18 Hazardous Materials Mishap Notification

Hazardous material incidents must be reported in accordance with the DOT-SP 9198, 49 CFR §171.15 and §171.16, so that an investigation by the appropriate authorities can establish the cause and corrective actions.

Chapter 2 Flammable and Combustible Liquids

2.1 General Information

Flammable and combustible liquids include all flammable and combustible liquids except those under compression (propane, butane, etc.). These materials may include but are not limited to gasoline, diesel, kerosene, alcohol, white gas (stove fuel), paint, and thinners/solvents.

2.2 Control Measures: Non-Bulk

To transport flammable and combustible liquids in non-bulk containers of 119-gallon capacity or less, the following conditions must be met:

- A. Containers must be specifically designed to carry flammable and combustible liquids and be of sufficient strength to prevent leakage during transportation and handling.
- B. All closures on the containers should be tight and the outside of the container should be free of any residue.
- C. Containers must be filled to a level that allows for expansion due to temperature or altitude and never filled beyond rated capacity.
- D. Containers must be secured in the upright position by tie-down straps or shipped in an outside container that will keep the inner container upright.
- E. Containers that may release vapors must not be transported in unvented aircraft compartments. Baggage compartments in unpressurized aircraft are considered vented compartments (an unpressurized cabin may also be used when it is ventilated to prevent accumulation of harmful vapors).
- F. Flammable and combustible liquids must not be transported in containers unless they are specifically designed for that purpose.
- G. Additional requirements apply to the following containers:
 - 1. Safety Cans. Safety cans must be transported in vented compartments, secured in the upright position, and filled to a level that allows for expansion (no more than 90% capacity).
 - 2. Military Jeep Cans (3A1 Jerry cans). Military Jeep Cans must be secured in the upright position and have two inches of air space below the container opening.
 - 3. Drip Torches. Drip torches (1) must be transported with the igniter nozzle assembly in the tank, air breather valve closed, tank lock ring sealed, and fuel spout plug closed; and (2) must be secured in the upright position. Leave a minimum of two inches of air space below the container opening when filling.
 - 4. Chainsaw Fuel/Oil Plastic Container (Dolmars). Chainsaw fuel/oil plastic containers must be transported with the pourer spout enclosed within the container with the caps sealed. Ensure seal gaskets or O-rings are intact. The fuel air breather cap must be closed during transportation. Secure in an upright position. Leave a minimum of two inches of air space below the fuel compartment opening when filling.
 - 5. Sigg Bottles. Sigg bottles must not be transported with a pouring spout in lieu of an unvented cap and must have air space below the container opening (no more than 90% capacity).

2.3 Control Measures: Flammable Fuel in Powered Equipment Tanks

To transport flammable fuel in powered equipment tanks the following conditions must be met:

- A. No combination greater than 20 gallons of flammable fuel in powered equipment tanks may be transported on one load.
- B. Powered equipment is secured in an upright position.
- C. Each fuel tank is filled in a manner that will preclude spillage of fuel during loading and unloading and during transportation.
- D. The compartment in which the equipment is loaded must be ventilated to prevent the accumulation of fuel vapors and must not contain an exposed battery.
- E. Powered equipment (chainsaws, pumps, etc.) and fuel containers shall not be transported in plastic bags.

2.4 Bulk Fuel Containers

Any fuel container in excess of 119-gallon capacity will be considered a bulk fuel container. Fuel may be carried in bulk fuel tanks if the tanks are installed in accordance with applicable Federal Aviation Regulations approved by DOI or USFS. Sealdrums (Rolligons) or bladder tanks of capacity up to 500 gallons are acceptable for carrying fuel in aircraft.

2.5 Compatibility Restrictions

Flammable and combustible liquids must not be stored next to or in contact with oxidizers (i.e., potassium permanganate, a.k.a. plastic spheres) or batteries. Flammable and combustible liquids must not be transported with explosives.

Chapter 3 Ignition Devices

3.1 General Information

Ignition devices include but are not limited to fusees, flares, and other flammable solids designed for signaling, fire ignition, or fumigating.

3.2 Control Measures

To transport fusees, strike anywhere matches, flares, and aerial ignition plastic spheres in aircraft, the following conditions must be met:

- A. All fusees must be packaged in a container, box, or pack.
- B. Broken fusees and those with protective igniter caps removed must not be transported in aircraft.
- C. Fusees and flares should be carried in original shipping containers whenever possible.
- D. Pistol flare ammunition may be carried on aircraft if contained in original package, box, pack, or a manufactured container designed for transporting ammunition.
- E. Aerial ignition plastic spheres containing oxidizers must be segregated from antifreeze (glycol) containers during transportation.
- F. Aerial ignition plastic spheres containing oxidizers may be loaded into bags that will be utilized to facilitate the efficient filling of the dispenser in flight during dispensing operations.
- G. Personnel engaged in fire management activities may transport small quantities of fusees (5 or fewer) inside field gear packs without the hazard communications marking.
- H. Strike anywhere matches, other than those carried in personal survival kits must be transported in a container that inhibits movement of matches, thus preventing ignition.

3.3 Compatibility Restrictions

Ignition devices must not be transported in a position that allows them to interact with batteries or battery fluids. Ignition devices must not be transported with explosives.

Chapter 4 Batteries/Battery Fluid

4.1 General Information

A battery is a device for generating an electrical current by a chemical reaction. Lithium-based batteries are included in this category. Wet-cell batteries contain a fluid of electrolyte acid or alkaline solution. This fluid is corrosive and is a hazardous material. A wet-cell battery case without the fluid is referred to as an empty storage battery or dry-storage battery and contains no hazardous material.

4.2 Control Measures

To transport batteries and battery fluids in aircraft, the following conditions must be met:

- A. All batteries, regardless of type, must be protected from short circuits by nonconductive terminal caps, tape, covers, or containers.
- B. Wet-cell batteries must be packed in nonconductive containers or palletized and have a slip-on cover of nonconductive material.
- C. Spillable wet-cell battery containers must be marked "this side up" or "this end up" and/or arrow indicators, and secured in an upright position. These markings must be placed on two opposite sides of the package.
- D. Transport batteries and battery fluids in the manufacturer's original shipping containers. If original containers are not available, package in a wooden or fiberboard box lined with a strong plastic bag.
- E. Battery fluid is limited to five gallons per package and must be secured in an upright position by tie-down straps or placed inside an outer container that will prevent the package from overturning.
- F. Metallic items must not be packaged in the same container as a battery.
- G. Lithium batteries must be transported in a manner that assures they remain undamaged and dry, and the terminals must be protected against short circuit.

4.3 Compatibility Restrictions

Batteries and battery fluids must not be transported in a position that allows them to interact with flammable solids or oxidizers. Batteries and battery fluids must not be transported with explosives.

Chapter 5 Explosives

5.1 General Information

Explosives include but are not limited to fireline explosives (FLE), nitroglycerin-based, and cast primer explosives. All explosives must be handled in accordance with agency guidance. When transporting explosives on aircraft, consider water gels and two-component (binary) explosives.

5.2 Control Measures

To transport explosives by aircraft, the following conditions must be met:

- A. All explosives transported in accordance with the standards contained herein must be classed and approved in accordance with 49 CFR and be labeled on the outside of the package with the appropriate UN/DOT hazardous materials warning label.
- B. All explosives must be prepared, packaged, and transported under the control or direction of a licensed and certified blaster or a person who is approved by DOI, USFS, or cooperating agencies in accordance with established training.
- C. Detonating materials and explosives must be carried on different flights or segregated using separate compartments or packaging that prevents the interaction of the two materials. Avalanche control flights in accordance with established procedures are an exception.
- D. Only crewmembers necessary for the completion of the mission must be allowed on a flight transporting explosive materials.

5.3 Compatibility Restrictions

Explosives must not be transported or stored next to or in contact with flammable gas, non-flammable gas, flammable/combustible liquids, flammable solids, oxidizers, or corrosives.

Chapter 6 Compressed Gases and Liquids

6.1 General Information

Compressed gases and liquids include liquids or fuels under compression such as propane, butane, acetylene, etc., and aerosol containers. High-pressure cylinders may contain products such as air, oxygen, carbon dioxide, helium, nitrogen, and argon. Note: compressed gases carried for personal survival are discussed in Chapter 8.

6.2 Control Measures

To transport compressed gases and liquids in aircraft, the following conditions must be met:

- A. Must be transported in a DOT specified container.
- B. Containers with gases and liquids under pressure, including aerosols carried for other than personal use, must be secured to prevent movement and protect the discharge valve.
- C. When carrying compressed gases and liquids internally, adequate ventilation must be provided to prevent the accumulation of harmful vapors.
- D. Compressed gases or liquids must not be dispensed or used inside the aircraft during flight, except oxygen or air and compressed gases for infrared cameras.
- E. Except when dispensing compressed gases and liquids during flight, cylinders must be secured and cylinder valves protected.
- F. Oxygen containers must not be stowed or used in a manner that allows oxygen to come into contact with flammable liquids or oils and greases.

6.3 Compatibility Restrictions

None.

Chapter 7 Small Arms Ammunition

7.1 General Information.

Small arms ammunition includes ammunition for pistols, rifles, shotguns, and similar firing devices.

7.2 Control Measures.

To transport small arms ammunition in aircraft, one of the following conditions must be met:

- A. A person who is required to carry a firearm while performing official government business may carry ammunition for small arms in a readily accessible manner.
- B. Loaded weapons will be transported in aircraft only when the mission dictates their use in flight or soon after landing.
- C. Small arms ammunition may be carried on aircraft if contained in original package, box, pack, or manufactured container designed for transporting ammunition.
- D. Hazard communication marking is not required for small arms ammunition.

7.3 Compatibility Restrictions.

Small arms ammunitions must not be stored next to or in contact with flammable liquids or corrosives.

Chapter 8 Personal Survival Equipment

8.1 General Information

Personal survival equipment is defined as materials essential to survival such as inflatable flotation devices, spare CO² cartridges for flotation devices, stove fuel, fire starters, strike anywhere matches, and supplemental breathing air. Many of these survival devices are carried in a pocket, survival vest, or pack.

8.2 Control Measures

Personal survival equipment and life saving devices may be carried in survival vests/jackets/packs/kits without any further requirements provided they are packed in such a manner to prevent any accidental discharge, activation, or ignition.

8.3 Compatibility Restrictions

None.

Chapter 9 Biomedical Waste

9.1 General Information

Biomedical waste is any kind of waste containing infectious or potentially infectious materials.

9.2 Control Measures

All materials must be packaged, secured, and identified to mitigate against exposure to personnel as soon as practical.

9.3 Compatibility Restrictions

None.

Chapter 10 Bear Repellent/Irritants

10.1 General Information

Irritants include red pepper extract aerosol products, such as bear repellent spray and personal defense sprays. Irritants such as bear repellent, tear gas, and mace should be transported in an external compartment whenever practical.

10.2 Control Measures

- A. Except for law enforcement operations conducted under 10.2.B, all bear repellent/irritant spray must be transported in a container that prevents personnel exposure in the event of an inadvertent discharge.
- B. Defensive aerosols carried by law enforcement officers may be transported on their person, in a manner designed to prevent accidental discharge.
- C. Avoid exposure to ignition sources and temperatures above 120 °F.

10.3 Compatibility Restrictions

None.

Appendix 1

Hazardous Materials Manifest Form DOT-SP-9198

Date: _____

Aircraft #: _____

Bureau/Agency: _____

Common Name	Shipping Name	Hazard Class	UN #	ERG #	QTY	WT
Acetylene	Acetylene, dissolved	2.1 Flammable Gas	UN1001	116		
Aerosols	Aerosols non-flammable each not exceeding one liter capacity	2.2 Non-Flammable Gas	UN1950	126		
Aerosols starting fluid, WD-40	Aerosols flammable each not exceeding one liter capacity	2.1 Flammable Gas	UN1950	126		
Batteries dry	Batteries dry, containing potassium hydroxide solid electric storage	8 Corrosive	UN3028	154		
Batteries wet	Batteries wet filled with acid	8 Corrosive	UN2794	151		
Batteries wet	Batteries wet filled with alkali	8 Corrosive	UN2795	131		
Batteries wet	Batteries wet non- spillable	8 Corrosive	UN2800	154		
Bear spray, irritants	Aerosols flammable each not exceeding one liter capacity	2.1 Flammable Gas	UN1950	126		
Biomedical waste	Infectious substances affecting humans	6.2	UN2814	158		
Cartridge	Cartridge for small arms	1.4s	UN0012	114		
Clorox, liquid bleach	Hypochlorite Solutions	8 Corrosive	UN1791	154		
Diesel	Diesel, fuel	3 Flammable	UN1993	128		
Drip torch fuel	Gasoline/ Diesel	3 Flammable	UN1203	128		
Engine, internal combustion	Engine, internal combustion, flammable gas powered <i>or</i> Engine, fuel cell, flammable gas powered <i>or</i> Machinery, internal combustion, flammable gas powered <i>or</i> Machinery, fuel cell, flammable gas powered	2.1	UN3529	135, A200		

**Hazardous Materials Manifest Form (cont.)
DOT-SP-9198**

Date: _____

Aircraft #: _____

Bureau/Agency: _____

Common Name	Shipping Name	Hazard Class	UN #	ERG #	QTY	WT
Engine, internal combustion	Engine, internal combustion, flammable liquid powered <i>or</i> Engine, fuel cell, flammable liquid powered <i>or</i> Machinery, internal combustion, flammable liquid powered <i>or</i> Machinery, fuel cell, flammable liquid powered	3	UN3528	135, A200		
Engine, internal combustion	Engine, internal combustion <i>or</i> Machinery, internal combustion	9	UN3530	135, A200		
Engines internal combustion	Engine internal combustion flammable gas powered	9 Misc.	UN3166	128		
Fire extinguisher	Fire extinguisher	2.2 Non-Flammable Gas	UN1044	126		
Fireline explosives FLE	Explosive blasting type E	1.1D EXPLOSIVES	UN0241	112		
Flare shell Pistol flare	Flammable solid, inorganic, nos (Aluminum powder)	4.1 Flammable Solid	UN3178	133		
Fuel white gas	Petroleum distillates, nos, (Naphtha solvent)	3 Flammable	UN1268	128		
Fuel, aviation jet-A	Fuel aviation, turbine engine	3 Flammable	UN1863	128		
Fusee	Fusee (rail or highway)	4.1 Flammable Solid	UN1325	133		
Gasoline	Gasoline	3 Flammable	UN1203	128		
Lithium battery	Lithium battery	9 Misc.	UN3090	138		
MAPP gas helitorch	Methyl acetylene propadiene propane mixtures stabilized	2.1 Flammable Gas	UN1060	116P		
Nitrogen	Nitrogen, compressed	2.2 Non-Flammable Gas	UN1066	121		
Nitrogen refrigerated	Nitrogen, refrigerated liquid, cryogenic liquid	2.2 Non-Flammable Gas	UN1977	120		

**Hazardous Materials Manifest Form (cont.)
DOT-SP-9198**

Date: _____

Aircraft #: _____

Bureau/Agency: _____

Common Name	Shipping Name	Hazard Class	UN #	ERG #	QTY	WT
Oxygen	Oxygen, compressed	2.2 Non-Flammable Gas	UN1072	122		
Paint	Paint including lacquer, enamel, stain, shellac, solutions, varnish, polish, liquid filler, and lacquer base, wood preservative	3 Flammable	UN1263	128		
Petro-gel helitorch	Gelling agent-helitorch	3 Flammable	UN1230	131		
Petroleum oil	Petroleum oil	3 Flammable	UN1270	128		
Plastic spheres	Potassium permanganate	5.1 Oxidizer	UN1490	140		
Propane	Petroleum gases, liquefied	2.1 Flammable Gas	UN1075	115		
Total Weight						
Shipper's Signature		Location				
Pilot's Signature						

Appendix 2

Blank Hazardous Materials Manifest Form DOT-SP-9198

Date: _____

Aircraft #: _____

Bureau/Agency: _____

Common Name	Shipping Name	Hazard Class	UN #	ERG #	QTY	WT
Total Weight						
Shipper's Signature		Location				
Pilot's Signature						

The *NWCG Standards for Aviation Transport of Hazardous Materials* is developed and maintained by the National Interagency Aviation Committee (NIAC), an entity of the National Wildfire Coordinating Group (NWCG).

Previous editions: none. Prior to 2018, the *Interagency Aviation Transport of Hazardous Materials Handbook* was produced jointly between the U.S. Department of Interior and the U.S. Department of Agriculture.

While they may still contain current or useful information, previous editions are obsolete. The user of this information is responsible for confirming that they have the most up-to-date version. NWCG is the sole source for the publication.

This publication is available electronically at <https://www.nwcg.gov/publications/513>.

Comments, questions, and recommendations shall be submitted to the appropriate agency program manager assigned to NIAC. View the complete roster at <https://www.nwcg.gov/committees/national-interagency-aviation-committee/roster>.

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