



HOW TO USE THE HAZARDOUS MATERIALS REGULATIONS

Title 49 — Code of Federal Regulations, Parts 100 to 185



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration

WWW.PHMSA.DOT.GOV

NOTICE

This publication was prepared as a training aid in the proper use of the Hazardous Materials Regulations (HMR) and should not be used to determine compliance with 49 CFR, Parts 100-185.

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PREFACE

The U.S. Department of Transportation (DOT) is responsible for developing and issuing the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-185). These regulations govern the transportation of hazardous materials (hazmat) in interstate, intrastate, and foreign commerce. DOT carries out this responsibility through the Pipeline and Hazardous Materials Safety Administration (PHMSA). The primary goal of the HMR is to ensure the safety of the public and those who prepare, offer, and transport hazmat.

The **Code of Federal Regulations (CFR)** are rules published in the *Federal Register* by Executive departments and agencies of the Federal Government and have the force of the law. The **49 CFR, Parts 100-185**, contains the current HMR under Chapter I – Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation.

The HMR are issued by PHMSA and govern the transportation of hazmat in all modes of transportation—air, highway, rail, and water.

The HMR are divided into four general areas:

- operational rules
- hazmat identification and classification
- hazard communication
- packaging requirements

The HMR must be used to determine the requirements for shipping hazmat and should be treated as a technical or reference book. Read it carefully. Pay particularly close attention if a section references other sections. When determining compliance, always use the current 49 CFR and any Federal Register Notices (e.g., rulemakings) issued since the most recent publish date of the CFR. For easier reference, you should tab your copy of 49 CFR Parts 100 to 185. This guide provides a list of frequently used references on p. 10.

A current version of the HMR can be accessed electronically at <http://www.ecfr.gov/> as well as through PHMSA's Online CFR (oCFR) at <https://www.phmsa.dot.gov/>. *Federal Register* Notices can be accessed at <https://www.federalregister.gov/>.

BACKGROUND

Proper classification and characterization of hazmat is the foundation of the HMR. Proper packaging selection, marking, labeling, shipping papers, and placarding are all dependent upon this first, critical step.

The HMR have nine hazard classes that are defined to characterize the predominant risk that a hazmat poses. The hazard classes are listed on p. 11 of this guide. Some materials meet the definition of more than one hazard class with primary risks and subsidiary risks. Once a material is classified into one or more hazard classes according to its technical characteristics, the HMR further delineates the risks of certain hazmat through packing groups (PG). Hazmat can be assigned to one of three PGs based upon its degree of hazard:

- high hazard (PG I)
- medium hazard (PG II)
- low hazard (PG III)

The quality, damage resistance, and performance standards of the container or package used to contain a hazmat is predicated by packing group. More robust packaging is required for transporting higher hazard materials.

The entity that offers hazmat for transportation is considered a shipper (this includes both initial offerors and subsequent, downstream offerors). It is the shipper's responsibility to properly classify and describe a hazmat, including determining the constituents present and any multiple hazard classes present, using the Hazardous Materials Table (HMT; 49 CFR § 172.101), its appendices, and the hazard classification criteria in the HMR.

The HMT serves as the backbone of the HMR. It provides a reference to hazmat entries – identified by proper shipping name and the associated UN ID number. The HMT also references the authorized packaging, appropriate hazard class labels, and any special provisions or quantity limitations for all hazmat entries.

The proper shipping name, UN ID number, hazard class or division, packing group, markings, labels, and placards communicate the hazards of a material. These communication elements appear on transport vehicles, packages, or shipping documents. Each shipment of a hazmat must be accompanied by a shipping document that must include a statement certifying that the material is in compliance with all appropriate regulations, including classification and packaging.

In summary, the first steps for anyone offering a hazmat for shipment are the following:

- Properly identify all the hazards of the material.
- Determine which of the nine hazard classes are applicable to the material as the primary and subsidiary hazards.
- Assign the material to a packing group, if applicable.

General awareness of the HMR and training is required for compliance with the regulations. This guide is designed to assist you with the first step of learning. Specifically, this guide should enable you to:

- locate parts, subparts, sections, and references within the HMR;
- locate and tab reference parts of the HMR; and
- use the HMR to locate specific information and determine compliance.

APPLICABILITY § 171.1

The full applicability of the HMR can be found in § 171.1. Always refer to the regulations when determining applicability.

The HMR apply to the transportation of hazardous materials in interstate, intrastate and foreign **commerce** by aircraft, rail car, vessel, and motor vehicle. Specifically, the HMR apply to any person who:

- loads, unloads, or handles hazmat in transportation,
- tests, reconditions, repairs, modifies, marks, or otherwise represents packagings as qualified for use in the transportation of hazmat,
- prepares hazmat for transportation,
- is responsible for safety, including security, of transporting hazmat, or
- operates a vehicle used to transport hazmat.

If you are still not sure if the HMR apply to you and/or your business or occupation, answer the questions below. If your answer is “yes” to any question, the HMR apply to you.

- Do you prepare, offer, and/or transport any hazmat by motor vehicle, aircraft, rail car, or vessel?
- Do you manufacture, repair, or recondition containers for the transportation of hazmat?
- Do you prepare hazmat shipping papers, select packagings for hazmat, or perform any other pre-transportation function listed in § 171.1? Note: see the definitions on p. 18 of this guide.

TRAINING § 172.700-704

It is critical to note that if you answered yes to any of the questions above, you are required to comply with the training requirements found in 49 CFR § 172.704. Hazmat employers must ensure that each of its hazmat employees is trained and tested in accordance with the training requirements. There are five parts to training:

1. General awareness and familiarization training
2. Function-specific training
3. Safety training
4. Security awareness training
5. In-depth security training (only if your company is required to have a security plan)

PHMSA offers free online training modules to meet the general awareness and security awareness training requirements. The training modules can be accessed at <https://www.phmsa.dot.gov/training/hazmat/training-modules>.

REGISTRATION § 107.601-620

Additionally, shippers and carriers of hazmat may be subject to registration (the applicability of registration is found in § 107.601). Registrants are required to pay an annual fee as well as obtain a certificate of registration. For more information about registration, please see: <https://www.phmsa.dot.gov/registration/registration-overview>.

STRUCTURE OF THE CODE OF FEDERAL REGULATIONS

RULES OF CONSTRUCTION § 171.9

In order to understand your responsibilities as a hazmat employee or employer, you need to understand terms and rules within the HMR. Unless specifically stated otherwise:

- singular words include the plural;
- plural words include the singular;
- masculine words include the feminine;
- “must” means required;
- “shall” means required;
- “should” means recommended, but not required;
- “may” means permitted, but not required;
- “includes” means includes, but not limited to; and
- “no person may” or “a person may not” means no person is required, authorized, or permitted to.

BASIC OUTLINE

Locating the correct information quickly and easily is important—learn the structure of the HMR and how to locate references. The Code of Federal Regulations follows the same basic outline used for most written material. Headings follow the descending order shown below:

HEADING	EXAMPLE
Title:	Title 49—Transportation
SUBTITLE:	SUBTITLE B—OTHER REGULATIONS RELATING TO TRANSPORTATION
CHAPTER:	CHAPTER I—Pipeline and Hazardous Materials Safety Administration, Department of Transportation
SUBCHAPTER:	SUBCHAPTER C—HAZARDOUS MATERIALS REGULATIONS
Part:	Part 172—Hazmat tables, special provisions, hazardous materials communications, emergency response information, and training requirements
Subpart*	Subpart D—Marking
Section*	172.301
Paragraph*	172.301(a)
Subparagraph*	172.301(a)(1)
Sub-subparagraph*	172.301(a)(3)(i)

* Listed under Parts, as needed, in descending order.

**TURN TO PAGE 1 IN
49 CFR PARTS 100-185**

Notice the CFR title at the top of the page:

Title 49—Transportation

The Parts contained in this volume are noted in parentheses:

(This book contains parts 100 to 185)*

The SUBTITLE and CHAPTER are also listed:

SUBTITLE B—OTHER REGULATIONS RELATING TO TRANSPORTATION
CHAPTER I—Pipeline and Hazardous Materials Safety
Administration, Department of Transportation 105

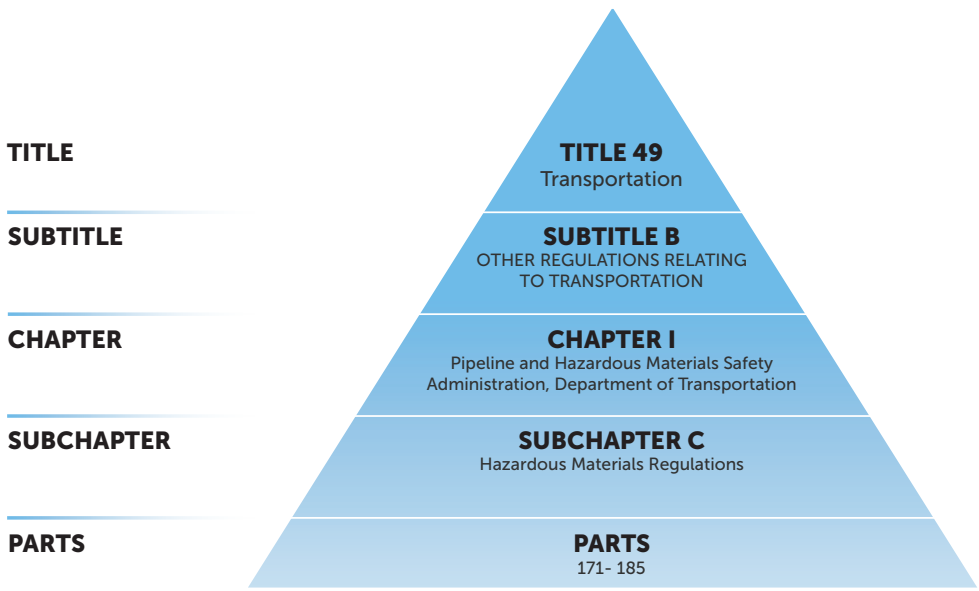
**NOW LOCATE THE
CHAPTER I INDEX:**

CHAPTER I—PIPELINE AND HAZARDOUS MATERIALS SAFETY
ADMINISTRATION, DEPARTMENT OF TRANSPORTATION

SUBCHAPTER A contains general procedures, rulemaking procedures, and other program procedures regarding enforcement, special permits and approvals, the hazmat grants program, and hazmat registration procedures that are administered by PHMSA. Parts 105-110 cover this information.

Notice that SUBCHAPTER C contains the HMR. This subchapter provides the specific requirements to identify, prepare, and ship hazmat safely. Parts 171-185 cover this information.

The pyramid diagram shown below illustrates the HMR format previously discussed.



* Parts 110 to 185 are typically published in two separate book volumes (parts 100-177 and parts 178-199).

SUBCHAPTER C

SUBCHAPTER C is the HMR and contains information that will assist the hazmat employer and hazmat employee to identify, prepare, and ship hazmat safely. SUBCHAPTER C is divided into several parts. Each part has a tabbing index that identifies each subpart and sections within the subpart. Tabbing the index for each part will assist you in locating information easily.

Note the example of the Index for Part 172 (below). If you are looking for requirements to prepare shipping papers, you will note that they are in Subpart C of Part 172. If you are looking specifically for the requirements covering signing of shipping papers, “Shipper’s Certification” is in Section 172.204.

<p>PART 172—HAZARDOUS MATERIALS TABLE, SPECIAL PROVISIONS, HAZARDOUS MATERIALS COMMUNICATIONS, EMERGENCY RESPONSE INFORMATION, TRAINING REQUIREMENTS, AND SECURITY PLANS</p> <p style="text-align: center;">Subpart A—General</p> <p>Sec. 172.1 Purpose and scope. 172.3 Applicability.</p> <p style="text-align: center;">Subpart B—Table of Hazardous Materials and Special Provisions</p> <p>172.101 Purpose and use of hazardous materials table. 172.102 Special provisions.</p>	<p style="text-align: center;">Subpart C—Shipping Papers</p> <p>172.200 Applicability. 172.201 Preparation and retention of shipping papers. 172.202 Description of hazardous material on shipping papers. 172.203 Additional description requirements. 172.204 Shipper’s certification. 172.205 Hazardous waste manifest.</p> <p style="text-align: center;">Subpart D—Marking</p> <p>172.300 Applicability. 172.301 General marking requirements for non-bulk packagings. 172.302 General marking requirements for bulk packagings. 172.303 Prohibited marking. 172.304 Marking requirements. 172.306 [Reserved]</p>
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PARTS

In 49 CFR Parts 100-185, the CHAPTER I index shows the headings under SUBCHAPTER C and designates where each subject is addressed in the HMR:

HEADING	PART (NUMBER)
General information, regulations, and definitions	171
Hazmat tables, special provisions, hazmat communications, emergency response information, safety and security plans, and training requirements	172
Shippers – General requirements for shipments and packagings	173
Carriage by rail	174
Carriage by aircraft	175
Carriage by vessel	176
Carriage by public highway	177
Specifications for packagings	178
Specifications for tank cars	179
Continuing qualification and maintenance of packagings	180

HOW TO LOCATE REFERENCE NUMBERS

Bold numbers referring to sections are at the top, outside corners of each page of the HMR. These reference numbers have the same location and purpose as dictionary locator words at the top of each page in a dictionary (i.e., the number on the top left is the CFR reference number that begins that page; the number on the top right is the last CFR reference number that ends on that page).

It is important to use these reference numbers, rather than the page numbers, to locate information in the HMR. The page numbers in 49 CFR are always changing because of revisions, additions, deletions, and the annual reprinting of the CFR.

TURN TO SUBCHAPTER C, THE BEGINNING OF THE HMR

Part 171 – GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

Use the reference numbers at the top of the HMR. Notice that Part 171 begins with a table of contents. The table of contents lists headings within Part 171 by section numbers, not page numbers.

SCAN THE SECTIONS OF PART 171

Notice the Part and Section numbers in **bold** at the top of each page; these numbers refer to the section that begins or ends on the page.

SUBCHAPTER C—HAZARDOUS MATERIALS REGULATIONS	Pipeline and Haz. Matls. Safety Admin., DOT	§ 171.1
PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS	parts 171 through 180) under that delegated authority. This section addresses the applicability of the HMR to packagings represented as qualified for use in the transportation of hazardous materials in commerce and to pre-transportation and transportation functions.	(6) Labeling a package to indicate that it contains a hazardous material. (7) Preparing a shipping paper. (8) Providing and maintaining emergency response information. (9) Reviewing a shipping paper to verify compliance with the HMR or international equivalents. (10) For each person importing a hazardous material into the United States, providing the shipper with timely and complete information as to the HMR requirements that will apply to the transportation of the material within the United States.
Subpart A—Applicability, General Requirements, and North American Shipments	Subpart A—Applicability, General Requirements, and North American Shipments	(1) Certifying that a hazardous material is in proper condition for transportation in conformance with the requirements of the HMR. (2) Loading, blocking, and bracing a hazardous material package in a freight container or transport vehicle. (3) Segregating a hazardous materials package in a freight container or transport vehicle from incompatible cargo. (4) Selecting, providing, or affixing placards for a freight container or transport vehicle to indicate that it contains a hazardous material.
Sec.	§ 171.1 Applicability of Hazardous Materials Regulations (HMR) to persons and functions.	(c) <i>Transportation functions.</i> Requirements in the HMR apply to transportation of a hazardous material in commerce and to each person who transports a hazardous material in commerce, including each person under contract with any department, agency, or instrumentality of the executive, legislative, or judicial branch of the Federal government who transports a hazardous material in commerce. Transportation of a hazardous material in commerce begins when a carrier takes physical possession of the hazardous material for the purpose of transporting it and continues until the package containing the hazardous material is delivered to the destination indicated on a shipping document, package marking, or other medium, or, in the case of a rail car, until the car is delivered to a private track or siding. For a private motor carrier, transportation of a hazardous material in commerce begins when a motor vehicle driver takes possession of a hazardous
171.2 General requirements. 171.3 Hazardous waste. 171.4 Marine pollutants. 171.6 Control numbers under the Paperwork Reduction Act. 171.7 Reference material. 171.8 Definitions and abbreviations. 171.9 Rules of construction. 171.10 Units of measure. 171.11 [Reserved]. 171.12 North American shipments. 171.12a [Reserved]. 171.14 [Reserved].	Federal hazardous materials transportation law (49 U.S.C. 5101 <i>et seq.</i>) directs the Secretary of Transportation to establish regulations for the safe and secure transportation of hazardous materials in commerce, as the Secretary considers appropriate. The Secretary is authorized to apply these regulations to persons who transport hazardous materials in commerce. In addition, the law authorizes the Secretary to apply these regulations to persons who cause hazardous materials to be transported in commerce. The law also authorizes the Secretary to apply these regulations to persons who manufacture or maintain a packaging or a component of a packaging that is represented, marked, certified, or sold as qualified for use in the transportation of a hazardous material in commerce. Federal hazardous material transportation law also applies to anyone who indicates by marking or other means that a hazardous material being transported in commerce is present in a package or transport conveyance when it is not, and to anyone who tampers with a package or transport conveyance used to transport hazardous materials in commerce or a required marking, label, placard, or shipping description. Regulations prescribed in accordance with Federal hazardous materials transportation law shall govern safety aspects, including security, of the transportation of hazardous materials that the Secretary considers appropriate. In 49 CFR 1.53, the Secretary delegated authority to issue regulations for the safe and secure transportation of hazardous materials in commerce to the Pipeline and Hazardous Materials Safety Administrator. The Administrator issues the Hazardous Materials Regulations (HMR; 49 CFR	(1) Determining the hazard class of a hazardous material. (2) Selecting a hazardous materials packaging. (3) Filling a hazardous materials packaging, including a bulk packaging. (4) Securing a closure on a filled or partially filled hazardous materials package or container or on a package or container containing a residue of a hazardous material. (5) Marking a package to indicate that it contains a hazardous material.
Subpart B—Incident Reporting, Notification, BOE Approvals and Authorization	171.15 Immediate notice of certain hazardous materials incidents. 171.16 Detailed hazardous materials incident reports. 171.17–171.18 [Reserved]. 171.19 Approvals or authorizations issued by the Bureau of Explosives. 171.20 Submission of Examination Reports. 171.21 Assistance in investigations and special studies.	
Subpart C—Authorization and Requirements for the Use of International Transport Standards and Regulations	171.22 Authorization and conditions for the use of international standards and regulations. 171.23 Requirements for specific materials and packagings transported under the ICAO Technical Instructions, IMDG Code, Transport Canada TDG Regulations, or the IAEA Regulations. 171.24 Additional requirements for the use of the ICAO Technical Instructions. 171.25 Additional requirements for the use of the IMDG Code. 171.26 Additional requirements for the use of the IAEA Regulations.	
AUTHORITY: 49 U.S.C. 5101–5128, 44701; Pub. L. 101–419 section 4; Pub. L. 104–134, section 31001; Pub. L. 114–74 section 4 (28 U.S.C. 2461 note); 49 CFR 1.81 and 1.97.		

FINDING A SPECIFIC SECTION

LOCATE THE DEFINITION OF A HAZARD CLASS, SUCH AS "CLASS 1 – EXPLOSIVES"

- Start by looking in § 171.8
- § 171.8 refers you to § 173.50
- Use the reference numbers at the top of the HMR pages to locate “§ 173.50 Class 1 – definitions”
- Read the definition

LOCATE A SPECIFIC REFERENCE, SUCH AS “§ 172.201(a)(1)(iii)”

- Use the reference numbers at the top of the HMR pages to find the number closest to § 172.201.
- Follow the step-by-step process below:
 1. Look at the top of the pages in 49 CFR for the **bold number**. The first three numbers indicate the Part (172).
 2. The Title of § 172.201 is “Preparation and retention of shipping papers.”
 3. Paragraph – “(a)” the first paragraph under General Entries pertains to contents of the shipping paper.
§ 172.201(a)
 4. Subparagraph – There are five subparagraphs under paragraph (a). § 172.201(a)(1)-(5)
 5. Sub-subparagraph – § 172.201(a)(1) has three sub-subparagraphs: (i)-(iii).
 6. Find “§ 172.201(a)(1)(iii)” and complete this sentence:
“Must be identified by the entry of an _____ placed before the basic shipping description . . .”
 7. “X” is the correct answer.

§ 172.200

49 CFR Ch. I

W10 When offered for transportation by vessel, the use of Large Packagings (see § 171.8 of this subchapter) is prohibited.

W31 Non-bulk packagings must be hermetically sealed.

W32 Non-bulk packagings shall be hermetically sealed, except for solid fused material.

W40 Non-bulk bags are not allowed.

W41 When offered for transportation by water, this material must be packaged in bales and be securely and tightly bound with rope, wire or similar means.

W100 Non-bulk flexible, fibreboard or wooden packagings must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner.

[Amdt. 172-123, 55 FR 52582, Dec. 21, 1990]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 172.102, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at www.fdsys.gov.

Subpart C—Shipping Papers

§ 172.200 Applicability.

(a) *Description of hazardous materials required.* Except as otherwise provided in this subpart, each person who offers a hazardous material for transportation shall describe the hazardous material on the shipping paper in the manner required by this subpart.

(b) This subpart does not apply to any material, other than a hazardous substance, hazardous waste or marine pollutant, that is—

(1) Identified by the letter “A” in column 1 of the § 172.101 table, except when the material is offered or intended for transportation by air; or

(2) Identified by the letter “W” in column 1 of the § 172.101 table, except when the material is offered or intended for transportation by water; or

(3) A limited quantity package unless the material is offered for transportation by aircraft or vessel and, until December 31, 2020, a package of ORM-D material authorized by this subchapter on October 1, 2010, when offered for transportation by highway, rail or vessel.

(4) Category B infectious substances prepared in accordance with § 173.199.

[Amdt. 172-29A, 41 FR 40677, Sept. 20, 1976, as amended by Amdt. 172-58, 45 FR 34697, May 22, 1980; Amdt. 172-74, 47 FR 43065, Sept. 30, 1982; Amdt. 172-112, 53 FR 17169, May 13, 1988; Amdt. 172-127, 57 FR 52938, Nov. 5, 1992; 71 FR 32258, June 2, 2006; 76 FR 3365, Jan. 19, 2011; 78 FR 1112, Jan. 7, 2013]

§ 172.201 Preparation and retention of shipping papers.

(a) *Contents.* When a description of hazardous material is required to be included on a shipping paper, that description must conform to the following requirements:

(1) When a hazardous material and a material not subject to the requirements of this subchapter are described on the same shipping paper, the hazardous material description entries required by § 172.202 and those additional entries that may be required by § 172.203:

(i) Must be entered first, or

(ii) Must be entered in a color that clearly contrasts with any description on the shipping paper of a material not subject to the requirements of this subchapter, except that a description on a reproduction of a shipping paper may be highlighted, rather than printed, in a contrasting color (the provisions of this paragraph apply only to the basic description required by § 172.202(a)(1), (2), (3), and (4)); or

(iii) Must be identified by the entry of an “X” placed before the basic shipping description required by § 172.202 in a column captioned “HM.” (The “X” may be replaced by “RQ,” if appropriate.)

(2) The required shipping description on a shipping paper and all copies of the shipping paper used for transportation purposes must be legible and printed (manually or mechanically) in English.

(3) Unless it is specifically authorized or required in this subchapter, the required shipping description may not contain any code or abbreviation.

(4) A shipping paper may contain additional information concerning the material provided the information is not inconsistent with the required description. Unless otherwise permitted or required by this subpart, additional

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§ 172.202

information must be placed after the basic description required by § 172.202(a).

(5) *Electronic shipping papers.* For transportation by rail, a rail carrier may accept shipping paper information either telephonically (i.e., voice communications and facsimiles) or electronically (EDI) from an offeror of a hazardous materials shipment in accordance with the provisions in paragraphs (a)(5)(i)-(a)(5)(iv) of this section. See § 171.8 for the EDI definition.

(i) When the information applicable to the consignment is provided under this requirement the information must be available to the offeror and carrier at all times during transport, and the carrier must have and maintain a printed copy of this information until delivery of the hazardous materials on the shipping paper is complete. When a paper document is produced, the data must be presented as required by this subpart.

(ii) The offeror must forward the shipping paper (record) for a loaded movement to the carrier prior to shipment unless the carrier prepares the shipping paper on behalf of the offeror. The offeror is only relieved of the duty to forward the shipping paper once the offeror has received a copy of the shipping paper from the carrier:

(iii) A carrier that generates a residue shipping paper using information from the previous loaded movement of a hazardous materials packaging must ensure the description of the hazardous material that accompanies the shipment complies with the offeror’s request; and

(iv) *Verification.* The carrier and the offeror must have a procedure by which the offeror can verify accuracy of the transmitted hazard communication information that will accompany the shipment.

(b) [Reserved]

(c) *Continuation page.* A shipping paper may consist of more than one page, if each page is consecutively numbered and the first page bears a notation specifying the total number of pages included in the shipping paper. For example, “Page 1 of 4 pages.”

(d) *Emergency response telephone number.* Except as provided in § 172.604(d), a shipping paper must contain an emer-

gency response telephone number and, if utilizing an emergency response information telephone number service provider, identify the person (by name or contract number) who has a contractual agreement with the service provider, as prescribed in subpart G of this part.

(e) *Retention and Recordkeeping.* Each person who provides a shipping paper must retain a copy of the shipping paper required by § 172.202(a), or an electronic image thereof, that is accessible at or through its principal place of business and must make the shipping paper available, upon request, to an authorized official of a Federal, State, or local government agency at reasonable times and locations. For a hazardous waste, the shipping paper copy must be retained for three years after the material is accepted by the initial carrier. For all other hazardous materials, the shipping paper must be retained for two years after the material is accepted by the initial carrier. Each shipping paper copy must include the date of acceptance by the initial carrier, except that, for rail, vessel, or air shipments, the date on the shipment waybill, airbill, or bill of lading may be used in place of the date of acceptance by the initial carrier. A motor carrier (as defined in § 390.5 of subchapter B of chapter III of subtitle B) using a shipping paper without change for multiple shipments of one or more hazardous materials having the same shipping name and identification number may retain a single copy of the shipping paper, instead of a copy for each shipment made, if the carrier also retains a record of each shipment made, to include shipping name, identification number, quantity transported, and date of shipment.

[Amdt. 172-29A, 41 FR 40677, Sept. 20, 1976]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 172.201, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at www.fdsys.gov.

§ 172.202 Description of hazardous material on shipping papers.

(a) The shipping description of a hazardous material on the shipping paper must include:

COMMUNICATING THE HAZARD

Hazard communication is an important aspect of safe transportation. The proper shipping name, hazard class or division, packing group, markings, labels, and placards all communicate the hazards of a material. This information appears on package markings, transport vehicles, and shipping papers. The information corresponds directly to important emergency response information. Emergency response information is an important component of hazard communication because it is used by emergency responders at the scene of a hazmat incident.

Refer to Part 172 in the "Frequently Used References" section on the next page to locate additional information on each aspect of hazard communication in the HMR.



FREQUENTLY USED REFERENCES

PART 106—RULEMAKING PROCEDURES

PART 107—HAZARDOUS MATERIALS PROGRAM PROCEDURES

(Special Permits, Preemption, Enforcement, Designation of Approval and Certification Agencies, and Registration)

PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

- **171.1** Applicability of HMR
- **171.4** Marine pollutants
- **171.8** Definitions and abbreviations
- **171.9** Rules of construction
- **171.12** North American shipments
- **171.15/16** Hazardous material incidents - notify/report
- **171.22** Authorization and conditions for the use of international standards and regulations
- **171.23-26** Requirements for specific materials and packagings transported under international standards

PART 172—HAZARDOUS MATERIALS TABLE, SPECIAL PROVISIONS, HAZARDOUS MATERIALS COMMUNICATIONS, EMERGENCY RESPONSE INFORMATION, TRAINING REQUIREMENTS, AND SECURITY PLANS

- **172.1** Purpose and scope
- **172.101** Hazardous Materials Table
- **172.102** Special provisions
- **172.200** Shipping papers – Applicability
- **172.300** Marking – Applicability
- **172.400** General labeling requirements
- **172.500** Placarding – Applicability
- **172.600** Emergency response information
- **172.700** Training requirements
- **172.800** Safety and security plans - Applicability

PART 173—SHIPPERS, GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

- **173.1** Purpose and scope
- **173.2** Hazardous materials classes and index to hazard class definitions
- **173.3** Packaging and exceptions
- **173.4/4a/4b** Small, excepted and de minimis quantity exceptions
- **173.5** Agricultural operations
- **173.6** Materials of trade exceptions

- **173.21** Forbidden materials and packages
- **173.22** Shipper's responsibility
- **173.24/24a/24b** General requirements for packagings and packages
- **173.25** Authorized packages and overpacks
- **172.26** Quantity limitations
- **173.27** General requirements for transportation by aircraft
- **173.28** Reuse, reconditioning, and remanufacture of packagings
- **173.29** Empty packagings
- **173.30** Loading and unloading of transport vehicles
- **173.115-156** Classes 2, 3, 4, 5, 6, 8, 9 definitions and exceptions (limited quantities)
- **173.157** Reverse logistics
- **173.159/159a** Wet batteries and non-spillable batteries
- **173.185** Lithium cells and batteries
- **173.301** General requirements for shipments of compressed gases in cylinders and spherical pressure vessels
- **173.306** Limited quantity exceptions for compressed gases

SPECIFIC HAZARD CLASSES

- **173.2** Hazardous materials classes and index to hazard class definitions
- **173.50** Class 1 (Explosives)
- **173.115** Class 2 (Divisions 2.1, 2.2, & 2.3) (Gases)
 - Division 2.1 Flammable Gas
 - Division 2.2 Non-flammable, Non-Poisonous Compressed Gas
 - Division 2.3 Gas Poisonous by Inhalation
- **173.120** Class 3 (Flammable liquids/Combustible liquids)
- **173.124** Class 4 (Divisions 4.1, 4.2, and 4.3)
 - Division 4.1 (Flammable Solid)
 - Division 4.2 (Spontaneously Combustible Material)
 - Division 4.3 (Dangerous When Wet)
- **173.127** Class 5, Division 5.1 (Oxidizers)
- **173.128** Class 5, Division 5.2 (Organic Peroxide)
- **173.132** Class 6, Division 6.1 (Poisonous Materials)
- **173.134** Class 6, Division 6.2 (Infectious Substances)
- **173.403** Class 7 (Radioactive Materials)
- **173.136** Class 8 (Corrosive Materials)
- **173.140** Class 9 (Miscellaneous Hazardous Materials)
- **173.144** Other Regulated Materials (ORM)

PACKING GROUPS

Packing groups are designated in Column 5 of the HMT and indicate the degree of danger presented by the material. Packing groups are not assigned to all classes of materials. The shipper is responsible for determining the appropriate packing group.

PACKING GROUP	CODE	DEGREE OF DANGER
Packing Group I	PG I	Great Danger
Packing Group II	PG II	Medium Danger
Packing Group III	PG III	Minor Danger

If more than one packing group is indicated for an entry, the packing group for the hazmat must be determined using the criteria found in Subpart D of Part 173. For example: **Ketones, liquid, n.o.s.** is listed in the HMT as a PG I, II, and III material. The shipper must determine the packing group for the material by applying the criteria in § 173.121, Class 3 – Assignment of packing group:

PACKING GROUP	FLASH POINT	INITIAL BOILING POINT
I		≤35°C (95°F)
II	<23°C (73°F)	>35°C (95°F)
III	≥23°C, ≤60°C (≥73°F, ≤140°F)	>35°C (95°F)

< = less than; ≤ = less than, or equal to; > = more than; ≥ = more than, or equal to

§ 172.101 HAZARDOUS MATERIALS TABLE

Sym- bols (1)	Hazardous materials descriptions and proper shipping names (2)	Hazard class or Division (3)	Identi- fication Numbers (4)	PG (5)	Label Codes (6)	Special provisions (§ 172.102) (7)	(8)			(9)		(10) Vessel stowage		
							Packaging (§ 173.***)			Quantity limitations (see §§ 173.27 and 175.75)		Loca- tion (10A)	Other (10B)	
							Excep- tions (8A)	Non-bulk (8B)	Bulk (8C)	Passenger aircraft/rail (9A)	Cargo air- craft only (9B)			
A	Sodium aluminate, solid	8	UN2812	III	8	IB8, IP3, T1, TP33	154	213	240	25 kg	100 kg	A		
	Sodium aluminate, solution	8	UN1819	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	52.	
				III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	52.	
	Sodium aluminum hydride	4.3	UN2835	II	4.3	A8, A19, A20, IB4, T3, TP33, W31, W40	151	212	242	Forbidden	50 kg	E	13, 52, 148	
	Sodium ammonium vanadate	6.1	UN2863	II	6.1	IB8, IP2, IP4, T3, TP33	153	212	242	25 kg	100 kg	A		
	Sodium arsenilate	6.1	UN2473	III	6.1	IB8, IP3, T1, TP33	153	213	240	100 kg	200 kg	A		
	Sodium arsenate	6.1	UN1685	II	6.1	IB8, IP2, IP4, T3, TP33	153	212	242	25 kg	100 kg	A		
	Sodium arsenite, aqueous solutions	6.1	UN1686	II	6.1	IB2, T7, TP2	153	202	243	5 L	60 L	A		
				III	6.1	IB3, T4, TP2	153	203	241	60 L	220 L	A		
	Sodium arsenite, solid	6.1	UN2027	II	6.1	IB8, IP2, IP4, T3, TP33	153	212	242	25 kg	100 kg	A		
	Sodium azide	6.1	UN1687	II	6.1	IB8, IP2, IP4	153	212	242	25 kg	100 kg	A	36, 52, 91	
	<i>Sodium bifluoride, see Sodium hydrogendifluoride</i>													
	<i>Sodium bisulfite, solution, see Bisulfites, aqueous solutions, n.o.s.</i>													
	Sodium borohydride	4.3	UN1426	I	4.3	N40, W32	None	211	242	Forbidden	15 kg	E	13, 52, 148	

USING THE HAZARDOUS MATERIALS TABLE

The process of complying (or determining compliance) with the HMR always centers around the § 172.101 Hazardous Materials Table. Review Part 172, Subpart B, § 172.101(a)-(k). A very brief description of this process follows:

STEP ONE:

Identify the material by:

- Proper Shipping Name **(Col. 2)**
- Hazard Class or Division **(Col. 3)**
- Identification Number **(Col. 4)**
- Packing Group (if appropriate) **(Col. 5)**

REMEMBER TO ALWAYS CHECK THE APPENDICES TO THE HMT (§ 172.101):

Appendix A – The hazardous material may also be a hazardous substance. See additional information on the next page.

Appendix B – The hazardous material may also be a marine pollutant. See additional information on the next page.

STEP TWO:

Check symbols (+, A, D, G, I, or W) and determine if restrictions or exceptions apply. **(Col. 1)**

STEP THREE:

Determine Packaging – For the material selected, determine the authorized packaging. **(Cols. 8A, 8B, 8C)** AND

Check Special Provisions – For the material selected, determine if any Special Provisions apply. **(Col. 7)**

STEP FOUR:

Label the package(s) – For the material selected, determine the required hazard warning label(s). **(Col. 6)**

Note: Marking (§ 172.300) and Placarding (§ 172.500), may also be required.

STEP FIVE:

Check Air or Rail Limitations – For transportation by air and/or rail, determine packaging limits. **(Cols. 9A, 9B)**

STEP SIX:

Check Water Limitations – For transportation by water, determine vessel shipment requirements. **(Cols. 10A, 10B)**

APPENDIX A: HAZARDOUS SUBSTANCES

1. The hazmat also is a hazardous substance (as defined in § 171.8) when:

- the material is listed in Appendix A (HMT § 172.101),
- concentration limits are exceeded, and
- the amount **in one package** equals or exceeds the reportable quantity (RQ).

Note: The term does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance in Appendix A, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and synthetic gas).

2. Read the footnotes to Appendix A. The footnotes may affect the proper shipping name selection.

APPENDIX B: MARINE POLLUTANTS

1. The hazmat also is a marine pollutant when:

- the material is listed in Appendix B (HMT § 172.101), and
- when in solution or mixture, the concentration by weight equals or exceeds:
 - 10% for material listed in Appendix B, or
 - 1% for material identified as “severe marine pollutant” in Appendix B.

2. Requirements and exceptions specific to marine pollutants (see § 171.4):

- apply to all Marine Pollutants transported by vessel, and
- do not apply to non-bulk shipments by rail, air, or highway.

ADDITIONAL REQUIREMENTS:

172.200-205	Shipping Papers
172.301-302	Package Marking
172.402	Additional Labeling
172.504	Placarding
172.602-604	Emergency Response Information and Telephone Number
172.704	Training Requirements
172.800	Safety and Security Plan Applicability

RESOURCES

TEST YOUR KNOWLEDGE OF THE HMR

DO YOU UNDERSTAND THE SCOPE OF THE HMR?

#	STATEMENT	TRUE	FALSE
1.	Industry standards have been incorporated into hazmat regulations.		
2.	Some words have different meanings when used in conjunction with the Hazardous Materials Regulations (HMR).		
3.	Air shipments may be transported in accordance with the International Civil Aviation Organization (ICAO) Technical Instructions.		
4.	Import shipments require certification prior to acceptance by the initial carrier in the United States.		
5.	Shipments can move through the United States under Canadian regulations.		
6.	Hazmat incidents/spills may require immediate and/or written notification to the Department of Transportation (DOT).		

TEST YOUR KNOWLEDGE OF THE HMR – ANSWERS

#	ANSWER	
1.	TRUE	Industry standards have been incorporated by reference and have the full force of the law. See § 171.7.
2.	TRUE	Some words have different meanings when used in conjunction with the HMR. Become familiar with the definitions in § 171.8 and use the Glossary on page 21 of this document.
3.	TRUE	Air shipments may be transported in accordance with the ICAO Technical Instructions. For more details read § 171.22.
4.	TRUE	Import shipments require certification prior to acceptance by the initial carrier in the US. See § 171.22.
5.	TRUE	Shipments prepared according to Canada's TDG regulations may enter and/or transit the United States, provided certain requirements are met. See § 171.12.
6.	TRUE	Hazmat incidents and/or spills meeting the conditions in § 171.15 require notification to DOT. Please read the details in §§ 171.15 and 171.16.

RESOURCES FOR TRAINING AND ASSISTANCE

DOT PHMSA's Office of Outreach and Engagement is responsible for the development and dissemination of hazmat training, technical assistance, and information to enhance compliance, enforcement uniformity, and emergency preparedness.

LETTERS OF INTERPRETATION

PHMSA provides written clarifications of the Hazardous Materials Regulations in the form of interpretation letters. These letters reflect the agency's current application of the HMR to the specific facts presented by the person requesting the clarification. Interpretations do not create legally-enforceable rights or obligations and are provided to help the public understand how to comply with the HMR. PHMSA regularly reviews interpretations for accuracy and applicability. Interpretation letters from the last ten years are published to provide the public with a greater awareness and understanding of the HMR.

To access letters of interpretation on-line, visit: <https://www.phmsa.dot.gov/regulations/title49/b/2/1>.

TRAINING MATERIALS AND PUBLICATIONS

Training, outreach, and information dissemination are important responsibilities of PHMSA. To promote compliance with the HMR, PHMSA develops brochures, charts, publications, training modules, videos and other safety-related information and makes them available to the public through the PHMSA website. Many of the publications spotlight safety concerns such as lithium batteries, undeclared hazmat shipments, wetlines, and alternative fuels such as ethanol.

To order training materials and publications, visit: <https://www.phmsa.dot.gov/training/hazmat/publications>.

HAZARDOUS MATERIALS SAFETY ASSISTANCE TEAM (HMSAT)

The HMSAT was established to ensure industry remains aware of the regulatory requirements, to help businesses find the resources needed to comply with the HMR, and to provide technical assistance to the emergency response and planning community. Regional offices are located in Atlanta, GA, Trenton, NJ, Houston, TX, Kansas City, KS, and Ontario, CA.

For more information, visit: <https://www.phmsa.dot.gov/training/hazmat/hazardous-materials-safety-assistance-team-hmsat>.

HAZARDOUS MATERIALS INFO CENTER (HMIC)

Contact PHMSA's HMIC to obtain hazmat transportation information and copies of rulemakings. Specialists are on duty Monday through Friday from 9:00 a.m. to 5:00 p.m. (EST). You may call any time, 24 hours a day, seven days a week, and leave a message. A specialist will return your call before the end of the next business day. You may also contact the HMIC to report alleged violations of the Hazardous Materials Regulations.

1-800-HMR-4922 (1-800-467-4922)

INFOCNTR@dot.gov



GLOSSARY

HAZARDOUS MATERIALS TRANSPORTATION TERMS

NOTE: See 49 CFR § 171.8 for in-depth definitions.

Aerosol

An article consisting of any non-refillable receptacle containing a gas compressed, liquefied or dissolved under pressure, the sole purpose of which is to expel a nonpoisonous (other than a Division 6.1 Packing Group III material) liquid, paste, or powder and fitted with a self-closing release device allowing the contents to be ejected by the gas.

Approval

A written authorization, including a competent authority approval, issued by the Associate Administrator, the Associate Administrator's designee, or as otherwise prescribed in the HMR, to perform a function for which prior authorization by the Associate Administrator is required.

Bulk Packaging

A packaging, other than a vessel or a barge, including a transport vehicle or freight container, in which hazardous materials are loaded with no intermediate form of containment. A Large Packaging in which hazardous materials are loaded with an intermediate form of containment, such as one or more articles or inner packagings, is also a bulk packaging. Additionally, a bulk packaging has:

- (1) A maximum capacity greater than 450 L (119 gallons) as a receptacle for a liquid;
- (2) A maximum net mass greater than 400 kg (882 pounds) and a maximum capacity greater than 450 L (119 gallons) as a receptacle for a solid; or
- (3) A water capacity greater than 454 kg (1000 pounds) as a receptacle for a gas as defined in § 173.115.

Carrier

A person who transports passengers or property in commerce by rail car, aircraft, motor vehicle, or vessel.

Commerce

Trade or transportation in the jurisdiction of the United States within a single state; between a place in a state and a place outside of the state; that affects trade or transportation between a place in a state and place outside of the state; or on a United States-registered aircraft.

Division

A subdivision of a hazard class.

Emergency response information

Information that can be used in the mitigation of an incident involving hazardous materials and, as a minimum, must contain the information listed in § 172.602.

EX Number

A number preceded by the prefix "EX", assigned by the Associate Administrator, to an item that has been evaluated under the provisions of § 173.56.

Flash Point

The minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid.

Gross Weight	The weight of a packaging plus the weight of its contents.
Hazard Class	The category of hazard assigned to a hazardous material under the definitional criteria of part 173 of the HMR and the provisions of the HMT.
Hazardous Material	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, and has designated as hazardous under section 5103 of Federal hazardous materials transportation law. The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the HMT (49 CFR § 172.101), and materials that meet the defining criteria for hazard classes and divisions in Part 173 of the HMR.
Hazardous Substance	<p>A material, including its mixtures and solutions, that:</p> <ol style="list-style-type: none"> (1) Is listed in the Appendix A to § 172.101; (2) Is in a quantity, in one package, which equals or exceeds the reportable quantity (RQ) listed in the Appendix A to § 172.101; and (3) When in a mixture or solution, is in a concentration by weight that equals or exceeds the concentration as shown in § 171.8.
Hazardous Waste	Means any material that is subject to the Hazardous Waste Manifest Requirements of the U.S. Environmental Protection Agency specified in 40 CFR part 262.
Hazmat	A hazardous material.
Hazmat Employee	A person employed on a full-time, part time, or temporary basis by a hazmat employer and who in the course of such full time, part time or temporary employment directly affects hazardous materials transportation safety. Hazmat employees are subject to training requirements in the HMR. See § 171.8 for the full definition.
Hazmat Employer	<p>A person who employs or uses at least one hazmat employee on a full-time, part time, or temporary basis; and who:</p> <ol style="list-style-type: none"> (1) Transports hazardous materials in commerce; (2) Causes hazardous materials to be transported in commerce; or (3) Designs, manufactures, fabricates, inspects, marks, maintains, reconditions, repairs or tests a package, container, or packaging component that is represented, marked, certified, or sold by that person as qualified for use in transporting hazardous materials in commerce. <p>Hazmat employers must ensure that all hazmat employees are trained in accordance with the training requirements in the HMR. See § 171.8 for the full definition.</p>

Identification Number (ID No.)	The UN or NA “four-digit number” assigned to hazardous i.e., UN 1203. ID numbers are listed in Col. 4 of the HMT. Used for identification and emergency response.
Infectious Substance (Etiologic Agent)	A material known or reasonably expected to contain a pathogen. A pathogen is a microorganism (including bacteria, viruses, rickettsiae, parasites, fungi) or other agent, such as a proteinaceous infectious particle (prion), that can cause disease in humans or animals.
Limited Quantity (Ltd. Qty.)	When specified as such in a section applicable to a particular material, means the maximum amount of a hazardous material for which there is a specific labeling or packaging exception.
Marine Pollutant	<p>A material which is listed in Appendix B to § 172.101 (also see § 171.4) and, when in a solution or mixture of one or more marine pollutants, is packaged in a concentration which equals or exceeds:</p> <ol style="list-style-type: none"> (1) Ten percent by weight of the solution or mixture for materials listed in the appendix; or (2) One percent by weight of the solution or mixture for materials that are identified as severe marine pollutants in the appendix.
Marking	A descriptive name, identification number, instructions, cautions, weight, specification, or UN marks, or combinations thereof, required by the HMR on outer packagings of hazardous materials.
Material of Trade	<p>A hazardous material, other than a hazardous waste, that is carried on a motor vehicle—</p> <ol style="list-style-type: none"> (1) For the purpose of protecting the health and safety of the motor vehicle operator or passengers; (2) For the purpose of supporting the operation or maintenance of a motor vehicle (including its auxiliary equipment); or (3) By a private motor carrier (including vehicles operated by a rail carrier) in direct support of a principal business that is other than transportation by motor vehicle.
Mixture	Material composed of more than one chemical compound or element.
Net Weight	A measure of weight referring only to the contents of a package. It does not include the weight of any packaging material.

Non-Bulk Packaging

A packaging which has:

- (1) A maximum capacity of 450 L (119 gallons) or less as a receptacle for a liquid;
- (2) A maximum net mass of 400 kg (882 pounds) or less and a maximum capacity of 450 L (119 gallons) or less as a receptacle for a solid;
- (3) A water capacity of 454 kg (1000 pounds) or less as a receptacle for a gas as defined in § 173.115; or
- (4) Regardless of the definition of bulk packaging, a maximum net mass of 400 kg (882 pounds) or less for a bag or a box conforming to the applicable requirements for specification packagings, including the maximum net mass limitations, provided in subpart L of part 178.

Overpack

Means an enclosure that is used by a single consignor to provide protection or convenience in handling of a package or to consolidate two or more packages. Overpack does not include a transport vehicle, freight container, or aircraft unit load device. Examples of overpacks are one or more packages:

- (1) Placed or stacked onto a load board such as a pallet and secured by strapping, shrink wrapping, stretch wrapping, or other suitable means; or
- (2) Placed in a protective outer packaging such as a box or crate.

Package

A packaging plus its contents.

Packaging

A receptacle and any other components or materials necessary for the receptacle to perform its containment function in conformance with the minimum packing requirements of the HMR.

Packaging Group

A grouping according to the degree of danger presented by hazardous materials. Packing Group I indicates great danger; Packing Group II, medium danger; Packing Group III, minor danger.

Person

An individual, corporation, company, association, firm, partnership, society, joint stock company; or a government, Indian Tribe, or authority of a government or Tribe, that offers a hazardous material for transportation in commerce, transports a hazardous material to support a commercial enterprise, or designs, manufactures, fabricates, inspects, marks, maintains, reconditions, repairs, or tests a package, container, or packaging component that is represented, marked, certified, or sold as qualified for use in transporting hazardous material in commerce.

Person who offers or offeror

Any person who does either or both of the following:

- (1) Performs, or is responsible for performing, any pre-transportation function required under the HMR for transportation of the hazardous material in commerce
- (2) Tenders or makes the hazardous material available to a carrier for transportation in commerce.

Portable Tank

A bulk packaging (except a cylinder having a water capacity of 1000 pounds or less) designed primarily to be loaded onto, or on, or temporarily attached to a transport vehicle or ship and equipped with skids, mountings, or accessories to facilitate handling of the tank by mechanical means.

Pre-Transportation Function	<p>A function specified in the HMR that is required to assure the safe transportation of a hazardous material in commerce, including—</p> <ol style="list-style-type: none"> (1) Determining the hazard class of a hazardous material. (2) Selecting a hazardous materials packaging. (3) Filling a hazardous materials packaging, including a bulk packaging. (4) Securing a closure on a filled or partially filled hazardous materials package or container or on a package or container containing a residue of a hazardous material. (5) Marking a package to indicate that it contains a hazardous material. (6) Labeling a package to indicate that it contains a hazardous material. (7) Preparing a shipping paper. (8) Providing and maintaining emergency response information. (9) Reviewing a shipping paper to verify compliance with the HMR or international equivalents. (10) For each person importing a hazardous material into the United States, providing the shipper with timely and complete information as to the HMR requirements that will apply to the transportation of the material within the United States. (11) Certifying that a hazardous material is in proper condition for transportation in conformance with the requirements of the HMR. (12) Loading, blocking, and bracing a hazardous materials package in a freight container or transport vehicle. (13) Segregating a hazardous materials package in a freight container or transport vehicle from incompatible cargo. (14) Selecting, providing, or affixing placards for a freight container or transport vehicle to indicate that it contains a hazardous material.
Primary Hazard	The hazard class of a material as assigned in the HMT.
Proper Shipping Name	The name of the hazardous material shown in Roman print (not italics) in the HMT.
Radioactive Material	Any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values specified in the table in § 173.436 or values derived according to the instructions in § 173.433.
Registration	A person who transports or offers for transportation certain hazardous materials is required to register and pay a fee to the USDOT. (See § 107.601)
Registration for Cargo Tanks	Procedure for persons who manufacture, assemble, inspect, test, certify or repair a cargo tank or cargo tank motor vehicle. (See § 107.501)
Reportable Quantity (RQ)	The quantity specified in column 2 of the appendix to § 172.101 for any material identified in column 1 of the appendix.
Residue	The hazardous material remaining in a packaging, including a tank car, after its contents have been unloaded to the maximum extent practicable and before the packaging is either refilled or cleaned of hazardous material and purged to remove any hazardous vapors.

Shipping Paper	A shipping order, bill of lading, manifest or other shipping document serving a similar purpose and prepared in accordance with subpart C of part 172 of the HMR.
Solution	Any homogeneous liquid mixture of two or more chemical compounds or elements that will not undergo any segregation under conditions normal to transportation.
Special Permit	A document issued by the DOT, permitting a person to perform a function that is not otherwise permitted under hazmat regulations (See Part 107, Subpart B of 49 CFR). Formerly known as an exemption.
Specification Packaging	A packaging conforming to one of the specifications or standards for packagings in part 178 or part 179 of the HMR.
Strong Outer Packaging	The outermost enclosure that provides protection against the unintentional release of its contents. It is a packaging that is sturdy, durable, and constructed so that it will retain its contents under normal conditions of transportation.
Subsidiary Hazard	A hazard of a material other than the primary hazard. (See primary hazard).
Technical Name	A recognized chemical name or microbiological name currently used in scientific and technical handbooks, journals, and texts.
Transport Vehicle	A cargo-carrying vehicle such as an automobile, van, tractor, truck, semitrailer, tank car or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, rail car, etc.) is a separate transport vehicle.
Transportation	The movement of property and loading, unloading, or storage incidental to that movement.
Unit Load Device	Any type of freight container, aircraft container, aircraft pallet with a net, or aircraft pallet with a net over an igloo.
Watt-Hour (Wh)	A unit of energy equivalent to one watt (1 W) of work acting for one hour (1 h) of time. The Watt-hour rating of a lithium ion cell or battery is determined by multiplying the rated capacity of a cell or battery in ampere-hours, by its nominal voltage. Therefore, Watt-hour (Wh) = ampere-hour (Ah) × volts (V).

For additional information contact:

The Hazardous Materials Info Center

1-800-HMR-4922

(1-800-467-4922)

E-mail: infocntr@dot.gov

<https://www.phmsa.dot.gov>

Pipeline and Hazardous Materials Safety Administration

Outreach, Engagement, and Grants Division

East Building, 2nd Floor

1200 New Jersey Ave., SE

Washington, DC 20590

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