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spaces during fumigation unless he wears the personal protection equipment for the fumigant that is in use;

(2) No person may enter the space that is fumigated unless the entry is made by a two person team; and

(3) No person may enter the space that is fumigated unless he wears a lifeline and safety harness and each life-line is tended by a person who is outside the space and who is wearing the personal protection equipment for the fumigant that is in use.

AFTER VENTILATION

§ 147A.31 Removal of fumigation material and warning signs.

After ventilation is completed and a marine chemist or other qualified person determines that there is no danger to the health and safety of any person under § 147A.21(d) or § 147A.23(g), the person in charge of fumigation, or, if the vessel has left port, the person in charge of the vessel, shall ensure that all warning signs are removed and fumigation containers and materials are removed and disposed of in accordance with the manufacturer's recommendations.

SPECIAL REQUIREMENTS FOR FLAMMABLE FUMIGANTS

§ 147A.41 Person in charge of fumigation; flammable fumigants.

(a) The person in charge of fumigation shall ensure that:

(1) Before the space that is to be fumigated is sealed, it is thoroughly cleaned, and all refuse, oily waste, and other combustible material is removed;

(2) Before fumigation, all fire fighting equipment, including sprinklers and fire pumps, is in operating condition; and

(3) Before and during fumigation, electrical circuits that are in the space that is fumigated are de-energized.

(b) [Reserved]

§ 147A.43 Other sources of ignition; flammable fumigants.

While the space that is fumigated is being sealed or during fumigation, no person may use matches, smoking materials, fires, open flames, or any other source of ignition in any spaces that are not determined to be safe for occupancy under § 147A.11(b)(1)(i).

PART 148—CARRIAGE OF BULK SOLID MATERIALS THAT REQUIRE SPECIAL HANDLING

Subpart A—General

Sec.

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148.250 Direct reduced iron (DRI); hot-molded briquettes.
148.255 Ferrosilicon, aluminum ferrosilicon, and aluminum silicon containing more than 30% but less than 90% silicon.
148.260 Ferrous metal.
148.265 Fish meal or fish scrap.
148.270 Hazardous substances.
148.275 Iron oxide, spent; iron sponge, spent.
148.280 Magnesia, unslaked (lightburned magnesia, calcined magnesite, caustic calcined magnesite).
148.285 Metal sulfide concentrates.
148.290 Peat moss.
148.295 Petroleum coke, calcined or uncalcined, at 55 °C (131 °F) or above.
148.300 Radioactive materials.
148.310 Seed cake.
148.315 Sulfur.
148.320 Tankage; garbage tankage; rough ammonia tankage; or tankage fertilizer.
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AUTHORITY: 33 U.S.C. 1602; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 46 U.S.C. 3306, 5111; 49 U.S.C. 5103; Department of Homeland Security Delegation No. 0170.1.

SOURCE: 75 FR 64591, Oct. 19, 2010, unless otherwise noted.

EDITORIAL NOTE: Nomenclature changes to part 148 appear by USCG–2012–0832, 77 FR 59783, Oct. 1, 2012.

Subpart A—General

§ 148.1 Purpose and applicability.

(a) This part prescribes special handling procedures for certain solid materials that present hazards when transported in bulk by vessel.

(b) Except as noted in paragraph (c) of this section, this part applies to all domestic and foreign vessels in the navigable waters of the United States that transport bulk solid materials requiring special handling.

(c) This part does not apply to an unmanned barge on a domestic voyage carrying a Potentially Dangerous Material (PDM) found in Table 148.10 of this part. All barges on international voyages must follow the requirements for PDM.

(d) The regulations in this part have preemptive impact over State law on the same subject. The Coast Guard has determined, after considering the factors developed by the Supreme Court in *U.S.* v. *Locke*, 529 U.S. 89 (2000), that in directing the Secretary to regulate the safe transportation of hazardous material and the safety of individuals and property on board vessels subject to inspection, as well as the provision of loading information, Congress intended to preempt the field of safety standards for solid materials requiring special handling when transported in bulk on vessels.

§ 148.2 Responsibility and compliance.

Each master of a vessel, person in charge of a barge, owner, operator, shipper, charterer, or agent must ensure compliance with this part. These persons are also responsible for communicating requirements to every person performing any function covered by this part.

§ 148.3 Definitions.

As used in this part—

A–60 class division means a division as defined in § 32.57–5 of this chapter.

Adjacent space means any enclosed space on a vessel, such as a cargo hold, cargo compartment, accommodation space, working space, storeroom, passageway, or tunnel, that shares a common bulkhead or deck with a hatch, door, scuttle, cable fitting or other penetration, with a cargo hold or compartment containing a material listed in Table 148.10 of this part.

Away from means a horizontal separation of at least 3 meters (10 feet) projected vertically is maintained between incompatible materials carried in the same hold or on deck.

Bulk applies to any solid material, consisting of a combination of particles, granules, or any larger pieces of material generally uniform in composition, that is loaded directly into the cargo spaces of a vessel without any intermediate form of containment.

Bulk Cargo Shipping Name or *BCSN* identifies a bulk solid material during transport by sea. When a cargo is listed in this Part, the BCSN of the cargo is identified by Roman type and is listed in Column 1 of Table 148.10 of this part. When the cargo is a hazardous material, as defined in 49 CFR part 173, the proper shipping name of that material is the BCSN.

Cold-molded briquettes are briquettes of direct reduced iron (DRI) that have been molded at a temperature of under 650 °C (1,202 °F) or that have a density of under 5.0 g/cm^3;.

Commandant (CG–ENG–5) means the Chief, Hazardous Materials Division of the Office of Design and Engineering Systems. The mailing address is: Commandant (CG–ENG–5), Attn: Hazardous Materials Division, U.S. Coast Guard Stop 7509, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593–7509; telephone 202–372–1420 or email *hazmatstandards@uscg.mil*.

Compartment means any space on a vessel that is enclosed by the vessel's decks and its sides or permanent steel bulkheads.

Competent authority means a national agency responsible under its national law for the control or regulation of a particular aspect of the transportation of hazardous materials.

Confined space means a cargo hold containing a material listed in Table 148.10 of this part or an adjacent space not designed for human occupancy.

Domestic voyage means transportation between places within the United States other than through a foreign country.

Hazard class means the category of hazard assigned to a material under this part and 49 CFR parts 171 through 173.

HAZARD CLASS DEFINITIONS

HAZARD CLASSES USED IN THIS PART ARE DEFINED IN THE FOLLOWING SECTIONS OF TITLE 49

Class No.	Division No. (if any)	Description	Reference (49 CFR)
1	1.1, 1.2, 1.3, 1.4, 1.5, 1.6	Explosives	§ 173.50
2	2.1, 2.2, 2.3	Flammable Gas, Non-Flammable Compressed Gas, Poisonous Gas	§ 173.115
3		Flammable and Combustible Liquid	§ 173.120
4	4.1, 4.2, 4.3	Flammable Solid, Spontaneously Combustible Material, Dangerous When Wet Material.	§ 173.124
5	5.1	Oxidizer	§ 173.127
5	5.2	Organic Peroxide	§ 173.128
6	6.1	Poisonous Materials	§ 173.132
6	6.2	Infectious Substance	§ 173.134
7		Radioactive Material	§ 173.403
8		Corrosive Material	§ 173.136
9		Miscellaneous Hazardous Material	§ 173.140

Hazardous substance is a hazardous substance as defined in 49 CFR 171.8.

Hold means a compartment below deck that is used exclusively for the stowage of cargo.

Hot-molded briquettes are briquettes of DRI that have been molded at a temperature of 650 °C (1,202 °F) or higher, and that have a density of 5.0 g/cm^3 (312 lb/ft^3) or greater.

IMSBC Code means the English version of the ''International Maritime Solid Bulk Cargoes Code'' published by the International Maritime Organization (incorporated by reference, see § 148.8).

Incompatible materials means two materials whose stowage together may result in undue hazards in the case of leakage, spillage, or other accident.

International voyage means voyages—

(1) Between any place in the United States and any place in a foreign country;

(2) Between places in the United States through a foreign country; or

(3) Between places in one or more foreign countries through the United States.

Lower flammability limit or *LFL* means the lowest concentration of a material or gas that will propagate a flame. The LFL is usually expressed as a percent by volume of a material or gas in air.

Master means the officer having command of a vessel. The functions assigned to the master in this part may also be performed by a representative of the master or by a person in charge of a barge.

Material safety data sheet or *MSDS* is as defined in 29 CFR 1910.1200.

Person in charge of a barge means an individual designated by the owner or operator of a barge to have charge of the barge.

Potentially Dangerous Material or *PDM* means a material that does not fall into a particular hazard class but can present a danger when carried in bulk aboard a vessel. The dangers often result from the material's tendency to self-heat or cause oxygen depletion. Materials that present a potential danger due solely to their tendency to shift in the cargo hold are not PDMs. For international shipments prepared in accordance with the IMSBC Code (incorporated by reference, see § 148.8), equivalent terminology to PDM is Material Hazardous only in Bulk (MHB).

Readily combustible material means a material that may not be a hazardous material but that can easily ignite and support combustion. Examples are wood, straw, vegetable fibers, and products made from these materials, and coal lubricants and oils. The term does not include packaging material or dunnage.

Reportable quantity or *RQ* means the quantity of a hazardous substance spilled or released that requires a report to the National Response Center. The specific RQs for each hazardous substance are available in 49 CFR 172.101, Appendix A.

Responsible person means a knowledgeable person who the master of a vessel or owner or operator of a barge makes responsible for all decisions relating to his or her specific task.

Seed cake means the residue remaining after vegetable oil has been extracted by a solvent or mechanical process from oil-bearing seeds, such as coconuts, cotton seed, peanuts, and linseed.

Shipper means any person by whom, or in whose name, or on whose behalf, a contract of carriage of goods by sea has been concluded with a carrier; or any person by whom or in whose name, or on whose behalf, the goods are actually delivered to the carrier in relation to the contract of carriage by sea.

Shipping paper means a shipping order, bill of lading, manifest, or other shipping document serving a similar purpose.

Stowage factor means the volume in cubic meters of 1,000 kilograms (0.984 long tons) of a bulk solid material.

Threshold limit value or *TLV* means the time-weighted average concentration of a material that the average worker can be exposed to over a normal eight-hour working day, day after day, without adverse effect. This is a trademark term of the American Conference of Governmental Industrial Hygienists (ACGIH).

Transported includes the various operations associated with cargo transportation, such as loading, off-loading, handling, stowing, carrying, and conveying.

Trimming means any leveling of a cargo within a cargo hold or compartment, either partial or total.

Tripartite agreement means an agreement between the national administrations of the port of loading, the port of

discharge, and the flag state of the vessel, on the conditions of carriage of a cargo.

Ventilation means exchange of air from outside to inside a cargo space and includes the following types:

(1) *Continuous ventilation* means ventilation that is operating at all times. Continuous ventilation may be either natural or mechanical;

(2) *Mechanical ventilation* means power-generated ventilation;

(3) *Natural ventilation* means ventilation that is not power-generated; and

(4) *Surface ventilation* means ventilation of the space above the cargo. Surface ventilation may be either natural or mechanical.

Vessel means a cargo ship or barge.

[75 FR 64591, Oct. 19, 2010, as amended by USCG–2013–0671, 78 FR 60154, Sept. 30, 2013]

§ 148.5 Alternative procedures.

(a) The Commandant (CG–ENG–5) may authorize the use of an alternative procedure, including exemptions to the IMSBC Code (incorporated by reference, see § 148.8), in place of any requirement of this part if it is demonstrated to the satisfaction of the Coast Guard that the requirement is impracticable or unnecessary and that an equivalent level of safety can be maintained.

(b) Each request for authorization of an alternative procedure must—

(1) Be in writing;

(2) Name the requirement for which the alternative is requested; and

(3) Contain a detailed explanation of—

(i) Why the requirement is impractical or unnecessary; and

(ii) How an equivalent level of safety will be maintained.

§ 148.7 OMB control numbers assigned under the Paperwork Reduction Act.

The information collection requirements in this part are approved by the Office of Management and Budget, and assigned OMB control number 1625–0025.

§ 148.8 Incorporation by reference.

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the FEDERAL REGISTER and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*. Also, it is available for inspection at the Coast Guard Headquarters. Contact Commandant (CG–ENG–5), Attn: Hazardous Materials Division, U.S. Coast Guard Stop 7509, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593–7509. The material is also available from the sources listed in paragraphs (b) and (c) of this section.

(b) International Maritime Organization (IMO), 4 Albert Embankment, London SE1 7SR, United Kingdom, + 44 (0)20 7735 7611, *http://www.imo.org*.

(1) International Maritime Solid Bulk Cargoes Code and Supplement, 2009 edition (''IMSBC Code''), incorporation by reference, excluding supplemental materials, approved for §§ 148.3; 148.5(a); 148.15(d); 148.55(b); 148.205(b); 148.220(b) and (c); 148.240(h); 148.450(a), (d), and (g).

(2) [Reserved]

(c) United Nations Publications, 2 United Nations Plaza, Room DC2–853, Dept. C089, New York, NY 10017, (800) 253–9646, *http://unp.un.org*.

(1) Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Fifth revised edition (2009) (''UN Manual of Tests and Criteria''), incorporation by reference approved for §§ 148.205(b); 148.220(b) and (c).

(2) [Reserved]

[75 FR 64591, Oct. 19, 2010, as amended by USCG–2013–0671, 78 FR 60154, Sept. 30, 2013]

§ 148.9 Right of appeal.

Any person directly affected by enforcement of this part by or on behalf of the Coast Guard may appeal the decision or action under Subpart 1.03 of this chapter.

§ 148.10 Permitted materials.

(a) A material listed in Table 148.10 of this section may be transported as a bulk solid cargo on a vessel if it is carried according to this part. A material that is not listed in Table 148.10 of this section, but which is hazardous or a Potentially Dangerous Material (PDM), requires a Special Permit under § 148.15 of this part to be transported on the navigable waters of the United States.

(b) For each listed material, Table 148.10 identifies the hazard class and gives the BCSN or directs the user to the preferred BCSN. In addition, the table lists specific hazardous or potentially dangerous characteristics associated with each material and specifies or references detailed special requirements in this part pertaining to the stowage or transport of specific bulk solid materials. The column descriptions for Table 148.10 are defined as follows:

(1) *Column 1: Bulk Solid Material Descriptions and Bulk Cargo Shipping Names (BCSN).* Column 1 lists the bulk solid material descriptions and the BCSNs of materials designated as hazardous or PDM. BCSNs are limited to those shown in Roman type. Trade names and additional descriptive text are shown in italics.

(2) *Column 2: I.D. Number.* Column 2 lists the identification number assigned to each BCSN associated with a hazardous material. Those preceded by the letters ''UN'' are associated with BCSNs considered appropriate for international voyages as well as domestic voyages. Those preceded by the letters ''NA'' are associated with BCSNs not recognized for international voyages, except to and from Canada.

(3) *Column 3: Hazard Class or Division.* Column 3 designates the hazard class or division, or PDM, as appropriate, corresponding to each BCSN.

(4) *Column 4: References.* Column 4 refers the user to the preferred BCSN corresponding to bulk solid material descriptions listed in Column 1.

(5) *Column 5: Hazardous or Potentially Dangerous Characteristics.* Column 5 specifies codes for hazardous or potentially dangerous characteristics applicable to specific hazardous materials or PDMs. Refer to § 148.11 of this part for the meaning of each code.

(6) *Column 6: Other Characteristics.* Column 6 contains other pertinent characteristics applicable to specific bulk solid materials listed in Column 1.

(7) *Column 7: Special Requirements.* Column 7 specifies the applicable sections of Part 148 of this chapter that contain detailed special requirements pertaining to stowage and/or transportation of specific bulk solid materials in this part. This column is completed in a manner which indicates that ''§ 148.'' precedes the designated numerical entry.

(c) The following requirements apply to combinations of bulk solids carried at the same time and in the same compartment or hold:

Combinations of bulk solid materials	*Requirements*
(1) Material listed in Table 148.10 carried with any other non-hazardous bulk solid material.	Requirements specified in Table 148.10 for the listed material.
(2) Material carried under Special Permit with any non-hazardous bulk solid material.	Requirements specified in the Special Permit.
(3) Two or more materials listed in Table 148.10	Must apply for a Special Permit.

(d) An owner, agent, master, operator, or person in charge of a vessel or barge carrying materials listed in Table 148.10 of this section must follow the requirements contained in 46 CFR part 4 for providing notice and reporting of marine casualties and retaining voyage records.

TABLE 148.10—BULK SOLID HAZARDOUS MATERIALS TABLE

Bulk solid material descriptions and bulk cargo shipping names	I.D. No.	Hazard class or division	References	Hazardous or potentially dangerous characteristics (see § 148.11)	Other characteristics	Special requirements (§ 148.* * *)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Aluminum Ferrosilicon Powder.	UN1395	4.3, 6.1	.....	2, 3	Fine powder or briquettes.	135, 255, 405(b), 407, 415(a) & (e), 420(b), 445
Aluminum Nitrate	UN1438	5.1	.....	4	Colorless or white crystals.	140
Aluminum Silicon Powder, Uncoated.	UN1398	4.3	.....	2, 3	.....	135, 255, 405(b), 407 415(a) & (e), 420(b), 445
Aluminum Smelting By-products or Aluminum Re-melting Byproducts.	UN3170	4.3	.....	1, 2, 3	Includes aluminum dross, residues, spent cathodes, spent potliner, and skimmings.	135, 405(b), 420(b), 445
Ammonium Nitrate	UN1942	5.1	.....	5, 27	.....	140, 205, 405(a), 407, 410
Ammonium Nitrate Based Fertilizer.	UN2067	5.1	.....	5, 27	.....	140, 205, 405(a), 407, 410
Ammonium Nitrate Based Fertilizer.	UN2071	9	.....	6	Nitrogen, Phosphate, or Potash.	140, 220, 405(a), 407
Barium Nitrate	UN1466	5.1, 6.1	.....	4, 7	.....	140
Brown Coal Briquettes	.....	PDM	.....	11, 12, 14, 25	.....	155, 240, 405(b), 407, 415(b), 420(a), 445
Calcium fluoride	.....	.....	*See Fluorospar.*	.....	.	
Calcium Nitrate	UN1454	5.1	.....	4	White crystals or powder.	140, 227
Calcium Oxide	.....	.....	*See* Lime, Unslaked.	.....	.	
Castor Beans	UN2969	9	.....	10	Whole beans	150, 235
Charcoal	.....	PDM	.....	1, 11, 12	Screenings, briquettes.	155
Chili Saltpeter	.....	.....	*See* Sodium Nitrate.	.....	.	
Chilean Natural Nitrate ...	.....	.....	*See* Sodium Nitrate.	.....	.	
Coal	.....	PDM	.....	11, 12, 13, 14, 25	.....	155, 240, 405(b), 407, 415(b), 420(a) & (c), 445, 450
Copra	UN1363	4.2	.....	11, 12	Dry	130, 242
Direct reduced iron (A) *with not more than 5% fines.*	.....	PDM	.....	1, 2, 12	Hot-molded briquettes.	155, 250, 420(b)
Direct reduced iron (B) *with not more than 5% fines.*	.....	PDM	.....	1, 2, 12	Lumps, pellets, and cold-molded briquettes.	155, 245, 405(b), 407, 420(b), 445
Environmentally Hazardous Substances, Solid, n.o.s..	UN3077	9	Hazardous substances listed in 40 CFR part 302.	15	.....	150, 270
Ferrophosphorous	.....	PDM	.....	2, 3	Including briquettes	155, 415(e), 445

TABLE 148.10—BULK SOLID HAZARDOUS MATERIALS TABLE—Continued

Bulk solid material descriptions and bulk cargo shipping names	I.D. No.	Hazard class or division	References	Hazardous or potentially dangerous characteristics (see § 148.11)	Other characteristics	Special requirements (§ 148.* * *)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ferrosilicon with *30–90% silicon.*	UN1408	4.3, 6.1	.....	2, 3	.....	135, 255, 405(b), 407, 415(a) & (e), 420(b), 445
Ferrosilicon *with 25%–30% silicon or 90% or more silicon.*	.....	PDM	.....	.....	.....	155, 255, 405(b), 407, 415 (a) & (e), 420(b), 445
Ferrous Sulfate	.....	.....	See Environmentally Hazardous Substances, Solid, n.o.s.	.....	.	
Ferrous Metal Borings, Shavings, Turnings, or Cuttings.	UN2793	4.2	.....	11, 12	.....	130, 260
Fish Meal Stabilized or Fish Scrap, Stabilized.	UN2216	9	.....	11, 12	Ground and pelletized (mixture), anti-oxidant treated.	150, 265
Fluorospar	.....	PDM	.....	8, 24	.....	155, 440(a), 450
Garbage Tankage	.....	.....	*See* Tankage.	.....	.	
Iron Oxide, Spent or Iron Sponge, Spent.	UN1376	4.2	.....	3, 11, 12, 14	.....	130, 275, 415(c), (d) & (f), 445
Iron Swarf	.....	.....	*See* Ferrous Metal Borings, Shavings, Turnings, or Cuttings.	.....	.	
Lead Nitrate	UN1469	5.1, 6.1	.....	4, 7, 22, 26	.....	140, 270
Lignite	.....	.....	*See* Brown Coal Briquettes.	.....	.	
Lime, Unslaked	.....	PDM	.....	1	.....	155, 230
Linted Cotton Seed *containing not more than 9% moisture and not more than 20.5% oil.*	.....	PDM	.....	11, 12	.....	155
Magnesia, Unslaked	.....	PDM	.....	1	Lightburned magnesia, calcined magnesite.	155, 280
Magnesium Nitrate	UN1474	5.1	.....	4	.....	140
Metal Sulfide Concentrates.	.....	PDM	.....	8, 11, 12, 22, 24	Solid, finely divided sulfide concentrates of copper, iron, lead, nickel, zinc, or other metalliferous ores.	155, 285, 450
Peat Moss *with moisture content of more than 65% by weight.*	.....	PDM	.....	8, 12, 13, 14, 24	Fine to coarse fibrous structure.	155, 290, 450
Pencil Pitch	.....	.....	*See* Pitch Prill.	.....	.	

TABLE 148.10—BULK SOLID HAZARDOUS MATERIALS TABLE—Continued

Bulk solid material descriptions and bulk cargo shipping names	I.D. No.	Hazard class or division	References	Hazardous or potentially dangerous characteristics (see § 148.11)	Other characteristics	Special requirements (§ 148.* * *)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Petroleum Coke *calcined or uncalcined at >55 °C (131 °F).*	.....	PDM	.....	11	.....	155, 295
Pitch Prill	.....	PDM	.....	14, 16	.....	155
Potassium Nitrate	UN1486	5.1	.....	4	.....	140
Prilled Coal Tar	.....	.....	*See* Pitch Prill.	.....	.	
Pyrites, Calcined	.....	PDM	.....	8, 9, 24	Fly ash	155, 225, 450
Pyritic ash	.....	.....	*See* Pyrites, Calcined.	.....	.	
Quicklime	.....	.....	*See* Lime, Unslaked.	.....	.	
Radioactive Material	UN2912	7	.....	17	Low specific activity	145, 300
Radioactive Material	UN2913	7	.....	17	Surface contaminated objects.	145, 300
Rough Ammonia Tankage.	.....	.....	*See* Tankage.	.....	.	
Saltpeter	.....	.....	*See* Potassium Nitrate.	.....	.	
Sawdust	.....	PDM	.....	12, 18	.....	155, 405(a), 407
Seed Cake	UN1386	4.2	.....	12, 19	Mechanically expelled or solvent extractions.	130, 310
Seed Cake	UN2217	4.2	.....	12, 19	Solvent extractions	130, 310
Silicomanganese *with silicon content of 25% or more.*	.....	PDM	.....	2, 3, 12	With known hazard profile or known to evolve gases.	155, 405(b), 407, 415(a) & (d), 420(b), 445
Sodium Nitrate	UN1498	5.1	.....	4	.....	140
Sodium Nitrate and Potassium Nitrate Mixture.	UN1499	5.1	.....	4	Mixtures prepared as fertilizer.	140
Steel Swarf	.....	.....	*See* Ferrous Metal Borings, Shavings, Turnings, or Cuttings.	.....	.	
Sulfur	UN1350	4.1	.....	14, 20	Lumps or coarse-grained powder.	125, 315, 405(a), 407, 435
Sulfur	NA1350	9	.....	14, 20	Not subject to the requirements of this subchapter when formed into specific shapes (i.e., prills, granules, pellets, pastiles, or flakes).	125, 315, 405(a), 407, 435
Tankage	.....	PDM	.....	11	.....	155, 320
Tankage Fertilizer	.....	.....	*See* Tankage.	.....	.	
Vanadium Ore	.....	PDM	.....	21	.....	155
Wood chips, Wood Pellets, Wood Pulp Pellets.	.....	PDM	.....	12	.....	155, 325
Zinc Ashes	UN1435	4.3	.....	2, 3, 23	Includes zinc dross, residues, and skimmings.	135, 330, 405(b), 407, 420(b), 435, 445

§ 148.11 Hazardous or potentially dangerous characteristics.

(a) General. When Column 5 refers to a code for a hazardous material or PDM, the meaning of that code is set forth in this section.

(b) Table of Hazardous or Potentially Dangerous Characteristics.

Code	Hazardous or potentially dangerous characteristic
1	Contact with water may cause heating.
2	Contact with water may cause evolution of flammable gases, which may form explosive mixtures with air.
3	Contact with water may cause evolution of toxic gases.
4	If involved in a fire, will greatly intensify the burning of combustible materials.
5	A major fire aboard a vessel carrying this material may involve a risk of explosion in the event of contamination (*e.g.,* by a fuel oil) or strong confinement. If heated strongly will decompose, giving off toxic gases that support combustion.
6	These mixtures may be subject to self-sustaining decomposition if heated. Decomposition, once initiated, may spread throughout the remainder, producing gases that are toxic.
7	Toxic if swallowed and by dust inhalation.
8	Harmful and irritating by dust inhalation.
9	Highly corrosive to steel.
10	Powerful allergen. Toxic by ingestion. Skin contact or inhalation of dust may cause severe irritation of skin, eyes, and mucous membranes in some people.
11	May be susceptible to spontaneous heating and ignition.
12	Liable to cause oxygen depletion in the cargo space.
13	Liable to emit methane gas which can form explosive mixtures with air.
14	Dust forms explosive mixtures with air.
15	May present substantial danger to the public health or welfare or the environment when released into the environment. Skin contact and dust inhalation should be avoided.
16	Combustible. Burns with dense black smoke. Dust may cause skin and eye irritation.
17	Radiation hazard from dust inhalation and contact with mucous membranes.
18	Susceptible to fire from sparks and open flames.
19	May self-heat slowly and, if wet or containing an excessive proportion of unoxidized oil, ignite spontaneously.
20	Fire may produce irritating or poisonous gases.
21	Dust may contain toxic constituents.
22	Lead nitrate and lead sulfide are hazardous substances; see code 15 of this table and § 148.270.
23	Hazardous substance when consisting of pieces having a diameter less than 100 micrometers (0.004 in.); see code 15 of this table and § 148.270.
24	Cargo subject to liquefaction.
25	Subject to liquefaction if average particle size of cargo is less than 10 mm (.394 in.).
26	This entry is considered a Marine Pollutant in accordance with 49 CFR 172.101 Appendix B.
27	This entry is considered a certain dangerous cargo in accordance with 33 CFR 160.202.

[75 FR 64591, Oct. 19, 2010, as amended by USCG–2005–21869, 80 FR 5336, Jan. 30, 2015]

§ 148.12 Assignment and certification.

(a) The National Cargo Bureau is authorized to assist the Coast Guard in administering the provisions of this part by—

(1) Inspecting vessels for suitability for loading solid materials in bulk;

(2) Examining stowage of solid materials loaded in bulk on board vessels;

(3) Making recommendations on stowage requirements applicable to the transportation of solid materials in bulk; and

(4) Issuing certificates of loading that verify stowage of the solid material in bulk meets requirements of this part.

(b) Certificates of loading from the National Cargo Bureau are accepted as evidence of compliance with bulk solid transport regulations.

Subpart B—Special Permits

§ 148.15 Petition for a special permit.

(a) Each shipper who wishes to ship a bulk solid material not listed in Table 148.10 of this part must determine whether the material meets the definition of any hazard class, or the definition of a PDM, as those terms are defined in § 148.3 of this part.

(b) If the material meets any of the definitions described in paragraph (a) of this section, the shipper then must submit a petition in writing to the Commandant (CG–ENG–5) for authorization to ship any hazardous material or PDM not listed in Table 148.10 of this part.

(c) If the Commandant (CG–ENG–5) approves a petition for authorization, the Commandant (CG–ENG–5) issues the petitioner a Coast Guard special permit. The permit allows the material

to be transported in bulk by vessel and outlines requirements for this transport.

(d) A tripartite agreement developed in conjunction with the United States and in accordance with the IMSBC Code (incorporated by reference, see § 148.8) may be used in lieu of a special permit.

§ 148.20 Deadlines for submission of petition and related requests.

(a) A petition for a special permit must be submitted at least 45 days before the requested effective date. Requests for extension or renewal of an existing special permit must be submitted 20 days before the date of expiration.

(b) Requests for extension or renewal must include the information required under § 148.21(a), (f), and (g) of this part.

§ 148.21 Necessary information.

Each petition for a special permit must contain at least the following:

(a) A description of the material, including, if a hazardous material—

(1) The proper shipping name from the table in 49 CFR 172.101;

(2) The hazard class and division of the material; and

(3) The identification number of the material.

(b) A material safety data sheet (MSDS) for the material or—

(1) The chemical name and any trade names or common names of the material;

(2) The composition of the material, including the weight percent of each constituent;

(3) Physical data, including color, odor, appearance, melting point, and solubility;

(4) Fire and explosion data, including auto-ignition temperature, any unusual fire or explosion hazards, and any special fire fighting procedures;

(5) Health hazards, including any dust inhalation hazards and any chronic health effects;

(6) The threshold limit value (TLV) of the material or its major constituents, if available, and any relevant toxicity data;

(7) Reactivity data, including any hazardous decomposition products and any incompatible materials; and

(8) Special protection information, including ventilation requirements and personal protection equipment required.

(c) Other potentially dangerous characteristics of the material not covered by paragraph (b) of this section, including—

(1) Self-heating;

(2) Depletion of oxygen in the cargo space;

(3) Dust explosion; and

(4) Liquefaction.

(d) A detailed description of the proposed transportation operation, including—

(1) The type of vessel proposed for water movements;

(2) The expected loading and discharge ports, if known;

(3) Procedures to be used for loading and unloading the material;

(4) Precautions to be taken when handling the material; and

(5) The expected temperature of the material at the time it will be loaded on the vessel.

(e) Test results (if required under Subpart E of this part).

(f) Previous approvals or permits.

(g) Any relevant shipping or accident experience (or any other relevant transportation history by any mode of transport).

§ 148.25 Activities covered by a special permit.

(a) Each special permit covers any shipment of the permitted material by the shipper and also covers for each shipment—

(1) Each transfer operation;

(2) Each vessel involved in the shipment; and

(3) Each individual involved in any cargo handling operation.

(b) Each special permit is valid for a period determined by the Commandant (CG–ENG–5) and specified in the special permit. The period will not exceed 4 years and is subject to suspension or revocation before its expiration date.

§ 148.26 Standard conditions for special permits.

(a) Each special permit holder must comply with all the requirements of this part unless specifically exempted by the terms of the special permit.

(b) Each special permit holder must provide a copy of the special permit and the information required in § 148.60 of this part to the master or person in charge of each vessel carrying the material.

(c) The master of a vessel transporting a special permit material must ensure that a copy of the special permit is on board the vessel. The special permit must be kept with the dangerous cargo manifest if such a manifest is required by § 148.70 of this part.

(d) The person in charge of a barge transporting any special permit material must ensure that a copy of the special permit is on board the tug or towing vessel. When the barge is moored, the special permit must be kept on the barge with the shipping papers as prescribed in § 148.62 of this part.

§ 148.30 Records of special permits issued.

A list of all special permits issued, and copies of each, are available from the Commandant (CG–ENG–5).

Subpart C—Minimum Transportation Requirements

§ 148.50 Cargoes subject to this subpart.

The regulations in this subpart apply to each bulk shipment of—

(a) A material listed in Table 148.10 of this part; and

(b) Any solid material shipped under the terms of a Coast Guard special permit.

§ 148.51 Temperature readings.

When Subpart D of this part sets a temperature limit for loading or transporting a material, apply the following rules:

(a) The temperature of the material must be measured 20 to 36 centimeters (8 to 14 inches) below the surface at 3 meter (10 foot) intervals over the length and width of the stockpile or cargo hold.

(b) The temperature must be measured at every spot in the stockpile or cargo hold that shows evidence of heating.

(c) Before loading or transporting the material, all temperatures measured must be below the temperature limit set in Subpart D of this part.

§ 148.55 International shipments.

(a) *Importer's responsibility*. Each person importing any bulk solid material requiring special handling into the United States must provide the shipper and the forwarding agent at the place of entry into the United States with timely and complete information as to the requirements of this part that will apply to the shipment of the material within the United States.

(b) *IMSBC Code*. Notwithstanding the provisions of this part, a bulk solid material that is classed, described, stowed, and segregated in accordance with the IMSBC Code (incorporated by reference, see § 148.8), and otherwise conforms to the requirements of this section, may be offered and accepted for transportation and transported within the United States. The following conditions and limitations apply:

(1) A bulk solid material that is listed in Table 148.10 of this part, but is not subject to the requirements of the IMSBC Code, may not be transported under the provisions of this section and is subject to the requirements of this part. Examples of such materials include environmentally hazardous substances, solid, n.o.s.

(2) Zinc Ashes must conform to the requirements found in § 148.330 of this part.

(3) Exemptions granted by other competent authorities in accordance with the IMSBC Code must be approved by the Commandant (CG–ENG–5) in accordance with § 148.5 of this part.

(4) Tripartite agreements granted by other competent authorities in accordance with the IMSBC Code must be authorized for use in the United States by the Commandant (CG–ENG–5).

§ 148.60 Shipping papers.

The shipper of a material listed in Table 148.10 of this part must provide the master or his representative with appropriate information on the cargo in the form of a shipping paper, in English, prior to loading. Information on the shipping paper must include the following:

(a) The appropriate BCSN. Secondary names may be used in addition to the BCSN;

(b) The identification number, if applicable;

(c) The hazard class of the material as listed in Table 148.10 of this part or on the Special Permit for the material;

(d) The total quantity of the material to be transported;

(e) The stowage factor;

(f) The need for trimming and the trimming procedures, as necessary;

(g) The likelihood of shifting, including angle of repose, if applicable;

(h) A certificate on the moisture content of the cargo and its transportable moisture limit for cargoes that are subject to liquefaction;

(i) Likelihood of formation of a wet base;

(j) Toxic or flammable gases that may be generated by the cargo, if applicable;

(k) Flammability, toxicity, corrosiveness, and propensity to oxygen depletion of the cargo, if applicable;

(l) Self-heating properties of the cargo, if applicable;

(m) Properties on emission of flammable gases in contact with water, if applicable;

(n) Radioactive properties, if applicable;

(o) The name and address of the U.S. shipper (consignor) or, if the shipment originates in a foreign country, the U.S. consignee.

(p) A certification, signed by the shipper, that bears the following statement: ''This is to certify that the above named material is properly named, prepared, and otherwise in proper condition for bulk shipment by vessel in accordance with the applicable regulations of the U.S. Coast Guard.''

§ 148.61 Emergency response information.

The shipper of a material listed in Table 148.10 of this part must provide the master or his representative with appropriate emergency response information. This information may be included on the shipping papers or in a separate document such as a material safety data sheet (MSDS). The information must include preliminary first aid measures and emergency procedures to be carried out in the event of an incident or fire involving the cargo.

§ 148.62 Location of shipping papers and emergency response information.

(a) The shipping paper and emergency response information required by §§ 148.60 and 148.61 of this part must be kept on board the vessel along with the dangerous cargo manifest required by § 148.70 of this part. When the shipment is by unmanned barge the shipping papers and emergency response information must be kept on the tug or towing vessel. When an unmanned barge is moored, the shipping paper and emergency response information must be on board the barge in a readily retrievable location.

(b) Any written certification or statement from the shipper to the master of a vessel or to the person in charge of a barge must be on, or attached to, the shipping paper. See Subparts E and F of this part for required certifications.

§ 148.70 Dangerous cargo manifest; general.

(a) Except as provided in paragraph (b) of this section and in § 148.72 of this part, each vessel transporting materials listed in Table 148.10 of this part must have a dangerous cargo manifest on board.

(b) This document must be kept in a designated holder on or near the vessel's bridge. When required for an unmanned barge, the document must be on board the tug or towing vessel.

§ 148.71 Information included in the dangerous cargo manifest.

The dangerous cargo manifest must include the following:

(a) The name and official number of the vessel. If the vessel has no official number, the international radio call sign must be substituted;

(b) The nationality of the vessel;

(c) The name of the material as listed in Table 148.10 of this part;

(d) The hold or cargo compartment in which the material is being transported;

(e) The quantity of material loaded in each hold or cargo compartment; and

(f) The signature of the master acknowledging that the manifest is correct, and the date of the signature.

§ 148.72 Dangerous cargo manifest; exceptions.

(a) No dangerous cargo manifest is required for—

(1) Shipments by unmanned barge, except on an international voyage; and

(2) Shipments of materials designated as potentially dangerous materials in Table 148.10 of this part.

(b) When a dangerous cargo manifest is required for an unmanned barge on an international voyage, § 148.71(d) of this part does not apply, unless the barge has more than one cargo compartment.

§ 148.80 Supervision of cargo transfer.

The master must ensure that cargo transfer operations are supervised by a responsible person as defined in § 148.3 of this part.

§ 148.85 Required equipment for confined spaces.

When transporting a material that is listed in Table 148.10 of this part, each vessel, other than an unmanned barge, must have on board the following:

(a) Equipment capable of measuring atmospheric oxygen. At least two members of the crew must be knowledgeable in the use of the equipment, which must be maintained in a condition ready for use and calibrated according to the manufacturer's instructions.

(b) At least two self-contained, pressure-demand-type, air breathing apparatus approved by the Mine Safety and Health Administration (MSHA) or the National Institute for Occupational Safety and Health (NIOSH), each having at least a 30-minute air supply. Each foreign flag vessel must have on board at least two such apparatus that are approved by the flag state administration. The master must ensure that the breathing apparatus is used only by persons trained in its use.

§ 148.86 Confined space entry.

(a) Except in an emergency, no person may enter a confined space unless that space has been tested to ensure there is sufficient oxygen to support life. If the oxygen content is below 19.5 percent, the space must be ventilated and retested before entry.

(b) In an emergency, a confined space may be entered by a trained person wearing self-contained breathing apparatus, suitable protective clothing as necessary, and a wire rope safety line tended by a trained person outside the hold or in an adjacent space. Emergency entry into a confined space must be supervised by a responsible person as defined in § 148.3 of this part.

§ 148.90 Preparations before loading.

Before loading any material listed in Table 148.10 of this part, in bulk on board a vessel, the following conditions must be met:

(a) If a hold previously has contained any material required under Subpart D of this part to be segregated from the material to be loaded, the hold must be thoroughly cleaned of all residue of the previous cargoes.

(b) If the material to be loaded is Class 4.1, 4.2, or 5.1, then all combustible materials must be removed from the hold. Examples of some combustible materials are residue of previous cargoes, loose debris, and dunnage. Permanent wooden battens or sheathing may remain in the hold unless forbidden by Subpart E of this part.

(c) If the material to be loaded is classified as Class 4.3, or is subject to liquefaction, the hold and associated bilge must be as dry as practicable.

§ 148.100 Log book entries.

During the transport in bulk of a material listed in Table 148.10 of this part, the master must keep a record of each temperature measurement and each test for toxic or flammable gases required by this part. The date and time of each measurement and test must be recorded in the vessel's log.

§ 148.110 Procedures followed after unloading.

(a) After a material covered by this part has been unloaded from a vessel, each hold or cargo compartment must

be thoroughly cleaned of all residue of such material unless the hold is to be reloaded with that same cargo.

(b) When on U.S. territorial seas or inland waters, cargo associated wastes, cargo residue, and deck sweepings must be retained on the vessel and disposed of in accordance with 33 CFR parts 151.51 through 151.77.

§ 148.115 Report of incidents.

(a) When a fire or other hazardous condition occurs on a vessel transporting a material covered by this part, the master must notify the nearest Captain of the Port as soon as possible and comply with any instructions given.

(b) Any incident or casualty occurring while transporting a material covered by this part must also be reported as required under 49 CFR 171.15, if applicable. A copy of the written report required under 49 CFR 171.16 must also be sent to the Commandant (CG–ENG–5), Attn: Hazardous Materials Division, U.S. Coast Guard Stop 7509, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593–7509, at the earliest practicable moment.

(c) Any release to the environment of a hazardous substance in a quantity equal to or in excess of its reportable quantity (RQ) must be reported immediately to the National Response Center at 800–424–8802 (toll free) or 202–267–2675; or online at *www.nrc.uscg.mil*..

[75 FR 64591, Oct. 19, 2010, as amended by USCG–2013–0671, 78 FR 60154, Sept. 30, 2013]

Subpart D—Stowage and Segregation

§ 148.120 Stowage and segregation requirements.

(a) Each material listed in Table 148.10 of this part must be segregated from incompatible materials in accordance with—

(1) The requirements of Tables 148.120A and 148.120B of this section that pertain to the primary or subsidiary hazard class to which the materials belong. Whenever a subsidiary hazard may exist, the most stringent segregation requirement applies; and

(2) Any specific requirements in Subpart D of this part.

(b) Materials that are required to be separated during stowage must not be handled at the same time. Any residue from a material must be removed before a material required to be separated from it is loaded.

(c) Definitions and application of segregation terms:

(1) *''Separated from''* means located in different cargo compartments or holds when stowed under deck. If the intervening deck is resistant to fire and liquid, a vertical separation, i.e., in different cargo compartments, is acceptable as equivalent to this segregation.

(2) *''Separated by a complete cargo compartment or hold from''* means either a vertical or horizontal separation, for example, by a complete cargo compartment or hold. If the intervening decks are not resistant to fire and liquid, only horizontal separation is acceptable.

(3) *''Separated longitudinally by an intervening complete cargo compartment or hold from''* means that vertical separation alone does not meet this requirement.

TABLE 148.120A—SEGREGATION BETWEEN INCOMPATIBLE BULK SOLID CARGOES

Bulk solid materials	Class	4.1	4.2	4.3	5.1	6.1	7	8	9/PDM
Flammable solid	4.1	X	.....	.....	.....	.....	.....	.....	
Spontaneously combustible material	4.2	2	X	.....	.....	.....	.....	.....	
Dangerous when wet material	4.3	3	3	X	.....	.....	.....	.....	
Oxidizer	5.1	3	3	3	X	.....	.....	.....	
Poisonous material	6.1	X	X	X	2	X	.....	.....	
Radioactive material	7	2	2	2	2	2	X	.....	
Corrosive material	8	2	2	2	2	X	X	X	
Miscellaneous hazardous material and potential dangerous material	9/PDM	X	X	X	X	X	2	X	X

Numbers and symbols indicate the following terms as defined in § 148.3 of this part:
2—''Separated from''.

3—''Separated by a complete hold or compartment from''.
X—No segregation required, except as specified in an applicable section of this subpart or Subpart E of this part.

TABLE 148.120B—SEGREGATION BETWEEN BULK SOLID CARGOES AND INCOMPATIBLE PACKAGED CARGOES

Packaged hazardous material	Bulk solid material								
	Class	4.1	4.2	4.3	5.1	6.1	7	8	9/PDM
Explosives	1.1 1.2 1.5	4	4	4	4	2	2	4	X
Explosives	1.3 1.6	3	3	4	4	2	2	2	X
Explosives	1.4	2	2	2	2	X	2	2	X
Flammable gas	2.1	2	2	1	2	X	2	2	X
Non-flammable compressed gas	2.2	2	2	X	X	X	2	1	X
Poisonous gas	2.3	2	2	X	X	X	2	1	X
Flammable liquid	3	2	2	2	2	X	2	1	X
Flammable solid	4.1	X	1	X	1	X	2	1	X
Spontaneously combustible material	4.2	1	X	1	2	1	2	1	X
Dangerous when wet material	4.3	X	1	X	2	X	2	1	X
Oxidizer	5.1	1	2	2	X	1	1	2	X
Organic peroxide	5.2	2	2	2	2	1	2	2	X
Poisonous material	6.1	X	1	X	1	X	X	X	X
Infectious substance	6.2	3	3	2	3	1	3	3	X
Radioactive material	7	2	2	2	1	X	X	2	X
Corrosive material	8	1	1	1	2	X	2	X	X
Miscellaneous hazardous material	9	X	X	X	X	X	X	X	X

Numbers and symbols indicate the following terms as defined in § 148.3 of this part:
1—''Away from''.
2—''Separated from''.
3—''Separated by a complete hold or compartment from''.
4—''Separated longitudinally by an intervening complete compartment or hold from''.
X—No segregation required, except as specified in an applicable section of this subpart or Subpart E of this part.

§ 148.125 Stowage and segregation for materials of Class 4.1.

(a) Class 4.1 materials listed in Table 148.10 of this part must—

(1) Be kept as cool and dry as practical before loading;

(2) Not be loaded or transferred between vessels during periods of rain or snow;

(3) Be stowed separated from foodstuffs; and

(4) Be stowed clear of sources of heat and ignition and protected from sparks and open flame.

(b) Bulkheads between a hold containing a Class 4.1 material and incompatible materials must have cable and conduit penetrations sealed against the passage of gas and vapor.

§ 148.130 Stowage and segregation for materials of Class 4.2.

(a) Class 4.2 materials listed in Table 148.10 of this part must—

(1) Be kept as cool and dry as practical before loading;

(2) Not be loaded or transferred between vessels during periods of rain or snow;

(3) Be stowed clear of sources of heat and ignition and protected from sparks and open flame; and

(4) Except for copra and seed cake, be stowed separate from foodstuffs.

(b) The bulkhead between a hold containing a Class 4.2 material and a hold containing a material not permitted to mix with Class 4.2 materials must have cable and conduit penetrations sealed against the passage of gas and vapor.

§ 148.135 Stowage and segregation for materials of Class 4.3.

(a) Class 4.3 materials listed in Table 148.10 of this part which, in contact with water, emit flammable gases, must—

(1) Be kept as cool and dry as practical before loading;

(2) Not be loaded or transferred between vessels during periods of rain or snow;

(3) Be stowed separate from foodstuffs and all Class 8 liquids; and

(4) Be stowed in a mechanically ventilated hold. Exhaust gases must not penetrate into accommodation, work or control spaces. Unmanned barges

that have adequate natural ventilation need not have mechanical ventilation.

(b) The bulkhead between a hold containing a Class 4.3 material and incompatible materials must have cable and conduit penetrations sealed against the passage of gas and vapor.

§ 148.140 Stowage and segregation for materials of Class 5.1.

(a) Class 5.1 materials listed in Table 148.10 of this part must—

(1) Be kept as cool and dry as practical before loading;

(2) Be stowed away from all sources of heat or ignition; and

(3) Be stowed separate from foodstuffs and all readily combustible materials.

(b) Special care must be taken to ensure that holds containing Class 5.1 materials are clean and, whenever practical, only noncombustible securing and protecting materials are used.

(c) Class 5.1 materials must be prevented from entering bilges or other cargo holds.

§ 148.145 Stowage and segregation for materials of Class 7.

(a) Class 7 material listed in Table 148.10 of this part must be stowed—

(1) Separate from foodstuffs; and

(2) In a hold or barge closed or covered to prevent dispersal of the material during transportation.

(b) [Reserved]

§ 148.150 Stowage and segregation for materials of Class 9.

(a) A bulk solid cargo of Class 9 material (miscellaneous hazardous material) listed in Table 148.10 of this part must be stowed and segregated as required by this section.

(b) Ammonium nitrate fertilizer of Class 9 must be segregated as required for Class 5.1 materials in §§ 148.120 and 148.140 of this part and must be stowed—

(1) Separated by a complete hold or compartment from readily combustible materials, chlorates, hypochlorites, nitrites, permanganates, and fibrous materials (*e.g.*, cotton, jute, sisal, *etc.*);

(2) Clear of all sources of heat, including insulated piping; and

(3) Out of direct contact with metal engine-room boundaries.

(c) Castor beans must be stowed separate from foodstuffs and Class 5.1 materials.

(d) Fish meal must be stowed and segregated as required for Class 4.2 materials in §§ 148.120 and 148.130 of this part. In addition, its temperature at loading must not exceed 35 °C (95 °F), or 5 °C (9 °F) above ambient temperature, whichever is higher.

(e) Sulfur must be stowed and segregated as required under §§ 148.120 and 148.125 of this part for a material of Class 4.1.

§ 148.155 Stowage and segregation for potentially dangerous materials.

(a) A PDM must be stowed and segregated according to the requirements of this section and Table 148.155 of this section.

(b) When transporting coal—

(1) Coal must be stowed separate from materials of Class/division 1.4 and Classes 2, 3, 4, and 5 in packaged form; and separated from bulk solid materials of Classes 4 and 5.1;

(2) No material of Class 5.1, in either packaged or bulk solid form, may be stowed above or below a cargo of coal; and

(3) Coal must be separated longitudinally by an intervening complete cargo compartment or hold from materials of Class 1 other than Class/division 1.4.

(c) When transporting direct reduced iron (DRI)—

(1) DRI lumps, pellets, or cold-molded briquettes, and DRI hot-molded briquettes, must be separated from materials of Class/division 1.4, Classes 2, 3, 4, 5, Class 8 acids in packaged form, and bulk solid materials of Classes 4 and 5.1; and

(2) No material of Class 1, other than Class/division 1.4, may be transported on the same vessel with DRI.

(d) Petroleum coke, calcined or uncalcined, must be—

(1) Separated longitudinally by an intervening complete cargo compartment or hold from materials of Class/divisions 1.1 and 1.5; and

(2) Separated by a complete cargo compartment or hold from all hazardous materials and other potentially dangerous materials in packaged and bulk solid form.

TABLE 148.155—STOWAGE AND SEGREGATION REQUIREMENTS FOR POTENTIALLY DANGEROUS MATERIAL

Potentially dangerous material	Segregate as for class listed [1]	"Separate from" foodstuffs	Load only under dry weather conditions	Keep dry	Mechanical ventilation required	"Separate from" material listed	Special provisions
Aluminum Smelting By-products or Aluminum Remelting By-products.	4.3	X	X	X	X	Class 8 liquids	
Brown Coal Briquettes.	.....	.....	.....	.....	.....	See paragraph (b) of this section.	See paragraph (b) of this section.
Charcoal	4.1	.....	.....	X	.....	Oily materials	
Coal	.....	.....	.....	.....	.....	See paragraph (b) of this section.	See paragraph (b) of this section.
Direct reduced iron (A).	.....	.....	.....	.....	.....	See paragraph (c) of this section.	See paragraph (c) of this section.
Direct reduced iron (B).	.....	.....	.....	.....	.....	See paragraph (c) of this section.	See paragraph (c) of this section.
Ferrophosphorus.	4.3	X	X	X	X	Class 8 liquids	
Ferrolilicon	4.3	X	X	X	X	Class 8 liquids	
Fluorospar	.....	X	.....	.....	.....	Class 8 liquids	
Lime, Unslaked	.....	.....	.....	X	.....	All packaged and bulk solid hazardous materials.	
Linted Cotton Seed.	.....	.....	.....	X	.....		
Magnesia, Unslaked.	.....	.....	.....	.....	.....	All packaged and bulk solid hazardous materials.	
Metal Sulfide Concentrates.	4.2	X	.....	.....	.....	Class 8 liquids	
Petroleum Coke	.....	X	.....	.....	.....		See section 148.155(d).
Pitch Prill	4.1	.....	.....	.....	.....		
Pyrites, Calcined.	.....	X	X	X	X		
Sawdust	4.1	.....	.....	X	.....	All Class 5.1 and 8 liquids.	
Silicomanganese.	4.3	X	X	X	X	Class 8 liquids	
Tankage	4.2	X	X	.....	.....		
Vanadium	6.1	X	.....	.....	.....		
Wood chips	4.1	.....	.....	.....	.....		
Wood pellets	4.1	.....	.....	.....	.....		
Wood pulp pellets.	4.1	.....	.....	.....	.....		

[1] See Tables 148.120A and B.

Subpart E—Special Requirements for Certain Materials

§ 148.200 Purpose.

This subpart prescribes special requirements for specific materials. These requirements are in addition to the minimum transportation requirements in Subpart C of this part that are applicable to all materials listed in Table 148.10 of this part.

§ 148.205 Ammonium nitrate and ammonium nitrate fertilizers.

(a) This section applies to the stowage and transportation in bulk of ammonium nitrate and the following fertilizers composed of uniform, non-segregating mixtures containing ammonium nitrate:

(1) Ammonium nitrate containing added organic matter that is chemically inert towards the ammonium nitrate; containing at least 90 percent ammonium nitrate and a maximum of 0.2 percent of combustible material (including organic material calculated as carbon); or containing less than 90 percent but more than 70 percent of ammonium nitrate and a maximum of 0.4 percent combustible material;

(2) Ammonium nitrate with calcium carbonate and/or dolomite, containing more than 80 percent but less than 90 percent of ammonium nitrate and a maximum of 0.4 percent of total combustible material;

(3) Ammonium nitrate with ammonium sulfate containing more than 45 percent but a maximum of 70 percent of ammonium nitrate and containing a maximum of 0.4 percent of combustible material; and

(4) Nitrogen phosphate or nitrogen/potash type fertilizers or complete nitrogen/phosphate/potash type fertilizers containing more than 70 percent but less than 90 percent of ammonium nitrate and a maximum of 0.4 percent of combustible material.

(b) No material covered by this section may be transported in bulk unless it demonstrates resistance to detonation when tested by one of the following methods:

(1) Appendix 2, Section 5, of the IMSBC Code (incorporated by reference, see § 148.8);

(2) Test series 1 and 2 of the Class 1 (explosive) in the UN Manual of Tests and Criteria, Part I (incorporated by reference, see § 148.8); or

(3) An equivalent test satisfactory to the Administration of the country of shipment.

(c) Before loading a material covered by this section—

(1) The shipper must give the master of the vessel written certification that the material has met the test requirements of paragraph (b) of this section;

(2) The cargo hold must be inspected for cleanliness and free from readily combustible materials;

(3) Each cargo hatch must be weathertight as defined in § 42.13–10 of this chapter;

(4) The temperature of the material must be less than 55 °C (131 °F); and

(5) Each fuel tank under a cargo hold where the material is stowed must be pressure tested before loading to ensure that there is no leakage of manholes or piping systems leading through the cargo hold.

(d) Bunkering or transferring of fuel to or from the vessel may not be performed during cargo loading and unloading operations involving a material covered by this section.

(e) When a material covered by this section is transported on a cargo vessel—

(1) No other material may be stowed in the same hold with that material;

(2) In addition to the segregation requirements in § 148.140 of this part, the material must be separated by a complete cargo compartment or hold from readily combustible materials, chlorates, chlorides, chlorites, hypochlorites, nitrites, permanganates, and fibrous materials; and

(3) The bulkhead between a cargo hold containing a material covered by this section and the engine room must be insulated to ''A–60'' class division or an equivalent arrangement to the satisfaction of the cognizant Coast Guard Captain of the Port or the Administration of the country of shipment.

§ 148.220 Ammonium nitrate-phosphate fertilizers.

(a) This section applies to the stowage and transportation of uniform, nonsegregating mixtures of nitrogen/phosphate or nitrogen/potash type fertilizers, or complete fertilizers of nitrogen/phosphate/potash type containing a maximum of 70 percent of ammonium nitrate and containing a maximum of 0.4 percent total added combustible material or containing a maximum of 45 percent ammonium nitrate with unrestricted combustible material.

(b) A fertilizer mixture described in paragraph (a) of this section is exempt if—

(1) When tested in accordance with the trough test prescribed in Appendix 2, Section 4, of the IMSBC Code or in the UN Manual of Tests and Criteria, Part III, Subsection 38.2 (incorporated by reference, see § 148.8), it is found to be free from the risk of self-sustaining decomposition.

(2) [Reserved]

(c) No fertilizer covered by this section may be transported in bulk if, when tested in accordance with the trough test prescribed in Appendix 2, Section 4, of the IMSBC Code or in the UN Manual of Tests and Criteria, Part III, Subsection 38.2 (incorporated by reference, see § 148.8), it has a self-sustaining decomposition rate that is greater than 0.25 meters per hour, or is liable to self-heat sufficient to initiate decomposition.

(d) Fertilizers covered by this section must be stowed away from all sources of heat, and out of direct contact with a metal engine compartment boundary.

(e) Bunkering or transferring of fuel may not be performed during loading and unloading of fertilizer covered by this section.

(f) Fertilizer covered by this section must be segregated as prescribed in §§ 148.140 and 148.220(d) of this part.

§ 148.225 Calcined pyrites (pyritic ash, fly ash).

(a) This part does not apply to the shipment of calcined pyrites that are the residual ash of oil or coal fired power stations.

(b) This section applies to the stowage and transportation of calcined pyrites that are the residual product of sulfuric acid production or elemental metal recovery operations.

(c) Before loading calcined pyrites covered by this section—

(1) The cargo space must be as clean and dry as practical;

(2) The calcined pyrites must be dry; and

(3) Precautions must be taken to prevent the penetration of calcined pyrites into other cargo spaces, bilges, wells, and ceiling boards.

(d) After calcined pyrites covered by this section have been unloaded from a cargo space, the cargo space must be thoroughly cleaned. Cargo residues and sweepings must be disposed of as prescribed in 33 CFR parts 151.55 through 151.77.

§ 148.227 Calcium nitrate fertilizers.

This part does not apply to commercial grades of calcium nitrate fertilizers consisting mainly of a double salt (calcium nitrate and ammonium nitrate) and containing a maximum of 15.5 percent nitrogen and at least 12 percent of water.

§ 148.230 Calcium oxide (lime, unslaked).

(a) When transported by barge, unslaked lime (calcium oxide) must be carried in an unmanned, all steel, double-hulled barge equipped with weathertight hatches or covers. The barge must not carry any other cargo while unslaked lime is on board.

(b) The shipping paper requirements in § 148.60 of this part and the dangerous cargo manifest requirements in § 148.70 of this part do not apply to the transportation of unslaked lime under paragraph (a) of this section.

§ 148.235 Castor beans.

(a) This part applies only to the stowage and transportation of whole castor beans. Castor meal, castor pomace, and castor flakes may not be shipped in bulk.

(b) Persons handling castor beans must wear dust masks and goggles.

(c) Care must be taken to prevent castor bean dust from entering accommodation, control, or service spaces during cargo transfer operations.

§ 148.240 Coal.

(a) The electrical equipment in cargo holds carrying coal must meet the requirements of Subpart 111.105 of this chapter or an equivalent standard approved by the administration of the vessel's flag state.

(b) Before coal is loaded in a cargo hold, the bilges must be as clean and dry as practical. The hold must also be free of any readily combustible material, including the residue of previous cargoes if other than coal.

(c) The master of each vessel carrying coal must ensure that—

(1) All openings to the cargo hold, except for unloading gates on self-unloading vessels, are sealed before loading

the coal and, unless the coal is as described in paragraph (f) of this section, the hatches must also be sealed after loading;

(2) As far as practical, gases emitted by the coal do not accumulate in enclosed working spaces such as storerooms, shops, or passageways, and tunnel spaces on self-unloading vessels, and that such spaces are adequately ventilated;

(3) The vessel has adequate ventilation as required by paragraph (f) of this section; and

(4) If the temperature of the coal is to be monitored under paragraph (e)(2)(i) of this section, the vessel has instruments that are capable of measuring the temperature of the cargo in the range 0°–100 °C (32 °–212 °F) without entry into the cargo hold.

(d) A cargo hold containing coal must not be ventilated unless the conditions of paragraph (f) of this section are met, or unless methane is detected under paragraph (h) of this section.

(e) If coal waiting to be loaded has shown a tendency to self-heat, has been handled so that it may likely self-heat, or has been observed to be heating, the master is responsible for monitoring the temperature of the coal at several intervals during these times:

(1) Before loading; and

(2) During the voyage, by—

(i) Measuring the temperature of the coal;

(ii) Measuring the emission of carbon monoxide; or

(iii) Both.

(f) If coal waiting to be loaded has a potential to emit dangerous amounts of methane, for example it is freshly mined, or has a history of emitting dangerous amounts of methane, then:

(1) Surface ventilation, either natural or from fixed or portable nonsparking fans, must be provided; and

(2) The atmosphere above the coal must be monitored for the presence of methane as prescribed in paragraph (h) of this section. The results of this monitoring must be recorded at least twice in every 24-hour period, unless the conditions of paragraph (m) of this section are met.

(g) Electrical equipment and cables in a hold containing a coal described in paragraph (f) of this section must be either suitable for use in an explosive gas atmosphere or de-energized at a point outside the hold. Electrical equipment and cables necessary for continuous safe operations, such as lighting fixtures, must be suitable for use in an explosive gas atmosphere. The master of the vessel must ensure that the affected equipment and cables remain de-energized as long as this coal remains in the hold.

(h) For all coal loaded on a vessel, other than an unmanned barge, the atmosphere above the coal must be routinely tested for the presence of methane, carbon monoxide, and oxygen, following the procedures in the Appendices to the schedules for Coal and Brown Coal Briquettes as contained in the IMSBC Code (incorporated by reference, see §148.8). This testing must be performed in such a way that the cargo hatches are not opened and entry into the hold is not necessary.

(i) When carrying a coal described in paragraph (e) of this section, the atmosphere above the coal must be monitored for the presence of carbon monoxide as prescribed in paragraph (h) of this section. The results of this monitoring must be recorded at least twice in every 24-hour period, unless the conditions of paragraph (m) of this section are met. If the level of carbon monoxide is increasing rapidly or reaches 20 percent of the lower flammability limit (LFL), the frequency of monitoring must be increased.

(j) When a cargo of coal has a potential to self-heat or has been observed to be heating, the hatches should be closed and sealed and all surface ventilation halted except as necessary to remove any methane that may have accumulated.

(k) If the level of carbon monoxide monitored under paragraph (i) of this section continues to increase rapidly or the temperature of coal carried on board a vessel exceeds 55 °C (131 °F) and is increasing rapidly, the master must notify the nearest Coast Guard Captain of the Port of—

(1) The name, nationality, and position of the vessel;

(2) The most recent temperature, if measured, and levels of carbon monoxide and methane;

(3) The port where the coal was loaded and the destination of the coal;

(4) The last port of call of the vessel and its next port of call; and

(5) What action has been taken.

(l) If the level of methane as monitored under paragraph (h) of this section reaches 20 percent of the LFL or is increasing rapidly, ventilation of the cargo hold, under paragraph (f) of this section, must be initiated. If this ventilation is provided by opening the cargo hatches, care must be taken to avoid generating sparks.

(m) The frequency of monitoring required by paragraph (f) of this section may be reduced at the discretion of the master provided that—

(1) The level of gas measured is less than 20 percent of the LFL;

(2) The level of gas measured has remained steady or decreased over three consecutive readings, or has increased by less than 5 percent over four consecutive readings spanning at least 48 hours; and

(3) Monitoring continues at intervals sufficient to determine that the level of gas remains within the parameters of paragraphs (m)(1) and (m)(2) of this section.

§ 148.242 Copra.

Copra must have surface ventilation. It must not be stowed against heated surfaces including fuel oil tanks which may require heating.

§ 148.245 Direct reduced iron (DRI); lumps, pellets, and cold-molded briquettes.

(a) Before loading DRI lumps, pellets, or cold-molded briquettes—

(1) The master must have a written certification from a competent person appointed by the shipper and recognized by the Commandant (CG–ENG–5) stating that the DRI, at the time of loading, is suitable for shipment;

(2) The DRI must be aged for at least 3 days, or be treated with an air passivation technique or some other equivalent method that reduces its reactivity to at least the same level as the aged DRI; and

(3) Each hold and bilge must be as clean and dry as practical. Other than double bottom tanks, adjacent ballast tanks must be kept empty when possible. All wooden fixtures, such as battens, must be removed from the hold.

(b) Each boundary of a hold where DRI lumps, pellets, or cold-molded briquettes are to be carried must be resistant to fire and passage of water.

(c) DRI lumps, pellets, or cold-molded briquettes that are wet, or that are known to have been wetted, may not be accepted for transport. The moisture content of the DRI must not exceed 0.3 percent prior to loading.

(d) DRI lumps, pellets and cold-molded briquettes must be protected at all times from contact with water, and must not be loaded or transferred from one vessel to another during periods of rain or snow.

(e) DRI lumps, pellets, or cold-molded briquettes may not be loaded if their temperature is greater than 65 °C (150 °F).

(f) The shipper of DRI lumps, pellets, or cold-molded briquettes in bulk must ensure that an inert atmosphere of less than 5 percent oxygen and 1 percent hydrogen, by volume, is maintained throughout the voyage in any hold containing these materials.

(g) When DRI lumps, pellets, or cold-molded briquettes are loaded, precautions must be taken to avoid the concentration of fines (pieces less than 6.35mm in size) in any one location in the cargo hold.

(h) Radar and RDF scanners must be protected against the dust generated during cargo transfer operations of DRI lumps, pellets, or cold-molded briquettes.

§ 148.250 Direct reduced iron (DRI); hot-molded briquettes.

(a) Before loading DRI hot-molded briquettes—

(1) The master must have a written certification from a competent person appointed by the shipper and recognized by the Commandant (CG–ENG–5) that at the time of loading the DRI hot-molded briquettes are suitable for shipment; and

(2) Each hold and bilge must be as clean and dry as practical. Except double bottom tanks, adjacent ballast tanks must be kept empty where possible. All wooden fixtures, such as battens, must be removed.

(b) All boundaries of a hold must be resistant to fire and passage of water to carry DRI hot-molded briquettes.

(c) DRI hot-molded briquettes must be protected at all times from contact with water. They must not be loaded or transferred from one vessel to another during periods of rain or snow.

(d) DRI hot-molded briquettes may not be loaded if their temperature is greater than 65 °C (150 °F).

(e) When loading DRI hot-molded briquettes, precautions must be taken to avoid the concentration of fines (pieces less than 6.35mm in size) in any one location in the cargo hold.

(f) Adequate surface ventilation must be provided when carrying or loading DRI hot-molded briquettes.

(g) When DRI hot-molded briquettes are carried by unmanned barge—

(1) The barge must be fitted with vents adequate to provide natural ventilation; and

(2) The cargo hatches must be closed at all times after loading the DRI hot-molded briquettes.

(h) Radar and RDF scanners must be adequately protected against dust generated during cargo transfer operations of DRI hot-molded briquettes.

(i) During final discharge only, a fine spray of water may be used to control dust from DRI hot-molded briquettes.

§ 148.255 Ferrosilicon, aluminum ferrosilicon, and aluminum silicon containing more than 30% but less than 90% silicon.

(a) This section applies to the stowage and transportation of ferrosilicon, aluminum ferrosilicon, and aluminum silicon containing more than 30 percent but less than 90 percent silicon.

(b) The shipper of material described in paragraph (a) of this section must give the master a written certification stating that after manufacture the material was stored under cover, but exposed to the weather, in the particle size in which it is to be shipped, for at least three days before shipment.

(c) Material described in paragraph (a) of this section must be protected at all times from contact with water, and must not be loaded or unloaded during periods of rain or snow.

(d) Except as provided in paragraph (e) of this section, each hold containing material described in paragraph (a) of this section must be mechanically ventilated by at least two separate fans. The total ventilation must be at least five air changes per hour, based on the empty hold. Ventilation must not allow escaping gas to reach accommodation or work spaces, on or under deck.

(e) An unmanned barge which is provided with natural ventilation need not comply with paragraph (d) of this section.

(f) Each space adjacent to a hold containing material described in paragraph (a) of this section must be well ventilated with mechanical fans. No person may enter that space unless it has been tested to ensure that it is free from phosphine and arsine gases.

(g) Scuttles and windows in accommodation and work spaces adjacent to holds containing material described in paragraph (a) of this section must be kept closed while this material is being loaded and unloaded.

(h) Any bulkhead between a hold containing material described in paragraph (a) of this section and an accommodation or work space must be gas tight and adequately protected against damage from any unloading equipment.

(i) When a hold containing material described in paragraph (a) of this section is equipped with atmosphere sampling type smoke detectors with lines that terminate in accommodation or work spaces, those lines must be blanked off gas-tight.

(j) If a hold containing material described in paragraph (a) of this section must be entered at any time, the hatches must be open for two hours before entry to dissipate any accumulated gases. The atmosphere in the hold must be tested to ensure that there is no phosphine or arsine gas present.

(k) After unloading material described in paragraph (a) of this section, each cargo hold must be thoroughly cleaned and tested to ensure that no phosphine or arsine gas remains.

§ 148.260 Ferrous metal.

(a) This part does not apply to the stowage and transportation in bulk of stainless steel borings, shavings, turnings, or cuttings; nor does this part apply to an unmanned barge on a

voyage entirely on the navigable waters of United States.

(b) Ferrous metal may not be stowed or transported in bulk unless the following conditions are met:

(1) All wooden sweat battens, dunnage, and debris must be removed from the hold before the ferrous metal is loaded;

(2) If weather is inclement during loading, hatches must be covered or otherwise protected to keep the material dry;

(3) During loading and transporting, the bilge of each hold in which ferrous metal is stowed or will be stowed must be kept as dry as practical;

(4) During loading, the ferrous metal must be compacted in the hold as frequently as practicable with a bulldozer or other means that provides equivalent surface compaction;

(5) No other material may be loaded in a hold containing ferrous metal unless—

(i) The material to be loaded in the same hold with the ferrous metal is not a material listed in Table 148.10 of this part or a readily combustible material;

(ii) The loading of the ferrous metal is completed first; and

(iii) The temperature of the ferrous metal in the hold is below 55 °C (131 °F) or has not increased in eight hours before the loading of the other material; and

(6) During loading, the temperature of the ferrous metal in the pile being loaded must be below 55 °C (131 °F).

(c) The master of a vessel that is loading or transporting a ferrous metal must ensure that the temperature of the ferrous metal is taken—

(1) Before loading;

(2) During loading, in each hold and pile being loaded, at least once every twenty-four hours and, if the temperature is rising, as often as is necessary to ensure that the requirements of this section are met; and

(3) After loading, in each hold, at least once every 24 hours.

(d) During loading, if the temperature of the ferrous metal in a hold is 93 °C (200 °F) or higher, the master must notify the Coast Guard Captain of the Port and suspend loading until the Captain of the Port is satisfied that the temperature of the ferrous metal is 88 °C (190 °F) or less.

(e) After loading ferrous metal—

(1) If the temperature of the ferrous metal in each hold is 65 °C (150 °F) or above, the master must notify the Coast Guard Captain of the Port, and the vessel must remain in the port area until the Captain of the Port is satisfied that the temperature of ferrous metal has shown a downward trend below 65 °C (150 °F) for at least eight hours after completion of loading of the hold; or

(2) If the temperature of the ferrous metal in each hold is less than 88 °C (190 °F) and has shown a downward trend for at least eight hours after the completion of loading, the master must notify the Coast Guard Captain of the Port, and the vessel must remain in the port area until the Captain of the Port confirms that the vessel is sailing directly to another port, no further than 12 hours sailing time, for the purpose of loading more ferrous metal in bulk or to completely off-load the ferrous metal.

(f) Except for shipments of ferrous metal in bulk which leave the port of loading under the conditions specified in paragraph (e)(2) of this section, if after the vessel leaves the port, the temperature of the ferrous metal in the hold rises above 65 °C (150 °F), the master must notify the nearest Coast Guard Captain of the Port as soon as possible of—

(1) The name, nationality, and position of the vessel;

(2) The most recent temperature taken;

(3) The length of time that the temperature has been above 65 °C (150 °F) and the rate of rise, if any;

(4) The port where the ferrous metal was loaded and the destination of the ferrous metal;

(5) The last port of call of the vessel and its next port of call;

(6) What action has been taken; and

(7) Whether any other cargo is endangered.

§ 148.265 Fish meal or fish scrap.

(a) This part does not apply to fish meal or fish scrap that contains less than 5 percent moisture by weight.

(b) Fish meal or fish scrap may contain a maximum of 12 percent moisture by weight and a maximum of 15 percent fat by weight.

(c) At the time of production, fish meal or fish scrap must be treated with an effective antioxidant (at least 400 mg/kg (ppm) ethoxyquin, at least 1000 mg/kg (ppm) butylated hydroxytoluene, or at least 1000 mg/kg (ppm) of tocopherol-based liquid antioxidant).

(d) Shipment of the fish meal or fish scrap must take place a maximum of 12 months after the treatment prescribed in paragraph (c) of this section.

(e) Fish meal or fish scrap must contain at least 100 mg/kg (ppm) of ethoxyquin or butylated hydroxytoluene or at least 250 mg/kg (ppm) of tocopherol-based antioxidant at the time of shipment.

(f) At the time of loading, the temperature of the fish meal or fish scrap to be loaded may not exceed 35 °C (95 °F), or 5 °C (9 °F) above the ambient temperature, whichever is higher.

(g) For each shipment of fish meal or fish scrap, the shipper must give the master a written certification stating—

(1) The total weight of the shipment;

(2) The moisture content of the material;

(3) The fat content of the material;

(4) The type of antioxidant and its concentration in the fish meal or fish scrap at the time of shipment;

(5) The date of production of the material; and

(6) The temperature of the material at the time of shipment.

(h) During a voyage, temperature readings must be taken of fish meal or fish scrap three times a day and recorded. If the temperature of the material exceeds 55 °C (131 °F) and continues to increase, ventilation to the hold must be restricted. This paragraph does not apply to shipments by unmanned barge.

§ 148.270 Hazardous substances.

(a) Each bulk shipment of a hazardous substance must—

(1) Be assigned a shipping name in accordance with 49 CFR 172.203(c); and

(2) If the hazardous substance is also listed as a hazardous solid waste in 40 CFR part 261, follow the applicable requirements of 40 CFR chapter I, subchapter I.

(b) Each release of a quantity of a designated substance equal to or greater than the reportable quantity, as set out in Table 1 to Appendix A of 49 CFR 171.101, when discharged into or upon the navigable waters of the United States, adjoining shorelines, into or upon the contiguous zone, or beyond the contiguous zone, must be reported as required in subpart B of 33 CFR part 153.

(c) A hazardous substance must be stowed in a hold or barge that is closed or covered and prevents dispersal of the material during transportation.

(d) During cargo transfer operations, a spill or release of a hazardous substance must be minimized to the greatest extent possible. Each release must be reported as required in paragraph (b) of this section.

(e) After a hazardous substance is unloaded, the hold in which it was carried must be cleaned thoroughly. The residue of the substance must be disposed of pursuant to 33 CFR 151.55 through 151.77 and the applicable regulations of 40 CFR subchapter I.

§ 148.275 Iron oxide, spent; iron sponge, spent.

(a) Before spent iron oxide or spent iron sponge is loaded in a closed hold, the shipper must give the master a written certification that the material has been cooled and weathered for at least eight weeks.

(b) Both spent iron oxide and spent iron sponge may be transported on open hold all-steel barges after exposure to air for a period of at least ten days.

§ 148.280 Magnesia, unslaked (lightburned magnesia, calcined magnesite, caustic calcined magnesite).

(a) This part does not apply to the transport of natural magnesite, magnesium carbonate, or magnesia clinkers.

(b) When transported by barge, unslaked magnesia must be carried in an unmanned, all-steel, double-hulled barge equipped with weathertight hatches or covers. The barge may not carry any other cargo while unslaked magnesia is on board.

(c) The shipping paper requirements in § 148.60 of this part and the dangerous cargo manifest requirements in § 148.70 of this part do not apply to unslaked magnesia transported under the requirements of paragraph (b) of this section.

§ 148.285 Metal sulfide concentrates.

(a) When information given by the shipper under § 148.60 of this part indicates that the metal sulfide concentrate may generate toxic or flammable gases, the appropriate gas detection equipment from §§ 148.415 and 148.420 of this part must be on board the vessel.

(b) No cargo hold containing a metal sulfide concentrate may be ventilated.

(c) No person may enter a hold containing a metal sulfide concentrate unless—

(1) The atmosphere in the cargo hold has been tested and contains sufficient oxygen to support life and, where the shipper indicates that toxic gas(es) may be generated, the atmosphere in the cargo hold has been tested for the toxic gas(es) and the concentration of the gas(es) is found to be less than the TLV; or

(2) An emergency situation exists and the person entering the cargo hold is wearing the appropriate self-contained breathing apparatus.

§ 148.290 Peat moss.

(a) Before shipment, peat moss must be stockpiled under cover to allow drainage and reduce its moisture content.

(b) The cargo must be ventilated so that escaping gases cannot reach living quarters on or above deck.

(c) Persons handling or coming into contact with peat moss must wear gloves, a dust mask, and goggles.

§ 148.295 Petroleum coke, calcined or uncalcined, at 55 °C (131 °F) or above.

(a) This part does not apply to shipments of petroleum coke, calcined or uncalcined, on any vessel when the temperature of the material is less than 55 °C (131 °F).

(b) Petroleum coke, calcined or uncalcined, or a mixture of calcined and uncalcined petroleum coke may not be loaded when its temperature exceeds 107 °C (225 °F).

(c) No other hazardous materials may be stowed in any hold adjacent to a hold containing petroleum coke except as provided in paragraph (d) of this section.

(d) Before petroleum coke at 55 °C (131 °F) or above may be loaded into a hold over a tank containing fuel or material having a flashpoint of less than 93 °C (200 °F), a 0.6 to 1.0 meter (2 to 3 foot) layer of the petroleum coke at a temperature not greater than 43 °C (110 °F) must first be loaded.

(e) Petroleum coke must be loaded as follows:

(1) For a shipment in a hold over a fuel tank, the loading of a cooler layer of petroleum coke in the hold as required by paragraph (d) of this section must be completed before loading the petroleum coke at 55 °C (131 °F) or above in any hold of the vessel;

(2) Upon completion of the loading described in paragraph (e)(1) of this section, a 0.6 to 1.0 meter (2 to 3 foot) layer of the petroleum coke at 55 °C (131 °F) or above must first be loaded into each hold, including those holds already containing a cooler layer of the petroleum coke; and

(3) Upon completion of the loading described in paragraph (e)(2) of this section, normal loading of the petroleum coke may be completed.

(f) The master of the vessel must warn members of a crew that petroleum coke is hot, and that injury due to burns is possible.

(g) During the voyage, the temperature of the petroleum coke must be monitored often enough to detect spontaneous heating.

§ 148.300 Radioactive materials.

(a) Radioactive materials that may be stowed or transported in bulk are limited to those radioactive materials defined in 49 CFR 173.403 as Low Specific Activity Material, LSA–1, or Surface Contaminated Object, SCO–1.

(b) Skin contact, inhalation or ingestion of dusts generated by Class 7 material listed in Table 148.10 of this part must be minimized.

(c) Each hold used for the transportation of Class 7 material (radioactive) listed in Table 148.10 of this part must

be surveyed after the completion of offloading by a qualified person using appropriate radiation detection instruments. Such holds must not be used for the transportation of any other material until the non-fixed contamination on any surface, when averaged over an area of 300 cm^2, does not exceed the following levels:

(1) 4.0 Bq/cm^2 (10^{-4} uCi/cm^2;) for beta and gamma emitters and low toxicity alpha emitters, natural uranium, natural thorium, uranium-235, uranium-238, thorium-232, thorium-228 and thorium-230 when contained in ores or physical or chemical concentrates, and radionuclides with a half-life of less than 10 days; and

(2) 0.4 Bq/cm^2 (10^{-5} uCi/cm^2) for all other alpha emitters.

§ 148.310 Seed cake.

(a) This part does not apply to solvent-extracted rape seed meal, pellets, soya bean meal, cotton seed meal, or sunflower seed meal that—

(1) Contains a maximum of 4 percent vegetable oil and a maximum of 15 percent vegetable oil and moisture combined; and

(2) As far as practical, is free from flammable solvent.

(b) This part does not apply to mechanically expelled citrus pulp pellets containing not more than 2.5 percent oil and a maximum of 14 percent oil and moisture combined.

(c) Before loading, the seed cake must be aged per the instructions of the shipper.

(d) Before loading, the shipper must give the master or person in charge of a barge a certificate from a competent testing laboratory stating the oil and moisture content of the seed cake.

(e) The seed cake must be kept as dry as practical at all times.

(f) If the seed cake is solvent-extracted, it must be—

(1) As free as practical from flammable solvent; and

(2) Stowed in a mechanically ventilated hold.

(g) For a voyage with a planned duration greater than 5 days, the vessel must be equipped with facilities for introducing carbon dioxide or another inert gas into the hold.

(h) Temperature readings of the seed cake must be taken at least once in every 24-hour period. If the temperature exceeds 55 °C (131 °F) and continues to increase, ventilation to the cargo hold must be discontinued. If heating continues after ventilation has been discontinued, carbon dioxide or the inert gas required under paragraph (g) of this section must be introduced into the hold. If the seed cake is solvent-extracted, the use of inert gas must not be introduced until fire is apparent, to avoid the possibility of igniting the solvent vapors by the generation of static electricity.

(i) Seed cake must be carried under the terms of a Special Permit issued by the Commandant (CG–ENG–5) per subpart B of this part if—

(1) The oil was mechanically expelled; and

(2) It contains more than 10 percent vegetable oil or more than 20 percent vegetable oil and moisture combined.

§ 148.315 Sulfur.

(a) This part applies to lump or coarse grain powder sulfur only. Fine-grained powder (''flowers of sulfur'') may not be transported in bulk.

(b) After the loading or unloading of lump or coarse grain powder sulfur has been completed, sulfur dust must be removed from the vessel's decks, bulkheads, and overheads. Cargo residues and deck sweepings must be disposed of pursuant to 33 CFR 151.55 through 151.77.

(c) A cargo space that contains sulfur or the residue of a sulfur cargo must be adequately ventilated, preferably by mechanical means. Each ventilator intake must be fitted with a spark-arresting screen.

§ 148.320 Tankage; garbage tankage; rough ammonia tankage; or tankage fertilizer.

(a) This part applies to rough ammonia tankage in bulk that contains 7 percent or more moisture by weight, and garbage tankage and tankage fertilizer that contains 8 percent or more moisture by weight.

(b) Tankage to which this part applies may not be loaded in bulk if its temperature exceeds 38 °C (100 °F).

(c) During the voyage, the temperature of the tankage must be monitored often enough to detect spontaneous heating.

§ 148.325 Wood chips; wood pellets; wood pulp pellets.

(a) This part applies to wood chips and wood pulp pellets in bulk that may oxidize, leading to depletion of oxygen and an increase in carbon dioxide in the cargo hold.

(b) No person may enter a cargo hold containing wood chips, wood pellets, or wood pulp pellets, unless—

(1) The atmosphere in the cargo hold has been tested and contains enough oxygen to support life; or

(2) The person entering the cargo hold is wearing the appropriate self-contained breathing apparatus.

§ 148.330 Zinc ashes; zinc dross; zinc residues; zinc skimmings.

(a) The shipper must inform the cognizant Coast Guard Captain of the Port in advance of any cargo transfer operations involving zinc ashes, zinc dross, zinc residues, or zinc skimmings (collectively, ''zinc material'') in bulk.

(b) Zinc material must be aged by exposure to the elements for at least one year before shipment in bulk.

(c) Before loading in bulk, zinc material must be stored under cover for a period of time to ensure that it is as dry as practical. No zinc material that is wet may be accepted for shipment.

(d) Zinc material may not be loaded in bulk if its temperature is greater than 11.1 °C (52 °F) in excess of the ambient temperature.

(e) Paragraphs (e)(1) through (e)(5) of this section apply only when zinc materials are carried by a cargo vessel:

(1) Zinc material in bulk must be stowed in a mechanically ventilated hold that—

(i) Is designed for at least one complete air change every 30 minutes based on the empty hold;

(ii) Has explosion-proof motors approved for use in Class I, Division 1, Group B atmospheres or equivalent motors approved by the vessel's flag state administration for use in hydrogen atmospheres; and

(iii) Has nonsparking fans.

(2) Combustible gas detectors capable of measuring hydrogen concentrations of 0 to 4.1 percent by volume must be permanently installed in holds that will carry zinc material. If the concentration of hydrogen in the space above the cargo exceeds 1 percent by volume, the ventilation system must be run until the concentration drops below 1 percent by volume.

(3) Thermocouples must be installed approximately 6 inches below the surface of the zinc material or in the space immediately above the zinc material. If an increase in temperature is detected, the mechanical ventilation system required by paragraph (d) of this section must be used until the temperature of the zinc material is below 55 °C (131 °F).

(4) Except as provided in paragraph (e)(5) of this section, the cargo hatches of holds containing zinc material must remain sealed to prevent the entry of seawater.

(5) If the concentration of hydrogen is near 4.1 percent by volume and increasing, despite ventilation, or the temperature of the zinc material reaches 65 °C (150 °F), the cargo hatches should be opened provided that weather and sea conditions are favorable. When hatches are opened take care to prevent sparks and minimize the entry of water.

Subpart F—Additional Special Requirements

§ 148.400 Applicability.

Unless stated otherwise, the requirements of this subpart apply only to the shipment or loading of materials, listed in Table 148.10 of this part, for which Table 148.10 contains a reference to a section or paragraph of this subpart.

§ 148.405 Sources of ignition.

(a) Except in an emergency, no welding, burning, cutting, chipping, or other operations involving the use of fire, open flame, sparks, or arc-producing equipment, may be performed in a cargo hold containing a Table 148.10 material or in an adjacent space.

(b) A cargo hold or adjacent space must not have any flammable gas concentrations over 10 percent of the LFL

before the master may approve operations involving the use of fire, open flame, or spark- or arc-producing equipment in that hold or adjacent space.

§ 148.407 Smoking.

When Table 148.10 of this part associates a material with a reference to this section, and that material is being loaded or unloaded, smoking is prohibited anywhere on the weatherdeck of the vessel. While such a material is on board the vessel, smoking is prohibited in spaces adjacent to the cargo hold and on the vessel's deck in the vicinity of cargo hatches, ventilator outlets, and other accesses to the hold containing the material. ''NO SMOKING'' signs must be displayed in conspicuous locations in the areas where smoking is prohibited.

§ 148.410 Fire hoses.

When Table 148.10 of this part associates a material with a reference to this section, a fire hose must be available at each hatch through which the material is being loaded.

§ 148.415 Toxic gas analyzers.

When Table 148.10 of this part associates a material with a reference to a paragraph in this section, each vessel transporting the material, other than an unmanned barge, must have on board a gas analyzer appropriate for the toxic gas listed in that paragraph. At least two members of the crew must be knowledgeable in the use of the equipment. The equipment must be maintained in a condition ready for use and calibrated according to the instructions of its manufacturer. The atmosphere in the cargo hold and adjacent spaces must be tested before a person is allowed to enter these spaces. If toxic gases are detected, the space must be ventilated and retested before entry. The toxic gases for which the requirements of this section must be met are:

(a) Arsine;
(b) Carbon monoxide;
(c) Hydrogen cyanide;
(d) Hydrogen sulfide;
(e) Phosphine; and
(f) Sulfur dioxide.

§ 148.420 Flammable gas analyzers.

When Table 148.10 of this part associates a material with a reference to a paragraph in this section, each vessel transporting the material, other than an unmanned barge, must have on board a gas analyzer appropriate for the flammable gas listed in that paragraph. At least two members of the crew must be knowledgeable in the use of the equipment. The equipment must be maintained in a condition ready for use, capable of measuring 0 to 100 percent LFL for the gas indicated, and calibrated in accordance with the instructions of its manufacturer. The atmosphere in the cargo hold must be tested before any person is allowed to enter. If flammable gases are detected, the space must be ventilated and retested before entry. The flammable gases for which the requirements of this section must be met are:

(a) Carbon monoxide;
(b) Hydrogen; and
(c) Methane.

§ 148.435 Electrical circuits in cargo holds.

During transport of a material that Table 148.10 of this part associates with a reference to this section, each electrical circuit terminating in a cargo hold containing the material must be electrically disconnected from the power source at a point outside of the cargo hold. The point of disconnection must be marked to prevent the circuit from being reenergized while the material is on board.

§ 148.445 Adjacent spaces.

When transporting a material that Table 148.10 of this part associates with a reference to this section, the following requirements must be met:

(a) Each space adjacent to a cargo hold must be ventilated by natural ventilation or by ventilation equipment safe for use in an explosive gas atmosphere.

(b) Each space adjacent to a cargo hold containing the material must be regularly monitored for the presence of the flammable gas indicated by reference to § 148.420 of this part. If the level of flammable gas in any space reaches 30 percent of the LFL, all electrical equipment that is not certified

safe for use in an explosive gas atmosphere must be de-energized at a location outside of that space. This location must be labeled to prohibit reenergizing until the atmosphere in the space is tested and found to be less than 30 percent of the LFL.

(c) Each person who enters any space adjacent to a cargo hold or compartment containing the material must wear a self-contained breathing apparatus unless—

(1) The space has been tested, or is routinely monitored, for the appropriate flammable gas and oxygen;

(2) The level of flammable gas is less than 10 percent of the LFL; and

(3) The level of toxic gas, if required to be tested, is less than the TLV.

(d) No person may enter an adjacent space if the level of flammable gas is greater than 30 percent of the LFL. If emergency entry is necessary, each person who enters the space must wear a self-contained breathing apparatus and caution must be exercised to ensure that no sparks are produced.

§ 148.450 Cargoes subject to liquefaction.

(a) This section applies only to cargoes identified in Table 148.10 of this part with a reference to this section and cargoes identified in the IMSBC Code (incorporated by reference, see § 148.8) as cargoes that may liquefy.

(b) This section does not apply to—

(1) Shipments by unmanned barge; or

(2) Cargoes of coal that have an average particle size of 10mm (.394 in.) or greater.

(c) Definitions as used in this section—

(1) *Cargo subject to liquefaction* means a material that is subject to moisture migration and subsequent liquefaction if shipped with moisture content in excess of the transportable moisture limit.

(2) *Moisture migration* is the movement of moisture by settling and consolidation of a material, which may result in the development of a flow state in the material.

(3) *Transportable moisture limit* or *TML* of a cargo that may liquefy is the maximum moisture content that is considered safe for carriage on vessels.

(d) Except on a vessel that is specially constructed or specially fitted for the purpose of carrying such cargoes (see also section 7 of the IMSBC Code, incorporated by reference, see § 148.8), a cargo subject to liquefaction may not be transported by vessel if its moisture content exceeds its TML.

(e) The shipper of a cargo subject to liquefaction must give the master the material's moisture content and TML.

(f) The master of a vessel shipping a cargo subject to liquefaction must ensure that—

(1) A cargo containing a liquid is not stowed in the same cargo space with a cargo subject to liquefaction; and

(2) Precautions are taken to prevent the entry of liquids into a cargo space containing a cargo subject to liquefaction.

(g) The moisture content and TML of a material may be determined by the tests described in Appendix 2, Section 1, of the IMSBC Code (incorporated by reference, see § 148.8).

PART 149 [RESERVED]