Hazardous materials – CFR / domestic regs

Dangerous goods – IMDG / international regs

Classifications are the same, IMDG and CFR read nearly identical (marine pollutants in IMDG is class 10)

**References:**

**International Conventions (The Big Five)**

* **SOLAS** 
  + VI– Carriage of cargoes and oil fuels
  + VII– Dangerous goods
  + XI-1 – Special measure to enhance maritime safety
  + XII – Additional safety measures for bulk carriers
* **MARPOL**
* **STCW**
* **ILO**
* **ILLC**

**Codes**

* **IMDG** – Int’l Maritime Dangerous Goods Code
  + Detailed appendix of dangerous goods commonly carried onboard vessels
  + Classes Dangerous Goods 1-10
* **IMSBC** – Int’l Maritime Solid Bulk Cargo Code
  + Code pertaining to loading, storing and transporting solid bulk cargoes on vessels.
  + Details individual cargoes including
    - Description, characteristics
    - Angle of repose
    - Hazards
    - Stowage and segregation
    - Weather precautions
    - Carriage, discharge, clean up and emergency procedures
* **BLU Code & Manual**: Code of Practice for the Safe Loading and Unloading of Bulk Carriers
* **CSS Code**: Code of Safe Practice for Cargo Stowage and Securing
* **IGC Code:** International Code for the Safe Carriage of Grain in Bulk (aka “Int’l Grain Code”)
* **ESP Code**: International Code on the Enhanced Programme of Inspections during Surveys of Bulk Carriers and Oil Tankers

**Domestic**

* **49 CFR subchapter C: Hazardous Materials Regulations**
  + 49 CFR 171 “
  + 49CFR 172 “
  + 49CFR 173 “General Requirements for Shipments and Packaging” (Classifications of HazMat)
  + 49CFR 176 “Carriage by Vessel” (US IMDG equiv)
* 46CFR 108 (US IMSBC eq)
* 46CFR 172 (US Grain code eq)

**Ship and cargo types:**

* Bulk Carrier
  + Ship constructed generally with single deck, top side tanks and hopper side tanks in cargo spaces, and is intended primarily to carry dry cargo in bulk; includes such tyes as ore carriers and combination carriers. (SOLAS 14 IX – 1)
* MHB / PDM
  + Materials only Hazardous in Bulk
  + Potentially Dangerous Materials
* General dry cargo
* Container
  + *Closed freight container* means a [freight container](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=f27e391368e4d0c661feb31efe196fc8&term_occur=999&term_src=Title:49:Subtitle:B:Chapter:I:Subchapter:C:Part:176:Subpart:A:176.2) which totally encloses its contents by permanent structures. A [freight container](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=f27e391368e4d0c661feb31efe196fc8&term_occur=999&term_src=Title:49:Subtitle:B:Chapter:I:Subchapter:C:Part:176:Subpart:A:176.2) formed partly by a tarpaulin, plastic sheet, or similar material is not a [closed freight container](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=d71673ad8059898d36045068d9882120&term_occur=999&term_src=Title:49:Subtitle:B:Chapter:I:Subchapter:C:Part:176:Subpart:A:176.2).
* Solid Bulk
  + Not liquid or gas. Solids of uniform composition that are loaded directly into cargo spaces of vessel without any form of containment (such as intermodal container, box etc.)
* Timber
* Grain
  + Grain includes wheat, maize (corn), oats, rye, barley, rice, pulses, seeds and processed forms thereof whose behavior is similar to that of grain in it’s natural state
* Break Bulk
  + Means of packages of hazardous materials that are handled individually; built in cranes/lifts
  + Cargo is too large for containers, but not in bulk holds like grain/oil etc.
    - Large pieces of building material, smaller vessels, heavy lift etc.
* Hazardous material (see table on last page)
  + a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has designated as hazardous under section 5103 of Federal hazardous materials transportation law (49 U.S.C. 5103). The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (see 49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions in part 173 of this subchapter.
* *Cargo of particular hazard* means any of the following:
  + **(1)** Division 1.1 and 1.2 explosives, as defined in [49 CFR 173.50](https://www.law.cornell.edu/cfr/text/49/173.50), for which a permit is required under [33 CFR 126.17](https://www.law.cornell.edu/cfr/text/33/126.17).
  + **(2)** Ammonium nitrate products, division 5.1 (oxidizing) materials listed in [49 CFR 176.410](https://www.law.cornell.edu/cfr/text/49/176.410), for which a permit is required under [49 CFR 176.415](https://www.law.cornell.edu/cfr/text/49/176.415).
  + **(3)** Division 4.3 dangerous when wet products as defined in [49 CFR 173.124](https://www.law.cornell.edu/cfr/text/49/173.124), in excess of 60 mt.
  + **(4)** Division 2.3 and 6.1 poison inhalation hazard products as defined in [49](https://www.law.cornell.edu/cfr/text/49) CFR [173.115](https://www.law.cornell.edu/cfr/text/49/173.115) and [173.132](https://www.law.cornell.edu/cfr/text/49/173.132), respectively.
  + **(5)** Class 7 highway route controlled quantity radioactive material or fissile material, controlled shipment, as defined in [49 CFR 173.403](https://www.law.cornell.edu/cfr/text/49/173.403).
* Facility of particular hazard
  + Designated facility that is authorized to handle cargo of particular hazard.
* Dangerous goods
  + Those classified under **IMDG** code
  + Group A
    - Cargoes which may liquify if shipped at a certain moisture content
  + Group B
    - Cargoes which possess a chemical hazard which could give rise to a dangerous situation on a ship
  + Group C
    - Cargoes neither A nor B

**FFV Specific Certificates and Documents**

* ESP: Enhanced Survey Program
* DOC: Document of Compliance for Carriage of Dangerous Goods
* Crew Training Records: Hazardous Material / Dangerous Goods
* DOA: Document of Authorization for Carriage of Grain
  + Ship’s Stability Booklet
  + Grain Loading Booklet
* Loading Manual
* Cargo Securing Manual
* DCM: Dangerous Cargo Manifest
  + Name, nationality of vessel
  + Shipping name, ID number for haz mats
  + Number and description of packages w/ gross weights
  + Classification via IMDG or 49CFR 172.101
  + Location onboard vessel
* COR: Certificate of Readiness
* COL: Certificate of Loading

**Look ups**

1. What agency do we trust to spot check the DCM and containers?
   1. National Cargo Bureau Inc
   2. 49 CFR 176.18
2. When is CO2 (or inert gas) required for cargo holds pertaining to container ships?
   1. Cargo spaces of ships >2,000gt
      1. SOLAS(14) II-2 / 10.7.1.3
3. Maximum amount of fuel permitted in tank of vehicle?
   1. ¼ tank or 250L
      1. Provision 962 IMDG
      2. See also provision 961 in IMDG

|  |  |  |  |
| --- | --- | --- | --- |
| Class No. | Division No. (if any) | Name of class or division | [49](https://www.law.cornell.edu/cfr/text/49) CFR reference for definitions |
| None |  | Forbidden materials | 173.21 |
| None |  | Forbidden explosives | 173.54 |
| 1 | 1.1 | Explosives (with a mass explosion hazard) | 173.50 |
| 1 | 1.2 | Explosives (with a projection hazard) | 173.50 |
| 1 | 1.3 | Explosives (with predominately a fire hazard) | 173.50 |
| 1 | 1.4 | Explosives (with no significant blast hazard) | 173.50 |
| 1 | 1.5 | Very insensitive explosives; blasting agents | 173.50 |
| 1 | 1.6 | Extremely insensitive detonating substances | 173.50 |
| 2 | 2.1 | Flammable gas | 173.115 |
| 2 | 2.2 | Non-flammable compressed gas | 173.115 |
| 2 | 2.3 | Poisonous gas | 173.115 |
| 3 |  | Flammable and combustible liquid | 173.120 |
| 4 | 4.1 | Flammable solid | 173.124 |
| 4 | 4.2 | Spontaneously combustible material | 173.124 |
| 4 | 4.3 | 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 (Etiologic agent) | 173.134 |
| 7 |  | Radioactive material | 173.403 |
| 8 |  | Corrosive material | 173.136 |
| 9 |  | Miscellaneous hazardous material | 173.140 |
| None |  | Other regulated material: ORM-D | 173.144 |