

APPENDIX R
HAZARDOUS MATERIALS DEFINITIONS



U.S. Department
of Transportation

Research and
Special Programs
Administration

HAZARDOUS MATERIALS DEFINITIONS

The following definitions have been abstracted from the Code of Federal Regulations, Title 49, Transportation, Parts 100-177. Refer to the referenced sections for complete details. Note: In column (1), Sec. 172.101, Hazardous Materials Table, the plus (+) fixes the proper shipping name and hazard class. The name and class do not change whether the material meets or does not meet the definition of that class. (Sec. 172.101(b)(1))

HAZARDOUS MATERIAL - A substance or material, including a hazardous substance, which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and which has been so designated. (See Sec. 171.8)

MULTIPLE HAZARDS - A material meeting the definition of more than one hazard class is classed according to its position in the lists in Sec. 173.2(a) and (b).

DOT HAZARD CLASS	UN CLASS	DEFINITION
		An Explosive - Any chemical compound, mixture, or device which is designed to function by explosion, that is substantially instantaneous with the release of gas and heat. Exception--such compound, mixture, or device which is otherwise specifically classified in Parts 170-189. (See Sec. 173.50)
CLASS A	1	Detonating or otherwise of maximum hazard. The nine types of Class A explosives are defined in Sec. 173.53.
CLASS B	1	Flammable hazard - In general, functions by rapid burning rather than detonation. Includes some explosive devices such as special fireworks, flash powders, etc. (Sec. 173.88)
CLASS C	1	Minimum hazard - Certain types of fireworks and certain types of manufactured articles containing restricted quantities of Class A and/or Class B explosives as components. (Sec. 173.100)
BLASTING AGENT		A material designed for blasting which has been tested in accordance with Sec. 173.114a(b). It must be so insensitive that there is very little probability of: (1) accidental explosion or (2) going from burning to detonation. (Sec. 173.114a(b))
		Compressed Gas - Any material or mixture having in-the-container a pressure EXCEEDING 40 psia at 70°F., OR a pressure exceeding 104 psia at 130°F.; or any liquid flammable material having a vapor pressure exceeding 40 psia at 100°F. (Sec. 173.300(a))
		Non-liquefied compressed gas is a gas (other than gas in solution) which, under the charged pressure, is entirely gaseous at a temperature of 70°F.
		Liquefied compressed gas is a gas which, under the charged pressure, is partially liquid at a temperature of 70°F.
		Compressed gas in solution is a compressed gas which is dissolved in a solvent.
FLAMMABLE GAS	2	Any compressed gas meeting criteria as specified in Sec. 173.300(b). This includes: lower flammability limit, flammability limit range, flame projection, or flame propagation.

DOT HAZARD CLASS	UN CLASS	DEFINITION
NONFLAMMABLE GAS	2	Any compressed gas <u>other than</u> a flammable compressed gas.
COMBUSTIBLE LIQUID	3	Any liquid having a flash point <u>at or above</u> 100°F. and below 200°F. Authorized flash point methods are listed in Sec. 173.115(d). Exceptions are found in Sec. 173.115(b).
FLAMMABLE LIQUID	3	Any liquid having a flash point below 100°F. Authorized flash point methods are listed in Sec. 173.115(d). For exception, see Sec. 173.115(a). <u>Pyroforic Liquid</u> - Any liquid that ignites spontaneously in dry or moist air <u>at or below</u> 130°F. (Sec. 173.115(c))
FLAMMABLE SOLID	4	Any solid material (other than an explosive) which is liable to cause fires through friction or retained heat from manufacturing or processing. It can be ignited readily and burns so vigorously and persistently, as to create a serious transportation hazard. Included in this class are spontaneously combustible and <u>water-reactive materials</u> . (Sec. 173.150) <u>Spontaneously Combustible Material (Solid)</u> - A solid substance (including sludges and pastes) which may undergo spontaneous heating or self-burning under normal transportation conditions. These materials may increase in temperature and ignite when exposed to air. (Sec. 171.8) <u>Water Reactive Material (Solid)</u> - Any solid substance (including sludges and pastes) which react with water by igniting or giving off <u>dangerous quantities</u> of flammable or toxic gases. (Sec. 171.8)
ORGANIC PEROXIDE	5	An organic compound containing the bivalent -O-O structure. It may be considered a derivative of hydrogen peroxide where one or more of the hydrogen atoms have been replaced by organic radicals. It must be classed as an organic peroxide unless it meets certain criteria listed in Sec. 173.151(a).
OXIDIZER	5	A substance such as chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily. It accelerates the combustion of organic matter. (See Sec. 173.151)
POISON A	2	<u>Extremely Dangerous Poisons</u> - Poisonous gases or liquids -- a very small amount of the gas, or vapor of the liquid, mixed with air is <u>dangerous to life</u> . (Sec. 173.326)
POISON B	6	<u>Less Dangerous Poisons</u> - Substances, liquids or solids (including pastes and semi-solids), other than Class A or Irritating materials--so toxic (or presumed to be toxic) to man that they are a hazard to health during transportation. (Sec. 173.381)
IRRITATING MATERIAL	6	A liquid or solid substance which, upon contact with fire or air, gives off dangerous or intensely irritating fumes. They do <u>not include any poisonous material</u> . Class A. (Sec. 173.381)
ETIOLOGIC AGENT	6	An "etiologic agent" means a living micro-organism (or its toxin) which causes (or may cause) human disease. (Sec. 173.386)
RADIOACTIVE MATERIAL	7	Any material, or combination of materials, that spontaneously gives off ionizing radiation. It has a specific activity greater than 0.002 microcuries per gram. (Sec. 173.403 (See Sec. 173.403(a) through (z) for details)
CORROSIVE MATERIAL	8	Any liquid or solid that causes visible destruction or irreversible damage to human skin tissue. Also, it may be a liquid that has a severe corrosion rate on steel. (See Sec. 173.240(a) and (b) for details)
ORM-OTHER REGULATED MATERIALS		(1) Any material that may pose an unreasonable risk to health and safety property when transported in commerce; and (2) does not meet any of the definitions of the other hazard classes specified in this subpart; or (3) has been reclassified an ORM (specifically or permissively) according to this subchapter. (Sec. 173.500(a))
ORM-A	9	A material which has an anesthetic, irritating, noxious, toxic, or other similar property. If the material leaks during transportation, passengers and crew would experience extreme annoyance and discomfort. (Sec. 173.500(b)(1))
ORM-B	9	A material (including a solid when wet with water) the leakage of which could cause significant damage to the vehicle transporting it. Materials meeting one or both of the following criteria are ORM-B materials: (1) specifically designated by name in Sec. 172.101 and/or (2) a liquid substance that has a corrosion rate exceeding 0.250 inch per year (IPY) on non-clad aluminum. An acceptable test is described in NACE Standard TM-01-69. (Sec. 173.500(b)(2))

DOT HAZARD CLASS	UN CLASS	DEFINITION
ORM-C	9	A material which has other inherent characteristics not described as an ORM-A or ORM-B. It is unsuitable for shipment, unless properly identified and prepared for transportation. Each ORM-C material is specifically named in Sec. 172.101. (Sec. 173.500(b)(3))
ORM-D	9	A material such as a consumer commodity which presents a limited hazard during transportation due to its form, quantity and packaging. They must be materials for which exceptions are provided in Sec. 172.101. A shipping description applicable to ORM-D material is found in Sec. 172.101. (Sec. 173.500(b)(4))
ORM-E	9	A material that is not included in any other hazard class, but is subject to the requirements of this subchapter. Materials in this class include (1) HAZARDOUS WASTE (2) HAZARDOUS SUBSTANCE, as defined in Sec. 171.8 (Sec. 173.500(b)(5))

THE FOLLOWING ARE OFFERED TO EXPLAIN SOME OF THE ADDITIONAL TERMS USED IN PREPARATION OF HAZARDOUS MATERIALS FOR SHIPMENT. (Sec. 171.8)

DOT TERM	EXPLANATION
CONSUMER COMMODITY (SEE (ORM-D ON PREVIOUS PAGE)	A material that is packaged or distributed in a form intended and suitable for sale through retail sales-type agencies. The material is for use by individuals for personal care or household use. This term also includes drugs and medicines. (Sec. 171.8)
FLASH POINT	The minimum temperature at which the flammable vapors of a substance (in contact with a spark or flame) will ignite. For liquids, see Sec. 173.115.
FORBIDDEN	Material is prohibited from being offered or accepted for transportation. This prohibition does not apply if these materials are diluted, stabilized, or incorporated in devices AND they are classed in accordance with Sec. 172.101(d)(1)
HAZARDOUS SUBSTANCE	A material, including its mixtures and solutions, that: (1) Is listed in the Appendix to Sec. 172.101; (2) is in a quantity, in one package, which equals or exceeds the reportable quantity (RQ) listed in the Appendix to Sec. 172.101; (3) When in a mixture or solution, is in a concentration by weight which equals or exceeds the concentration corresponding to the RQ of the material as shown in the table of the "hazardous substance" definition in Sec. 171.8. This definition does not apply to petroleum products that are lubricants or fuels. (See 40 CFR 300.6)
HAZARDOUS WASTE	Any material that is (1) subject to the hazardous waste manifest requirements of the Environmental Protection Agency specified in the CFR, Title 40, Part 262; or (2) would be subject to these requirements (in the absence of an interim authorization to a State) see Title 40, CFR, Part 123, Subpart F; 49 CFR 171.8. Questions regarding EPA hazardous waste regulations, call (202) 554-1404, 554-1405, or 554-1406 in Washington, D.C.
LIMITED QUANTITY	The maximum amount of a hazardous material authorized for specific labeling and packaging exceptions. Consult the sections applicable to the particular hazard class. See Sec. 173.118, 173.118(a), 173.153, 173.244, 173.306, 173.345, 173.364 and 173.391.
REPORTABLE QUANTITY	The quantity specified in Column 3 of the Appendix to Sec. 172.101 for any material identified in Column 1 of the Appendix.

*THIS HANDOUT IS DESIGNED AS A TRAINING AID FOR ALL INTERESTED PARTIES WHO MAY BECOME INVOLVED WITH HAZARDOUS MATERIALS. IT DOES NOT RELIEVE PERSONS FROM COMPLYING WITH THE DEPARTMENT OF TRANSPORTATION'S HAZARDOUS MATERIALS REGULATIONS. SPECIFIC CRITERIA FOR HAZARD CLASSES AND RELATED DEFINITIONS ARE FOUND IN THE CODE OF FEDERAL REGULATIONS (CFR), TITLE 49, PARTS 100-177.

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