



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

JAN 23 2020

Sean Kelly
Pristine World Academy
1811 Laser Court
Fernandina Beach, FL 32034

Reference No. 19-0113

Dear Mr. Kelly:

This letter is in response to your September 3, 2019, letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the packaging testing requirements for a limited quantity package via highway transportation. Specifically, you ask whether a packaging used for a limited quantity shipment by highway is subject to vibration test requirements in § 178.608.

The answer is no. In accordance with the applicable limited quantity requirements in Part 173, a limited quantity package transported by highway is excepted from the specification packaging requirements, including the vibration standard in § 178.608. However, in accordance with § 173.24a(a)(5), a packaging used for a limited quantity package must be capable of withstanding, without rupture or leakage, the vibration test procedure specified in § 178.608. Meeting this requirement may be based on performance of the test, institutional knowledge, prior experience, modeling, or other data.

I hope this information is helpful. Please contact us if we can be of further assistance.

Sincerely,

Dirk Der Kinderen
Chief, Standards Development Branch
Standards and Rulemaking Division

Pristine World Academy
Sean Kelly
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03 Sep 19

Cuciarone

19-0113

U.S. DOT / PHMSA
Director Standards Rulemaking
Shane Kelley
Washington, DC 20590

Dear Shane, I wrote this letter for training but now am asking for a letter of clarification specifically, as per the enclosed letter, what are the package testing requirements for a limited quantity package being shipped / transported by ground in the United States?

All of the Exceptions in Subpart D refer to Subpart B which refers to Subpart M (Specification Packaging) for or from which the limited quantity is excepted?

I hope this letter finds you well, I hope you enjoyed your Labor Day Weekend.
Cordialmente,

Sean Kelly

ity of the shipper to ensure that such packaging is suitable for the goods to be transported. This is to be done in accordance with the instructions of the shipper to ensure that such packaging is suitable for the goods to be transported. This is to be done in accordance with the instructions of the shipper to ensure that such packaging is suitable for the goods to be transported.

Effects of fluorine on glass:

Factors of corrosion on metals such as steel and aluminium:

Factors of corrosion on metals such as steel and aluminium:

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Evidence of Compatibility

measures ensure that all appropriate measures have been taken to ensure that the packagings used are suitable for the goods to be transported.

Temperature and Vibration

The body and the closure of any packaging constructed as to be able to adequately resist the effects of temperature and vibration occurring in the course of transport. The closure device must be checked to determine that it is completely closed.

In addition, for inner packagings containing dangerous substances, must be held securely, tightly and in place by secondary means. Examples of methods include: adhesive tape, friction sleeves, or soldering; positive locking wires, locking rings, metal seals and child-resistant closures. The device must be so designed that it is unlikely that it will be opened or incompletely closed. When secondary means of closure cannot be applied, the inner liner must be securely closed and placed in a liner and then placed in an outer packaging.

Ullage

OR VARIATION: K2.03
 Inner packagings for liquids, sufficient ullage must be left to ensure that neither leakage nor expansion of the liquid caused by temperature will prevail during transport. Liquids must not be filled in packaging at a temperature of 55°C.

5.0.2.9 Internal Pressure Standards

Packagings, for which retention of liquid is a basic function, must be capable of withstanding, without leakage, an internal pressure which produces a pressure differential of not less than 95 kPa (0.95 bar), not less than 75 kPa (0.75 bar) for liquids in Packing Group III of Class 3 or Division 6.1, or a pressure related to the vapour pressure of the liquid to be conveyed, whichever is the greater. The pressure, related to the vapour pressure must be determined by one of the methods described in 5.0.2.9.1 to 5.0.2.9.3.

5.0.2.9.1 Method A—the total gauge pressure measured in the packaging (i.e. the vapour pressure of the filling substance and the external pressure at 50°C) or other inert gases, less 100 kPa (1 bar), multiplied by a safety factor of 1.5. This total gauge pressure should be determined on the basis of a design of filling in accordance with 5.0.2.8 and a filling temperature of 15°C; or

5.0.2.9.2 Method B—1.75 times the vapour pressure at 50°C, less 100 kPa (1 bar) but with a minimum of 95 kPa (0.95 bar).

This is expressed as:
 $P = (P_{vap} \times 1.75) - 100 \text{ kPa}$, with a minimum of 95 kPa where:

P = Pressure requirement in kPa (gauge)

P_{vap} = Vapour pressure at 50°C; or

5.0.2.9.3 Method C—1.5 times the vapour pressure at 55°C, less 100 kPa but with a minimum of 95 kPa.

This is expressed as:

$P = (P_{vap} \times 1.5) - 100 \text{ kPa}$, with a minimum of 95 kPa where:

P = Pressure requirement in kPa (gauge)

P_{vap} = Vapour pressure at 55°C.

Note: The capability of a packaging to withstand an internal pressure without leakage that produces the specified pressure without rupture or deformation by testing specimens without rupture or deformation by testing and simple packagings. Pressure differential is the difference between the pressure exerted on the inside of the packaging and the pressure on the outside. The appropriate test method should be selected based on packaging type. Acceptable test methods include any method that produces the required pressure differential between the inside and outside of a single packaging or an inner packaging of a combination packaging. The test may be conducted using internal hydraulic or pneumatic pressure (gauge) or external vacuum test methods. Internal hydraulic or pneumatic pressure can be applied in most cases as the required pressure differential can be achieved under most circumstances. An external vacuum test is not acceptable if the specified pressure differential is not achieved and maintained. The external

Packing

vacuum test is a generally acceptable method for rigid packagings but is not normally acceptable for:

- flexible packagings;
- packagings filled and closed under an absolute atmospheric pressure lower than 95 kPa or for liquids in Packing III of Class 3 or Division 6.1 with an absolute pressure of 75 kPa;
- packagings intended for the transport of high vapour pressure liquids (i.e. those with a vapour pressure greater than 111 kPa at 50°C or 130 kPa at 55°C and accordingly greater than 100 kPa at 50°C or 117 kPa at 55°C for liquids in Packing III of Class 3 or Division 6.1).

TABLE 5.0.A

Test Pressure Marking Examples (5.0.2.14(c)) (see also 5.0.2.14 and 6.3.5.3)

UN No.	Name	Class or Division	Packing Group	V _{as} (kPa)	V _{as} × 1.5 (kPa)	(V _{as} × 1.5) minus 100 (kPa)	Minimum Test Pressure (kPa) Method C	Minimum Pressure (kPa) Method A	Minimum Pressure (kPa) Method B
2056	Tetrahydrofuran	3	II	70	105	5	100	1	1
2247	n-Decane	3	III	1.4	2.1	-97.9	100	1	1
1593	Dichloromethane	6.1	III	164	246	146	146	1	1
1155	Diethyl ether	3	I	199	299	199	199	2	2

Notes:

- For pure liquids, the vapour pressure at 55°C, V_{as}, can often be obtained from scientific tables.
- The maximum vapour pressures in 5.0.2.14.2 (b) and (c) refer to the inside of the bottle while the minimum test pressure in the test sentences of 5.0.2.14 refers to the external surface.
- Table 5.0.A refers to the use of 5.0.2.14.2(c) only. When, for example, the test pressure for n-Decane is determined according to 6.3.5.3 Method A the minimum of 95 kPa (0.95 bar) applies.
- For Diethyl ether the required minimum test pressure under 6.3.5.4 is 250 kPa (2.5 bar).
- Test pressure to be marked on package must be rounded down to the nearest 10 kPa (see 6.0.4.2).

5.0.2.10 Packagings for Solids that May Become Liquid

Packagings used for solids, which may become liquid at temperatures likely to be encountered during transport, must be constructed of materials that are capable of containing the substance in the liquid state.

- Packagings for solids (both inner and single), which may be permitted by the applicable packing instruction, should not be used if they are unsuitable for containing liquids e.g. paper or plastic bags as inner packagings unless they drain as single packagings, should not be used.
- Where single packagings are permitted for such substances, only single packagings approved for solid materials may be used.

5.0.2.11 Different Dangerous Goods Packed in One Outer Packaging

STATE VARIATION: IRG-02
 OPERATOR VARIATION: DL-04

- An outer packaging may contain more than one dangerous goods or other goods provided that:
- (a) the dangerous goods do not need dangerous labels or with the other goods and containers;
 - (b) combustion and/or evolution of gas, heat, evolution of flammable, toxic or corrosive gases;
 - (c) the formation of corrosive substances;
 - (d) the dangerous goods do not require a label according to Table 6.3.A, except as otherwise stated in these Regulations;
 - (e) an outer packaging containing Division 6.2 (Substances) may contain material for refilling (mezzing or packaging material) such as material as provided in Packing Instruction

Do Packages of Limited Quantities Need to be Tested When Shipped by Ground In the United States of America? How shall they be tested?

If I'm shipping a non-bulk package of Paint, UN1263, Packing Group II, by ground in the United States of America as a Limited Quantity, I am afforded the exceptions in Column 8A of the Hazardous Materials Table (HMT). Here in Column 8A, we are referred to Section 173.150.

Section 173.150(b) says, we are excepted from the specification packaging requirements of this subchapter when packaged in combination packagings according to THIS paragraph.

It goes on to say, for transportation by aircraft, the package must also conform to Section 173.27 of this part. This is a no brainer. Section 173.27(f)(2)(G)(v), clearly states the package must be drop tested. Section 173.27(f)(2)(G)(vi), clearly states the package must be stack tested. I get this and this requirement harmonizes with international regulations (ICAO / IMDG). We're shipping a non-bulk package by ground. So we stay, right there in Section 173.150.

Are you buckled-up? Here we go. I've already pointed out above, we are excepted from the specification packaging requirement as long as it is a combination package according to this paragraph. Also in Section 173.150(b), same paragraph mind you, it goes onto say, Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kgs. Okay where's subpart B? Subpart B is Preparation of Hazardous Materials for Transportation. Section 173. Here it is;

§ 173.21 Forbidden materials and packages.

§ 173.22 Shipper's responsibility.

§ 173.22a Use of packagings authorized under special permits.

§ 173.23 Previously authorized packaging.

§ 173.24 General requirements for packagings and packages.

§ 173.24a Additional general requirements for non-bulk packagings and packages.

§ 173.24b Additional general requirements for bulk packagings.

§ 173.25 Authorized packagings and overpacks.

§ 173.26 Quantity limitations.

§ 173.27 General requirements for transportation by aircraft.

Section Four

4.1.6 – LIST OF DANGEROUS GOODS

The List of Dangerous Goods, Subsection 4.2, lists specific dangerous articles and substances which experience has shown are likely to be offered for transport by air. The list is divided into 14 columns.

UN or ID No.	Proper Shipping Name/Description	Class or Div. (999-Web)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		ERG Code	
					EQ		Pkg		Max Net Qty/Pkg		Pkg Inst	Max Net Qty/Pkg		V.P. No. 4.4
					I	II	I	II	I	II				
1979	Oxidizing solid, n.o.s. *	5.1	Oxidizer		E0	Forbidden	557	1 kg	561	15 kg	A3	SL		
					II	Y544	2.5 kg	566	5 kg	562	25 kg	A903	SL	
					III	Y546	10 kg	550	25 kg	563	100 kg	DL	DL	
3082	Oxidizing solid, corrosive, n.o.s. *	5.1 (8)	Oxidizer & Corrosive		I	Forbidden	557	1 kg	561	15 kg	A3	SC		
					II	Y544	2.5 kg	558	5 kg	562	25 kg	A903	SC	
					III	Y546	5 kg	559	25 kg	563	100 kg	SC	SC	
3127	Oxidizing solid, flammable, n.o.s. *	5.1 (4.1)				Forbidden	Forbidden	Forbidden				SP		
3103	Oxidizing solid, self-heating, n.o.s. *	5.1 (4.2)				Forbidden	Forbidden	Forbidden				SS		
2067	Oxidizing solid, toxic, n.o.s. *	5.1 (8.1)	Oxidizer & Toxic		I	Forbidden	557	1 kg	561	15 kg	A3	SP		
					II	Y543	1 kg	558	5 kg	562	25 kg	SP	SP	
					III	Y546	10 kg	559	25 kg	563	100 kg	SP	SP	
3121	Oxidizing solid, water-reactive, n.o.s. *	5.1 (4.3)				Forbidden	Forbidden	Forbidden				SW		
	Oxazone, see Ethylene oxide (UN 1040)													
3172	Oxygen, compressed	2.2 (5.3)	Non-flamm. gas & Oxidizer		E0	Forbidden	200	75 kg	200	150 kg	A175 A302	DX		

- Column A: provides us with the UN or ID number. The UN number must always be preceded with the letters UN.
- Column B: provides us with the proper shipping name in bold print. There may be additional text in light text but not part of the proper shipping name.
- Column C: shows us the hazard class and/or the division.
- Column D: shows us the labels that must be displayed on the package. Primary hazard labels will be listed first followed by subsidiary risks labels in parenthesis.
- Column E: shows us the packing group in roman numerals I, II, III.
- Column F: Excepted Quantities code E0 - E5 as explained in Table 2.6.A



FIGURE 2.6.B Encrypted Quantity Package Mark (2.6.7.1)

- Column G: limited quantity packing instruction which begins with Y.



Identification

- Column H: limited quantity max quantity per package
- Column I: packing instruction number for shipment on a passenger airplane.
- Column J: maximum quantity per package on a passenger airplane.
- Column K: packing instruction number for cargo-only aircraft.
- Column L: maximum quantity per package on a cargo-only aircraft.
- Column M: special provisions generally tighten up the regulations. All special provisions apply to all packing groups.
- Column N: emergency response drill (ERG) codes. The ERG code is provided to facilitate the airlines, which may be added to the NOTOC / the shipper's declaration. It is not mandatory at this time.

4.3 – NUMERICAL CROSS-REFERENCE

The list of dangerous goods is an alphabetical list. If you only have the UN number, you may find the appropriate proper shipping name in this numerical cross reference.

UN or ID No.	Name and Description	Page No.	UN or ID No.	Name and Description	Page No.
0050	Cartridges, flash †	242	0050	Cartridges, flash †	242
0054	Cartridges, signal †	243	0054	Cartridges, signal †	243
0055	Cases, cartridge, empty, with primer †	243	0055	Cases, cartridge, empty, with primer †	243
0056	Charges, depth †	244	0056	Charges, depth †	244
0059	Charges, shaped † without detonator	245	0059	Charges, shaped † without detonator	245
0060	Charges, supplementary, explosive †	245	0060	Charges, supplementary, explosive †	245
0065	Cord, detonating, † flexible	252	0065	Cord, detonating, † flexible	252
0066	Cord, igniter †	252	0066	Cord, igniter †	252
0070	Cutters, cable, explosive †	255	0070	Cutters, cable, explosive †	255
0072	Cyclonite, wetted with not less than 15% water, by weight	256	0072	Cyclonite, wetted with not less than 15% water, by weight	256
0079	Ammunition, incendiary † with or without burster, expelling charge or propelling charge	224	0079	Ammunition, incendiary † with or without burster, expelling charge or propelling charge	224
0080	Ammunition, incendiary † with or without burster, expelling charge or propelling charge	224	0080	Ammunition, incendiary † with or without burster, expelling charge or propelling charge	224
0082	Cartridges for weapons, inert projectile †	242	0082	Cartridges for weapons, inert projectile †	242
0083	Cartridges for weapons, inert projectile †	242	0083	Cartridges for weapons, inert projectile †	242
0084	Cartridges for weapons, blank †	242	0084	Cartridges for weapons, blank †	242
0085	Cartridges for weapons, blank †	242	0085	Cartridges for weapons, blank †	242
0086	Cartridges for weapons, blank †	242	0086	Cartridges for weapons, blank †	242
0087	Cartridges for weapons, blank †	242	0087	Cartridges for weapons, blank †	242
0088	Cartridges for weapons, blank †	242	0088	Cartridges for weapons, blank †	242
0089	Cartridges for weapons, blank †	242	0089	Cartridges for weapons, blank †	242
0090	Cartridges for weapons, blank †	242	0090	Cartridges for weapons, blank †	242
0091	Cartridges for weapons, blank †	242	0091	Cartridges for weapons, blank †	242
0092	Cartridges for weapons, blank †	242	0092	Cartridges for weapons, blank †	242
0093	Cartridges for weapons, blank †	242	0093	Cartridges for weapons, blank †	242
0094	Cartridges for weapons, blank †	242	0094	Cartridges for weapons, blank †	242
0095	Cartridges for weapons, blank †	242	0095	Cartridges for weapons, blank †	242
0096	Cartridges for weapons, blank †	242	0096	Cartridges for weapons, blank †	242
0097	Cartridges for weapons, blank †	242	0097	Cartridges for weapons, blank †	242
0098	Cartridges for weapons, blank †	242	0098	Cartridges for weapons, blank †	242
0099	Cartridges for weapons, blank †	242	0099	Cartridges for weapons, blank †	242
0100	Cartridges for weapons, blank †	242	0100	Cartridges for weapons, blank †	242
0101	Cartridges for weapons, blank †	242	0101	Cartridges for weapons, blank †	242
0102	Cartridges for weapons, blank †	242	0102	Cartridges for weapons, blank †	242
0103	Cartridges for weapons, blank †	242	0103	Cartridges for weapons, blank †	242
0104	Cartridges for weapons, blank †	242	0104	Cartridges for weapons, blank †	242
0105	Cartridges for weapons, blank †	242	0105	Cartridges for weapons, blank †	242
0106	Cartridges for weapons, blank †	242	0106	Cartridges for weapons, blank †	242
0107	Cartridges for weapons, blank †	242	0107	Cartridges for weapons, blank †	242
0108	Cartridges for weapons, blank †	242	0108	Cartridges for weapons, blank †	242
0109	Cartridges for weapons, blank †	242	0109	Cartridges for weapons, blank †	242
0110	Cartridges for weapons, blank †	242	0110	Cartridges for weapons, blank †	242
0111	Cartridges for weapons, blank †	242	0111	Cartridges for weapons, blank †	242
0112	Cartridges for weapons, blank †	242	0112	Cartridges for weapons, blank †	242
0113	Cartridges for weapons, blank †	242	0113	Cartridges for weapons, blank †	242
0114	Cartridges for weapons, blank †	242	0114	Cartridges for weapons, blank †	242
0115	Cartridges for weapons, blank †	242	0115	Cartridges for weapons, blank †	242
0116	Cartridges for weapons, blank †	242	0116	Cartridges for weapons, blank †	242
0117	Cartridges for weapons, blank †	242	0117	Cartridges for weapons, blank †	242
0118	Cartridges for weapons, blank †	242	0118	Cartridges for weapons, blank †	242

4.4 – SPECIAL PROVISIONS

Special provisions are referenced in column M in the list of dangerous goods. Special provisions generally provide additional requirements. It must be complied with if the special provision shown affects your shipment.

§ 173.28 Reuse, reconditioning and remanufacture of packagings.

§ 173.29 Empty packagings.

§ 173.30 Loading and unloading of transport vehicles.

§ 173.31 Use of tank cars.

§ 173.32 Requirements for the use of portable tanks.

§ 173.33 Hazardous materials in cargo tank motor vehicles.

§ 173.34 [Reserved]

§ 173.35 Hazardous materials in IBCs.

§ 173.36 Hazardous materials in Large Packagings.

§ 173.37 Hazardous Materials in Flexible Bulk Containers.

§ 173.40 General packaging requirements for toxic materials packaged in cylinders.

§ 173.41 Sampling and testing program for unrefined petroleum-based products.

Among other sections it looks like we need to focus on Sections 173.24 and 173.24a.

173.24 General Requirements for packagings and packages - 173.24(a), Applicability. Except as otherwise provided in this subchapter, the provisions of this section apply to 173.24(a)(3), Specification and non-specification packagings. Huh?

Section 173.150 says we're excepted from specification packaging but here they say the package still has requirements. Dig deeper.

173.24a Additional general requirements for non-bulk packagings and packages

173.24a(a)(5) Vibration. Each non-bulk package must be capable of withstanding, without rupture or leakage, the vibration test procedure specified in Section 178.608 of this subchapter.

Following the dots, let's go to Section 178.608. Geeze!

178.608. Yup, it's there. Describes the requirements for a vibration test. A vibrating platform that allows the package to jump up and down and rotate.

This all started in Section 173.150(b). It said we do not need specification packaging as long as it was prepared according to that section which brought us to 173.24 which brought us to 173.24a which brought us to 178.608. Whew!



EXERCISE THREE

1. HOW MANY HAZARD CLASSES ARE THERE?
2. IF A MATERIAL DOES NOT MEET THE DEFINITION OF ONE OF THE FIRST 8 HAZARD CLASSES, BUT STILL POSES A RISK IN TRANSPORTATION, IT IS CLASSED AS HAZARD CLASS _____?
3. MATERIAL HAS A FLASH POINT OF 23 DEGREES C AND A BOILING POINT OF 35 DEGREES C, IT IS A HAZARD CLASS _____ PACKING GROUP _____?
4. HOW MANY DIVISIONS DOES CLASS 4 HAVE?
5. THEY USE LABORATORY RATS TO DETERMINE THE PACKING GROUP FOR HAZARD CLASS 6.1, THIS DATA IS ALSO KNOWN AS _____?
6. A MATERIAL THAT PRODUCES OR PROVIDES OXYGEN IS HAZARD CLASS _____?



SECTION FOUR IDENTIFICATION

Not only did the committee of experts create 9 different hazard classes and 3 different packing groups, they also created proper shipping names for each of these dangerous goods. (Approximately 3,000 entries) Proper shipping names are shown in alphabetical order in bold print.

4.1 – SELECTING THE PROPER SHIPPING NAME

Dangerous goods must be assigned to one of the proper shipping names shown in the list of dangerous goods.

Entries in the list of the dangerous goods are one of four types:

- Single entries for well-defined substances or articles, for example
 - o Kerosene – UN 1233
 - o Isopropyl butyrate – UN 2405
- Generic entries for a well-defined group of substances or articles, for example
 - o Adhesives – UN 1133
 - o Paint related material – UN 1263
- Specific not otherwise specified (n.o.s.) entries covering a group of substances or articles, for example
 - o Refrigerant gas, n.o.s. – UN 1078
 - o Selenium compound, solid, n.o.s. – UN 3283
- General n.o.s. entries, for example
 - o Corrosive solid, n.o.s. – UN 1759
 - o Flammable liquid n.o.s. – UN 1993

Please let's finish with 173.150(b)(1), (b)(2), and (b)(3), all say in the last respective sentences, packed in a strong outer packaging. What's this you say, a strong outer packaging? Hmmm. Okay, let's go on another field trip.

Section 171.8 *Strong outer packaging* means the outermost enclosure that provides protection against the unintentional release of its contents. It is a packaging that is sturdy, durable, and constructed so that it will retain its contents under normal conditions of transportation. In addition, a strong outer packaging must meet the general packaging requirements of subpart B of part 173 of this subchapter but need not comply with the specification packaging requirements in part 178 of the subchapter. For transport by aircraft, a strong outer packaging is subject to § 173.27 of this subchapter. The terms "strong outside container" and "strong outside packaging" are synonymous with "strong outer packaging."

In summary, a Limited Quantity package prepared for shipment by ground in the United States of America is excepted from

- a) Specification Packaging requirements but
- b) Must meet the General Packaging requirements as outlined in Sections 173.24, 173.24a, and 178.608 (vibration test) and be in a Strong Outer Package which
- c) Brings us to Section 171.8 and back to the aforementioned references

I'm so dizzy my head is spinnin, like a whirlpool it never ends!

Section 173.27 makes it crystal clear a Limited Quantity shipped by air, the package must be dropped tested and stack tested.

Section 173.150 makes it clear as mud as to the package testing requirements for a Limited Quantity shipped by ground.

If, and that's a big if. If I followed the dots correctly, it appears, a limited quantity package shipped by ground must be in a strong outer package which has successfully completed a vibration test.

Question 1) How must the test be recorded?

Question 2) Is the shipper or offeror required to maintain a copy of the vibration test?

Question 3) Is the result of the test required to be marked on the outside of the limited quantity package?

Section Three



6.2 – Infectious substances

- Infectious substances - substances known to contain, or reasonably expected to contain, pathogens. Pathogens are the little tiny microscopic animals (including bacteria, viruses, rickettsia, parasites, and fungi) that are known or reasonably expected to cause infectious disease in humans or animals.
- These materials are further classified by category.

- ☀ **CATEGORY A – EXPOSURE IS CAPABLE OF CAUSING PERMANENT DISABILITY, LIFE THREATING OR FATAL DISEASE IN OTHERWISE HEALTHY HUMANS OR ANIMALS.**
- ☀ **CATEGORY B – AN INFECTIOUS SUBSTANCES THAT DOES NOT MEET THE CRITERIA IN CATEGORY A**
- ☀ **THIS CLASS ALSO INCLUDES DIAGNOSTIC SPECIMENS AND BIOLOGICAL PRODUCT**

CLASS 7 – RADIOACTIVE MATERIALS

Class 7 does not have any Divisions. It is, however; defined with 3 different categories.

- ☀ **CATEGORY WHITE I / YELLOW II / YELLOW III**

Radioactive material means any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values specified in Section 10.3.2.



Classifications

CLASS 8 – CORROSIVE MATERIALS

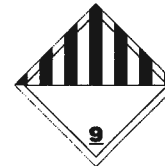
Class 8 does not have any Divisions but it does have 3 packing groups. The packing group is determined by observing full thickness destruction of intact skin by utilizing exposure times and observation times.



TABLE 3.8.A
Class 8—Packing Group Assignment based on Corrosivity (3.8.3)

Packing Group	Exposure Time	Observation Time	Effect
I	≤ 3 min	≤ 60 min	Full thickness destruction of intact skin
II	> 3 min ≤ 60 min	≤ 14 d	Full thickness destruction of intact skin
III	> 60 min ≤ 4 h	≤ 14 d	Full thickness destruction of intact skin
III	—	—	Corrosion rate on steel/aluminium > 6.25 mm a year at a test temperature of 55°C

Note:
h = hours, d = days.



CLASS 9 – MISCELLANEOUS

The previous 8 hazard classes have unique and specific definitions. Either the material meets these definitions or it does not. If you have a material that does not meet the definition of one of the first 8 hazard classes, but still poses a risk in transportation, we must classify it as class 9 miscellaneous.

Question 4) Does Section 178.608 fall under Subpart M which clearly states requirements for Performance-Orientated Packaging? Which brings us back to 173.150 conflicting package requirements.

In closing, a limited quantity package by ground in the United States of America is excepted from the Specification Packaging requirements but must meet the requirements in subpart B (Section 173), which refers us to the Specification Packaging requirements in Subpart M (The very section from which we were excepted).

PHMSA can you confirm if the above synopsis is correct?

A strong outer package and a vibration test?

Sincerely,

Sean Kelly
Pristine World Academy
904 437 9101

Section Three

CLASS 4 – FLAMMABLE SOLIDS

- 4.1 – flammable solids
- 4.2 – spontaneous combustible
- 4.3 – dangerous when wet

4.1 Flammable solids, self-reactive substances, Polymerizing Substances and solid de-sensitized explosives.



4.2 Substances Liable to Spontaneous Combustion - substances liable to spontaneous heating under normal conditions of transport, or to heating up in contact with air, and then being liable to catch fire.



4.3 Substance Which in Contact with Water Emit Flammable Gases – substances, which, in contact with water, emit flammable gases (dangerous when wet). Substances which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.



Classifications

CLASS 5 – OXIDIZERS

5.1 – Oxidizing substances
Oxidizing substances are not necessarily combustible but may cause or contribute to the combustion of other materials by yielding oxygen.



5.2 – Organic peroxides

Organic peroxides are liable to exothermic decomposition, which can be started by heat, contact with impurities (e.g. acids, heavy metal compounds, or amines). For certain organic peroxides, the temperature must be controlled during transportation.



CLASS 6 – TOXIC AND INFECTIOUS SUBSTANCES

6.1 – toxic or poison substances

• Toxic substances are liable to cause death or injury or to harm human health if swallowed, inhaled or contacted by the skin.



TABLE 3.6.A
Oral, Dermal and Dust/Mist Inhalation Hazards Division 6.1 Packing Group Criteria (3.6.1.3)

Packing Group	Oral Toxicity LD ₅₀ (mg/kg)	Dermal Toxicity LD ₅₀ (mg/kg)	Inhalation Toxicity by Dusts and Mists LC ₅₀ (mg/L)
I	≤ 5.0	≤ 50	≤ 0.2
II	> 5.0 but ≤ 50	> 50 but ≤ 200	> 0.2 but ≤ 2.0
III*	> 50 but ≤ 300	> 200 but ≤ 1,000	> 2.0 but ≤ 4.0

* Tear gas substances must be included in Packing Group II even if their toxicity data correspond to Packing Group III values.