



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, D.C. 20590

SEP 23 2013

Mr. Ed Mazzullo
9584 Burnt Oak Drive
Fairfax Station, VA 22039

Ref. No.: 13-0118

Dear Mr. Mazzullo:

This is in response to your May 29, 2013 email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to small cartridges used to inflate life-saving appliances, and fire extinguishers. Your questions are paraphrased and answered below.

Q1. You request confirmation of your understanding that a cylinder (receptacle, small, containing gas, UN 2037, division 2.2) containing carbon dioxide (CO₂) with no subsidiary risk is excepted from other requirements of the HMR if it has a capacity of not more than 50 ml (1.7 fluid oz.) and meets all requirements of § 173.306(j). However, a similar cylinder that is part of a life-saving appliance, self-inflating (UN 2990, class 9), would not be subject to other requirements of the HMR provided the capacity of the cylinder is not more than 120 ml and all requirements of § 173.219(c)(5) are met.

A1. Your understanding is correct. For relief from the regulations in accordance with § 173.306(j), a receptacle, small containing division 2.2 gas cannot exceed 50 ml (1.7 fluid oz.). A similar cylinder that is part of a life-saving appliance, self-inflating is afforded relief from the regulations in accordance with § 173.219(c)(5) if it has a capacity of not more than 120 ml.

Q2. Are the provisions of §§ 173.306(j) and 173.219(c)(5) consistent with corresponding provisions of the International Civil Aviation Organization (ICAO) Technical Instructions and the International Maritime Dangerous Goods (IMDG) Code?

A2. Yes. Section 173.306(j) is consistent with the ICAO Technical Instructions Special Provision A98 and IMDG Code Special Provision 191. Section 173.219(c)(5) is consistent with the ICAO Technical Instructions Packing Instruction 955 and IMDG Code Special Provision 296. Note that receptacles, small, containing gas (UN 2037) and life-saving appliances, self-inflating (UN 2990) may not be carried on an aircraft by passengers or crewmembers in carry-on or checked baggage, or on the person unless specifically excepted by HMR § 175.10 or the ICAO Technical Instructions 8;1.1.1.

Q3. For fire extinguishers (UN 1044, division 2.2) under the provisions of § 173.309 are all sizes of the cylinders authorized by paragraphs (a), (b) or (c) eligible for the limited quantity exceptions of § 173.309(d)?

A3. Yes. Provided the fire extinguisher conforms to all requirements of § 173.309(d). For the specification cylinders authorized in § 173.309(a) and (b) all sizes authorized under part 178 for the authorized specification cylinder are eligible for the limited quantity exception. For non-specification cylinders authorized under § 173.309(c) the internal volume of each cylinder may not exceed 18 L (1,100 cubic inches).

Q4. Does § 173.309(d) authorize the shipment of fire extinguishers having a capacity greater than 120 ml as limited quantity?

A4. Yes. See A3.

Q5. Do the UN Model Regulations and the IMDG Code authorize the shipment of fire extinguishers having a capacity greater than 120 ml as limited quantity?

A5. No. In accordance with the UN Model Regulations and IMDG Code Dangerous Goods List, Column 7a, fire extinguishers having a capacity greater than 120 ml are not authorized for shipment as a limited quantity.

I hope this information is helpful. If you have further questions, please do not hesitate to contact this office.

Sincerely,



Delmer Billings
Senior Regulatory Advisor
Standards and Rulemaking Division

Babich
§ 173.306
§ 173.219
Fire Extinguishers/Cylinders
13-0118

Dear Info Center:

I would appreciate clarification or confirmation of my understanding of certain provisions of the HMR and international standards related to small compressed gas cylinders and fire extinguishers, as follows:

1. CO₂ cartridges used to inflate life-saving appliances

It's my understanding that a small cylinder containing carbon dioxide (CO₂), a Division 2.2 gas with no subsidiary risk, is eligible for the exceptions provided in § 173.306(j) for Receptacles, small, containing gas, and, therefore, is excepted from regulation if it meets the quantity and pressure limits and other restrictions specified in paragraph (j). For a CO₂ cylinder, this section would limit its capacity to no more than 50 mL (1.7 fluid oz.) and to a maximum pressure of either 970 kPa (141 psig) at 55°C (131 °F) or, for a cylinder transported in an outer packaging conforming to subpart B of Part 173, 2,000 kPa (290 psig) at 55°C (131 °F).

If this same cylinder is part of a self inflating life-saving appliance, the appropriate shipping description is Life-saving appliances, self inflating, 9, UN 2090; the provisions of § 173.306(j) do not apply; and the device must conform to the provisions of § 173.219. Under the provisions of § 173.219(c)(5), a life-saving appliance containing no hazardous materials other than cylinders of a Division 2.2 gas with no subsidiary risk (e.g., CO₂), with a capacity not exceeding 120mL is excepted from regulation if overpacked in a rigid outer packaging with a maximum gross mass of 40 kg. This provision would limit the capacity of the CO₂ cylinder to 120 mL, but would allow higher pressures, similar to the 4-ounce exception in § 173.306(a)(1).

Please confirm or clarify my understanding of the above provisions and that these provisions are consistent with the corresponding provisions in the ICAO Technical Instructions and the IMDG Code.

2. Fire extinguishers containing compressed or liquefied gas, 2.2, UN1044

Under the provisions of § 173.309(d), Fire extinguishers *containing compressed or liquefied gas*, 2.2, UN1044, are provided limited quantity exceptions if they conform to the provisions of paragraphs (a), (b), or (c) and are charged with a limited quantity of compressed gas to not more than 1660 kPa (241 psig) at 21 °C (70 °F), and otherwise conform to paragraph (d). These fire extinguishers are excepted from shipping papers (except when offered for transportation by aircraft or vessel); labeling (except when offered for transportation by aircraft), and specification packaging requirements.

I note that paragraphs (a) and (b) do not impose size limits for fire extinguishers (i.e., size is only limited through the specification requirements) and paragraph (c) limits the internal volume of each cylinder to 18 L (1,100 cubic inches). **Am I correct that all sizes of the cylinders authorized by paragraphs (a), (b), or (c) are eligible for the limited quantity exceptions in paragraph (d), if they otherwise conform to the provisions of paragraph (d)?**

Under provisions of the UN Model Regulations and the IMDG Code, it is my understanding that limited quantity exceptions for Fire extinguishers containing compressed or liquefied gas, 2.2, UN1044, are limited to cylinders of 120 mL or less. **Am I correct that the limited quantity provisions of § 173.209(d) allow capacities greater than 120mL and that the international standards applicable to these fire extinguishers do not?**

Thank you for your attention to this matter.

Best regards,

Ed Mazullo

edmazz08@gmail.com

571-268-0991

Hilder, Mike (PHMSA)

From: Kelsch, Meridith (PHMSA)
Sent: Wednesday, July 24, 2013 12:30 PM
To: Hilder, Mike (PHMSA)
Subject: RE: Interpretation letter on cylinder regs

Hi Mike,

My thoughts on the interp are below. I reviewed it based only on the HMR, ICAO, and IMDG and didn't look into old interps or reg history--so there may be something there I'm missing. Also I could only access the 2006 IMDG on the N drive (I'm teleworking), so my comments on it may not be up-to-date.

For A1, I agree that the understanding stated in Q1 is correct, however, I don't think A1 is entirely accurate. There are more requirements in 173.306(j) than are stated and the requirements of 173.219(c)(5) are not complete and should list a capacity of 100 cubic centimeters, not 120 mL (which comes from ICAO and is equivalent to 120 cubic centimeters). 

For A2, the ICAO and IMDG provisions are similar to the HMR, but have some differences I think are worth noting.

With respect to 173.306(j), ICAO Special Provision A98 does apply to UN2037, and is largely the same as 173.306(j), but not identical. Specifically, A98 does not have the pressure limit of 970 kPa listed in 173.306(j) and has additional requirements regarding extreme annoyance to crew members and airway bill information. And IMDG Special Provision 191 applies to UN2037, but has no pressure or division limits.

With respect to 173.219(c)(5), ICAO Packing Instruction 955 applies to UN2990, but is specific to aircraft, the capacity limit is greater (i.e. 120 mL), and it is not specifically limited to carbon dioxide cylinders. As for IMDG (assuming 2006 is current), it should reference Special Provision 956, not 296. SP 296 merely describes life-saving appliances (akin to 173.219(b)), while SP 956 lists the exception in 173.219(c)(5), except it also specifies that the outer package must be wood or fiberboard.

A3 and A4 look fine to me.

For A5, I suggest adding reference to IMDG and UN section 3.4 (limited quantities) and specifying that this limit is for UN1044 fire extinguishers.

Hope that helps,
Meridith

-----Original Message-----

From: Hilder, Mike (PHMSA)
Sent: Wednesday, July 24, 2013 10:30 AM
To: Kelsch, Meridith (PHMSA)
Subject: Interpretation letter on cylinder regs

Joe has given me the attached draft interpretation letter to review which comes from Ed Mazzullo who used to be the head of PHH-10.

Because you Joe's "specialist" on cylinder issues, I would greatly appreciate your looking it over and giving me any comments before I respond to PHH-10.

Many thanks,