



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

1200 New Jersey Avenue, SE  
Washington, DC 20590

FEB 05 2018

Jimmy Zahriya  
Chief Executive Officer  
United Brands  
170 Associated Road  
South San Francisco, CA 94080

Reference No. 17-0129

Dear Mr. Zahriya:

This letter is in response to your November 27, 2017, letter and follow-up email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to pressure relief device (PRD) requirements for U.S. Department of Transportation (DOT) 2P or 2Q containers filled with butane.

We have paraphrased and answered your questions as follows:

- Q1. You state that your company complies with § 173.304b for use of DOT 2P and 2Q containers for the transportation of butane.
- A1. This understanding of applicability is incorrect. Section 173.304b applies to the use of UN pressure receptacles, not DOT specification packagings. DOT 2P and 2Q containers are DOT specification containers; therefore, § 173.304a applies.
- Q2. You ask if DOT 2P and 2Q containers filled with liquefied butane at a pressure less than 32 psig at 70 °F and 81 psig at 130 °F must be equipped with a PRD.
- A2. The answer is no. DOT 2P and 2Q containers are considered inner non-refillable metal receptacles, not cylinders; therefore, the pressure relief requirements and exceptions found in § 173.301(f) do not apply. DOT 2P and 2Q containers are authorized for liquefied petroleum gases (LPG), such as butane, under the provisions of § 173.304a(d)(3)(ii). Provided the maximum capacity of the receptacle does not exceed 31.83 cubic inches and the maximum filling pressure does not exceed 35 psig at 70 °F and 100 psig at 130 °F, no PRD is required for a DOT 2P or 2Q container filled with LPG.

Note that a DOT 2P or 2Q container filled with LPG with pressures exceeding 35 psig but not exceeding 45 psig at 70 °F and exceeding 100 psig but not exceeding 105 psig at 130 °F must have a PRD in accordance with § 173.304a(d)(3)(ii) Note 2.

Q3. You ask whether the dispensing port at the top of the DOT 2P or 2Q container, which is designed to allow the contents to flow out when actuated mechanically in the normal use of the device, is a PRD.

A3. Your incoming letter has not provided enough information about the manual dispensing port to make this determination. However, as discussed in Question Q2, a PRD is not required in the scenario you described.

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

Patrick.  
§ 173.304  
Cylinders  
17-0129

Mr. Shane Kelley  
Acting Director, Standards and Rulemaking Division  
U.S. DOT/PHMSA (PHH-10)  
1200 New Jersey Avenue, SE East Building, 2nd Floor  
Washington, DC 20590

Dear Mr. Kelley:

United Brands ships butane in small specification 2P cylinders for use in heating devices. During recent inspection of our facility, the DOT inspector commented that the dispensing port on top of butane canisters might be considered a pressure relief device. United Brands ships butane in canisters in compliance with § 173.304 Filling of cylinders with liquefied compressed gases.  
§ 173.304b Additional requirements for shipment of liquefied compressed gases in UN pressure receptacles.

The latter regulation states:

*§ 173.304b (a) General. Liquefied gases and gas mixtures must be offered for transportation in UN pressure receptacles subject to the requirements in this section and § 173.304. In addition, the general requirements applicable to UN pressure receptacles in §§ 173.301 and 173.301b must be met.*

For butane shipped in 2P packaging, "49 CFR Section § 173.301 General requirements for shipment of compressed gases and other hazardous materials in cylinders, UN pressure receptacles and spherical pressure vessels" states:

*§ 173.301 (f) Pressure relief device systems.*

*(1) Except as provided in paragraphs (f)(5) through (f)(7) and (j) of this section, and § 171.23(a) of this subchapter, a cylinder filled with a gas and offered for transportation must be equipped with one or more pressure relief devices sized and selected as to type, location, and quantity, and tested in accordance with CGA S-1.1 (compliance with paragraph 9.1.1.1 is not required) and CGA Pamphlet S-7 (IBR, see § 171.7 of this subchapter). The pressure relief device must be capable of preventing rupture of the normally filled cylinder when subjected to a fire test conducted in accordance with CGA C-14 (IBR, see § 171.7 of this subchapter), or, in the case of an acetylene cylinder, CGA C-12 (IBR, see § 171.7 of this subchapter).*

*(5) A pressure relief device is not required on -*

*(i) A cylinder 305 mm (12 inches) or less in length, exclusive of neck, and 114 mm (4.5 inches) or less in outside diameter, except when the cylinder is filled with a liquefied gas for which this part requires a service pressure of 1800 psig or higher or a nonliquefied gas to a pressure of 1800 psig or higher at 21 °C (70 °F);*

The Compressed Gas Association definitions note that a pressure relief valve is a type of pressure relief device designed to relieve excessive pressure and to reclose and reseal to prevent further flow of gas or fluid from the cylinder.

CGA S1-1 provides the requirements for various pressure relief devices including

- a rupture disk device,

- a fusible plug.
- one of a variety of combination rupture-disk/fusible-plug devices,
- a pressure relief valve
- A pressure cycling relief valve capable of activating and reseating/resealing multiple times,
- A single pressure relief device combining the general characteristics of a fusible trigger device and a pressure cycling relief valve activated by either temperature or pressure.

A pressure relief device is defined as a pressure and/or temperature activated device used to prevent the pressure in a normally charged cylinder from rising above a predetermined maximum, thereby prevent rupture of the cylinder when subjected to a standard fire test as required by 49 CFR 173.34(d). It is synonymous with “safety relief devices”.

**Question #1:** Is it required for packaging of liquefied butane in specification 2P and 2Q cylinders with length less than 10 inches and diameter less than 2 inches, and with liquefied butane at pressures less than 32 psig to be equipped with a pressure relief devices?

**Question #2:** Each butane cylinder has a fluid/gas delivery port at the top that is designed to allow the contents to flow out when actuated mechanically in normal use in devices designed for use of butane fuel. Is that port considered a pressure relief device?

Thank you in advance for your response.

Sincerely,

Jimmy Zahriya  
CEO  
United Brands

# Test Report

**1. Product Name (Whip-It 227g)**

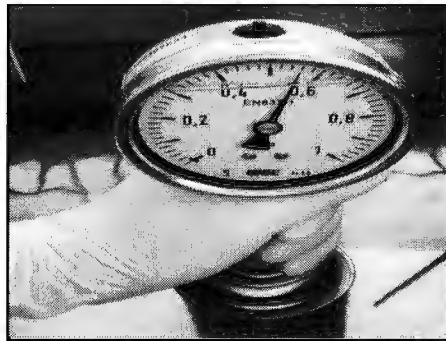


**2. Filling internal pressure (70°F) 21.1°C**



	Result(n=5)				
	n=1	n=2	n=3	n=4	n=5
MPa	0.22	0.21	0.21	0.22	0.22
psig	31.91	30.46	30.46	31.91	31.91

**3. Filling internal pressure (130°F) 54.4°C**



	Result(n=5)				
	n=1	n=2	n=3	n=4	n=5
MPa	0.56	0.56	0.55	0.56	0.55
psig	81.22	81.22	79.77	81.22	79.77