



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

1200 New Jersey Avenue, SE  
Washington, DC 20590

October 13, 2020

Oliver Sánchez Muñoz  
R&D Engineer  
Johnson Controls  
Josep Ros i ros, Naves 23. P.I. La Clota.  
08740 Sant Andreu de la Barca, Spain

Reference No. 20-0057

Dear Mr. Muñoz:

This letter is in response to your August 4, 2020, email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to service equipment for United Nations (UN) cylinders as it relates to certain ISO standards. You state you have a UN cylinder filled with a liquid extinguishing agent charged with a compressed gas, and the cylinder is equipped with pressure gauges and switches mounted to a quick release valve. Furthermore, you reference ISO 17871:2015, incorporated by reference in § 173.301b(c), and you indicate your understanding that section 4.2.6 of this standard provides additional requirements to those in ISO 10297:2014 as it relates to specification standards for service equipment under § 178.71(d). You also note that a recent update to ISO 17871 (2020) indicates that the valve burst test pressure is to be calculated at 1.5 times the valve test pressure, which is consistent with the same requirement for liquefied gases in ISO 10297:2014. Finally, you note your understanding that the instruction in section 4.2.6 of ISO 17871:2015 is that the valve test pressure must be at least the developed pressure of a full gas cylinder at 65 °C and will never exceed the test pressure of the pressure receptacle (i.e., the UN cylinder).

You ask whether pressure gauges and switches mounted to quick release valves covered under ISO 17871:2015 comply with the hydraulic burst pressure test requirement when successfully tested (e.g., no visible deformation or burst) at 1.5 times the developed pressure of a full gas cylinder at 65 °C regardless of the test pressure marked on the cylinder.

The answer to your question is no. The pressure gauge and switches mounted to the quick release valve must meet the burst test requirement of the cylinder that is being used. Furthermore, for purposes of performing the hydraulic burst pressure test in ISO 10297:2014, the formula you describe is used to determine the value of the burst test pressure. However, for purposes of § 178.71(d)(1), UN pressure receptacle equipment (e.g., a quick release valve) that is subjected to pressure must be designed and constructed to withstand at least 1.5 times the test pressure of the pressure receptacle. Therefore, if the calculated valve burst test pressure is less

than 1.5 times the marked cylinder test pressure, the performance standard of § 178.71(d)(1) would not be achieved. Please also note that for purposes of ISO 10297:2014, section 6.3, valves designed to incorporate pressure gauges or pressure indicators must have the devices installed for testing, except for the hydraulic burst pressure test.

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

Sincerely,

A handwritten signature in blue ink, appearing to read 'Dirk Der Kinderen', written in a cursive style.

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

**From:** [Oliver Sanchez Muñoz](#)  
**To:** [INFOCNTR \(PHMSA\)](#); [Baker, Yul \(PHMSA\)](#)  
**Cc:** [Dodd, Alice \(PHMSA\)](#); [Carlos Perez Perez](#)  
**Subject:** 20-0029  
**Date:** Tuesday, August 4, 2020 9:28:13 AM  
**Attachments:** [20-0029 Letterhead.pdf](#)  
**Importance:** High

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Dear Yul, Dear Sirs,

We have received the attached letter of interpretation. Going little deeper on the details of that letter, we came to the following exposed approach. Please see below explanation and additional question we would like you to answer.

Thanks.

*Your letter reference No 20-0029 in response to our letter dated April 1, 2020, are referring to final rule HM-2150 published by PHMSA where ISO10297:2014 is incorporated by reference. It should be noted that also ISO17871:2015 has also been incorporated by the mentioned final rule.*

*The application we are looking at is liquid extinguishing agents charged with compressed gases and pressure gauges and pressure switches that are mounted on valves covered by ISO17871 (quick release valves).*

*ISO17871:2015, 4.2.6 introduces additional requirements to ISO10297:2014, 6.6.2. According to this additional requirements P<sub>vt</sub> (valve test pressure) is determined as the developed pressure of a full gas cylinder at 65°C and this pressure shall never exceed the test pressure of the pressure receptacle. P<sub>vbt</sub> is typically calculated as 1.5 times P<sub>vt</sub>. So in these cases the reference to the test pressure marked on the cylinder may not be applicable.*

*NOTE: ISO17871:2020 4.2.7 (recently published), though not included of HM2150, fills a potential gap on how P<sub>vbt</sub> is to be calculated, establishing that P<sub>vbt</sub> for extinguishing agents charged with compressed gases is to be calculated as 1.5 time P<sub>vt</sub> as for liquefied gases.*

*NOTE: The developed pressure of a full gas cylinder at 65°C shall never exceed the test pressure of the pressure receptacle.*

*So, taken the above into consideration and given that now ISO10297:2014 and ISO17871:2015 have been incorporated by reference and restricting the scope of the question number 1 that was originally posed to this specific case, we ask the following:*

**QUESTION:**

*For liquid extinguishing agents charged with compressed gases, do pressure gauges and pressure switches mounted on valves covered by ISO17871:2015 as service equipment for UN cylinders comply the hydraulic burst pressure test requirement when successfully tested (no visible deformation or burst) at 1.5 times the developed pressure of a full gas cylinder at 65°C, regardless of the test pressure marked in the cylinder.*

**Best regards / Atentamente,**

**Oliver Sánchez Muñoz**

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