



U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Ave., S.E.
Washington, DC 20590

NOV 03 2011

Mr. Tae Kim
9671 Irvine Center Drive
Koll Center II – Building 6
Irvine, CA 92618

Reference No.: 11-0186

Dear Mr. Kim:

This responds to your July 29, 2011 email requesting further clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the use and packaging of a chemical oxygen generator (COG). You request, based on the submission of new data, that the Pipeline and Hazardous Materials Safety Administration (PHMSA) reconsider a previously-issued letter of interpretation dated July 15, 2011 [Ref. No. 11-0108]. Specifically, in light of this new data, you seek written confirmation that the manner in which you are preparing and packaging your insulated handheld COG classified as “Oxygen generator, chemical (*including when contained in portable breathing equipment (PBE)*), UN3356” is in compliance with the HMR.

In your original incoming email, you describe a scenario in which you purchased a COG whose design has been approved by the Associate Administrator of PHMSA. In addition, in your original incoming email, you included a document from the manufacturer of the packaging used to initially transport the COG which states the packaging that contains the COG has been successfully tested in accordance with § 173.168. Subsequently, you modified the COG by adding insulation to facilitate handheld use, and then repackaged the modified COG in the originally-tested and approved packaging. However, you modified the approved original packaging configuration by removing some of the inner packaging to accommodate the increased size of the modified insulated COG.

The new data and your rationale for requesting that PHMSA reconsider our opinion stated in our previous letter of interpretation [Ref. No. 11-0108] are paraphrased and addressed below. For purposes of clarity, the insulated handheld COG and the packaging used to contain the insulated handheld COG are addressed separately. It should be noted that PHMSA does not provide approvals for COGs through letters of interpretation. The requirements for submitting an approval application are specified in § 107.709 of the HMR.

The insulated handheld COG used as a PBE

In your follow-up email concerning the COG, you include the original source control schematic drawing of the approved COG, a schematic drawing of the preliminary PBE assembly that you developed using the approved COG, and the original approval issued by PHMSA. You indicate that the COG is the main component of the PBE. You also state that

the COG is not tampered with, nor modified. Based on this information, it is your understanding that your PBE assembly containing a COG should fall within the design parameters of the originally approved COG and, therefore, is not required to be re-submitted for approval.

Provided your PBE, that includes the COG as its' main component, does not modify the originally approved COG, the COG would be permitted to be shipped under the original approval. Based on the original approval of the COG and the additional documentation you provided in your emails, it is the opinion of this Office that the addition of insulation to the COG would not merit the submittal of a new approval from the Associate Administrator of PHMSA in order to be shipped in compliance with the HMR.

The packaging containing the insulated handheld COG used as PBE

In your follow-up email, you also submit more specific details and data regarding the packaging design for your PBE assembly containing a COG and your rationale for requesting that PHMSA reconsiders its' opinion that your packaging would need to be subjected to the testing requirements specified in § 173.168.

You state it is your understanding that the COG itself, not the packaging, is tested for impact resistance as specified in § 173.168(b). Your understanding of this requirement is correct. Provided the COG is not modified from its approved design, the new COG design would not need to undergo impact resistance as specified in § 173.168(b).

You also state it is your understanding that the performance requirements for the packaging specified in § 173.168(d), including the flame penetration and thermal resistance tests are specific to the outer packaging. Thus, the removal of the plastic insert, which does not tamper with the outer packaging, does not affect the flame penetration and thermal resistance tests. Your understanding that the performance requirements for the packaging specified in § 173.168(d) refer to the "rigid outer packaging" is correct. Provided the outer packaging remains unchanged with the removal of a plastic divider, the packaging does not require re-testing in accordance with § 173.168(d).

In light of the additional data you provided, we are rescinding our previous letter of clarification. I hope this satisfies your inquiry. Please contact us if we can be of further assistance.

Sincerely,



T. Glenn Foster
Chief, Regulatory Review and Reinvention Branch
Standards and Rulemaking Division

Drakeford, Carolyn (PHMSA)

Benedict
\$173.168
\$178.601

From: Dodd, Alice (PHMSA)
Sent: Monday, August 08, 2011 3:23 PM
To: Drakeford, Carolyn (PHMSA)
Subject: FW: Interpretation Letter

Chemical Oxygen Generators

From: Tae Kim [<mailto:tkim@ppp.aero>]
Sent: Monday, August 08, 2011 2:09 PM
To: Dodd, Alice (PHMSA)
Subject: RE: Interpretation Letter

Hi Alice,

Please confirm the request for reconsideration was forwarded to Mr. Foster.
If this is not the proper way to request a reconsideration of an interpretation request, please instruct me in the correct method.

Thank you,

Tae

From: Tae Kim
Sent: Friday, July 29, 2011 4:04 PM
To: 'Alice.Dodd@dot.gov'
Cc: Francois Vigier; Emmanuel Fantuzzi; Phil Bongiovanni
Subject: RE: Interpretation Letter

Hi Alice,

Please forward this message to Mr. Foster.

Thank you,

Tae Kim
Sr. Project Engineer



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Dear Mr. Foster,

Thank you for the letter dated, 7/15/11, (reference number 11-0108) whereby you informed us, based on the documentation we provided, that the insulated COG no longer meets the original approval for the COG, and that the modified packaging would need to be subjected to additional testing. The rationale

used in your determination has allowed us to gather more specific documentation that we believe should address the issues you have raised. We kindly ask, based on the new data, which you provide us with a revised determination.

1. ...the modified insulated COG no longer meets the original approval for the COG and, thus, would require submittal for approval from the Associate Administrator of PHMSA in order to be in shipped in compliance with the HMR.

Based on your clarification, we are in a position to present additional documentation showing that our “*insulated COG*” falls under the classification of portable breathing equipment (PBE), and thus is covered under the original approval:

- The approval for the COG (B/E aerospace part number E72220) qualifies the “*Oxygen generator, chemical [(including when contained in associated equipment, e.g, passenger service units (PSUs), portable breathing equipment (PBE), etc.)], UN3356*”.
- The B/E aerospace part number, E72220-10 is listed in our source control drawing P80381.
- The drawing P80381 (B/E aerospace COG E72220) is identified, among other components, on our top assembly drawing P26029.
 - The COG is the main component (*oxygen source*) for the portable breathing equipment (PBE).
 - The COG is combined primarily with an outlet, a flow indicator and insulation to constitute a portable breathing equipment (PBE).
 - The COG is not tampered with, nor is it modified.
 - The shipping pin should not be removed before shipping; refer to note 2 on the assembly drawing, P26029.
- Our top assembly P26029 describes the unit as portable breathing equipment (PBE), Life Pak being a commercial denomination only.

Consequently, we are under the understanding that it should fall within the parameter of the original qualification.

We look forward to your review.

2. Furthermore, it is the opinion of this Office that the packaging design you modified deviates significantly enough from the originally tested package design that the modified packaging would need to be subjected to the testing requirements described in § 173.168 in order to be shipped in compliance with the HMR.

Based on your clarifications, we were able to review the requirements and better assess the impact of our modification (*removal of one inner plastic divider*). We came to the conclusion that the packaging for our portable breathing equipment (PBE) meets the design requirements allowing to ship in compliance with HMR.

It is our understanding that generator itself COG –*not the packaging*- is tested for impact resistance.

- **§ 173.168 Chemical oxygen generators.**

(b) Impact resistance. A chemical oxygen generator, without any packaging, must be capable of withstanding a 1.8 meter drop onto a rigid, non-resilient, flat and horizontal surface, in the position most likely to cause actuation or loss of contents.

The original COGs have successfully passed these tests, and are thus in compliance.

It is our understanding that the performance requirements for the packaging are as follows:

- **§ 173.168 Chemical oxygen generators.**

(d) Packaging. A chemical oxygen generator and a chemical oxygen generator installed in equipment, (e.g., a PBE) must be placed in a rigid outer packaging that— (1) Conforms to the requirements of either:

(i) Part 178, subparts L and M, of this subchapter at the Packing Group I or II performance level.

(i) The Flame Penetration Resistance Test specified in Appendix E to part 178 of this subchapter.

(ii) The Thermal Resistance Test specified in Appendix D to part 178 of this subchapter.

- Both tests, flame penetration and thermal resistance test are tested on the outer packaging. The removal of the plastic insert, which does not tamper with the outer packaging, does not affect in any way these flame penetration and thermal resistance testing. OK
- Many "DOT qualified shipping containers" only include the outer packaging (*corrugated box w/ fire resistant lining that meet the fire penetration resistant and thermal resistant testing; 4G shipping box*) with the box manufacturer stating that any fire resistant filler can be used to pack the box. OK
- Our Protective Breathing Equipment (PBE), which contains additional insulation, helps keep the generators separate and can only aid with the impact and thermal resistance.
- The original packaging is identified by the manufacturer as, "packaging consists of a standard cardboard box coated with glass fiber liners inside"; see attached. Removing one plastic divider does not change this or affect, Part 178, subparts L and M requirements. The shipping container is identified as 4G packaging.

- **49 CFR § 178.601**

(4) A different packaging is one that differs (i.e. is not identical) from a previously produced packaging in structural design, size, material of construction, wall thickness or manner of construction but does not include:

(ii) A combination packaging which differs only in that the outer packaging has been successfully tested with different inner packaging. A variety of such inner packaging may be assembled in this outer packaging without further testing;

No

Consequently we are under the understanding that we can use a third party DOT31FP Oxygen Generator Box, consisting of a corrugated box w/ thermal lining, filled with Vermiculite (*or other non-flammable filler*) to ship our protective breathing equipment (PBE) and be in compliance with the HMR.

We look forward to your review as we feel, thanks to the clarifications you provided, we were able to confirm that we should be in a position to ship our protective breathing equipment (PBE) in compliance with all appropriate regulations. In case you would come to a different

conclusion, we would appreciate your detailed comments, including any potential tests which may have to be repeated.

Once again, thank you for your inputs.

Best regards,

Tae Kim
Sr. Project Engineer



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From: Alice.Dodd@dot.gov [<mailto:Alice.Dodd@dot.gov>]
Sent: Friday, July 15, 2011 12:58 PM
To: Tae Kim
Subject: Interpretation Letter

Per Mr. Foster's request. Attached is a copy of the response to your Interpretation. Also the original has been mailed to you as well.

Thank You,

*Alice Dodd
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Department of Transportation
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E-24-403
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