



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

1200 New Jersey Avenue, SE
Washington, DC 20590

May 22, 2025

Geno Delfino
Sr Tech, Logistics
Rockwell Collins
3530 Branscombe Road, P.O. Box KK
Fairfield, CA 94533

Reference No. 24-0088

Dear Mr. Delfino:

This letter is in response to your September 25, 2024 email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the selective testing of combination packagings. Specifically, you request clarification on the application of Variations 1 and 4 found in § 178.601(g). You provide a scenario of a packaging originally tested with individual coiled detonating cords placed within a size 10" X 17" inner plastic bag and ask questions about variations to the package ranging from the articles placed in the packaging, to variations in the number of inner packagings, to the type of inner packaging used. You state that for the purpose of the scenarios provided there are no quantity limits or gross mass limits exceeded.

We have paraphrased and answered your questions as follows:

- Q1. Does § 178.601(g)(1) allow a combination package originally tested with individual coiled detonating cords, an explosive article, within an inner plastic bag to be used without further testing for similar but different explosive articles (*e.g.*, cartridges) that are packaged in the same manner? You state your understanding is that the variation allowed in § 178.601(g)(1)(i) is focused on the inner packaging configuration changes and not variation of the articles contained within.
- A1. Your question pertains to whether the packaging remains suitable for use for similar articles other than what was originally was tested. Generally, successfully tested packagings may be used for hazardous materials other than those used during testing provided the packaging is appropriate and authorized for the alternative material (*e.g.*, the hazardous material and packaging configuration still meet the specific packaging

requirements for explosives in § 173.62). Further, your understanding of Variation 1 is correct that the permitted variations are focused on the inner packagings of a tested combination package.

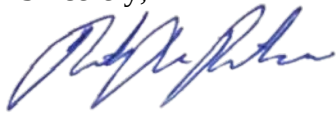
- Q2. Would the change to the articles as described in the introductory paragraph and question Q1 fall under Variation 4—see § 178.601(g)(4)(iii)?
- A2. No. Section 178.601(g)(4) prescribes variations in outer packagings of a tested design-type combination packaging, provided that the design is maintained, and all requirements of paragraph (g)(4) are met. The scenario described is specific to a change in the articles contained within the inner packagings. See answer A1.
- Q3. Can a combination packaging that has been tested with 50 detonating cords and 50 cartridges, all packaged in the manner as described above (*i.e.*, all packed in individual 10" X 17" inner plastic bags), instead be packaged with 90 cartridges packaged in the same manner (with zero detonating cords) without further testing?
- A3. Yes. Section 178.601(g)(1)(ii) allows for a lesser number of tested inner packagings, provided that the inner packagings are of an equivalent or smaller size and that sufficient cushioning is added to fill void space(s) to prevent significant shifting of the inner packagings.
- Q4. For a combination package that is tested with three different inner packaging configurations of: (1) 50 cartridges in individual inner plastic bags; (2) 50 cartridges wrapped individually in foam sheets; and (3) 50 cartridges wrapped in foam sheets which are then each placed in a plastic bag, for a total of 150 cartridges — does § 178.601(g)(1)(ii) permit placing 100 of these three variations or 100 of exactly one variation in an identical outer packaging without further testing?
- A4. Yes. See answer A3.
- Q5. With respect to Q4 and the variation in inner packaging described, is it permitted to increase the number of inner packagings more than originally tested without further testing?
- A5. No. Variations 1 and 4 do not allow for a greater number of inner packagings without further testing.
- Q6. What tests or methodology must a company conduct to be certain that an equivalent level of performance is maintained and remain compliant with § 178.601(g)(1) regarding variations in inner packaging? With respect to this question, you note that the majority of your combination packagings have inner plastic bags within fiberboard containers, although there are occasions where you may instead use foam sheets or bubble wrap to wrap the articles. You believe that foam or bubble wrap provides more protection than an inner plastic bag and you have reason to believe that if your company initially drop tested

with inner plastic bags only, that substitution of foam or bubble wrap for the plastics would not require additional testing.

- A6. PHMSA does not maintain a list of tests or methodologies your company could conduct to be certain that an equivalent level of performance is maintained as specified in § 178.601(g)(1). It is the packaging manufacturer's responsibility to make sure an equivalent level of performance is maintained when using Variation 1. In this case, a packaging variation using foam or bubble wrap meeting the pertinent criteria in § 178.601(g)(1)(i), may not require additional testing. However, the person certifying compliance with § 178.601(g)(1) must document and maintain a record that shows the methodology used to determine that the inner packaging maintains an equivalent level of performance. Note that as prescribed in § 178.601(g)(8), in addition to authorized variations, the Associate Administrator may approve the selective testing of packagings that differ only in minor respect from a tested type.

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', is positioned above the printed name.

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

From: [INFOCNTR \(PHMSA\)](#)
To: [Dodd, Alice \(PHMSA\)](#)
Cc: [Hazmat Interps](#)
Subject: FW: Interpretation Request of Combination Packaging Variation 1 & 4
Date: Thursday, September 26, 2024 4:39:49 PM

Hi Alice,

Please see the below interpretation request.

Let us know if you need anything,

-Breanna

From: Delfino, Geno Collins <Geno.Delfino@collins.com>
Sent: Wednesday, September 25, 2024 10:48 AM
To: INFOCNTR (PHMSA) <INFOCNTR.INFOCNTR@dot.gov>
Cc: Delfino, Geno Collins <Geno.Delfino@collins.com>
Subject: Interpretation Request of Combination Packaging Variation 1 & 4

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To Whom It May Concern,

I have a few questions regarding variations of combination packaging and require some clarity on the matter. This is specifically regarding 49 CFR 178.601(g)(1) and 49 CFR 178.601(g)(4). I understand there can be quantity limits per EX-letters or 49CFR packaging instructions, as well as gross mass limits of the originally drop tested outer package, but for these below questions please treat them as there being no quantity limits called out and the gross mass limit has not been exceeded.

1. For example purposes: say we place an individual coiled detonating cord within a size 10X17" inner plastic bag and then place 50 of those bagged parts within an outer container. Under 49 CFR 178.601(g)(1)(i) would it also be compliant to place a different parts other than the detonating cord we drop tested the package with (i.e. a cartridge) within an identical 10X17" inner plastic bag and place 50 of those bagged parts within an identical outer container for transport? I ask for clarification because it seems that this section makes statements about variation of not necessarily the parts contained within the inner packaging, but the inner packaging itself: size (i.e. 10X17), shape (i.e. rectangle), construction (i.e. plastic bag), opening (i.e. 10"), closure method (i.e. heat-sealed), sufficient additional cushioning, package orientation maintained, and gross mass of the originally tested package not exceeded.

2. Or would packaging this different category of part within the inner packaging fall under 49 CFR 178.601(g)(4)(iii)? If yes, then in order to cover a variation of parts and bag sizes for transport after drop testing, would you agree it would be best to originally drop test the outer container with the highest quantity of inner plastic bags, the largest size inner plastic bag which could also hold the largest size part with the highest mass?
3. If the outer container is drop tested with a quantity of 50 detonating cords in 10X17 inner plastic bags and 50 cartridges in 10X17 inner plastic bags, would it be compliant to later transport 90 cartridges packaged in the same manner above under 49 CFR 178.601(g)(1)(ii)? This is considering the total count of mixed inner packaging's was originally tested at 100 pieces of 50 cords and 50 cartridges... again all in 10X17 inner bags quantity 100. The gross mass of the outer package would not be exceeded in this example.
4. If for example we package 50 cartridges in 50 individual inner plastic bags, as well as package 50 cartridges wrapped individually in foam sheets, as well as 50 cartridges wrapped in foam sheets then placed each in a plastic bag and placed these in one outer container, is it compliant under 49 CFR 178.601(g)(1)(ii) to place 100 of one of these variations or 100 of one variation in an identical outer container for transport considering the outer packaging had 150 parts packaged in 3 different varieties of packaging?
5. Is it allowable under any variation of packaging to increase the number of inner packaging's for transport (i.e. 100) if the gross mass is not exceeded, but the outer packaging was originally tested with a lesser amount of inner packaging's (i.e. 20)?
6. May you please elaborate as to what tests or methodology we can conduct to be certain an equivalent level of performance is maintained to remain compliant as specified in 49 CFR 178.601(g)(1)? A large majority of our combination packaging's are inner plastic bags within fiberboard containers, although there could be occasions where we may use foam sheets or bubble wrap to wrap the parts instead. Intuitively I feel that if we drop tested with all these variations of inner packaging's we would be covering ourselves, but if we chose to test only with inner plastic bags, would it not be common sense that foam or bubble wrap obviously provides more protection than an inner plastic bag and that explanation suffices?

Any assistance you can provide is highly appreciated and I thank you for the time and effort spent to clarify these regulations for myself and others who seek interpretation.

Thank you,

Geno Delfino | Sr Tech, Logistics | Shipping Department | Mission Systems
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