



U.S. Department
of Transportation
**Research and
Special Programs
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

JUN 4 2004

Mr. Chris Widman
Explosives Transportation Specialist
Alliant Techsystems Inc.
Ordnance & Ground Systems LLC
4700 Nathan Lane N.
Plymouth, MN 55442

Ref. No. 04-0101

Dear Mr. Widman:

This is in response to your letter dated April 16, 2004 regarding the reuse of fiberboard drums (UN 1G) and boxes (UN 4G) under § 173.28 of the Hazardous Materials Regulations (HMR: 49 CFR Parts 171-180). You indicate that, during a DOT audit of your Arden Hills, MN facility, DOT enforcement officers found a number of 4G boxes that had minor rubs, abrasions, or tears to the outside laminate which would be in violation of the HMR if found in transportation. You state that in certain circumstances patches of the laminate of up to 4 square inches had been torn from the surface of the box during the tape removal process. Further, you state that the officers informed you that for future reuse of fiberboard packagings you should consider cutting the tape instead of tearing it off and closing it by placing new tape over the existing tape.

As a reuser of these packagings, you are required to ensure that they conform to § 173.28(a), which requires:

Packagings and receptacles used more than once must be in such condition, including closure devices and cushioning materials, that they conform in all respects to the prescribed requirements of this subchapter. Before reuse, each packaging must be inspected and may not be reused unless free from incompatible residue, rupture, or other damage which reduces its structural integrity.

You would like to know the definition of "other damage" as used in § 173.28(a) and if a shipper has the authority to determine when "other damage" has occurred to one of his packagings. The HMR do not provide a definition for "other damage" beyond that provided above, i.e., "damage which reduces [the packaging's] structural integrity. Tears to the facing of the fiberboard as you describe are reductions in structural integrity since they weaken the fiberboard and, therefore, render the packaging unfit for reuse. You are responsible for identifying these and other packaging deficiencies.

You also would like to know if the practice of cutting the tape and leaving it attached to the packaging and then taping over old tape with new tape is an acceptable means of closing your outer package.



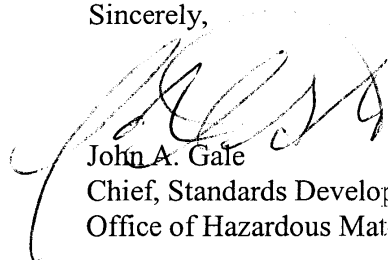
040101

173.28

This practice would be acceptable if there is no damage to the packaging, it is reclosed in accordance with the closure instructions provided by the packaging manufacturer, and the surface treatment created by the old tape does not adversely affect the closure.

I trust this satisfies your inquiry. If we can be of further assistance, please contact us.

Sincerely,

A handwritten signature in black ink, appearing to read "John A. Gale", is written over the typed name.

John A. Gale
Chief, Standards Development
Office of Hazardous Materials Standards

16 April 2004

Supko
§ 173.28
Reuse
04-0101



Ordnance & Ground Systems LLC
Plymouth MN 55442-2512
Telephone (763) 744-5289
Fax (763) 744-5833

Mr. Ed Mazzullo
US Department of Transportation
Office of Hazardous Materials Standards
DHM-10
400 Seventh Street SW
Washington DC 20590-0001

Dear Mr. Mazzullo

AlliantTechsystems Inc. (ATK) needs an official ruling regarding reusable shipping containers used for transporting explosives. To be more specific, reusable fiberboard drums (UN 1G) and boxes (UN 4G).

ATK is one of the leading manufacturers of bulk propellants used in military and sporting goods applications. In addition, ATK is a leader in manufacturing explosive devices such as fuzes, small arms ammunition, and a host of other explosive articles.

ATK has processed every explosive material and device currently being transported in UN fiber boxes and drums through proper DOT channels. A significant amount of these have been approved for transport in UN 1G drums or UN 4G fiber constructed containers and IAW CFR 49 Performance Oriented Packaging (POP) requirements. As you are aware, 49CFR allows for the use of UN 1G and UN 4G packages for a significant amount of UN Proper Ship Names displayed in 172.101.

For this discussion, we are identifying issues as they relate to the outer laminate of the outer lining of fiber drums and boxes. When reviewing the Table of Packaging Methods in CFR § 173.62, this discussion would be referring to Outer Packaging only. Inner, or Intermediate packagings are not relative to this discussion.

Background

A recent US DOT audit of the ATK Arden Hills MN facility conducted by the Office of Hazardous Materials Enforcement, DHM-40, (Mr. Raymond LaMagdelaine & Mr. Kevin Boehne) alerted ATK to potential and complicated issues relative to reusable fiber containers as defined in 49 CFR § 173.28. No notices of finable offenses were issued relative these fiberboard containers used for transporting explosives, however enforcement action may have been taken if these same containers were discovered while being transported over a public highway.

During the audit of the explosives storage magazine area, the agents identified a small number UN 4G fiberboard boxes that had very minor rubs, abrasions, or tears to the outside laminate (skin) of the boxes. The appearance of the anomalies led the agents to believe that during the procedure of opening the boxes, the adhesive tape used to close the containers tore some small patches of laminate when being removed. The amount of laminate removed from any one box could be best described as from the size of a dime, up to patches of approximate size of 4" x 4" and some in between. In all cases, only the outside laminate (skin) was removed. There was no evidence of punctures, holes, or total tears. No flute material was visible which would indicate that an entire layer of laminate had been removed.

For reuse procedures of a fiber box, product is placed into the fiber box. The top of the box is closed and secured using one strip of tape, pressure sensitive. Two strips of tape pressure sensitive are then taped across the top flaps.

The agents indicated that had these same containers been discovered during transport over a public highway, a fineable offense might have been committed. It is their opinion that these minor tears or abrasions would constitute a violation of 49 CFR §173.28. Because these boxes were in storage and intermingled with unopened pristine boxes, it was logical to determine that the boxes were transported as pristine, opened to remove small quantities of product, then closed and sent back to the on site storage area. No transport of previously opened containers outside of the facility occurred.

The agents recommended we entertain an alternate container-opening procedure. This procedure would have unloading personnel use a straight edge tool sharp enough to cut the tape at the sides and down the middle of the top of the fiber box. After removing the contents, and wishing to reuse the containers, we'd then place the product in the box and tape over the existing tape to secure and close the containers.

This procedure in their opinion would eliminate the possibility of removing the outer laminate when compared to tearing the tape to open the ship container. This issue will be further in the letter as it also directly relates to another 49 CFR/UN Standard known as Performance Oriented Packaging (POP).

The same may possibly be said for the UN 1G fiberboard drums utilized for transporting propellants. These drums have removable heads that are taped shut. Once received at the customers facility, the tape is torn off, the drumhead removed, the contents are emptied and sent back to the production facility. ATK conducts visual inspections of the drums for reuse after they are transported back (empty) to the production facility. We remove and destroy those drums with obvious visible punctures, holes, or cracks to the laminate.

It is those drums and boxes with minor anomalies in between pristine and abrasions/ tears that have the potential to cost ATK and our customers, millions of dollars per year. ATK and its customers have a significant investment into being allowed to reuse fiberboard boxes and drums with minor abrasions.

If ATK interprets 49 CFR § 173.28 to direct any shipper with fiber manufactured packaging used for transporting explosives to remove any container not considered pristine, initial calculations identify an approximate \$4 million dollar cost per year just for purchasing new drums in support of propellant manufacturing operations alone.

Definitions / Questions

Below are copied definitions from 49 CFR § 173.28 (**Reuse, reconditioning and remanufacturing of packagings**).

49 CFR § 173.28 (a) (General)

Packagings and receptacles used more than once must be such condition, including closure devices and cushioning materials that they conform in all respects to prescribed requirements of this sub chapter. Before reuse, each packaging must be inspected and may not be reused unless free from incompatible residue, rupture, or other damage which reduces its structural integrity.

The statement *may not be reused unless free from incompatible residue, rupture, or other damage which reduces its structural integrity* prompts me to request some specific clarification.

For proper clarification of "*or other damage which reduces its structural integrity*" contained in §173.28 (a).

Question: What section or sections of 49 CFR define "*or other damage*"? We need your official definition and criteria of damage so we can incorporate additional procedures to those that currently exist to allow us to identify and remove any fiber box or drum used for transporting explosives.

Question: Assuming the criteria of "*damage*" is un-definable, will the DOT allow a shipper whose history of compliance and integrity are recognized by your office as positive, be authorized to use its own judgment in determining whether or not the structural integrity of a fiberboard container has been compromised?

§173.28 (b) (3)

The above section §173.28 (b) (3) may come into question during your investigation. §173.28 (b) (3) states Packagings made of paper, plastic film, or textile are not authorized for reuse.

ATK obtained an official ruling from Mr. Delmer F. Billings on June 30th 1997 on this specific regulation. Mr. Billings ruling was published in the manual U.S. DOT Letters of Interpretation & Clarification of the Hazardous Materials Regulations, 1993-2000 edition, page number 262, reference, 6/30/97 response.

Mr. Billings's sates in part the regulation apply to "paper bags" not fiber drums.

Current US DOT / ATK Correspondences

Following the brief discussion of pristine, are excerpts of correspondences between myself and the Office of Hazardous Materials Enforcement, DHM-40, (Mr. Raymond LaMagdelaine & Mr. Kevin Boehne) regarding fiber boxes used for transporting explosives.

Pristine

I refer to the condition pristine because that was the definition of the authorized reuse packaging condition meeting regulation according to Mr. LaMagdelaine & Mr. Boehne.

According to the American Heritage Dictionary, pristine is defined in part as:

Remaining in a pure state; uncorrupted.

E-Mail Correspondence

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

From: Widman, Christopher [<mailto:Christopher.Widman@ATK.COM>]

Sent: Tuesday, February 10, 2004 11:04 AM

To: LaMagdelaine, Ray

Subject: RE: Status

Ray

Thanks for taking the time to examine the issues. Now that this issue appears to be coming to an end, I need to bring up another issue that was discussed during your and Kevin's investigation.

While investigating our explosive magazines, you noticed some fiberboard containers containing explosive devices that were used in support of on-site production activities. The issue you brought to our attention was relative to the tape used to close the fiberboard boxes. In fact, one of the boxes clearly had the outer skin compromised in the tape area. It is agreed that when an operator removes the tape by tearing, the skin has a likelihood of tearing off with the tape. ATK assumes that this may be a somewhat common problem and we hope to canvass your expert opinion.

I can say that the fiberboard boxes we currently use are not considered disposable by any means. They are expensive in terms of quantity. Reusable containers are necessary. I believe Kevin offered a possible solution and we wish to confirm a couple of things.

Kevin indicated that the operator could cut the tape at both ends and then cut a slit down the middle. This would eliminate the tearing of the tape which would eliminate the probability of compromising the outer skin of the box. We wish to clarify a couple of things before we commit to this practice.

1) Did I correctly understand that you and Kevin are of the opinion that cutting the tape is a viable alternative to tearing the tape off?

If we cut the tape instead of tearing it off, we'll have to in effect put tape on top of tape to close and seal the container when reusing the box for transport.

2) In your opinion, will taping on top of tape compromise the Performance Oriented Packaging (POP) certification? The boxes were POP tested with only one strip of tape on the top and two sides of the box. It's conceivable that over time, we could have several layers of tape on top of each other.

E-Mail Correspondence Continued

ATK would appreciate any comments, suggestions, or opinions you have on the subject.

I would've copied Kevin on this, but he didn't have an e-mail address on his business card.

Sincerely,

Chris Widman
Tele (651) 639 3334
Fax (651) 639 3341
Christopher.Widman@ATK.COM

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

From: LaMagdelaine, Ray
Sent: Tuesday, February 10, 2004 11:08 AM
To: Boehne, Kevin <DHM43>
Subject: FW: Status
Importance: High

F.Y.I.

In answer to your question, it is possible to reuse a package, in your case a UN4G box, if the package is in pristine condition. As you noted, I stated that if the tape alone was slit allowing access to the contents and no other damage and/or compromise to the package integrity had occurred, the package could be reused by re-taping the closure, in accordance with the manufacturers and design qualification closure instructions.

Remember that the package is not only the outer skin, but also the entire package as tested with dividers and/or inner packages. To that end, any change in package design, from the package as tested and certified would constitute a new package. Additionally, you need to ensure that the package and contents satisfy the demands of any packaging requirements of the Explosive Approval.

United Nations Performance Oriented Packaging (POP)

As you are aware, hazardous materials specifically, class 1 materials are required to be transported in POP tested containers. ATK has not conducted POP tests on fiber drums or boxes that have multiple layers of tape on the box or drum openings.

Should ATK be allowed to use a straight edge to open boxes or drums to avoid tearing laminate, and reuse the container by re-sealing with tape over tape to seal the container for transport, we feel this may lead to another violation of POP standards criteria. As stated earlier, all POP tests conducted had a single layer of adhesive tape used to seal or close the container.

Question: Will the authorization to cut the tape versus tear and then tape over existing tape to re-close the container violate UN POP requirements?

Question: Is there a not to exceed limit on the amount of tape over tape conditions we can adhere to?

Summary

ATK and our customers rely heavily on the ability to reuse fiber drums and boxes during the course of normal explosives transportation operations. There is a long history of these types of containers being authorized for use by the DOT. Should an official ruling from your office that authorizes only those fiber boxes and drums without *any* visible anomaly regardless of size, depth, or abrasion be issued, this ruling will generate a significant cost burden of an estimated millions of dollars per year. Costs aside, it's our opinion that these minor anomalies to outside containers do not endanger either the safety, or integrity of the container.

ATK requests your office allow us a "common sense" approach in which we would remove any fiber box or drum with obvious structural damage but allows for minor abrasions to outside containers (only). We are more than willing to accept responsibility for ensuring that any outside containers with moderate tears or abrasions be immediately removed from inventory.

ATK welcomes any suggestions that you may have should you require further analysis on those drums or boxes in question.

If you have any questions regarding the above request, please contact the undersigned at (651) 639-3334. Fax (651) 639-3341.

Sincerely,

A handwritten signature in black ink, appearing to read "Christopher J. Widman", followed by a horizontal line.

Christopher J Widman
ATK Explosives Transportation Specialist
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Fax 763 744 5833
Christopher.Widman@ATK.COM