



U.S. Department  
of Transportation

**Pipeline and  
Hazardous Materials Safety  
Administration**

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

MAR 21 2006

Mr. Richard L. Sheehan  
Sr. Package Engineering Specialist  
3M Company  
Industrial Adhesives and Tapes Division  
3M Center 230-1S-10  
St. Paul, MN 55144

Reference No.: 06-0019

Dear Mr. Sheehan:

This responds to your letter concerning the reuse of fiberboard boxes under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically you ask what performance standards apply to a reused packaging, and if an outer package may be reclosed by taping over old tape with new tape.

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

There are no separate performance standards for a reused packaging. Section 173.28(a) requires packagings and receptacles used more than once to be in such condition, including closure devices and cushioning materials, that they conform in all respects to the prescribed requirements in the HMR. Before reuse, each packaging must be inspected and may not be reused unless it is free from incompatible residue, rupture, or other damage that reduces its structural integrity.

I trust this satisfies your request.

Sincerely,

Hattie L. Mitchell  
Chief, Regulatory Review and Reinvention  
Office of Hazardous Materials Standards



060019

173.28(a)

Corbin  
§173.28(a)  
Reuse  
06-0019

John A Gale  
Chief, Standards Development  
Office of Hazardous Materials Standards  
US Department of Transportation  
FAX 202.366.3012

January 25, 2006

Dear Mr Gale

We have been contacted by a customer who is asking about a pressure sensitive box sealing tape that can be used to reclose used UN 4G boxes for shipment.

49 CFR 173.28 seems to have been changed to allow the reuse of packagings made of fiberboard. We are also aware of your letter of June 4, 2004 to Mr Widman of Alliant Techsystems regarding re-taping used boxes. The question of re-use of boxes raises many questions.

By visual inspection, it is **impossible** to determine if a used corrugated box has retained adequate strength for reuse. The flutes may be crushed, the tear resistance may be reduced, the surface may be abraded, the ECT may be reduced, the burst strength may be reduced, the board may be chemically weakened, etc. There is **not** an established visual nor analytical methodology to determine the residual strength of a used box.

With performance-oriented-packaging, what are the performance requirements for a reused box? Experience dictates that the stacking strength of a box is reduced and the drop/impact strength is reduced by normal shipment. Yes, performance is always reduced for a reused box, but by how much?

Questions abound about the potential liability and the implied performance guarantee for reused packagings.

The specific question we were asked concerned the use of pressure sensitive box sealing tape. All tape manufacturers coat a polyester or a polypropylene film backing with an adhesive on one side and a release treatment on the other side. The easy-release treatment allows the tape to be wound up on a roll and subsequently unwound from the roll for use. When tape is applied over old tape, the new tape is trying to adhere to the release treatment on the old tape backing. The bond of the tape to tape is much less than the bond of tape to kraft corrugated board.

If someone were to apply tape on a used box, we would suggest that they consider applying 72 mm wide tape over the usual 48 mm wide tape which had been slit open. The extra width of tape would adhere to the corrugated board on each side of the old tape to help improve bonding. New tape should be applied over all of the old tape, even the portions which are not slit open. Very limited 1.2 m drop testing with this configuration has been successful in our laboratory. We would not, however, guarantee performance for all shippers. More thorough analysis would be needed.

Other box closures (adhesives, staples, gummed tapes, strapping, etc) all have similar problems with re-use.

We would not recommend the reuse of UN 4G corrugated boxes.

Sincerely



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