

Pipeline and Hazardous Materials Safety Administration

Mike Iannelli Technical Manager Mondi Group 1310 Saybrook Crossing Thompsons Station, TN 37179

Reference No. 18-0050

Dear Mr. Iannelli:

This letter is in response to your March 28, 2018, email and subsequent phone conversations requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the location of the water-resistant ply in a 5M2 paper bag design. Specifically, you provide the following example and ask whether it is in compliance with § 178.521(b)(2):

- 1. Next to product: 2-millimeter low density polyethylene
- 2. Kraft Paper
- 3. Kraft Paper coated with polyethylene
- 4. Kraft Paper

The design standards for a 5M2 bag require at least three plies made of "a suitable kraft paper, or of an equivalent paper" in accordance with § 178.521(b)(1). Section 178.521(b)(2) states that a 5M2 bag of three plies must be made waterproof by the use of a water-resistant ply as the outermost ply. However, a bag of four plies or more must be made waterproof by the use of either a water-resistant ply as one of the two outermost plies or a water-resistant barrier made of a suitable protective material between the two outermost plies. The HMR do not define "plies."

A 5M2 paper bag may include plies made out of other materials provided there are at least three plies made out of a material equivalent to a suitable Kraft Paper. Therefore, the bag described in your letter is a four-ply bag. It is the opinion of this Office that if the polyethylene coated ply—which you described as one of the two outermost plies—is water-resistant, your bag construction meets the design standards in § 178.521(b)(2).

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

Sincerely,

Venn Tosti

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

1200 New Jersey Avenue, SE Washington, DC 20590

January, Ikeya CTR (PHMSA)

From: Sent: To: Subject: INFOCNTR (PHMSA) Thursday, March 29, 2018 1:21 PM Hazmat Interps FW: Request for Clarification

Ikeya and Alice,

Below in a request for a letter of interpretation. Mr. Lannelli spoke with Eugenio. Let me know if you have any questions.

caging creneral

Thanks, Jodi

From: lannelli Mike (US, Atlanta) [mailto:MIKE.IANNELLI@mondigroup.com] Sent: Wednesday, March 28, 2018 6:30 PM To: INFOCNTR (PHMSA) <INFOCNTR.INFOCNTR@dot.gov> Subject: Request for Clarification

I would like to request a formal notification that the following construction does not meet the requirements of title 49 CFR

178.521 Standards for Paper Bags.

We have been informed by our customer, operating in Europe, that the following construction is acceptable in Europe as a 5M2 construction. Based on our interpretation of the 178.521 along with the published interpretations, we do not believe this construction is in compliance with 49 CFR 178.521 and Mondi Bags USA is currently unwilling to certify a package with this construction.

Please confirm that we are correctly interpreting the following construction as not in compliance.

Ply 1 (next to product)	2 mil Low Density Polyethylene
Ply 2	Kraft Paper
Ply 3	Kraft Paper coated with polyethylene
Ply 4 (outer ply)	Kraft Paper

Best Regards, Mike

Mike lannelli Technical Manager Industrial Bags

Mondi 1310 Saybrook Crossing Thompsons Station, TN 37179 Tel: 503-360-7078 Mobile: 503-360-7078 Email: mike.iannelli@mondigroup.com www.mondigroup.com

Lehman, Victoria (PHMSA)

From:	Iannelli Mike (US, Atlanta) <mike.iannelli@mondigroup.com></mike.iannelli@mondigroup.com>
Sent:	Wednesday, April 11, 2018 5:06 PM
То:	Lehman, Victoria (PHMSA)
Subject:	RE: 5M2 letters of interpretation

Good afternoon Ms. Lehman,

It was a pleasure to discuss this topic yesterday, and thank you for being responsive to my question.

Thank you for sending the copies of the interpretations, as this matches the ones I have on file. I have enclosed in red and in brackets additional comments / questions below regarding the section cited.

The letter that causes the most confusion in my mind is the 00-0191 response letter which appears to be not unclear verses other letters. The 95-0309 letter appears to be very clear in confirming the bag referenced as a 4 ply bag. Since the 1990's, the industry has used the 95-0309 letter as the basis for counting plys and intern determining where the water resistant ply should be located to comply with §178.521. Based on the 95-0309, the industry has counted paper plys in order to determine if a bag is 3 ply or 4 ply and not considered film to be a ply counted. If film is now counted as an equivalent paper ply, this could signal a large change in how bags are constructed in the industry.

With respect to my original question sent on 3/28/18, I believe the construction to not be in compliance based on this being considered a three ply bag and the position of the water resistant ply not being the outer ply.

Please contact me with additional questions concerning my original questions or comments.

Sincerely, Mike

Mike lannelli Technical Manager Industrial Bags

Mondi Tel: 503-360-7078 Mobile: 503-360-7078

From: Lehman, Victoria (PHMSA) [mailto:victoria.lehman@dot.gov]
Sent: Tuesday, April 10, 2018 4:30 PM
To: Iannelli Mike (US, Atlanta)
Subject: 5M2 letters of interpretation

Good afternoon Mr. Iannelli,

Thanks for taking time to discuss 5M2 bag letter on your commute. Attached are the previous interpretations PHMSA/RSPA have issued. The following list includes excerpts:

00-0191

- Q1. Does the statement in § 178.521(b)(2) in reference to the number of plies only mean paper plies, or does it also include plastic film plies which may be used in combination with paper plies?

- Al. The "UN5M2" multi-wall bag must be made of <u>suitable kraft paper or an equivalent paper</u> with at least three plies. To prevent the entry of moisture, a plastic film ply may be used as a waterproof ply or water-resistant barrier in combination with paper plies as prescribed § 178.521(b)(2). [Kraft paper refers to a specific grade of paper typically used in a multiwall bag. The statement "or an equivalent paper", I believe this is in reference to other paper grades such as liner board grade. However, does the answer in A1 suggest that a "film" ply could be a substitute to a paper ply if used as a waterproof ply?]
- Q2. Is the plastic film ply considered a separate ply if it is laminated or bonded in some way to a paper ply, or is it only considered a separate ply if it is free and not bonded to a paper ply?
- A2. A plastic film ply bonded or laminated to the inner surface of a three ply bag as a waterproof ply or barrier would be considered a separate ply. [This answer appears to agree with the June 30, 1995 response to Mr. Jimmy Druey, in which Edward Mazzulo responded that "The bag described is a four ply bag". In Mr. Druey's question, the construction had 3 mil linear low density plastic film ply laminated to the third paper ply. Mr. Mazzulo refers to the combination of the 3 mil film ply laminated to paper collectively as the third ply. This would appear to support that a film/paper lamination is "one ply" and not "two plys".]
- Q3. Is a bag constructed of a plastic film inner ply laminated to a ply of kraft paper having an outer ply of waterresistant kraft paper considered a three ply "UN5M2" bag.
- A3. Yes, provided the bag complies with all other requirements of § 178.521 and meets the testing requirements of Subpart M of Part 178. [The question (Q3) is not listed verbatim as asked by Mr. Ruebush who asks if a third ply of paper necessary at the end of his original question. The response by Mr. Billings appears to authorize a bag with two paper plys and a film ply to be acceptable based on the altered phrasing of the original question. Mr. Billings does state that it must also meet requirements of § 178.521 so it is unclear if he is referring to the need for an additional paper ply as asked by Mr. Ruebush. If the response supports only two paper plys, this appears to be opposed to the wording in §178.521(1) Standards for Paper Bags, which states that "Bags must be made of a suitable kraft paper, or of an equivalent paper with at least three plies."

95-0309

- This is in response to your June 15, 1995 fax to Ms. Susan Murphy, asking whether your bag construction complies with the standards for a UN 5M2 paper bag. The bag you described is a four ply bag. The two innermost plies are kraft paper. The third ply is 3 mil linear low density plastic laminated to paper. The plastic side of the third ply faces inward, toward the product. The outermost ply is kraft paper.
- It is our, opinion that the bag you described meets the requirement in 49 CFR 178.521(b)(2) that "a bag of four plies or more must be made waterproof by the use of either a waterresistant ply as one of the two outermost plies or a waterresistant barrier made of a suitable protective material between the two outermost plies." Provided the bag complies with all other requirements of 49 CFR 178.521, and meets the testing requirements of Subpart M of Part 178, the bag may be marked as a UN 5M2 paper bag. [In the first paragraph of the response by Mr. Mazzullo, he states clearly and in no uncertain terms that "The bag you described is a four ply bag." This is consistent with the interpretation used for years in the industry.]

13-0197

In your email you describe the bag as three-plied, with a paper ply innermost layer coated with a waterresistant polymer facing inward (towards the product), a middle paper ply layer, and an outermost layer of
paper ply having a water-resistant polymer coating facing inward...The requirements for DOT specification 5M2
paper bags in § 178.521 do not specify the orientation (i.e. inward or outward facing) of the water-resistant
coating on the outermost. [I do not have questions regarding this letter.]

02-0030

- It is the opinion of this Office that for purposes of § 178.521, UN 5M2 bag, the term "water resistant" means "waterproof". Wet strength paper which does not resist the penetration of water is not suitable for use as a water resistant barrier. [No issues]

95-0311

- The exemption to which you refer, addressing a stitched top closure, is not inconsistent with 5M2 standards; it permits a departure only from 5M2 requirement for waterproof seams and closures.

Please let me know if you have additional questions or information for us. Respectfully,

Victoria Lehman

Transportation Specialist- Regulatory Review & Reinvention (PHH-12) U.S. Department of Transportation (U.S. DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) Office of Hazardous Materials Safety (OHMS) East Building, 2nd Floor (E24-408) 1200 New Jersey Ave., SE Washington, D.C. 20590

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

JAN - 2 2001

Mr. Richard Ruebush International Paper P.O. Box 4687 Spartanburg, SC 29304-5687

Dear Mr. Ruebush:

This is in response to your letter dated July 10, 2000, regarding construction of "UN5M2" paper bags of three plies and four plies authorized in § 178.521(b)(2) of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). You state the multi-wall bags are sometimes constructed either with plastic film plies or plastic film plies laminated to paper plies with adhesives, either with all over adhesive coverage or stripes of adhesive.

Your questions are paraphrased and answered as follows:

- Q1. Does the statement in § 178.521(b)(2) in reference to the number of plies only mean paper plies, or does it also include plastic film plies which may be used in combination with paper plies?
- A1. The "UN5M2" multi-wall bag must be made of suitable kraft paper or an equivalent paper with at least three plies. To prevent the entry of moisture, a plastic film ply may be used as a waterproof ply or water-resistant barrier in combination with paper plies as prescribed § 178.521(b)(2).
- Q2. Is the plastic film ply considered a separate ply if it is laminated or bonded in some way to a paper ply, or is it only considered a separate ply if it is free and not bonded to a paper ply.
- A2. A plastic film ply bonded or laminated to the inner surface of a three ply bag as a waterproof ply or barrier would be considered a separate ply.

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

Ref. No. 00-0191

- Q3. Is a bag constructed of a plastic film inner ply laminated to a ply of kraft paper having an outer ply of water-resistant kraft paper considered a three ply "UN5M2" bag.
- A3. Yes, provided the bag complies with all other requirements of § 178.521 and meets the testing requirements of Subpart M of Part 178.

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

Sincerely,

Delmer F. Billings Chief, Standards Development Office of Hazardous Materials Standards



Engrum 3 178.52

CUSTOMER RESOURCE CENTER

P.O. BOX 5687 00-019 SPARTANBURG, SC 29304-5687 PHONE: 864-596-7140 FAX: 864-596-7175

July 10, 2000

U.S. Department of Transportation Research and Special Programs Administration 400 Seventh Street, S.W. Washington, D.C. 20590-0001

Office of Hazardous Materials Standards DHM-10:

I have some questions about 5M2 paper bags as mentioned in 49 CFR 178.521(b)(2). My questions are in reference to the statements about bags of three plies and bags of four plies or more.

Multiwall bags are sometimes constructed either with plastic film plies between paper plies or plastic film plies laminated to paper plies with adhesives, either with all over adhesive coverage or stripes of adhesive.

- 1. Does the statement about the number of plies only mean paper plies or does it also include plastic film plies which may be in combination with the paper plies?
- 2. Is the plastic film ply considered a separate ply if it is laminated or bonded in some way to a paper ply or is it only considered a separate ply if it is free and not bonded to a paper ply?
- 3. Is a bag construction such as a plastic film inner ply laminated to a ply of kraft paper having an outer ply of water resistant kraft paper considered a three ply 5M2 bag or is it necessary to have a third ply of paper?

I would be grateful if you can provide some clarification on these issues for me. Please contact me if you need more information at 864-596-7159 or at the address on the letterhead.

Regards,

Richard Ruebush

Richard Ruebush DOT Packaging Coordinator