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

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

SEP 23 1999

Mr. Joseph J. Grebe
Manager, Testing & Technical Service
Greif Bros. Corporation
1201A South Houk Road
Delaware, Ohio 43015

Ref. No: 99-0090

Dear Mr. Grebe:

This is in response to your letter of March 30, 1999, requesting clarification on the maximum gross mass marking requirement for drums under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). You provide the following scenario:

> A steel drum which is manufactured to the minimum standards required by the HMR weighs 25 kg. The drum is tested with a net mass of 275 kg for a gross weight of 300kg. However, when taking advantage of numerous variations authorized in the HMR (for example, the steel used is now 10% thicker, coatings, a liner, and various decorations are added) the tare weight of the drum is now 3.5 kg heavier.

Your questions are paraphrased and responded to as follows:

Q. May I mark the drum with a maximum allowable gross weight of 303 kg even though it was tested to 300 kg?

A. The answer is no. A packaging may not be marked to a maximum gross weight that exceeds the gross weight to which it has been tested.

Q. Must the net mass in the drum be reduced to compensate for the additional tare weight of the drum?

A. The answer is yes.

Q. Should the drum be tested at a level of net weight (275 kg) plus maximum tare weight (28.5 kg) to be certain that the final gross weights of all drums do not exceed the tested gross weight?

A. The answer is yes.

990090

178.504

Q. Will customers (i.e., shippers) be required to weigh each drum to determine tare weight and associated net weight of fill to be certain that they do not exceed the maximum gross weight marked on the drum?

A. As provided by 173.24a(b)(2), a non-bulk packaging may not be filled with a hazardous material to a gross mass greater than the maximum gross mass marked on the packaging. Each offeror of a hazardous materials package is responsible for compliance with this requirement.

I hope this information is helpful.

Sincerely,

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

178.504
99-0090

3/30/99
See 3/30/99
e-mail, Bob M.
6-4346

Questions for interpretation

Example 1

When a steel drum is prepared in accordance with 49CFR178 Subpart M its tare weight is used to calculate the gross weight of the package. If the initial design type, sent in for test, falls on the exact minimums for material thicknesses, what is the appropriate marking for a drum which can be at least 10% heavier than tested?
For example, a steel drum 1A2/X300/S 1.2-0.9-1.2 weighs 25 kilograms when empty. This drum is unpainted and unlined when tested. All steel thicknesses fall at the exact minimum for this requirement. This drum is tested with 275 kilograms net for a total of 300 kg.

According to 178.601(g)(8)(viii) "An increase greater than 10% or any decrease in the steel thickness of the head, body, or bottom;" would mean that the drum we describe could weigh up to approximately 10% greater in tare wt or 2.5 kg without requiring additional design type testing.

Additionally, according to 178.601(c)(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:
(i) A packaging which differs only in surface treatment;"
does not require design type testing.

This would mean that the weight of additional coatings applied as part of the manufacturing process for steel drums i.e. paints, linings and decorations are not considered during our design type test on a bare steel drum. These coatings could weigh as much as a kilogram depending on the size of a drum, number of coats inside and out, and degree of decoration.

25 + 2.5 + 1 Kg (Paint)

Q1- Therefore since our theoretical drum could be produced with a tare weight of up to 28.5 kilograms. Does the net weight allowed to be packed in this drum get reduced in proportion, to 271.5 kilograms for customer use?
Q2- Should the drum be tested at a level of net weight required (275kg) plus max tare weight (28.5kg) to be certain that the final gross weights of all drums do not exceed the tested gross weight?
Q3- Will customers be required to weigh <u>each</u> drum to determine tare weight and associated net weight of fill to be certain that they do not exceed maximum gross mass marked on the drum? (most customer filling systems fill to net weight)

GBC Greif Bros. Corporation
Established 1877

Joseph J. Grebe
Manager, Testing & Technical Service

Research & Development Building
1201A South Houk Road
Delaware, Ohio 43015

Office: (740) 549-6121
Direct: (740) 549-6110
Fax: (740) 549-6120
Email: Grebej@Greif.Com

Example 2

Using the same regulatory issues as in example 1, we produce an 85-gallon drum. This drum is intended for use with contents weighing 400kg, the maximum non-bulk limit for steel drums. This 1A2 drum weighs approximately 33.0kg. at minimum material thickness. If the thickness of the body, bottom and cover are increased in thickness by 10% the final painted and lined drum will weigh approximately 35 kilograms.

Q1- Therefore since our theoretical drum could be produced with a tare weight of up to 35 kilograms does the net weight allowed to be packed in this drum get reduced in proportion, to 298 kilograms for customer use as the drum tare weights change to 35 kg?
Q2- Should the drum be tested at a level of net weight required (400kg) plus max tare weight (35kg) to be certain that the final gross weights of all drums do not exceed the tested gross weight? Note that in this case, the drum would have to be filled to 402 kg net, which is above the non-bulk limit.
Q3- Will customers be required to weigh <u>each</u> drum to determine tare weight and associated net weight of fill to be certain that they do not exceed maximum gross mass marked on the drum.?

Comments

If your response to Example 2 Q2 is negative, please explain the following - A customer fills to 400kg net in a drum which we only test at 433kg (load plus actual minimum tare weight). The final delivered drum is 35 kg tare weight. The loaded drum will weigh 435kg gross, which would be 2 kg above the certification marked on the drum. Is this a violation of the HMR? How will an enforcement agency, which reviews shipping papers or weighs drums in commerce deal with this discrepancy.

We would suggest the following resolution to this situation. The 400-kg limit on net weights appears in part 178 along with other similar provisions for other packages. We believe that containers for solids should be authorized to be tested at their maximum gross mass. Testing would be conducted at the necessary net weights to compensate for authorized differences in container tare weight. Test reports would reflect the user's restriction to the packing limits. Shippers should already be trained in these limitations as part of their required Haz-Mat training program.

We believe that this solution provides an increased level of safety due to the overtesting of the drum design. This solution is also transparent to users of the package.