



U.S. Department  
of Transportation

1200 New Jersey Avenue SE  
Washington, DC 20590

**Pipeline and Hazardous  
Materials Safety  
Administration**

DEC 2 2011

Arvin Blank  
Environmental Engineering Manager  
A2Z Test Lab a division of MAI  
220 Power Court  
Sanford, Florida 32771

Reference No. 11-0265

Dear Mr. Blank:

This is in response to your October 26, 2011 letter pertaining to the testing of batteries in accordance with the United Nations (UN) Manual of Test and Criteria, 5<sup>th</sup> revised edition. You reference Section 38.3.4.2.3 which requires cells and batteries to meet the requirement of the T2 – Thermal Shock Test. This test requires there is no mass loss, no leakage, no venting, no disassembly, no rupture, and no fire if the open circuit voltage of each cell or battery testing is not less than 90% of its voltage immediately prior to this procedure. You ask the Pipeline and Hazardous Materials Safety Administration (PHMSA) to clarify whether a crack in the outer casing of a battery you tested in accordance with the T2-Thermal Shock Test as show in the attached picture would constitute a “rupture.”

The answer is yes. In Section 38.3.2.2 of the UN Manual of Test and Criteria, 5<sup>th</sup> revised edition, a “rupture” is defined as mechanical failure of a cell container or battery case induced by an internal or external case, resulting in exposure or spillage but not the ejection of solid materials. It is the opinion of this Office that a crack in the case of the battery as depicted in your photograph would constitute a “rupture” and thus, be a failure of the T2- Thermal Shock Test.

I hope this satisfies your request.

Sincerely,

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



Andrews  
\$173.159  
Batteries  
11-0265

26 October 2011

To: PHMSA.hm-infocenter@dot.gov  
From: Arvin Blank (ablank@maifl.com)

Dear PHMSA

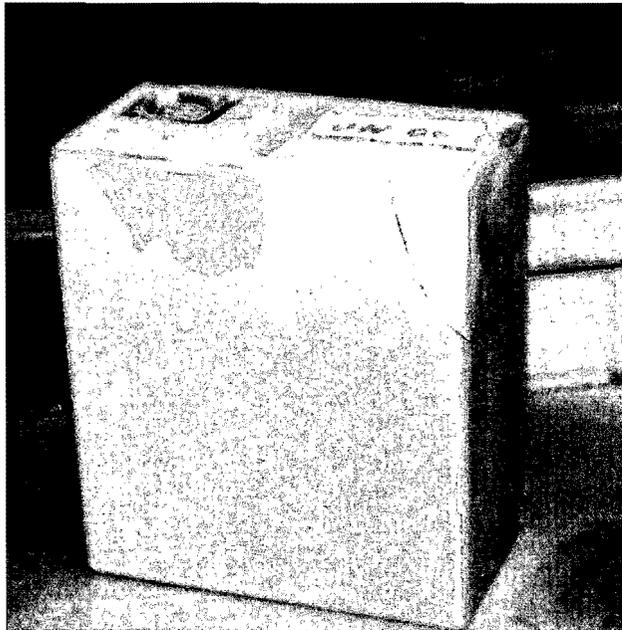
We are performing Department of Transportation Testing (T1 -T5) as per the Manual of Tests and Criteria 5th revised edition.

Specifically: Section of regulations 38.3.4.2.3 T2 - Thermal Shock

Section: 38.3.4.2.3 Requirement

Cells and batteries meet this requirement if there is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.

One of the batteries tested developed a crack in the case during the Thermal Shock Test. See picture below. Our customer has tasked us to get an official opinion from the Department of Transportation that clarifies if this constitutes a rupture or not.



Sincerely

Arvin Blank  
A2Z Test Lab  
[ablank@maifl.com](mailto:ablank@maifl.com)  
407-432-8869