

Ticket #1248

Ticket Status:	Closed	Name:	Philip Piper
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Create Date:	03/06/2016 11:17 pm	Phone:	(713) 501-2744
Field of Study:	Electrical Engineering		

Subject: **Yale University**
03/06/2016 11:17 pm Philip Piper

Hello,

Unfortunately our University's email phishing security has suitably obfuscated the link to ticket #1225 such that I can not reach it. I have changed to a non-University email address to fix this for future correspondence.

Carrie Okma responded to our inquiry about A123 cells suggesting that Kapton tape could be used to insulate the sides of the cells from the aluminum heat sinks. However I was under the impression that the sides (where the folds occur) are insulated with the same aluminum laminate as the faces, crimped together to seal the edges. I have verified this by checking the resistance between various points on the sides of a few cells and the positive/negative tabs. Additionally all material I can find seems to suggest that the aluminum laminate completely electrically insulates the cell (outside of the tabs of course). For instance the University of Waterloo PhD thesis I have attached that I used extensively for battery pack thermal design suggests that the aluminum laminate covers the cell in its entirety. Additionally the battery packs created by A123 with Amp20 cells shown on page 5 of their handling guidelines (although blurred) do not seem to worry about inter-cell insulation past the aluminum laminate.

I may be wrong, but from the evidence I have compiled I think that our battery pack will be safer without the Kapton tape, due to the IMD detection argument that I outlined previously in ticket #1225. I would prefer to follow this route, but I will concede to taping the heat sinks if this scheme does not pass the Formula Hybrid pouch cell rules. Sorry again for the ticket confusion!

Best,

Phil

[1_Guidelines.pdf\(1 mb\)](#) [A123 Thermal Thesis.pdf\(6.9 mb\)](#)

03/16/2016 10:07 am

Hi Philip,

Sorry for the delay in response, I wanted to take some photos of the cells in question, but I wasn't able to find them in our cell storage, then I managed to post my answer on the original ticket...

The bare aluminum that I am talking about is the cut edges of the pouch. The full top and bottom of the aluminum material used to make the pouch is coated, however where the material is cut into smaller rectangles to form the pouch, the cut edges are not coated. This is a very small area, (sometimes it's folded under on the sides, sometimes not depending on cell manufacturer), but should it come into contact with your aluminum repeater frames, it could cause the isolation detection to trip.

The insides of the pouch also have an isolation coating, but that can break down over time allowing the electrolyte to come into contact with the aluminum pouch. So electrolyte in contact with aluminum pouch, and cut edge of pouch in contact with repeater frame would trip an isolation monitoring. That's why it's highly recommended for system robustness that you tape either the cell edges or the outside edges of the repeater frames. Taping the frames is there preferred method as it's always good practice to minimize cell handling.

Carrie

03/16/2016 8:11 pm Philip Piper

Makes sense. Thank you for that clarification! We will be sure to tape the edges of the aluminum frames in our design.

Best,

Phil

03/21/2016 2:32 pm

Phil - I'm closing this ticket -

Please reopen if you have further questions

Thanks

Please Wait!

Please wait... it will take a second!