Subject: Aluminide conductivity
Posted by dangerman on Fri, 20 Jan 2012 23:10:34 GMT
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Quick question on Aluminide. I have been asked to look into a project that needs to conduct a very very small amount of electricity....actually to conduct generated static away..... Does Aluminide conduct given that it is metallic powder mix?

Subject: Re: Aluminide conductivity
Posted by stonysmith on Sat, 21 Jan 2012 00:07:38 GMT
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dangerman wrote on Fri, 20 January 2012 23:10Quick question on Aluminide. I have been asked to look into a project that needs to conduct a very very small amount of electricity....actually to conduct generated static away..... Does Aluminide conduct given that it is metallic powder mix?

Definitly non-conductive... I've tested it. The aluminum powder is mixed in with / suspended in nylon. There is a random chance that a string of aluminum particles could line up, but the odds are extremely low.

Subject: Re: Aluminide conductivity
Posted by dangerman on Sat, 21 Jan 2012 00:36:05 GMT
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Thanks for the prompt reply... Especially as its based on your own tests!.

Subject: Re: Aluminide conductivity
Posted by Tamert on Sun, 22 Jan 2012 20:06:23 GMT
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You might look at other rapid prototyping companies that offer carbon loaded SLS materials. These are exactly what you're looking for.

Subject: Re: Aluminide conductivity
Posted by tempusr2347_5bec2caca3a0 on Mon, 23 Jan 2012 08:30:41 GMT

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Carbon-loaded SLS has exactly the same problem as the Alumide, not enough conductive material to ensure there is always a conductive pathway. (In general, getting conduction through plastics is challenging as there is an upper limit to the amount of additive you can put in before it starts to alter the other properties, typically in a way which will prevent good processing).

If possible, your best option might be the post-process metal plating as mentioned elsewhere in the forum. Look up the company 3DDC for example here.

Simon

Subject: Re: Aluminide conductivity
Posted by dangerman on Mon, 23 Jan 2012 08:50:50 GMT
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Thanks for all the replies. I've now got a few Things to research. However, the original intention was to keep the cost down. We might have to go for metal parts within my assembly.

Subject: Re: Aluminide conductivity
Posted by Tamert on Mon, 23 Jan 2012 16:32:57 GMT
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Simon.Bubb wrote on Mon, 23 January 2012 08:30Carbon-loaded SLS has exactly the same problem as the Alumide, not enough conductive material to ensure there is always a conductive pathway. (In general, getting conduction through plastics is challenging as there is an upper limit to the amount of additive you can put in before it starts to alter the other properties, typically in a way which will prevent good processing).

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Simon

Simon - This is factually incorrect. Perhaps you are thinking of the PA-640 GSL powder which has carbon fiber in it for reinforcement rather than electrostatic dissipation. The carbon fiber doesn't percolate so no conduction current.

OP - You want to use NyTek 1200 CF which uses carbon black which will percolate. Here is a data sheet from a company that would build the part that you desire:

https://www.solidconcepts.com/content/pdfs/SLS_NyTek_1200_CF _Material_Specifications.pdf

If you look at its volume resistivity this is more than sufficient to dissipate most forms of charge build up. Check your spec for required dissipation rate and use the included volume resistivity to design your part to eliminate your expected charge build up rate.