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Subject: How do you fix inverted normals on rhino  
Posted by [sn888](#) on Tue, 02 Mar 2010 04:11:46 GMT  
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Hi i would like to 3d print a model but i have recieved an email saying, (Your model has inverted normals in it) can someone please help me...

#### File Attachments

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- 1) [senan\\_naamo\\_module.stl](#), downloaded 91 times
  - 2) [senan\\_naamo\\_cast.stl](#), downloaded 93 times
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Subject: Re: How do you fix inverted normals on rhino  
Posted by [Salokannel](#) on Tue, 02 Mar 2010 08:02:35 GMT  
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Hi!

On your tool bar there's tool with three arrows pointing up from blue surface or you just write ANALYZE DIRECTION. Then select your object. Now you'll see a lot of white arrows pointing from your object. Now arrows pointing inside to your object (wrong way normals). Just press left mouse button on one arrow and it will change the direction (arrows/normal). Then enter. Now it should be alright!

Cheers,  
Pekka

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Subject: Re: How do you fix inverted normals on rhino  
Posted by [MichielCornelissen](#) on Tue, 02 Mar 2010 08:18:55 GMT  
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Although, if your object is watertight ('closed' in rhino terms), it will always have the normals facing outward. If your stl file hasn't, it'll mean that your object wasn't closed in the rhino file (check with ShowEdges), or something somehow went wrong with the meshing part. If it's the latter: you can do meshing directly by exporting to stl, or you can create a mesh from polysurface first ('mesh' command), and then export that mesh. In my experience, sometimes one will work where the other doesn't.

Cheers, hope that helps, Michiel

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Subject: Re: How do you fix inverted normals on rhino  
Posted by [aoster](#) on Tue, 02 Mar 2010 19:29:33 GMT  
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Hi,  
you could also just try to repair your STL files like described in  
[http://www.shapeways.com/forum/index.php?t=msg&goto=10098&#msg\\_10098](http://www.shapeways.com/forum/index.php?t=msg&goto=10098&#msg_10098)

bye,  
Alex

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