Shattered Cycle Snare Drum

Daniel Nehring

VIEW IN BROWSER

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Summary

Stable shell design for large format 3d printing

Hobby & Makers > Music

Tags: drum snare

This is the result of multiple years to get a stable design which can withstand abuse. Drum is intended to be printed as a single piece and requires a large format printer. There are other designs which allow for smaller format printing.
Parts are exported in segments to allow variations for height of top and bottom bearing edges.
Recommended (verified acoustic) materials:
3dxtech's: PLA-CF, PETG-CF, (if printed in heated chamber ez-pc, pc-cf)

protopasta: Iron-filled Metal Composite PLA

“plain” pla, pla+, petg, abs have relatively poor acoustic performance. They will sound more like low end acrylic drums. “cheap” carbon fiber filaments similarly have poor acoustic performance. I recommend printing acoustic blocks (rectangle with hollow center) to validate materials.

Recommended approach
For ideal sound you MUST print as a solid piece. I recommend .08 or .1 mm nozzles with a .3 layer height. Drum orientation should be batter side

down to allow for the snare bed to be printed without the need for more processing work. Drum should not need supports, but will need a brim to help keep adhesion.
Drum will need to be routed to clear excess material on the bearing edge.

Future roadmap:

- At the moment I have only uploaded a 45 degree bearing edge. I have had good success with a 45/round over. However there is a notable lack of articulation on snare response. Guru drums has an open source bearing edge which would be interesting to try. I want to explore what could be accomplished with a variable geometry allowed via 3d printing.
- Experiment with mass placement: conventional drums with reinforcement rings have an added benefit of manipulating the frequency response by increasing the mass close to the vibrating surface. Mapex drums with their high end drums have experimented with placing mass at different locations within the drum. The affect size may be less apparent within snare drums as compared to larger drums.
- Passive attenuation devices (helmholtz resonators): I've been experimenting with using quarter wave length and helmholtz resonators to allow for contact-less muffling of the head. This would allow improved snare articulation but fewer overtones.
- Internal resonating structures within the drum. Infill patterns are a variation and so far I've observed somewhat increased absorption of high frequencies. However they would sound more “plastic-y”
- Improve rigidity of printed hoops: I have a few designs for printed hoops however after prolonged use they all eventually failed. Rim shots may limit the material selection.
- Carbon fiber reinforcement: Early tests allowed for thinner drum shells but much improved rigidity. Acoustic performance was mixed, carbon fiber can have “harsh” frequencies present.

Model files

55-inch-45.3mf

6-inch-narrow-snareside.3mf

6-inch-45.3mf

65-inch-45.3mf

65-inch-narrow-snareside.3mf

55-inch-narrow-snareside.3mf

snare-body.3mf

snare-body-bead.3mf

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