

LulzBot Filament Testing Report

Manufacturer: Hemp Ink
Filament Name: Hemp filled PLA, natural, 3mm
Filament Type: Hemp filled PLA
Tested By: Brent M
Date: 10/8/2015

Ease of use: 3/10, Prints well with standard woodfill profiles, but needs nozzle size <0.8mm
Appearance: 8/10, has a distinctive look from other filled PLA filaments, but the current batches have large visible chunks of hemp.
Size consistency: Poor, 2.15-2.65 across 2 ~3m samples
Color consistency: N/A, this is a non colored sample
Print temperature: Prints well at 205C/60C with 100% fan
Prints using Lulzbot profiles/temps: Yes

Recommendation:

For an early prototype filament, this is pretty exciting and prints fairly well. The 2 samples received have pieces of hemp in the filament several times larger than what works well in other filled PLA filaments. If the extrusion accuracy can be brought up to 2.85 +/- 0.05mm and the hemp grain size reduced to >0.3mm, this will likely be a really great printing filament.

Notes:

- 1st sample clogged badly in a 0.5mm nozzle, but printed really quite well through an 0.8mm nozzle, indicating that the current hemp grain size is between 0.5mm-0.8mm.
- The 2nd sample received still clogged a 0.8mm nozzle, indicating that we'd still need to go larger to print the filament consistently
- Print settings for bamboofill / woodfill seem to work very well for this filament, with the temperatures at 190C/60C. Retraction temperatures of 125C and wipe/probe temperatures of 130C seem to work well with a 0.8mm nozzle.
- The ~4" coil size of the 2 samples received is pretty small to consistently feed a PLA material, I would recommend ~8" diameter coils for future batches if possible.
- The filament diameter varied widely from 2.15mm to 2.65mm, with an average of around 2.40mm. This should be brought to 2.85 +/- 0.05mm in order to be comparable to existing filled PLAs.

| Filament | Variance in diameter | Maximum out of round | Extrusion temperature |
|-----------------|---------------------------------|----------------------|--|
| Hemp Filled PLA | 0.50mm (2.15-2.65) ~2.40mm avg. | 0.38mm (2.22-2.60) | 180-210 (190/60 works well on LulzBot TAZ) |

