



## Colorado Science and Engineering Fair

## 2024 Individual Project Abstract Form

**Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.**

Title of Project: Comparing the Accuracy of 3D printed Airsoft BB's

Finalist's Name: Morgan Drullinger

School and City: Liberty School, Joes

Sponsor's Name: Ms. Linda Fogale

Category: Engineering (ENGR)

Division: Junior (6th - 8th grades)

Abstract (250 words or less):

The purpose of this project is to determine if you can 3D print Airsoft BBs and be able to be shot out of an airsoft gun with a good accuracy. The hypothesis was that the filament (ABS) would be the most accurate because it would be strong so it wouldn't brake being shot out of the airsoft gun. ABS would also be the best because it would be heavy so the wind wouldn't affect it.

This was tested by 3d printing 12 Airsoft BBs with each filament. There were 3 filaments, ABS, TPU ,and PLA. Then sanding them down to the right size so they fit in the barrel. After that a target was set up. There were eight targets in all, six BBs on each target, (two targets per filament). Then the magazine was loaded with 12 BBs then scope got sited in on the target and was fired out of the rifle until I ran out of airsoft BBs. Then measured how far the BBs hit from the bullseye. After that the data was grafted and put into spreadsheets.

The data collected shows that the control was the best because they are made for being shot out of the gun. The PLA was the best out of the 3D printed BBs, The TPU and PLA were the worst because of the light weight.

So in conclusion the PLA was the best 3d printed BB but not the best out of all the BBs. The control was the best out of all the BBs because they were the heaviest and the smoothest.

*I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.*

Finalist's Signature: *Morgan Drullinger*

Date: *3/4/24*

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES o all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.