

Project 4: Materials Improvement in Firearms Suppressor Design

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Objective

Examine and determine suitability of alternative materials in the construction of firearms suppressors with the goal of reducing gas energy and heat.

Background

- Lack of innovation in suppressor design
- Possibility of a federal deregulation
- Possible materials choices are rapidly innovating
- Military interest has greatly increased with calls for full integration

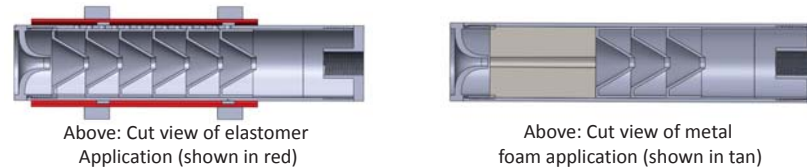
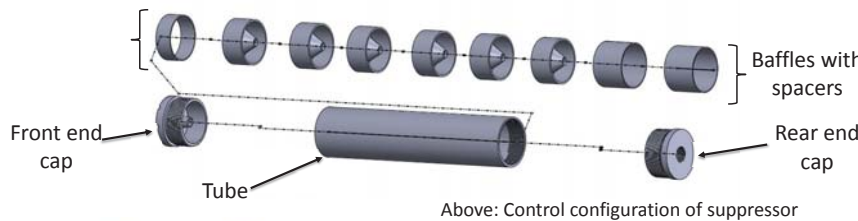
Functional Requirements

Sound	Must be below 140dB to be considered hearing safe
Safe	Must not fail in such a way as to endanger the shooter
Durable	Must be able to sustain continuous firing
Modular	Must have high modularity so as to facilitate testing

Engineering Analysis

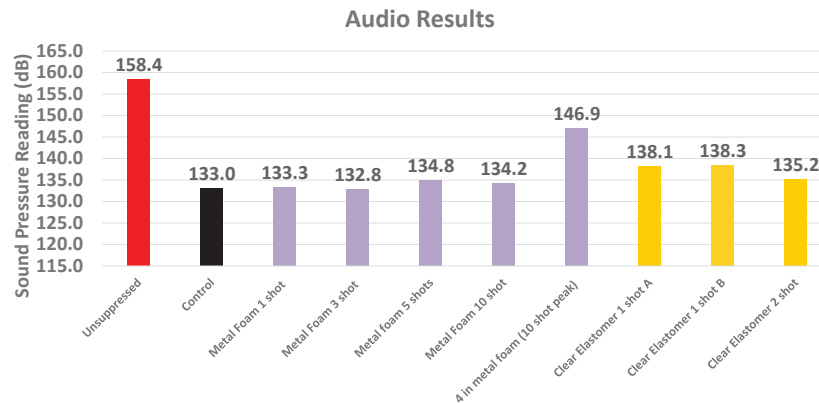
This project included a heavy focus on material selection with properties such as yield strength, thermal conductivity, and specific heat playing a major factor in material choice for both the management and dissipation of firearm gases.

Prototype Design



Testing & Results

- Location: EBR Sheriff Department Range
- Test Standard: MIL-STD 1474D Commercial Variant



Manufacturing Results



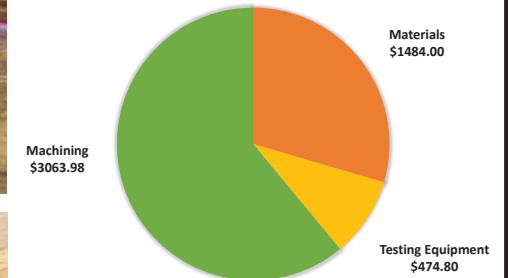
Testing Instrumentation

- Sound meter(Larson Davis LxT)
- Thermal FLIR(General IRT 207)
- Strain Gauges(LY47-6/350)
- Gun Stand
- Camera(Canon Vixia)

Safety Considerations

- Material Failure
- Baffle Strikes
- Standard Firearm Safety
- Eye and Ear Protection
- High Temperatures
- High Pressures

Budget Allocations



September	October	November	December	January	February	March	April
•Research and Concept Generation	•Concept Selection •Prototype Designs Suggested •Material Selection Finalized	•Prototype Design Finalized •Testing Procedure Finalized	•Prototype Material Ordering •Testing Site Determined	•Manufacturing Process Starting	•Manufacturing Finishes •Manufacturing Adjustments Made	•Testing Starts •Test Results Evaluated	•Finalizing Design Adjustments •Complete Testing •Final Prototype Finalized

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