

Executive Summary

This month I had two launch attempts of the Mki Viper. There was a leak at the propellant tank connection on the first attempt and the engine did not ignite on the second attempt. Also this month, I made a port and starboard fiberglass fuselage with a raised rib down the center. This increased the strength with no mass added while improving the streamline of the Viper.

Technical Stuff

This month I had two launch attempts of the Mki Viper. There was a leak at the propellant tank connection on the first attempt. The leak flushed the HTP from the propellant tank before the Viper could clear the rail guide. I removed the Soda Stream® bottle, cleaned off the seal, put some pipe thread tape on the joint, and gave it an extra twist to tighten the seal. That seemed to work.

The engine did not ignite on the second attempt. There are two possibilities. I may have reached the lower solubility threshold for the infusion of KMnO_4 into PLA or distilled water got into the HTP and lowered the concentration.

I am searching for the lower solubility limit for the infusion of KMnO_4 into PLA. Once I have it, the infusion process should be more efficient and lower the KMnO_4 build up on the gasket and rim of the pressure cooker, not that it is a big issue. Just trying to be more efficient.

I use a hand pump to flush the propellant tank with distilled water prior to loading the HTP. I believe a small amount of distilled water got trapped in the bellows and was transferred to the propellant tank during loading along with the HTP thus lowering the concentration. I have a fuel core from the same batch of PLA/ KMnO_4 infusion and some HTP from the same distillation. I plan to repeat the launch being especially careful with the transfer of HTP to the tank.

Also this month, I added a rib down the length of the port and starboard side panels to add strength and make the Viper more streamlined. Hopefully, this will decrease the air drag and increase its stability. I used two layers of fiberglass. As such, there was no change in mass.

Not much more to report. Most of the month was dedicated to designing, printing, and fiber glassing. Next month, I plan to repeat the last launch attempt being especially careful with the fill tank. Also, I will continue with launching the Viper and redesigning the struts and fuselage to streamline. My kingdom for a wind tunnel.