

Test Part Results

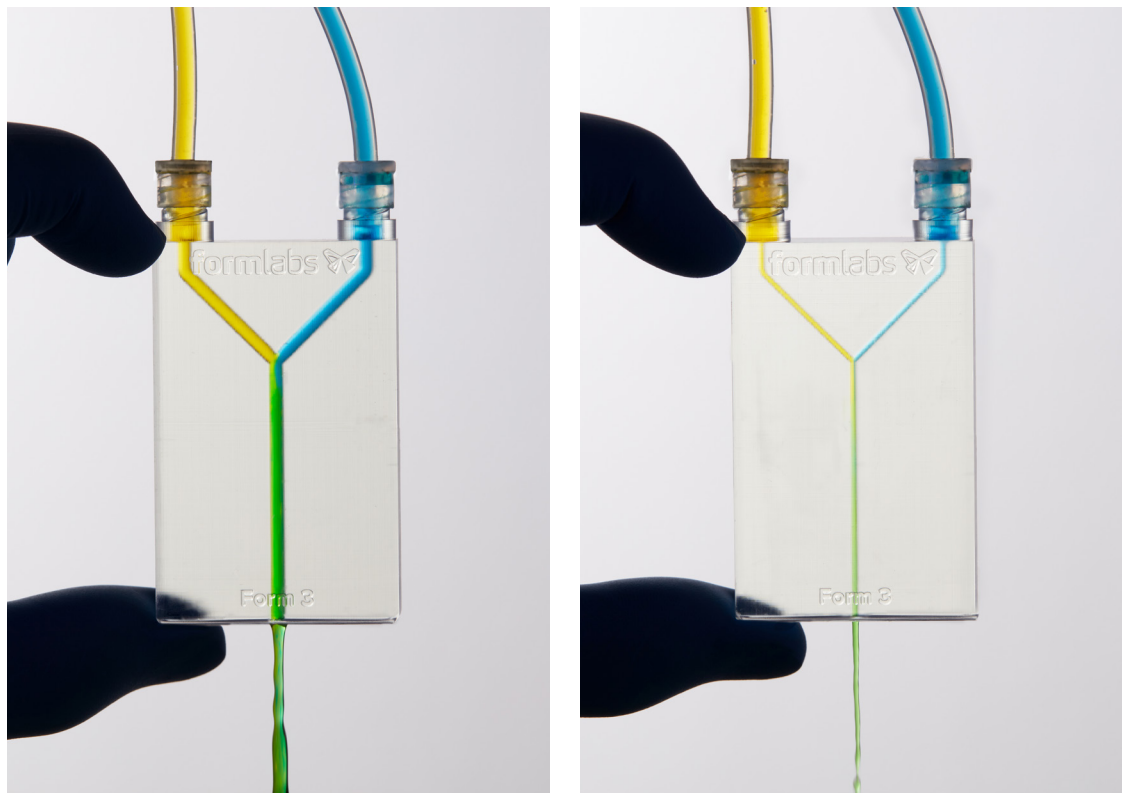
The Formlabs Engineering team designed, printed, and tested two basic millifluidic geometries. Mixers were tested using standard food dye dissolved in tap water. One syringe was filled with yellow, the other blue. Each color was injected into a mixing port. Then the mix was projected onto a white surface where the uniformity of the mix could be observed.

In this experiment, laminar vs. turbulent flow can be observed. In narrow channels, the colored liquids tend to flow side by side, via laminar flow, in the direction of the channel; mixing gradually occurs due to diffusion of the pigment. As the channel cross section increases, eddies and currents running perpendicular to the channel cause chaotic or turbulent mixing.

In our experiments, we found that different mixer geometries influenced the mode of fluid mixing.

Y-Mixers

Both the large and small channel Y-mixer produced excellent results, with both liquids adequately mixing. The food dye allows us to see when, where, and how thoroughly the liquids in the channel mix.



On the left, a Y-Mixer with 2.5mm channels. On the right, a Y-Mixer with 1.1mm channels.