



Dragon Ace™ Maximum Practical Flow Rate Test

OVERVIEW:

Find out the maximum practical flow rate of Dragon Ace™ using real-life print tests. It is well known that there is no strict standard for labeling the maximum flow rate of a hotend, and there is often a big difference between the labeled and actual performance. In this experiment, we try to find out the maximum flow rate that can be achieved in the real world by referring to E3D's method. [Link](#)

Experimental Procedures:

All tests set the layer height to 50% of the nozzle diameter and the extrusion width to 125% of the diameter

For example, for a nozzle with an diameter of 0.6mm, the layer height was set to 0.3mm and the extrusion width to 0.75mm.

The model was selected in single-wall vase mode, and the speed of printing was continuously increased until the prints showed imperfections that could not be ignored (e.g., Figures 2 and 3), and the maximum speed of movement was recorded and found and calculated as the practical print volume flow rate.

Experimental conditions:

Model: E3D Flow Rate Test "Geometry.stl" as in Figure 1 [Link](#)

Slicer: PrusaSlicer 2.6.0

Printer: Modified CR-10 with KLIPPER Firmware

Acceleration 4000mm²/S Pressure Advance and input shapers are turned off

Hot-end setup Dragon Ace™ Figures 4

Dragon Ace™ with MZE (melting zone extender) Figures 5

Nozzle: V6-style Copper Alloy 0.4 0.6 0.8 1.0mm

Filament: Generic PETG PLA ASA

Extruder: Cloned version BMG

Slicer setting:

VASE model

Zero top and bottom layer

Part cooling fan 100%

Figure 1

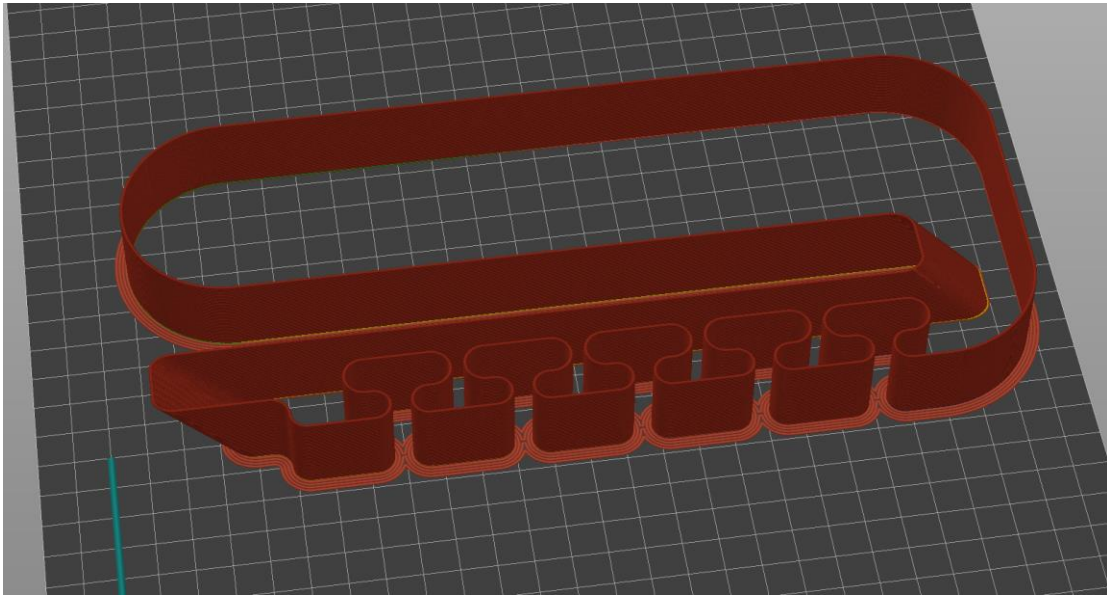


Figure 2

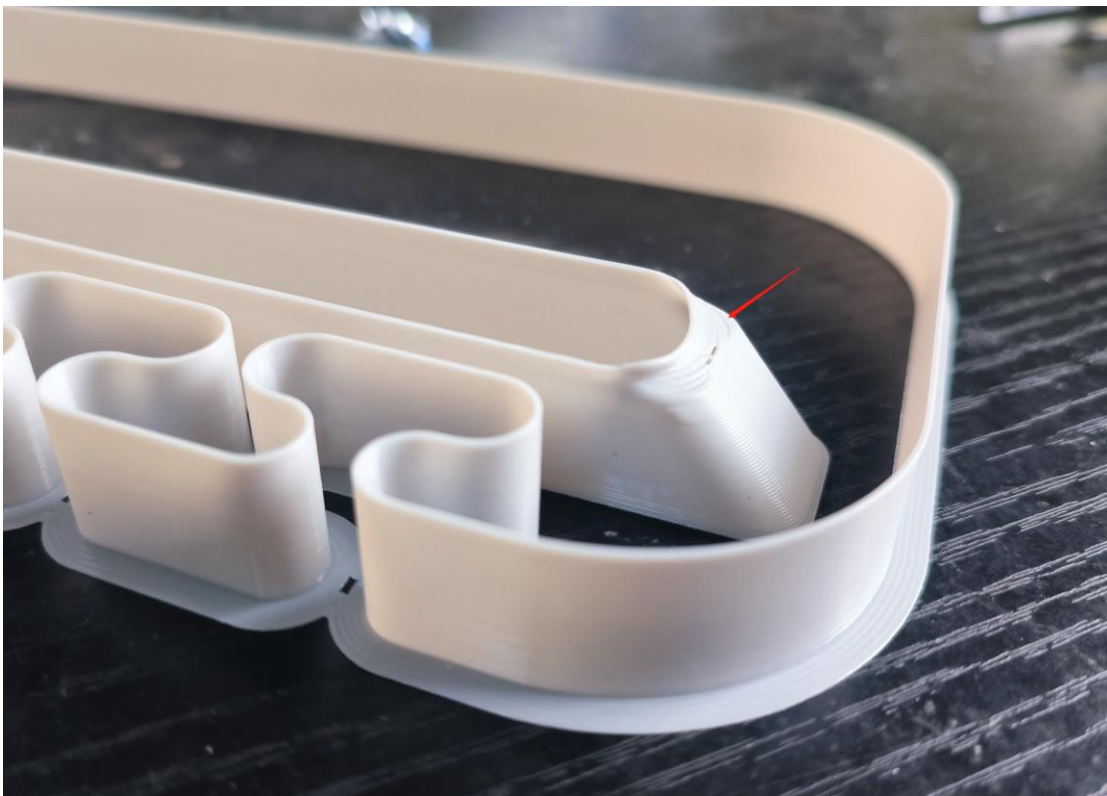


Figure 3

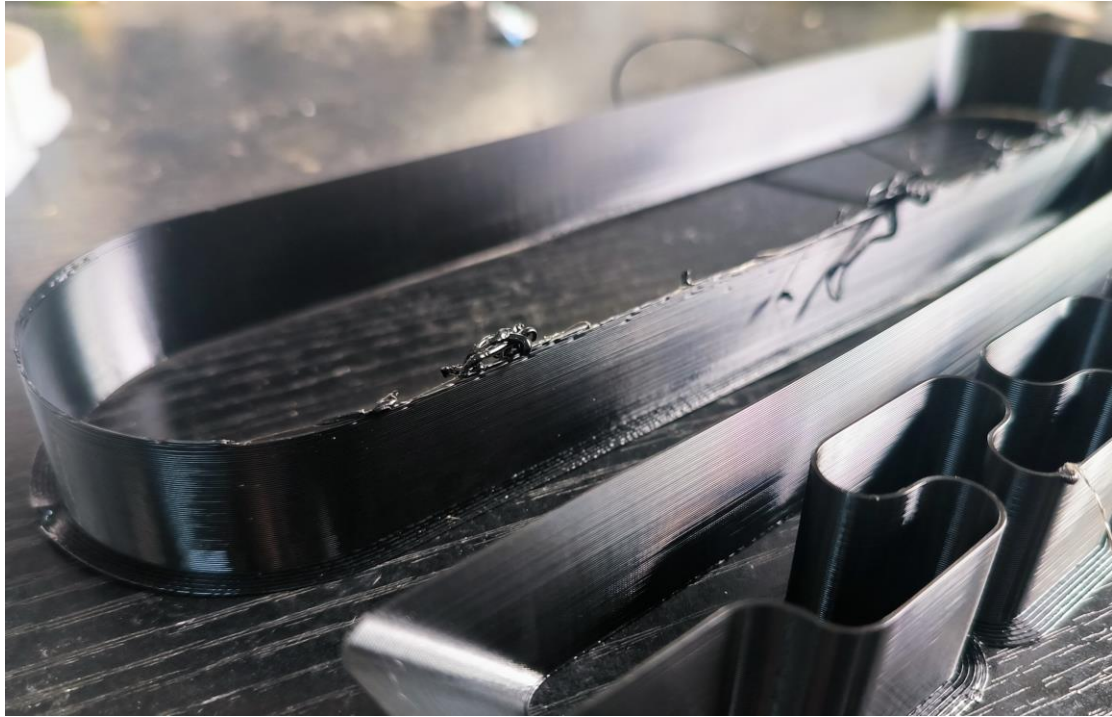


Figure 4



Figure 5





Results:

Table 1

Dragon Ace™ with V6 style nozzle		
Nozzle Diameter	Filament (°C)	Flow Rate (mm ³ /s)
0.4	PLA 220	28
	PETG 250	32
	ASA 265	30
0.6	PLA 220	30
	PETG 250	40
	ASA 265	34
0.8	PLA 220	32
	PETG 250	42
	ASA 265	36

Table 2

Dragon Ace™ plus MZE with V6 style nozzle		
Nozzle Diameter	Filament (°C)	Flow Rate (mm ³ /s)
0.6	PLA 220	36
	PETG 250	54
	ASA 265	50
0.8	PLA 220	42
	PETG 250	62
	ASA 265	46
1.0	PLA 220	50
	PETG 250	70
	ASA 265	49
1.2	PLA 220	58
	PETG 250	74