**Table 10 – Extruded Length at Varying Temp’s**

**Data**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| MELT | DRIVE | DIAMETER | ORIFICE | MATERIAL | Flow Rate | LENGTH |
| V6 | Direct | 1.75 mm | 0.6 mm | ABS | 2200mm^3/s | 50 mm |

|  |  |  |  |
| --- | --- | --- | --- |
| **Temp Celsius** | **Cross Section Diameter (mm)** | **Die Swell Ratios** | **Extruded Length (mm)** |
| **240** | .74 | 1.23 | 63 |
| **250** | .68 | 1.13 | 71 |
| **260** | .65 | 1.08 | 74 |
| **270** | .64 | 1.06 | 97 |

**Notes/Observations:**

* Extruded length increases for higher temperatures and another important observation is that the area with the severe blobbing remains fairly constant in length throughout the different trials. Overall blobbing occurs at the end of each trial suggesting that even 270 degrees isn’t high enough for the given volumetric flow rate so hot end needs a higher temperature so that even if the filament is there for a shorter time it will heat up to 240.
* The initial diameter for the extruded filament for the trials decreases as the temperature increases, and it gets closer and closer to the actual orifice diameter size, this occurs because at the lower temperatures it hasn’t melted completely due to the fast speeds at which at it is travelling through the orifice so its diameter is closer to the diameter of the pulled filament which was 1.75mm, however at higher temperatures it melts properly thus it reaches the orifice diameter.

**Specifications:**

* 1.75mm Octave ABS filament
* V6 nozzle with 0.6mm orifice
* Spring Tension: (~58.70 mm for 3mm) (~58.90 mm for 1.75mm)

**Failure Mode:** Not Applicable

**Image**

