

Relationship Between 3D Printed Materials and Flammability

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Producing aircraft components using additive manufacturing techniques introduces all new variables that must be taken into account when fire testing materials. This work focuses on materials produced using the fused deposition modeling (FDM) process which can produce identically dimensioned parts while varying printing direction, raster angle, layer thickness, printing width, and infill percentage. Therefore, studies are in progress using the vertical Bunsen burner, testing several polymers constructed different combinations of these variables. The testing completed so far has mainly focused on printing direction and infill percentage. Varying those parameters has shown to have a significant impact on flammability. The goal of this testing is to determine the worst case for each variable (if possible) in order to create guidance material to simplify future testing.