



# HIGH THERMAL CONDUCTIVITY 3D PRINTING MATERIALS AND PARTS

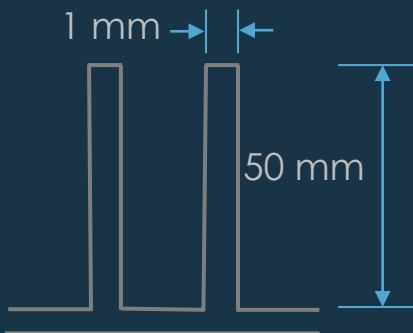
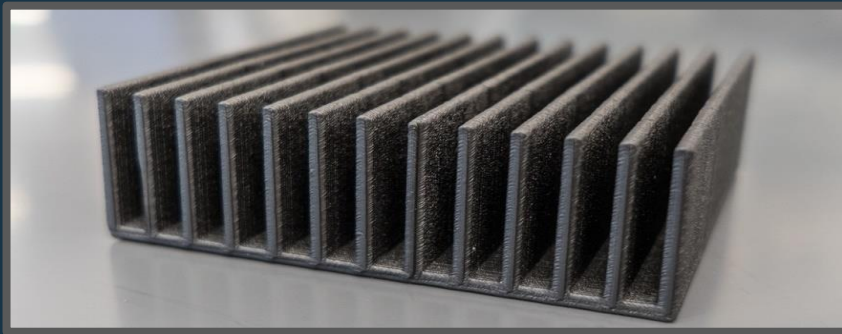
TCPoly has developed high thermal conductivity 3D printing filaments for use on FDM 3D printers.

- Thermal conductivity up to **50X** higher than traditional plastics ( $>10$  W/m-K)
- Electrically insulating available
- Flexible and stiff options available



3D PRINTER FILAMENT

## LIGHT-WEIGHT 3D PRINTED HEAT SINKS



**High aspect  
ratio fins**

Heat sink performance is dominated by surface area. Injection molded features are typically limited to aspect ratios of  $\sim 3$ , resulting in low surface area to volume ratios. 3D printing allows extreme aspect ratios, maximizing surface area and heat transport. This innovation allows for plastic components that match the heat removal of metals, but with reduced weight, manufacturing cost, and more design freedom. In addition, the soft material allows for the elimination of thermal interface materials in many applications.

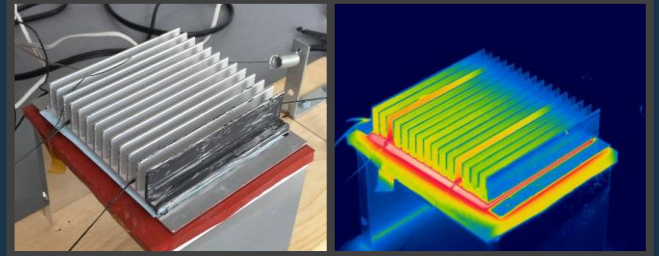
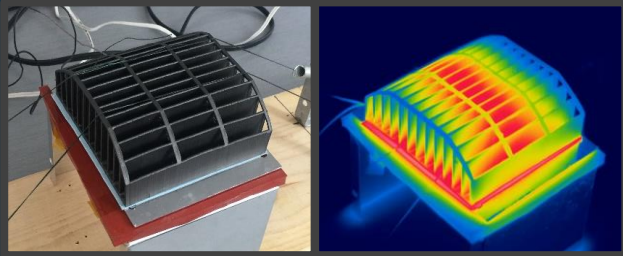


# HIGH PERFORMANCE 3D PRINTED HEAT SINKS

## THERMAL TESTING COMPARISON

TCPoly 3D printed heat sink

Extruded aluminum heat sink



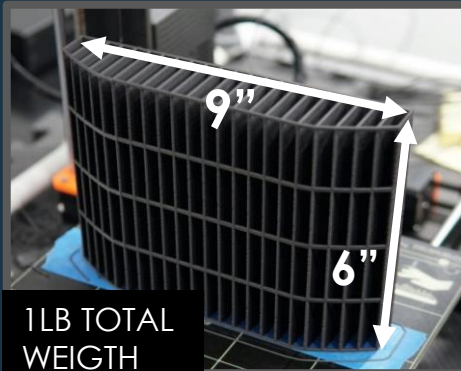
TCPoly Ice9 Flex

Extruded Aluminum

Fin Height	15 – 33 mm	20 mm
Number of Fins	13	13
Base Dimensions	100x100 mm	100x100 mm
Weight	100 grams	180 grams
Weight Normalized Resistance	220 grams-°C/W	378 grams-°C/W
<b>Resistance</b>	<b>2.2 °C/W</b>	<b>2.1 °C/W</b>

*TCPOLY PLASTIC MATCHES ALUMINUM WITH 40% LESS WEIGHT!*

**LARGE FORMAT &  
LIGHTWEIGHT**



**FLEXIBLE**



**ELECTRICALLY  
INSULATING**

