

| Filament type           | Expense     | Printing Temp | Bed Temp          | Difficulty                | Adhesion   | Glue with:  | Suggested uses:   | Notes  |  |
|-------------------------|-------------|---------------|-------------------|---------------------------|--|---|---|--|--|
| <b>PLA</b>              | \$\$-\$\$\$ | 190C-220C     | 60C-80C / no heat | Easy (good for beginners) | Blue Painter's tape<br>Hairspray<br>PEI sheet<br>Purple glue stick | CA Glue<br>2 part epoxy<br>plumbers cement<br>silicone glue   | Prototype parts. High infill structural pieces. Small parts with high detail. | Glass transition temp is usually between 60-70C (140-158F). It will start to soften at 50C (122F). To avoid warping, don't leave it in a car or location that can exceed this temp. When working on it (painting, etc.) don't leave on the pavement or a surface that can absorb heat (like pavement) as that will usually amplify heat and exceed the ambient temp. Lower infill is more susceptible to warping as the heat gets trapped in the open pockets. | <b>Special note: Finding consistant information on transition temp is challenging. I tried to use the best averages, but Have seen as low as 50C. Brand will dictate the end result.</b> |
| <b>PLA+</b>             | \$\$-\$\$\$ | 205C-230C     | 60C-80C / no heat | Easy (good for beginners) | Blue Painter's tape<br>Hairspray<br>PEI sheet<br>Purple glue stick |   | Prototype parts. High infill structural pieces. Small parts with high detail. | Glass transition temp is usually between 60-70C (140-158F). (It is the same as regular PLA) To avoid warping, don't leave it in a car or location that can exceed this temp. When working on it (painting, etc.) don't leave on the pavement or a surface that can absorb heat (like pavement) . This filmanet prints more consistantly than PLA and is easier for post finishing.   |  |
| <b>PETG</b>             | \$\$-\$\$\$ | 220C-245C     | 70C-80C / no heat | Intermediate              | Blue Painter's tape<br>Hairspray<br>Purple glue stick              | CA Glue<br>2part exoxy<br>silicone glue   | Non load bearing parts. Mechanical parts needing flex                         | PETG must be run slower than PLA and retraction must be adjusted to avoid stringing. Little to no shrinkage. High impact resistance. More flex than PLA. Glass transition temp 88C (190.4F). Softening temp is 85C (185F).   | <b>If you use all PETG for your droid you may need to reinforce the legs to ensure they don't flex. The movement will cause problems over time</b>                                       |
| <b>ABS</b>              | \$\$-\$\$   | 210C-250C     | 80C-110C          | Advanced                  | ABS slurry<br>Kapton tape<br>PEI sheet<br>Hairspray                | CA Glue<br>Acetone<br>2part exoxy<br>plumbers cement<br>silicone glue   | Anything  | ABS needs a stable environment to print in so an enclosure is required. It has learning curve, so can take time to get prints right, but ABS is a very durable and strong filament. It sands easily and can be put together is a basic ABS slurry (abs and acetone). It does emit fumes, so the area printed in should have ventilation  |  |
| <b>Nylon</b>            | \$\$-\$\$\$ | 210C-260C     | 60C-80C           | Advanced                  | Glass bed/PVA glue   | 2 part epoxy<br>silicone glue   | Gears<br>High friction parts  | Glass transition temp is 68.2C (154.76F). Nylon absorbs water which can effect the filament on the spool and the final print. Ensure you keep the filament dry and seal the final part to keep it from softening.  |  |
| <b>TPU</b>              | \$\$-\$\$\$ | 210C-230C     | 20C-60C / no heat | Intermediate              | Purple glue stick  | Welding with 3D pen or using soldering iron if parts must be put together<br>2 part epoxy (will leave rigid seam) | Flex parts, tires, belts  | TPU comes is various hardnesses (shore hardness). You can get it in the same consistency as PETG and as soft as a rubberband (NinjaFlex). Shore 00 (Extra soft) 0-50, Shore A (soft-hard) 0-100, Shore D (Medium soft - extra hard) 0-100. Bowden drive not recommended (unless using upgraded extruder mechanism). Run the filament slowly (no more than 30 mm/s). Kept the filament in a dry place. It absorbs moisture.                                     | <b>Temps will vary</b>   |
| <b>Ngen (ColorFabb)</b> | \$\$\$      | 210C-240C     | 60C-70C           | Intermediate              | Purple glue stick<br>IPA acohol and clean bed                      | CA Glue<br>2part exoxy  | Greeblie and high detail parts. Non-impact/low weight bearing parts           | Prints with the ease of PLA and finishes like ABS. More brittle than PLA. Not good for really large parts or solid parts. Glass transition temperuate is 85C (185F). Cooling fan is not needed for nGen except for bridging. Use 100% for first couple layers of a bridge to avoid heavy sagging.  |  |