PDS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attributes** | **Type** | **Metric/Requirement** | **Units** | **Note** |
| Convenient | Objective | N/A | N/A | Compact and light weight  |
| Safe | Objective | N/A | N/A | No sharp edge and toxic waste |
| Durable/Reliable | Objective | Years/Hours | Years/Hours | Life span / Operating time |
| multiple extruders | Objective | Number of extruders | Extruder |  |
| Fast operating speed | Objective | 100 | mm/s |  |
| Build large object | Objective | Volume | cm^3  |  |
|  |  |  |  |  |
| Four Extruders | Requirement | Colors/Name of materials |  |  |
| Run continuously | Requirement | 24 hours | Hours |  |
| Remove hazardous waste | Requirement | N/A | N/A |  |
| Operating temperature | Requirement | 15-32 | Celsius |  |
| Filament Diameter | Requirement | 3.00 | mm |  |
| Sturdy Frame | Requirement |  | Yield Strength (KPa) |  |
| Lightweight Frame | Requirement |  | Density (g/mm^3) |  |
|  |  |  |  |  |
| Extruder speed: 100 mm/s | Constrain  | Distance | mm/s |  |
| Operating times: 24 hrs. | Constrain  | Hours | Hours |  |
| Large object: approximately 2500 cm^3  | Constrain  | Volume | cm^3  |  |
| Resolution: 100 microns=0.1 mm | Constrain | 0.1 | mm |  |
|  |  |  |  |  |
| Switches | Function | N/A | N/A |  |
| Container | Function | Extruders | Number of extruders |  |
| Liquefy materials | Function | N/A | N/A | Melt |
| Deposit materials | Function | Volume flow rate | mm^3/s |  |
| Position materials | Function |  |  | Theta, R, Z coordinate |
| Data receiver  | Function | N/A | N/A |  |
| Convert power from AC to DC | Function | 12 | Volt |  |
| Store Data | Function | N/A | N/A | CAD files in and G-codes out |
| Structure | Function | N/A | N/A |  |
| Waste remover | Function | N/A | N/A |  |
| Table | Function | 320 | Diameter (mm) |  |
| Rollers | Function | N/A | N/A |  |
| Heated Bed | Function | 100 | Degrees Celcius |  |
| Extruder Cooling Fan | Function | N/A | Volumetric Flow (CFM) |  |
| Limit Switches | Function | N/A | N/A |  |
| Cogs | Function | 2 | Pitch (mm) |  |
| Idlers | Function | N/A | N/A |  |