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| **Site / Area:** | |  | | **Date of assessment:** |  | **Risk Assessment #:** | **021RA** |
| **Completed by (name):** | |  | | **Signature:** |  | | |
| **In Consultation with** | |  | | **Signature:** |  | | |
| **Identify / describe activity, equipment, area or event you are assessing:** | | | | | **3D PRINTER**  **(Polyactic Acid – PLA; Acrylonitrile Butadiene Styrene – ABS)** | | |
| **In conjunction with this risk assessment, training / education and development of a relevant SOP may be required.** | | | | | | | |
| **Step 1:** **Identify the hazard/s:**What do you believe are the hazards?(Refer Risk Assessment Guideline (015G)) | | **Step 2: Assess the risks:**  What do you believe are the risks?  (Refer *Risk Assessment Guideline (015G))* | | **Step 3: Reducing the risk:** What do you believe can be done to reduce the risk? (Refer *Risk Assessment Guideline (015G))* | | |
| **What could cause harm?** | | **What could go wrong?** | | **Controls** | | |
| **Extreme Temperatures**   * High temperatures | | * Contact with hot extrusion head or finished model could cause burns * Fire | | * Enclosed system * Wear oven gloves when removing parts from the heat treatment oven * Keep paper and combustibles away from the 3D printer * Never leave 3D printer unattended while in use (for long hour printing, check intermittently) * Fire extinguisher available (CO2 or dry powder) | | |
| **Hazardous Chemicals**   * Toxic emissions * Fumes and particles * Ultrafine particle (UFP) * Volatile Organic Compounds (VOC) | | * Exposure to uncured and partially cured 3D printer material fumes can result in health effects on the respiratory system | | * PLA filaments preferred over ABS. * Ventilation / extraction system installed * Carbon filters / HEPA filters in use * Used in well ventilated room where windows can be open & or there is good air flow * Safety Data Sheets (SDS’s) available | | |
| **Electricity**   * Frayed cords * Faulty appliances * Overheating equipment * Cutting cords * Contact with exposed wires | | * Burns * Fire * Explosion * Electrocution * Electric shock | | * Printer is tested & tagged * RCD installed at main switchboard and checked regularly * Repairs & modifications by competent person only | | |
| **Machinery & Equipment**   * Mechanical hazards (stepper motors, pulleys, threaded rods, carriages and small fans) | | * Entrapment / entanglement * Lacerations * Cuts * Bruising | | * Ensure 3D printer is covered with a protective hood / cabinet, fitted with an interlocking switch to prevent it from being open / opened whilst in operation * Hair, loose clothing is secured | | |
| **Airborne Contaminants**   * Post Printing – dust (UFP) | | * Respiratory problems * Foreign body in eye | | * Avoid sanding; use scraping tools to clean up student models. * Eye protection to be worn * Work done in a well ventilated area. | | |
| **Other**   * Tools (used for cleaning e.g. metal scraper / knife blade to clean build plate) | | * Cuts * Lacerations | | * Cleaning to be carried out by a competent person. * **Students are NOT permitted to clean the 3D printers** | | |
| **Other** | |  | |  | | |

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| **Authorised by:** |  | **Signature:** |  | **Date:** |  |

**Review hazard/risk assessment if task or circumstances change and at intervals appropriate to the level of risk (minimum 5 years).**

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| **Step 4: Monitor & review:**  (Refer to hazard sheet)  **Please tick Yes or No** | | | | | | | | |
| **Were the controls effective?** | | | | **Were there any unforeseen hazards/ incidents?** | | | | **New controls** |
| **Yes** |  | **No** |  | **Yes** |  | **No** |  |
| **DETAILS** | | | | **DETAILS** | | | | **DETAILS** |
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| **Name:** |  | **Signature:** |  | **Date:** |  |