# Job Safety Analysis

Safety Information for the University of California, Berkeley

## Department of Mechanical Engineering

**Operating a Markforged X7 3D Printer**

<table>
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<tr>
<th>Task</th>
<th>Hazards</th>
<th>Controls</th>
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<tbody>
<tr>
<td>1. Assess work area; is it clear of obstructions and slip/trip/fall hazards?</td>
<td>• Slip, trip, or fall</td>
<td>• Clear work area of any obstructions or slip/trip/fall hazards</td>
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| 2. Operation of equipment. Reaching into the 3D printer to remove parts and perform maintenance | • Components within equipment enclosure can be hot, may cause burns to skin  
• Machine will emit thermoplastic odors when in operation  
• Pinch hazards for hands/fingers | • Wear leather gloves if necessary when reaching into printer enclosure. Always allow extruder nozzles to cool before opening and/or reaching into the enclosure. Never reach inside the machine while in operation.  
• Ensure machine is operating in a well ventilated area. Consult with Markforged or an authorized dealer for service. Do not use materials not approved by Markforged for use with the X7 machine.  
• Keep hands and fingers clear of pinch points; particularly the belts and pulleys of the machine. Never reach inside the machine while in operation. |
| 4. Modifying parts from X7 machine post-printing | • Base material used for printing (onyx) is composed of nylon and carbon fiber. The particulate emitted when modifying parts from the printer is carcinogenic and extremely hazardous to the user. | • Never modify parts that have already been printed. This includes, but is not limited to:  
  o Sanding/filing  
  o Milling/turning/drilling  
  o Cutting  
  Re-CAD and re-print always! |

**Required Training:**
Student Shop Safety Training Program
Must complete additional training under guidance of a qualified Student Shop Laboratory Mechanic
Read and comply with Markforged X7 User Manual prior to operation. Located in staff break room or the operations manual is available on-line at [https://support.markforged.com/portal/s/industrial-series](https://support.markforged.com/portal/s/industrial-series)

**Required Personal Protective Equipment (PPE):**
Leather gloves, safety glasses

**Contributors:**
Markforged Materials Datasheet, Markforged X7 User Manual
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(EH&S will insert number here, if applicable)

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