Published Safe Work Procedure : SWP-0009814

Safe Work Procedure Details

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Published Version
3

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Title
Use of Resin (e.g. SLA) 3D Printers in the Makerspace Network

Detailed Description
Resin 3D printers use UV light to selectively cure polymer resin, layer by layer to build up a highly detailed 3-dimensional physical part.

The primary risk associated with these machines centres around appropriate handling of resins. When uncured, most (but not all) resins present skin contact risk and respiratory irritation from fumes. UV light exposure risk to the user is also present, but is controlled through use of a filtered cover and interlocks, which deactivate this light if the cover is lifted.

This SWP is intended to cover all resin 3D printing technologies (SLA, DLP, MSLA, etc.) and brands (Formlabs, Prusa, Elegoo, etc.) used in the Makerspace Network. This SWP outlines (but does not replace) completing the Resin printing badge on UNSW Making.

Faculty/Division
UNSW\Makerspaces

Equipment Required
-

PPE Required

Name	Type of PPE
Disposable Nitrile Gloves	Hand Protection/Gloves
Fully Enclosed Footwear	Foot Protection

Other Equipment (if not in list)
-

Other PPE (if not in list)
-

Hazards

Related Risk Management Forms

RMF Number	Title	Faculty/Division	Expiry Date	Overall Risk Rating based on Additional and Deleted Controls	Related Hazard Register
RMF-0016235	Use of Resin (e.g. SLA) 3D Printers in the Makerspace Network	Makerspaces	12/03/2029	06 - Medium	Chemical: Corrosion/Irritation - Skin; Category 2 - GHS07; Chemical: Sensitisers - Skin; Category 1, 1A, 1B - GHS07 [ADG Class 9 (Miscellaneous Dangerous Substance)]; Plant & Equipment: General Electrical Equipment; Chemical: Flammables - Liquids; Category 2 - GHS02 [ADG Class 3 Flammable Liquid; PG II]; Plant & Equipment: Mist (Vapours or Fumes). ; Plant & Equipment: Non-Ionizing Radiation - High Intensity Light (Laser, Ultraviolet).

Hazard Categories

-

Emergency Procedures

Emergency Procedures

Emergency

Interrupt main power to tools and equipment
In an emergency call 000 and then call:
- 9385 6666 (UNSW Security - Sydney), or
- 5114 4666 (UNSW Security - Canberra).

First Aid kits are available in all Makerspaces
Use fire extinguisher and eyewash/shower stations where available and if appropriate

Evacuation

Act on instructions from Wardens
Calmly leave the building by the nearest emergency exit
DO NOT take lifts
Proceed to the nearest assembly area:
- Kensington Campus
  - Design Futures Lab (Squarehouse E4) - the assembly point is on the main concourse known as University Mall
  - ENG Elec Makerspace (EET Building G17) - the assembly point is on the Quadrangle Lawn
  - ENG James A. Kirby Makerspace (WIllis Annexe J18) - the assembly point is on the Physics Lawn
  - MCIC Makerspace (Hilmer Building E10) - the assembly point is on the lawn area on University Mall, opposite the Law Building F8
- Paddington Campus
  - Making Centre - the assembly point is Albion Avenue
- UNSW Canberra @ the Australian Defence Force Academy
  - ProtoLAB (SET Building 17) - the assembly point is at the top of carpark 90
- UNSW Canberra City Campus
  - ProtoHUB (B04 / old CIT Reid Block A) - the assembly point is the short term parking lot at Gate 3

DO NOT re-enter the building until you are told it is safe to do so

Clean up and Waste Disposal Instructions

Wipe down any surfaces that have drops of resin or have gotten sticky with IPA and patient wipes/paper towel.

NEVER POUR UNCURED RESIN DOWN THE SINK OR IN GENERAL WASTE:
Any uncured resin must be disposed of as chemical waste - clean up and remove any resin spills with a paper towel, and discard any uncured failed prints or supports in the chemical waste bins provided.

Cured resin can be treated as general waste - good practice is to cure as much as possible before disposal.

Required Competency Levels

Read Document?

Yes

Training Required?

Yes

Details of Training Requirements

All users must complete the Resin 3D Printing Badge - this and all records of completed badges can be found at making.unsw.edu.au.

Licence/Certificate Sighted?

No

Details of Licence/Certificate Requirements

-

Knowledge Test?

No

Details of Knowledge Test Requirements

-

Other Competencies?

No

Details of Other Competency Requirements

-

SWP Steps

Step

SWP Step

Step Number

1

Step Summary

Before Using the Resin 3D Printers

Detailed Description

• Wear disposable nitrile gloves before handling equipment or consumables.
• Check the machine for any visible signs of damage or resin spills.
• Remove and post-process any existing prints in the machine.

Picture of task to be performed

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SWP Step

Step Number

2

Step Summary

When Using the Resin 3D Printers

Detailed Description

• Load the appropriate resin tank and material and close the lid.
• Compile print file using the appropriate slicer (i.e. PreForm) and start print.
• Ensure any spills are cleaned with IPA and a towel, and that any previous resin tanks and cartridges are stowed properly.

Picture of task to be performed

-

SWP Step

Step Number

3

Step Summary

After using the Resin 3D Printers and Post Processing

Detailed Description

• Remove the finished print and place into appropriate washing solution (IPA, TPM, Formlabs Washing Solution or similar), and start cycle using appropriate setting.
• Once wash is complete, rinse any internal channels with an wash-filled syringe.
• Some parts may require blow-drying with compressed air.
• Place washed part in curing machine and start cycle using appropriate setting.
• Retrieve completed part and remove any support material.
• Wipe down any surfaces that have drops of resin or have gotten sticky with IPA and patient wipes/paper towel.

Picture of task to be performed

-

SWP Step

Step Number

4

Step Summary

General clean up and resetting

Detailed Description

Wipe down any surfaces that have drops of resin or have gotten sticky with IPA and patient wipes/paper towel.

NEVER POUR UNCURED RESIN DOWN THE SINK OR IN GENERAL WASTE:
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Cured resin can be treated as general waste - good practice is to cure as much as possible before disposal.

Picture of task to be performed

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Supporting Documentation

Supporting Documentation

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