RISK ASSESSMENT FORM

Use this form to assist you to complete risk assessments for hazardous activities and processes[1]. Any serious or ongoing hazards should be reported via RiskWare to ensure that appropriate corrective actions are tracked and completed.

Faculty/School:	Faculty of Science — School of Physics (SAIL Labs)	**Initial Issue Date: 2020-06-17**
		Next Review Date: 2027-07-16
Risk Assessment Reference Number:	RA-A28-SAIL-116C-formlabs-form3	
Risk Assessment Name:	Operation Maintenance Of Formlabs Form 3 SLA 3D Printer	
Prepared by:	Chris Betters, Justin Digweed	
Responsible supervisor/s:	Chris Betters, Sergio Leon-Saval	

Identify the activity and the location	**Identify who may be at risk** This might include fellow workers, students, visitors, contractors, patients, research participants and the public
Activity or process: The Form 3 is a commercial, precision tool intended for use in the additive manufacture of end-user supplied designs from photopolymer resin. The final performance characteristics of cured photopolymer resin may vary according to compliance with the instructions for use, application, operating conditions, material combined with, end use, or other factors. This RA/SWP covers operation of the SAIL Form 3, including: - Print preparation (file preparation in PreForm, resin cartridge and tank installation) - Printing - Finishing - washing printed parts in isopropyl alcohol (IPA), drying and curing - Cleanup and waste disposal - Routine user maintenance and inspection TODO: The source document is titled Formlabs 3 but the operating and maintenance text throughout refers to the Form 3B (the biocompatible variant). Confirm which model is installed in A28-116C and make the model designation consistent before approval.	**Persons at risk**: All staff and students of SAIL that use the Form 3, Contractors and others in the vicinity
Location: Room A28-116C, Physics Building A28	**Risk assessment team** (who was consulted?)**:** Physics WHS Committee, SAIL Staff, RPF Staff

[1] This tool should also be used to assess the risk associated with clinical activities. Information gathered will be used to guide the classification of clinics in accordance with the University's Health Clinics and Clinical Services Policy and Procedures 2020.

List of Legislation, Code of Practice, Australian Standards, Guidance Materials used to determine control measures

Work Health and Safety Act 2011 (NSW)
Work Health and Safety Regulation 2017 (NSW)
Formlabs Form 3 Quick Start Guide (support.formlabs.com/s/article/Quick-Start-Guide-Form3)
Formlabs Form 3 Manual (media.formlabs.com/m/5a3f3cadc639b857/original/-ENUS-Form-3-Manual.pdf)
Safety Data Sheet - Formlabs Clear V4.1 Resin (media.formlabs.com/m/6552f8debd66e922/original/-ENAU-Safety-Data-Sheet-Clear-V4-1-Resin.pdf)
Safety Data Sheet - Formlabs Black V4.1 Resin (media.formlabs.com/m/75811facbde95dad/original/-ENAU-Safety-Data-Sheet-Black-V4-1-Resin.pdf)
Formlabs resin technical specifications and data sheets (formlabs.com/3d-printers/resin/tech-specs/#data-sheets)
SAIL-RA-SWP-02 - Use, storage and disposal of flammable liquids
ChemAlert report - isopropyl alcohol (chemalert.rmt.com.au/syduni/rest/reports/available-report/8447fba0-f957-4eab-a7c5-014e9e5c51b2)
ChemSupply isopropyl alcohol SDS (shop.chemsupply.com.au/documents/PA0131CH5R.pdf)
CHEMICALS INVOLVED:
- UV curable resins - MUST NOT come into contact with the skin. Respect Formlabs resin like any household chemical. Follow standard chemical safety procedures and Formlabs resin handling instructions. Formlabs resin is NOT approved for use with food, drink, or medical applications on the human body. Refer to the SDS for each specific resin for more detail.
- IPA is used in the cleaning process. Formlabs does not manufacture IPA - consult the chemical manufacturer or supplier for detailed safety information and carefully follow the safety instructions provided with the IPA purchased. IPA is HIGHLY FLAMMABLE, even explosive, and MUST be kept away from heat, fire, or sparks. Any containers holding IPA MUST be kept closed or covered when not in use. Wear protective gloves and ensure good ventilation when working with IPA.

Risk Assessment Methodology

Assessing the risk is a brainstorming exercise, which is most effectively carried out in a team environment with the people required to complete the activity or process. Most activities or processes are broken down into a variety of separate tasks. For each task, consider the hazards, the potential harm or negative outcomes and the conditions required for those negative outcomes to occur.

Whenever assessing the health and safety risks associated with a task, always consider the following primary risk factors.

- The **physical activities** required to complete the task e.g. repetitive movement, high force, physical exertion, awkward posture
- The **work environment** e.g. lighting, layout, traffic flow, ventilation, access to support (isolation)
- The **nature of the hazard itself** e.g. working with chemicals, microorganisms, radiation, use of plant and equipment, sharps, working with potentially aggressive clients, patients or research participants
- The **people involved**, e.g. level of training, supervision, experience, health, age, physical capacity.

The information gathered from the **risk assessment** process must be used to develop a **Safe Work Procedure (SWP)** or **clinical protocol** for the activity.

Task or scenario	**Hazard/s**	**Associated harm,** e.g. what could go wrong?	**Existing Risk Controls**	**Current risk rating** Use the Risk Matrix	**Any additional controls are required?**[2]	**Residual risk rating** Use the Risk Matrix
General usage	Hot surfaces within the system cabinet	- Burns to hands or arms from contact with heated surfaces inside the cabinet TODO: The Associated harm column was blank in the source document for every risk row. The harm described here is inferred from the hazard and MUST be confirmed by the assessment team.	Engineering: Hot surfaces are present within the system cabinet. NEVER reach inside the unit while it is in operation or in its cooling down phase. PPE: Protective gloves and safety glasses MUST be worn when working with the Form 3 printer.	Low	None	Low
General usage	Moving parts	- Crushing, pinching or entanglement injuries to fingers and hands from the build platform, lead screws and light processing unit TODO: Harm inferred - the source document left this column blank. Confirm with the assessment team.	Engineering: NEVER reach inside the unit when the system is in operation. Administrative: There is an interlock system in place.	Medium	None	Low
Unloading part, swapping materials	Chemical contact with uncured Formlabs photopolymer resin	- Skin irritation and sensitisation from contact with uncured resin - Eye irritation from splashes TODO: Harm inferred - the source document left this column blank. Confirm against	Administrative: Personnel are made aware through signage that gloves MUST be worn at all times	Low	None	Low

[2] Always consider whether it is possible to eliminate the hazard or hazardous task altogether. If this is not possible, refer to the hierarchy of risk controls.

		the SDS for each resin in use and with the assessment team.	whilst using any Formlabs process. Refer to the SDS for the resin in use before handling. PPE: Safety glasses and gloves MUST be worn at all times during this process.			
Cleaning parts	Chemical contact with isopropyl alcohol (IPA) and uncured resin residue	- Skin defatting, drying and irritation from IPA contact - Eye irritation from splashes - Inhalation of IPA vapour if used outside the fume hood TODO: Harm inferred - the source document left this column blank. Confirm against the IPA SDS and with the assessment team.	Engineering: The cleaning process involves washing printed parts in a bath of isopropyl alcohol (IPA). This MUST only be done inside a fume hood. Administrative: The cleaning process is automated but MUST NOT be performed outside of the fume cabinet. Keep IPA containers closed or covered when not in use. PPE: Safety glasses and gloves MUST be worn at all times during this process.	Low	None	Low

Implementation of Additional Risk Controls				
Additional controls needed	**Resources required**	**Responsible person**	**Date of implementation**	**RiskWare Reference**
Write the Safe Work Procedure (SWP) or clinical protocol for the relevant activity	Time (approx 1 hour)	Supervisor	2026-07-16	N/A
Education and training for workers to complete process in accordance with SWP	Time – supervisor and workers	Supervisor	2026-07-16	N/A
TODO: The source document identifies IPA as highly flammable, even explosive in its reference notes, but contains NO risk row assessing fire or ignition of IPA vapour. Add a fire/flammability risk row (task, hazard, harm, controls, ratings) or record why SAIL-RA-SWP-02 (flammable liquids) is considered to cover it in full. Ratings for any new row MUST be set by the assessment team.	Assessment team time; SAIL-RA-SWP-02; IPA SDS	Chris Betters	Before approval	N/A
TODO: The source document has an empty Clean up and waste disposal requirements section. The cleanup and waste content in this document is derived from the surrounding text and MUST be reviewed and completed - confirm the resin waste stream, IPA waste stream, and disposal route for contaminated gloves, wipes and resin tanks.	Process owner time; USyd chemical waste guidance	Chris Betters	Before approval	N/A
TODO: Confirm the printer model (Form 3 vs Form 3B) and reconcile the document title, operating	Equipment engineer time	Chris Betters	Before approval	N/A

steps and maintenance schedule to the correct model.				
TODO: The source document's risk ratings carried likelihood/consequence detail (Unlikely, L2, Rare, L2, Unlikely, L3) that the current template does not have a field for. Confirm the four-level ratings recorded here still reflect the assessment team's intent.	Assessment team time; University Risk Matrix	Chris Betters	Before approval	N/A

List emergency controls

These might include how to deal with fires, spills, emergency shutdown of equipment, exposure to hazardous materials and adverse reactions or the deteriorating condition of a patients/research participants in our care.

An emergency stop button is located on the wall in the lab.

In the event of a power outage, leave the building immediately and assemble on the sports oval on Physics Road. If it occurs after hours, call one of the listed Emergency Contacts.

If the evacuation alarm sounds, leave the room immediately and assemble on the sports oval on Physics Road.

For resin or IPA contact with skin or eyes, refer to the SDS for the chemical and apply the first aid measures it specifies. Seek medical attention if irritation persists.

Report all incidents, injuries and near misses via RiskWare.

Emergency services: 000. USyd Security: 9351 3333.

REVIEW

Scheduled review date	**1 year**	**2 years**	**3 years**
Are control measures in place (YES/NO)			
Are controls eliminating or minimizing the risk (YES/NO)			
Are there any new problems with the risk (YES/NO)			
Reviewed by:			
Actual Review date:			

Risk Matrix.

			Potential Consequences				
			Class 3	Class 2	Class 2	Class 1b/1c	Class 1a
			Minor injuries or physical discomfort. Short-term psychological impact (isolated or one-off event).	Injury or illness requiring medical treatment and/or short-term impairment (less than 2 weeks). Psychological impact requiring support.	Injury or illness requiring hospital admission and/or temporary impairment (less than 6 months). Psychological impact requiring medical treatment.	Injury or illness (physical or psychological) resulting in long-term or permanent impairment (more than 6 months). Injury or illness resulting in temporary impairment to multiple people.	One or more fatalities. Injury or illness resulting in long-term or permanent impairment to multiple people.
			Insignificant	**Minor**	**Moderate**	**Major**	**Severe**
Likelihood	Expected to occur regularly under normal circumstances	**Almost Certain**	**Medium**	**High**	**Very High**	**Very High**	**Very High**
	Expected to occur at some time	**Likely**	**Low**	**Medium**	**High**	**Very High**	**Very High**
	May occur at some time	**Possible**	**Low**	**Medium**	**Medium**	**High**	**High**
	Not likely to occur in normal circumstances	**Unlikely**	**Low**	**Low**	**Medium**	**Medium**	**High**
	Could happen, but probably never will	**Rare**	**Low**	**Low**	**Low**	**Medium**	**Medium**