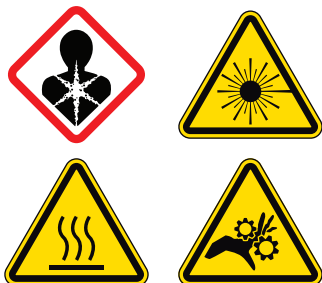
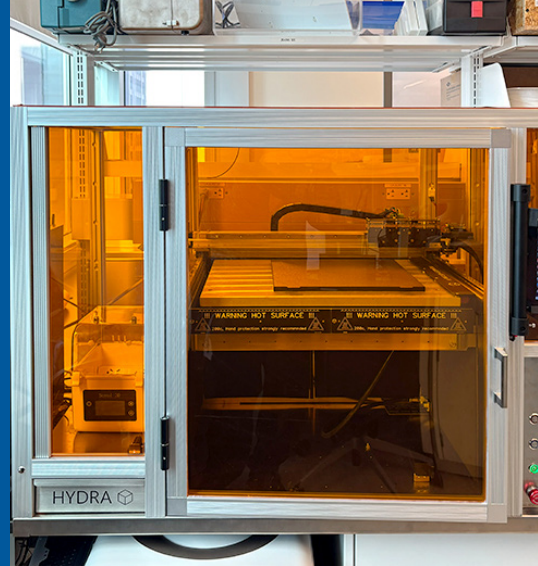


# Hyrel Hydra 21 3D Printing Safety Tips

The Hyrel Hydra 21 is a multi-material 3D printer that is capable of extruding thermoplastics, pastes, ceramics and more. It can also be fitted with attachments for laser etching/cutting and welding.



## Key hazards

- ♦ **Chemicals:** Review Safety Data Sheets (SDSs) for each material to identify hazards and only use printer-compatible materials.
- ♦ **Laser:** Class 4 lasers can cause skin and eye damage on contact.
- ♦ **Heat:** Allow components to cool before handling.
- ♦ **Moving parts:** Risk of entanglement or pinching.

## General safety tips



- ♦ Ensure printer heads are installed and used only by trained personnel.
- ♦ Supervise prints at all times to prevent accidents and clean material residues after each print to prevent unexpected reactions.
- ♦ Never eat, drink, or store food near work areas.
- ♦ Secure loose clothing, jewellery and long hair to avoid tangle injuries.
- ♦ Have an ABC fire extinguisher nearby for trained users' quick use.
- ♦ Review the manufacturer's guidelines for printer-specific hazards.
- ♦ Follow manufacturer-recommended temperatures to process filaments.



## Laser safety

- ♦ **Do not interfere with interlocks or sensors;** ensure the laser is only able to operate when fully enclosed and unable to escape the unit.



## PPE and safe handling

- ♦ **Nitrile gloves** to protect skin when handling materials.
- ♦ **Safety glasses** that are appropriate for the task being performed (e.g. laser safety glasses when using the laser attachment).
- ♦ **Face shield** to prevent splash injuries when preparing and transferring chemicals.
- ♦ **N95 mask or higher respirator with proper filter** (e.g. P100) when working with pastes or clays. See the Respiratory Protection and Fit-Testing website at [torontomu.ca/respiratory-protection](http://torontomu.ca/respiratory-protection).



## Electrical safety

- Use grounded outlets to reduce risk of electrical shock.
- Do not overload power strips to avoid electrical fires.
- Follow lock out/tag out procedures to ensure safe maintenance.



## Material safety, storage and exposure management

The Hyrel Hydra printers support a wide range of materials: Thermoplastics, pastes and clays, and silicones and elastomers.

**Always follow the specific manufacturer safety instructions provided in the associated SDS for the use, storage, handling and ventilation requirements of the different printer materials.**



## Waste disposal

- Ensure waste containers are labelled and dispose of chemical and solvents as per hazardous waste guidelines on the Chemical Safety website at [torontomu.ca/chemical-safety](http://torontomu.ca/chemical-safety).

## Emergency situations, exposure and spills

**In the case of an emergency, dial 911.**

Contact TMU Toronto Campus Security at 416-979-5040 (ext. 555040 from an internal phone); or TMU Brampton Campus Security at 416-598-5950 (ext. 555950 from an internal phone).

Report injuries, near misses and hazards to the TMU Emergencies and Reporting website at [torontomu.ca/emergencies-reporting](http://torontomu.ca/emergencies-reporting).

**Refer to the Section 4 of the SDS for the material used for First Aid Procedures.**

**Spills:** Follow emergency response procedures in TMU's Chemical Safety Manual available online at [torontomu.ca/chemical-safety](http://torontomu.ca/chemical-safety).

