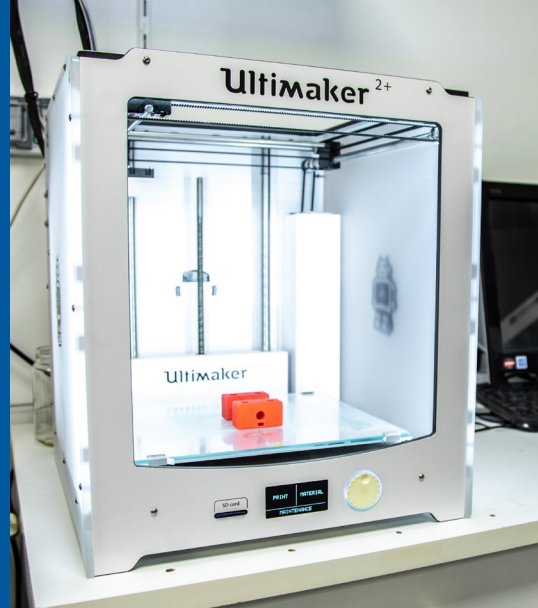


Fused Deposition Modelling (FDM) 3D Printing Safety Tips

FDM printing heats thermoplastic filaments such as Polylactic Acid (PLA), Acrylonitrile Butadiene Styrene (ABS), Nylon or Polyethylene Terephthalate Glycol (PETG), and deposits them layer by layer.



Key hazards

- **Heat:** Hot ends and heated beds; use an enclosure when available and avoid contact with hot components.
- **Moving parts:** Risk of pinching or entanglement.
- **Emissions:** Volatile organic compounds (VOCs) and nanoparticles from filaments.



General safety tips

- Supervise prints at all times to prevent accidents.
- Never eat, drink, or store food near work areas.
- Secure loose clothing, jewellery and long hair to avoid tangle injuries.
- Review manufacturers' guides for printer-specific hazards.
- Follow manufacturer-recommended temperatures to process filaments.



Heat and fire safety

- **Avoid contact with hot components** to prevent burns; use an enclosure when available.
- **Keep flammable materials at least six feet away** and ensure the printer rests on a non-flammable surface.
- **Have an ABC fire extinguisher nearby** for trained users' quick use.



PPE and safe handling

- **Heat-resistant gloves** to protect hands near hot ends/heated beds.
- **Safety glasses** to shield eyes from splashes and debris.
- **Face shield** during chemical transfer to prevent splash injuries.
- **Cut-resistant gloves** to prevent cuts when handling sharp parts.
- **Respirator (N95 or higher)** to protect against inhalation hazards during sanding. See the Respiratory Protection and Fit-Testing web page at torontomu.ca/respiratory-protection.



Ventilation and air quality

- Always operate in well-ventilated areas.
- Use local exhaust for ABS, Nylon, or high-VOC filaments.



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.



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.
- For non-recyclable filaments, sort by type and use specialized disposal services where possible.

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.

Spills: Follow emergency response procedures in TMU's Chemical Safety Manual available online at torontomu.ca/chemical-safety.

