

Working safely at the 3D printer

The key protective measures for FDM and resin printing – compact and without the legal maze.

3D printing is **not a harmless office device**. FDM printing produces fine particles and fumes; resin printing adds skin-irritating substances and flammable cleaning alcohol (IPA). In Austria a **workplace risk assessment is legally required** (§ 4 ASchG). This page summarizes the practice – the legal detail is in the technical paper.

WHAT MATTERS

FDM / filament

- △ Fine dust & fumes – especially with ABS/ASA (styrene) and nylon
- △ Hot nozzle (~250 °C) and heated bed
- △ PLA/PETG emit far less than ABS/ASA

Resin / SLA

- △ Uncured resin irritates skin & eyes, can cause allergies
- △ IPA (cleaner) is highly flammable – flash point 12 °C
- △ UV light during curing – operate enclosed only

PROTECTIVE MEASURES – THE STOP PRINCIPLE

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Substitute

Where possible choose **PLA/PETG instead of ABS/ASA** – far fewer emissions. For resin washing, consider water-based or less flammable alternatives.

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Technical (most important)

Enclosed printer with **source extraction** and filter (HEPA H13 + activated carbon). For resin: **sealed wash-&-cure station**. Check and change filters regularly.

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Organize

Put printers in a **separate, well-ventilated room** (especially with several units). No eating/drinking in the print area. Keep safety data sheets at hand. Train people.

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Personal protection

Nitrile gloves for resin (no latex), **safety goggles**, for fumes **type A respirator + particle filter**. Wash resin splashes off immediately with water and soap.

EVERYDAY

✓ ALWAYS

- ✓ Print enclosed & extract
- ✓ Gloves + goggles for resin
- ✓ Wash hands after work
- ✓ Ventilate, maintain filters
- ✓ Separate resin/IPA waste

✗ NEVER

- ✗ Print ABS openly in living spaces
- ✗ Touch resin with bare hands
- ✗ Open IPA near ignition sources
- ✗ Resin/IPA down the drain
- ✗ Run filters "until full"

Take isopropanol (IPA) seriously: the cleaning alcohol forms flammable vapours at room temperature that are heavier than air. Use sealed, extracted wash containers, keep away from ignition sources, do not leave open overnight.

Allergy note: repeated skin contact with uncured resin can trigger a permanent allergy – for life. So wear gloves consistently from the start. Cured parts are unproblematic.

MORE DETAIL

The legal basis (AUVA, ASchG, limit values, references) is in the scientific paper:

→ [Paper: Occupational Safety in 3D Printing_\(PDF\)](#)

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Guidance to the best of our knowledge, no substitute for a company-specific assessment; verify limit values before use