

Understanding 3D printing safely

What you should know about materials, safety and your printed parts
— simply explained.

FREQUENTLY ASKED QUESTIONS

? Is my printed part safe to touch? ▲

Yes — fully cured and cleaned 3D-printed parts are harmless for normal use. Occasional skin contact (figurines, housings, holders) is no problem.

✓ SUITABLE

- ✓ Decorative items & figurines
- ✓ Technical housings & holders
- ✓ Prototypes and models
- ✓ Jewellery masters (casting patterns)
- ✓ Animal figurines

✗ NOT SUITABLE

- ✗ Food contact (cups, cutlery)
- ✗ Drinking bottles
- ✗ Children under 3 years
- ✗ Medical implants
- ✗ Load-bearing parts without proof

? What do the warning symbols on resin containers mean? ▲

The GHS pictograms (international hazard symbols) on resin packaging apply to the **raw material before printing** — not to your finished product.

- ⚠ **Exclamation mark (H317):** may cause skin allergies — applies to uncured raw resin, not cured parts.
- 🌊 **Environment (H412):** harmful to aquatic organisms — applies to disposal of raw material.
- 🔥 **Flame:** flammable — applies to the IPA cleaner, our internal working medium.

In short: these symbols are relevant for processors like us. Your finished print no longer has these properties — it is cured, stable plastic.

? Can I sand, paint or glue my print? ▲

- **Sanding:** Yes — in a well-ventilated area, with a dust mask. Wet sanding is even better as it produces little dust.
- **Painting:** Yes — acrylic and spray paints adhere well. Lightly sand the surface first for better adhesion.
- **Gluing:** Superglue (cyanoacrylate) and epoxy work excellently on PLA and ABS.
- **Drilling:** Possible — slowly, sharp bit, so the plastic does not crack.

? Is 3D printing food-safe? ▲

No — by default neither SLA nor FDM prints are suitable for permanent food contact. Two reasons:

- **Layer lines** form microscopic grooves where bacteria settle and which cannot be fully cleaned.
- **Pigments and additives** in the filament can leach on contact with food.

Exception with limits: natural-colour PETG (no pigment) is considered conditionally suitable for *short, indirect* contact (e.g. cookie cutters). For continuous use (cups, plates, bottles): not recommended.

Solution: apply a food-safe epoxy coating (e.g. FDA-compliant) over the print.

? Can I use the product outdoors? ▲

- **PLA:** not for permanent outdoor use — softens in heat (~55 °C), UV-sensitive, biodegradable.
- **PETG:** conditionally suitable — better than PLA, but UV-unstable long-term.
- **ASA:** ideal for outdoors — UV-stable, heat-resistant (HDT ~90 °C), weatherproof.
- **ABS:** UV-sensitive, becomes brittle — not for permanent outdoor use.

For outdoor applications we always recommend **ASA**. Just state this with your order!

? How robust are 3D-printed parts really? ▲

Considerably more robust than often assumed — but not as strong as injection-moulded parts of the same material. The key difference:

- FDM parts are very strong in the print plane (XY). Perpendicular to it (Z direction, between layers) they are 30-50% weaker.
- SLA prints are more homogeneous, but often more brittle than FDM parts.

For load-bearing or safety-relevant parts, always talk to us beforehand — we advise on the right material and print orientation.

Not for: load-bearing structures under human load, pressure vessels, brake components, safety-critical parts — without structural proof and testing.

? Can I get the safety data sheet for my material? ▲

Yes — just request it by email. We provide the current SDS for the material used.

Official manufacturer sources:

- Elegoo SDS (SGS-certified)
- Formlabs datasheets
- Prusament SDS
- Polymaker TDS + SDS
- EU Chemicals Agency ECHA

? Is 3D printing safe for pets/animals? ▲

Fully cured prints are harmless for occasional pet contact. A few notes:

- No bowls or feeding parts from 3D printing in permanent contact with food (as food safety in general).
- Dog toys: PLA and PETG are not suitable for strong chewers — pieces can splinter off and be swallowed.

- Decorative animal figurines: fully cured, no problem.

BACKGROUND

For professionals: scientific publications

Schichtwerk publishes full scientific papers on 3D-printing safety and materials — with references, emission data and regulatory basis.

[Safety preprint →](#)

Questions about your order?

We usually reply within 24 hours and are happy to advise on material and process.

[Send email](#)

[Start a print order](#)

[Material guide](#)

No cooperation with the weapons, military or defence industry

Schichtwerk · contract manufacturer · Vienna · product responsibility rests with the customer
office@schicht-werk.eu · schicht-werk.eu · v1.0 · March 2026 · to the best of our knowledge, no substitute for professional advice