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Safety with Formlabs SLA printers

This article applies to [Form 2](#), [Form 3](#)

Formlabs SLA printers are precision tools that require respect and care to ensure safe operation. Follow all safety considerations listed here during operation.

Throughout the manual and other documentation, safety notices are marked with standard words and symbols. Read the definitions below to understand these markings and how they relate to your safety.

SYMBOL

MEANING



Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.



Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.



Notice indicates information considered important, but not hazard-related. Not following this information could void the warranty or result in damage to the machine.



WARNING:

The laser beam is harmful to the eyes. Avoid direct contact.

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SYMBOL

DANGER:
MEANING

Isopropyl alcohol is a flammable chemical.

General usage

Formlabs SLA printers are intended for use as-is for additive manufacturing. Read the printer manual, these safety advisories, and any other relevant documentation to determine if the printer is suitable for your use case.

WARNING:

- General usage:** You shall independently verify the suitability of additive manufacturing, stereolithography, Formlabs SLA printers, and any specific designs or materials employed for the application and intended purpose before use. In no event shall Formlabs be liable for any loss, death, or bodily injury that you suffer, or that you cause to any third party, in connection with your use of Formlabs products. To the fullest extent legally permitted Formlabs EXPRESSLY DISCLAIMS ANY IMPLIED OR EXPLICIT WARRANTY OF FITNESS for a particular usage, the particular nature and circumstances of said usage being unforeseen and unforeseeable to Formlabs.
- Medical usage:** Formlabs is not a manufacturer of medical devices. Formlabs provides tools and materials that may be used in many applications, but makes no claims as to the safety or effectiveness of any specific devices made using Formlabs products. Certain Formlabs products, such as those commonly known in the industry as “biocompatible” resins, have been engineered to comply with relevant industry standards. The specific standards and most relevant technical specifications may be identified within the technical data sheets and have been tested according to relevant testing protocols for those standards and specifications. Biocompatible resins are a speciality product, developed for use by medical professionals, and should be

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Modification: Do not modify—Formlabs SLA printers are intended for use as-is. Modifying the printer without explicit approval and directions from



as-is. Modifying the printer without explicit approval and directions from Formlabs will invalidate your warranty, and could potentially ruin the machine and cause you bodily harm.

- **Manual:** Read and understand the manual and its safety instructions before using the printer. Failure to do so can result in serious injury or death.

CAUTION:

- **Lifting hazard:** The printer may be difficult for a single person to lift and carry. Consider the weight and dimensions of the printer before transport or installation.
- **Moving parts:** Formlabs SLA printers contain motors and moving parts. Do not open the printer cover until the touchscreen indicates the print is complete. Formlabs SLA printers contain an interlock system to automatically shut off the motors when the orange cover is opened. If this system is tampered with, or fails, there is risk of pinching, crushing, or tangling.

Laser

Formlabs SLA printers are Class 1 laser products, which are eye-safe at all times under normal use. Observe all necessary safety precautions during operation and maintenance to prevent unintended laser radiation exposure.



Laser certification

FORM 2

- IEC 60825-1:2007
- EN 60825-1:2007
- FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated June 14, 2009.

FORM 3

- IEC 60825-1:2014
- EN 60825-1:2014
- FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated May 8, 2019.

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WARNING:

- **Unauthorized maintenance:** Class 1 Laser Product (diode: 405nm; max output: 250 mW). Only remove the shells of the printer with authorization from Formlabs or a certified reseller. Disconnect power before removing the shells.

CAUTION:

- **Radiation exposure:** Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser radiation exposure (class 3B).

Isopropyl alcohol (IPA)

IPA dissolves liquid resin, making it effective for washing parts printed on Formlabs SLA printers and for cleaning resin spills. Follow all relevant handling, storage, and disposal advisories when working with IPA.

**DANGER:**

- **Fire hazard:** IPA is flammable. Keep containers closed, and keep out of the reach of children.

CAUTION:

- **Disposal:** Refer to the Safety Data Sheet (SDS) and local authorities for

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- **Skin and respiratory irritant:** Wear protective gloves and work in a well-



ventilated area when handling IPA.

Resin

Formlabs SLA printers print parts using photoreactive liquid polymer resin. Always consult the [Safety Data Sheet \(SDS\)](#) as the primary source of information to understand safety and handling of Formlabs materials.

WARNING:

- **Poison hazard:** Never ingest resin in liquid or solid form. If swallowed, immediately call a poison center or medical professional. Contact ChemTel with the information below for global 24-hour assistance interpreting the SDS.
 - North America: +1 800 255 3924
 - Worldwide Intl.: +01 813 248 0585
 - Reference Contract Number: MIS4707563
- **General safety:** Always consult the SDS as the primary source of information to understand safety and handling of Formlabs materials. In an emergency involving resin, always refer to the SDS and/or seek help from a medical professional.
- **Skin irritant:** Resin may cause skin irritation or an allergic skin reaction. Wear gloves when handling liquid resin or resin-coated surfaces. Wash skin with plenty of soap and water.

CAUTION:

- **Spill hazard (resin tanks):** Resin may spill over the tank walls if the resin tank tilts more than 5-10°. Hold the resin tank level with two hands. To inspect and clean the underside of the tank, empty the resin tank and/or take care to avoid spilling resin outside the tank.
- **Spill hazard (resin cartridges):** Do not remove the rubber valve at the bottom of the cartridge. This bite valve controls the release of the resin. Removing the rubber bite valve allows resin to continuously flow and causes extreme damage to the machine. This damage is not covered by the warranty.

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Tools

Formlabs SLA printers come with various part and support removal tools. These tools are sharp and present a cutting hazard if used improperly.

CAUTION:

- **Cutting hazard:** Using the included tools (e.g., flush cutters, scrapers, etc.) on slippery surfaces (such as a resin-coated build platform) can result in sudden movement. Orient sharp tools away from yourself, especially when cutting or scraping.
- **Risk of eye injury:** Some methods of support removal may cause small pieces of supports to break away. Beware of flying debris and consider wearing eye protection and gloves to protect the skin and eyes.

Maintenance

Formlabs SLA printers require regular preventative maintenance and may require occasional repairs. Follow all relevant instructions and safety advisories when performing any maintenance on a printer.

DANGER:

- **Electric shock hazard:** Performing maintenance on the printer while it is plugged in increases the risk of electric shock. Never remove the back panel of the printer while the printer is plugged in.

WARNING:

- **Supervision:** Formlabs provides instructions to advise skilled and non-skilled persons in installing, operating, and maintaining Formlabs SLA printers. The printer shall only be maintained by a qualified and trained

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person.

- **Modification:** Do not open Formlabs SLA printers and/or investigate internal components unless under the guidance of Formlabs or an authorized reseller. Contact Formlabs or an authorized reseller for any additional guidance. All steps that involve opening a printer and/ or investigating internal components should be done by skilled persons under the guidance of Formlabs or a certified distributor.
- **Unauthorized maintenance:** Unauthorized disassembly or repair procedures may damage the printer and void the warranty.
- **Personal protective equipment:** Wear personal protective equipment when performing maintenance tasks. Use tools only as described.
- **Moving parts:** Disconnect the power cable before maintenance. Moving parts and lead screws present crushing and tangling hazards.

Radio interference

NOTICE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to CFR Title 47, Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

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All articles about Getting Started With The Form 3

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operation. Follow all safety considerations listed here during operation.

Receiving and unboxing your Form 3

Know what to expect when your Form 3 comes in the mail. Unboxing, setup, and package contents are all detailed here.

Quick Start Guide (Form 3)

Follow this guide to begin setting up your Form 3. Learn about the printer's components, preparing the printer for use, and initial setup steps.

Manuals and documentation

Manuals and related documentation for Formlabs printers and related products.

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