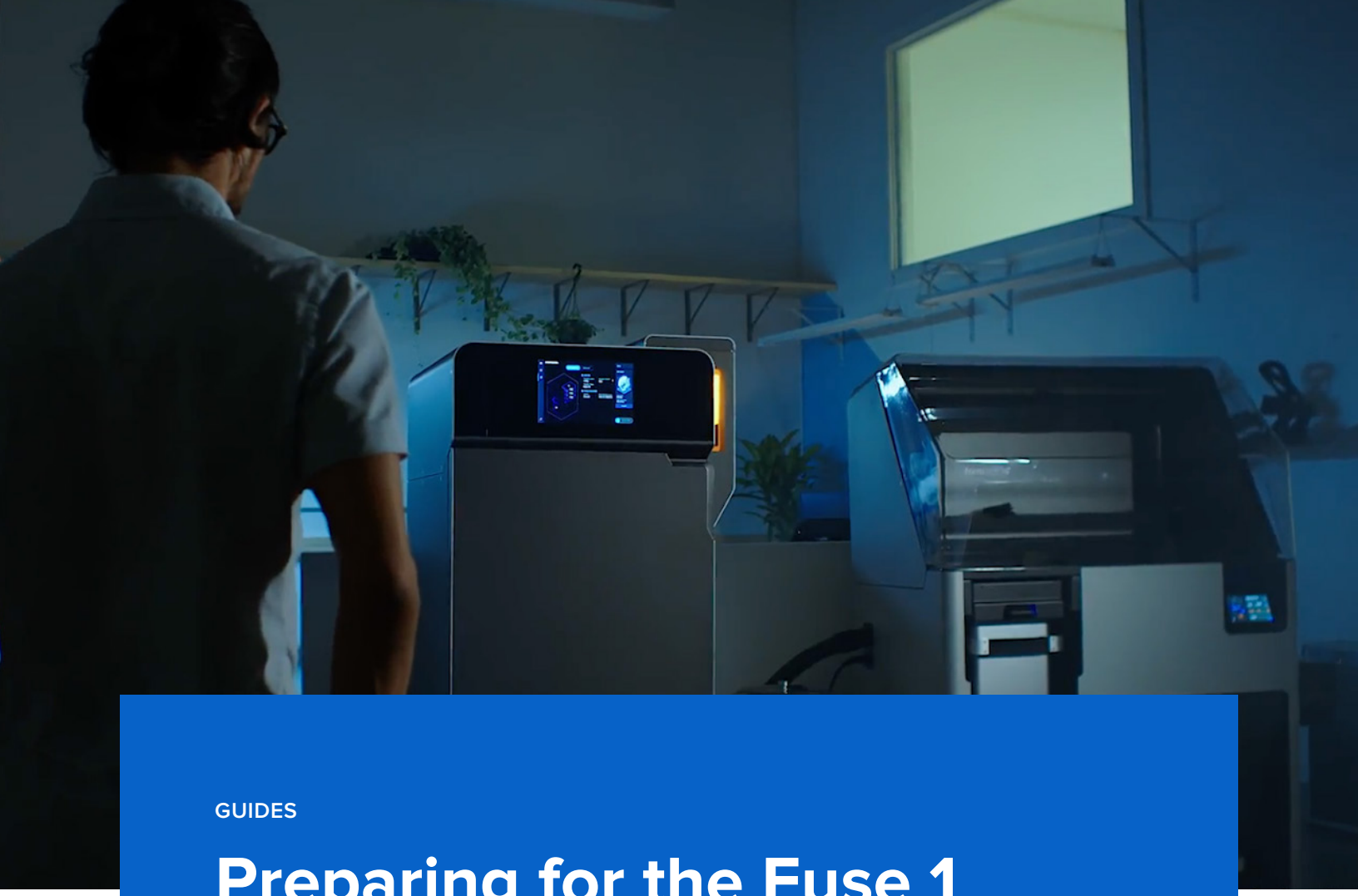

GUIDES

Preparing for the Fuse 1 & Fuse Sift

This guide will help ensure that your site is ready to receive, setup and use your Fuse 1 and Fuse Sift before your order ships.

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Introduction

Congratulations and thank you for purchasing the Fuse 1 benchtop SLS 3D printer, and Fuse Sift post-processing and recovery station. While we prepare your order, Formlabs would like to ensure that your site meets the minimum requirements necessary to start printing as soon as possible.

Please review the following sections to confirm that your site is ready to receive your order. If your site does not currently meet a specific requirement, please contact your Formlabs representative. We will work with you and our partners to address any complications or issues before your order arrives.

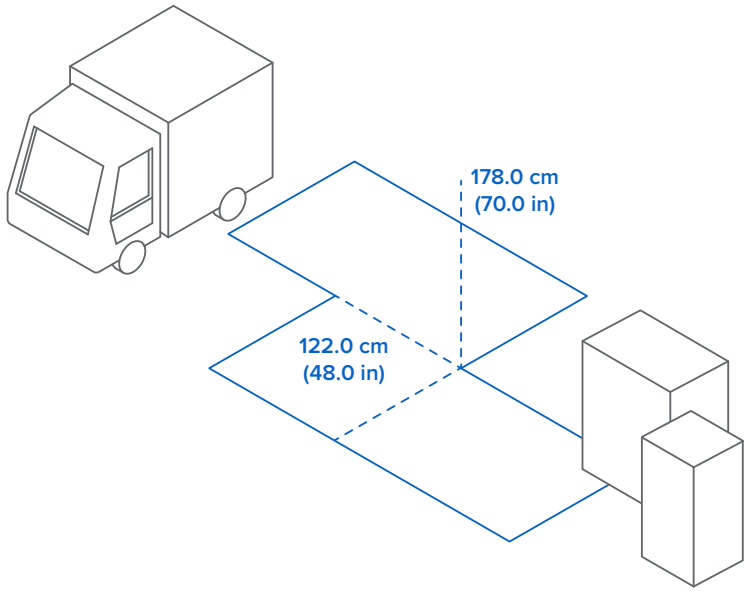
If your site meets the requirements outlined below, please let your Formlabs representative know so we can schedule your delivery and subsequent remote training sessions.

Please contact us with any questions by emailing support@formlabs.com, or call us directly at 617-702-8476 (weekdays Monday - Friday, 9AM - 6PM EST).

Delivery & Reception

The Fuse 1 and Fuse Sift are heavy devices that must be removed from their packaging with the provided assistive lifting straps (e.g., those commonly used for moving large appliances). For this reason we recommend purchasing Ready To Plug delivery so that our partners can unpack everything for you.

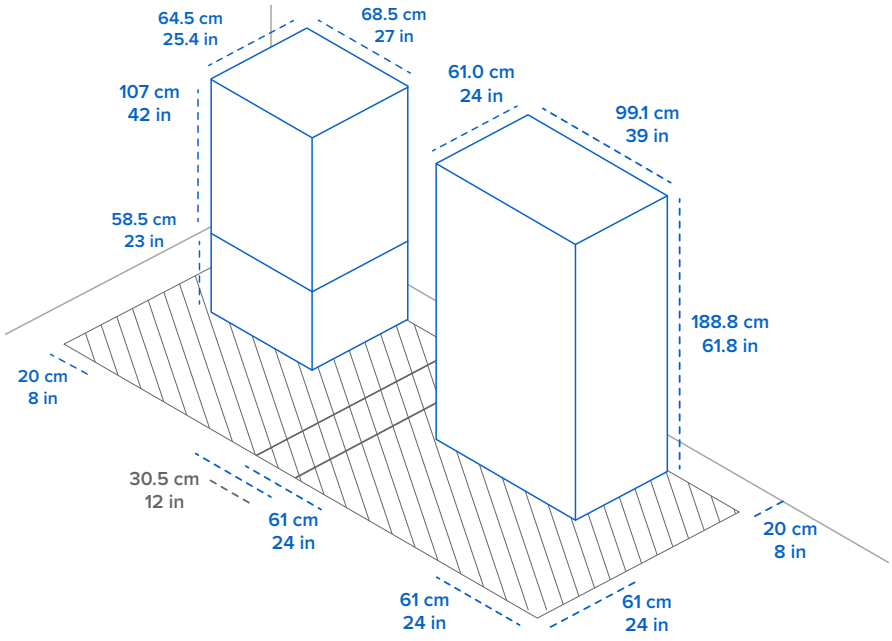
Please ensure there is ample space to maneuver between the delivery zone and the desired setup location. Our partners will also need access to an elevator if traveling between multiple stories, and to a loading dock or a receiving bay for At Your Dock delivery options.



For receiving your Fuse 1 and Fuse Sift:

- Ensure there is ample maneuvering space of at least **122.0 x 122.0 x 178.0 cm** (48.0 x 48.0 x 70.0 in) between the delivery and setup points.
- With Ready To Plug delivery, please provide our partners access to a freight or service elevator if the desired setup location is on a different level than the delivery point. Please relocate any obstacles that may get caught on dolly wheels such as carpets, hoses or cables.
- With At Your Dock delivery, please provide our partners access to a **loading dock** or **delivery bay** capable of receiving palletized freight deliveries.

Space



The Fuse 1 requires:

- **125.5 × 149.5 × 167.5 cm** (49.4 × 59.0 × 66.0 in) for a footprint of 64.5 × 68.5 × 107.0 cm (25.4 × 27.0 × 42.0 in), 165.5 cm (65.0 in) with the stand. Leave at least 20.0 cm (8.0 in) to the left of the printer and 61.0 cm (24.0 in) to the front and right of the printer free for access.
- At least **20.0 cm** (8 in) away from nearby walls.

The Fuse Sift requires:

- **142.0 × 221.1 × 218.0 cm** (55.9 × 87.0 × 85.83 in) for a footprint of 61.0 × 99.1 × 188.8 cm (24.0 × 39.0 × 74.3 in). Leave at least 61 cm (24 in) to the left, front, and right of the unit free for access.
- At least **20.0 cm** (8 in) away from nearby walls.
- Any overlap with the Fuse 1 access footprint to not exceed more than **30.5 cm** (12.0 in).

Power & Networking

The Fuse 1 and Fuse Sift each require their own dedicated 120 volt 15 amp circuit via a NEMA 5-20R socket, as well as access to the internet via Ethernet or Wi-Fi. Formlabs leverages remote access via point-to-point encryption to both Fuse 1 and Fuse Sift in order to collect diagnostic logs and provide remote assistance for troubleshooting.

Please check with your network administrator if there are specific procedures for registering new devices to your network. Additionally, both devices will need access to specific networking ports for uploading logs and providing remote assistance.

To power your Fuse 1 and Fuse Sift:

- **Two independent circuits**, each supplying **120 volts** and at least **15 amps** to a **NEMA 5-20R** socket. The Fuse 1 and Fuse Sift cannot share a single circuit with each-other, or any other appliance.
- If your vacuum will draw **more than 12 amps**, your Fuse Sift will need an independent circuit supplying **120 volts** and **20 amps** to a **NEMA 5-20R** socket.

NEMA 5-20R

To network your Fuse 1 and Fuse Sift:

- Two Ethernet (RJ45) jacks or a WPA2 Wi-Fi network that provides send and receive access to ports **UDP 9993** and **HTTPS 443**, as well as **api.formlabs.com**.

T/10000 RJ45

WPA2 WLAN

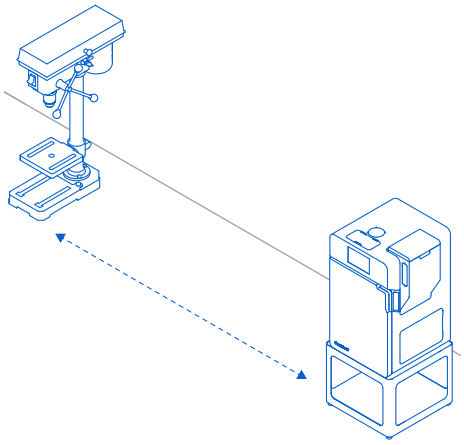
Environs

The Fuse 1 is a benchtop device that should be separated from machinery which generates sparks. SLS powder poses an ignition hazard if it is allowed to accumulate on surfaces and is in the presence of sparks.

Your location of choice should also have air being actively cycled throughout it, and maintain low ambient humidity.

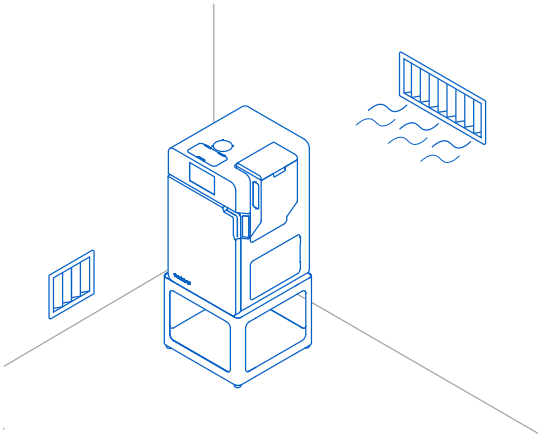
Your site will need to separate:

- Machinery or tooling that generates sparks, such as wood or metal working equipment from the Fuse 1 and Fuse Sift.



Your site will need to maintain:

- An ambient temperature between **18 - 28°C** (68 - 81°F) with an HVA/C system that actively moves air into and out of the space 24/7. Keep liquids separate from powder at all times.

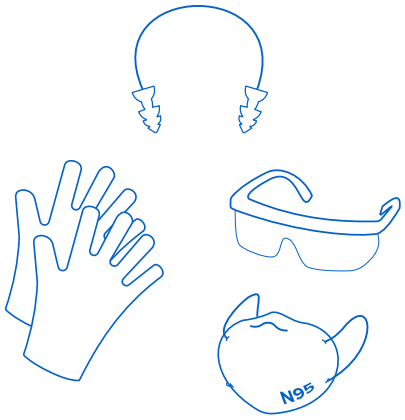


PPE

Operators of the Fuse 1 and Fuse Sift will need access to standard personal protection equipment (PPE). Hearing protection is advised if an operator is running the sifter and vacuum for extended periods of time. Powder handling and safety are covered in both training sessions, as well as the provided manuals for the Fuse 1 and Fuse Sift.

Your site must provide operators with:

- Disposable nitrile gloves.
- N95 or better particulate filtering respirators.
- Shatter-proof safety goggles with peripheral protection.
- Hearing protection, either over or in-ear.



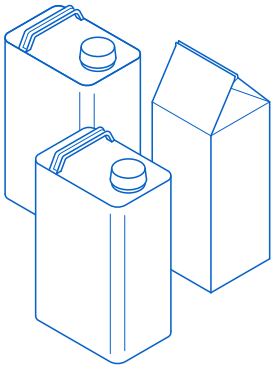
Cleaning Supplies

The Fuse 1 has an optical component that will need to be cleaned regularly in order to maintain print quality. Formlabs recommends a three-step cleaning process that consists of Alconox detergent, distilled water and lab-grade ethyl alcohol.

Prior to receiving your Fuse 1, you will need to source these three cleaning agents from a supplier of your choice. If you are unable to source ethyl alcohol, isopropyl is an acceptable substitute.

To clean your Fuse 1 optics, you will need:

- x1 carton of **Alconox 1104-1** powdered precision cleaner.
- x1 gallon of **distilled water**, laboratory grade.
- x1 gallon of **anhydrous ethyl** or **isopropyl alcohol**, laboratory grade.



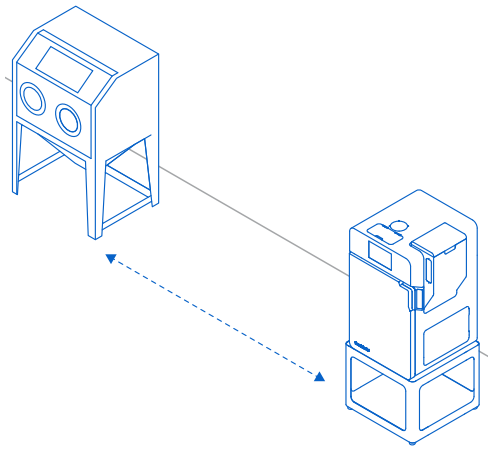
Post-Processing

While not required, Formlabs recommends using a media blasting cabinet to remove residual powder from printed parts. This can help eliminate the sand-like texture that is typical of unprocessed SLS parts, leaving you with more refined surfaces.

It is important to separate blasting media from Fuse equipment and consumables. If blasting media is found inside the print chamber, your print quality and success rate may be adversely affected. This will be explained during the training sessions in more detail.

If you will be using a blasting cabinet:

- Keep media blasting equipment in a workspace that is **separate** from the Fuse 1 and Fuse Sift.
- Do not store printing powder near or with blasting media. Maintain separate dedicated tools and PPE for media blasting.



Next Steps

Please contact your Formlabs representative after confirming your site meets the requirements listed above. Be sure to retain this guide for future reference. If there are any requirements that your site does not yet currently meet or you are unsure of, please contact your Formlabs representative for further assistance.

We understand that current circumstances may have introduced recent changes to your organization that could complicate reception, delivery and setup of your Fuse 1 and Fuse Sift. If you would prefer to delay or reschedule delivery of your order, please let your Formlabs representative know as soon as possible. You will *not* lose your preorder or place in the reservation queue, nor will Formlabs require additional payment for holding your order.

Any additional updates about your order, the Fuse 1 and Fuse Sift will be emailed to you by Formlabs directly or your representative.

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AUTHORIZED PARTNER