

Sinterit COMPACT SERIES FACILITY PREPARATION GUIDE



Please read the manual before using the product. For the most up-to-date manual, visit our website: www.sinterit.com/support/



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1. GENERAL INFORMATION

This guide collects the information necessary to prepare the user for receiving a delivery and guides necessary conditions, location, amenities and arrangements – thereby greatly streamlining the installation process.



- Each package is clearly labelled in regard to its contents.
- · Most of the devices come with a Quick Start label attached to their respective protective packaging.
- We recommend transporting the device to the place of installation in its original package, to prevent it from moving inside.
- Please keep protective cases, in case a repair or return is necessary.
- Structural damage can alter the device safeguards and therefore void the warranty check all devices before installation. Report all concerns directly to Sinterit After-Sales.

1.1 Technical support

If you have any questions or doubts, please contact our After-Sales department.

- www: sinterit.com/support/contact-support/
- e-mail: support@sinterit.com
- phone: +48 570 702 886
- headquarters address: Sinterit sp. z o.o., ul. Nad Drwina 10-B3, 30-741 Krakow, Poland

For a list of distributors and technical support in each country, please visit our website www.sinterit.com.



IMPORTANT!

- To facilitate the assistance process, please have the information ready:
- the type of machine,
- serial number (from the safety plate),
- printer firmware version (**© SETTINGS** -> SYSTEM INFO).

1.2 Symbols and visual cues used in the document



WARNING!

An inevitably dangerous situation which can result in serious injury or even death. Initiation, or omission, of a specific procedure as well as inattention, can cause severe physical injury to the user.



ATTENTION!

Initiation, or omission, of a specific procedure, can cause physical damage to the equipment or the user.





WARNING!

Risk of electric shock which can be fatal or cause severe burns. An inevitably dangerous situation, which can result in serious injury or even death, if not mitigated. Before working with any equipment, you should be aware of the dangers associated with the flow of electric current, and become familiar with the standard procedures to prevent accidents.



STOP!

Action prohibited.



IMPORTANT!

Information essential to correctly perform a specific task.

IMPORTANT!

You must read the instructions before taking action.

1.3 Unpacking

1.3.1 Packaging

 Please remember to prepare a sufficiently large space when receiving your parcel. The room, floor and media connection requirements can be found in <i>Chapter 2 Environmental Requirements</i>. Please see the table below for the dimensions and total weights of the Compact series packaging. Each device is a separate package on the pallet with a quick identification label. Most devices will attach a Quick Start label to their respective protective packaging. Read it carefully for all the important suggestions and instructions. When you receive your shipment, check it carefully to ensure that it has not been damaged in transit. If there are problems or visible damage to the transport box(es), please inform Sinterit After-Sales as soon as possible.

Listed below are the dimensions and identifiers of Compact series shipping units.

Nama		Weight		
Name	X [mm/in]	Y [mm/in]	Z [mm/in]	[kg]/[lbs]
Lisa X 3D printer	650/25.6	750/29.5	1350/53.0	190/418.0
SUZY printer	650/25.6	750/29.5	1350/53.0	195/430.0
Multi PHS	1200/47.2	800/31.5	1580/62.2	205.0/452.0
ATEX Vacuum Cleaner	480/18.9	470/18.5	780/30.7	27/49.5
Intertek Vacuum Cleaner	500/19.7	470/18.5	780/30.7	21.5/47.3
Vacuum Accessories	260/10.2	120/4.7	1305/51.4	7.5/16.5
Powder Separator	365/14.4	365/14.4	380/15.0	6.0/13.2
Powder Sieve	380/15.0	380/15.0	620/24.4	24.0/52.8
Sandblaster SLS	790/31.1	545/21.5	765/30.1	45.0/99.0
Dedicated Powder Tools (2 boxes)	480/18.9 390/15.4	300/11.8 290/11.4	330/13.0 280/11.0	10.0/22.0 16/35.2
Powder in a plastic bottle (2 bottles)	140/5.5	280/11.0	280/11.0	4/8.8
Powder in a metal container	300/11.8	300/11.8	300/11.8	7/15.4



IMPORTANT!

In case you do not completely unpack your delivery, please make sure that the packages are stored in nominal, safe indoor conditions, in temperatures between 5-40°C and air humidity levels lower than 60%.

The unloading of an average delivery requires:



1.3.3 Space considerations



IMPORTANT!

- Most devices will have a **Quick Start** label attached to their respective protective packaging. Read it carefully to ensure safe installation.
- Before you will start unpacking remember to leave enough free space around.



Fig. 1.2 Space considerations when unloading large devices.



2. ENVIRONMENTAL REQUIREMENTS

2.1 General information

As standard, besides the printers the Sinterit system includes the Multi PHS, the ATEX/Intertek Vacuum Cleaner and the Sandblaster SLS.

Such a set of devices requires:

- 9m² of space,
- smooth floors,
- 2 standard power sockets,
- · compressed air supply (via central installation or a compressor) for the Sandblaster SLS.

* for printing with select materials, also a supply of inert gas (via central installation or a generator).





Fig. 2.1 An example Compact series setup with the Lisa X printer.



2.2 Temperature and humidity room requirements

It is strongly recommended that the environment, where the Sinterit devices will be installed and operated, match the criteria listed below:

Condition	Value / Description
Storage conditions	5-40 [°C] (41-104 [°F])
Space	well-ventilated, with stable temperature and humidity
Air humidity	40-60%, non-condensing
Suggested air conditioning setting while the printer is in use	16-25 [°C] (61-77 [°F])
Optimal ambient temperature while the printer is in use	22 [°C] (72 [°F])
Ventilation	4 complete air changes per hour minimum
Air conditioner vents	not placed near the machines
Ventilation source (external door, AC)	not located close to the printer
Minimum doorway width	0.9 [m]/35.4 [in]
Minimum room height	min 2.4 [m]
Minimum lighting requirement	500 [lx]

IMPORTANT!

- The room where the printer is operated needs to be well-ventilated, with stable air temperature and humidity; kept relatively clean, ergonomic and arranged with an efficient workflow in mind.
- It is additionally advised that a hygrometer (air humidity sensor) be installed in the immediate vicinity of the printer, in order to enable monitoring and control.

IMPORTANT!

- All products should be placed on a flat, stable surface that extends beyond all edges of the product.
- If you place any Sinterit device by the wall, the distance between the product and the wall should be greater than 50 [cm]/20 [in].
- The devices will not work properly if set at an angle.



Fig. 2.2 A model room with marked dimensions and connections (9 [m²]/97 [ft²]).

2.3 Room and floor requirements

For full dimensions and examples of space arrangements, see Chapter 3 Space Planning.

Below are the minimum dimensions of the room that will allow you to safely operate a Lisa X/SUZY printer and other Sinterit Devices (Multi PHS, ATEX/Intertek Vacuum Cleaner, Sandblaster SLS and more).



WARNING!

- When planning the workspace for the Sinterit printer or a whole set, bear in mind escape routes and safety areas!
- Do not obstruct escape routes and adapt safety areas to local regulations!

2.3.1 Printer description



Fig. 2.3 Minimum space required for an optimal Compact series setup.







2.3.2 Floor requirements

Level and flatness	Hard, even and non-sloping
Vibration-free	Required. Other heavy machinery (e.g. presses) that cause vibrations can affect the operation of the printer.
Surface	 smooth and anti-static, easy to clean (dry and wet), non-slip, resistant to solvents.

2.4 Electrical safety

Solutions provided by Sinterit are safe for the collection of 3D printing powder. All electrical requirements match the industry standards.

	 WARNING! Sinterit Lisa X/SUZY printers require a 230 [V] circuit to operate; for customers in 110 [V] regions, we deliver a voltage converter with each such printer. Please consult the manual supplied with the converter for safety information specific to its use. 	
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Circuit	One-phase, 50/60 Hz, 230 or 110[V]*
Overcurrent protection	 B16 [A] rated fuse 30 [mA] residual current circuit breaker
Grounding system	must be present and in working order



ATTENTION!

Try to position all non-Sinterit devices with motors away and on a separate electrical line, to help eliminate the chance of contamination entering the motor or devices placed in the operating room.



2.5 Other utility requirements

2.5.1 Compressed air

Aside from the power requirements listed above, an air compressor is also necessary while working with the Sandblaster SLS (part of the integrated Sinterit system). It can also be used to help clean the printer in certain situations, outlined in the manual.

COMPRESSED AIR				
Purpose	occasional use (sandblasting, cleaning)			
Min max. flow	290 - 420 [l/min]			
Average consumption	21,3 [m ³ /h] at 3,5 [bar]			
Working pressure	5.0 - 8.6 [bar]			
Compressed air quality	clean and dry			
Compressor type	any			

2.5.2 Inert gas

The printers can also support an inert gas supply, with which you can eliminate oxygen from the printing process. This will enable you to print from non-standard materials, such as PA11, PA11 CF, PA11 ESD or other / 3rd party materials.

An inert gas (typically nitrogen or argon) is necessary to prevent ignition or other chemical degradation (oxidation) of materials, which require a high-temperature environment to be sintered.



IMPORTANT!

At the time of publication, only the Lisa X printer uses inert gas.

INERT GAS					
Purpose	printing with PA11, PA11 ESD, PA11 CF				
Туре	Nitrogen				
Min. Purity	99,5 [%]				
Average consumption	0.48 [m³/h] = 8 [l/min.]				
Working pressure	5 - 8 [bar]				
Weekly consumption	65 [m ³] (3 complete work cycles in 7 days)				
Nitrogen line fittings	quick-coupling Male Plug Nipple DN7.2				
Environmental venting	required				
Nitrogen Supply Options	Nitrogen generator / Bulk nitrogen tank / Liquid or bottled (gaseous) nitrogen with auto-switching manifold				

Unless the facility is already equipped with a central installation or another supply of inert gas, for SLS 3D printing we recommend the use of a **nitrogen generator (min. flow 10 [l/min])**. They are generally easier and safer to operate than the other options.



2.6 PC system requirements

It is not strictly necessary to directly connect the printer to a workstation PC. The updates as well as the sliced model files can be uploaded over WiFi or via a USB stick - in case the internet connection is not available or barred for security reasons.



For optimal performance of the 3D model placement and Sinterit Studio slicing, the recommended system configuration is:

- 64-bit processor
- Windows 10 or higher,
- Minimum 1 GB of disk space,
- Minimum 2 GB of RAM,
- Graphics adapter compatible with OpenGL 3.0 or higher,
- File type STL, OBJ, 3DS, FBX, DAE, 3MF.



3. SPACE PLANNING

3.1 Device dimensions





SUZY 3D printer				Lisa X 3D printer	
	[mm] [in]			[mm]	[in]
X	650	650 25.6		650	25.6
Y	610	24.0	Y	610	24.0
Z	1200	47.2	Z	1200	47.2
Weight [kg]/[lbs]	150	330.7	Weight [kg]/[lbs]	145	319.7







Multi PHS			ATEX Vacuum Cleaner			Intertek Vacuum Cleaner		
	[mm]	[in]		[mm]	[in]		[mm]	[in]
X	1000	39.4	Х	440	17.3	X	440	17.3
Y	700	27.6	Y	360	14.2	Y	420	16.5
Z	1700	66.9	Z	770	30.3	Z	780	30.7
Z (closed cover, without hose)	1426	56.1	Weight [kg]/[lbs]	26.0	57.3	Weight [kg]/[lbs]	21.5	47.4
Z (with hose)	1800	70.9						
Weight solo [kg]/[lbs]	157	346.2	-					
Weight with shelf [kg]/[lbs]	166	366.0						

*



Powd	Powder Sieve Sandblaster SLS			Powder Separator				
	[mm]	[in]		[mm]	[in]		[mm]	[in]
X	330	13.0	X	760	29.9	Х	320	12.6
Y	340	13.4	Y	500	19.7	Y	290	11.4
Z	600	23.6	Z	720	28.3	Z	290	11.4
Weight [kg]/[lbs]	22.5	49.5	Weight [kg]/[lbs]	28.0	61.6	Weight [kg]/[lbs]	5.0	11.0

3.2 The clean and safe workspace

- SLS Powder is flammable and can be ignited by static discharge.
- Keep the workplace clean it is the best protection when working with SLS printing powders.
- Take care of the cleanliness of the printers and the workspace with Multi PHS and our other devices and tools, specially
 designed for this very purpose.



The Lisa X Performance set, when used together, **is ATEX-certified**. It is protected from damage caused by the self-ignition of SLS powder within the devices to the highest of European standards. **The Performance set** consists of Lisa X, Multi PHS, the Powder Separator, ATEX / Intertek Vacuum Cleaner and Sandblaster SLS.



Fig. 3.1 The clean circulation of SLS powder in the Sinterit system.



The Sinterit Lisa X printer is equipped with a service area, collecting and storing powder dust away from the electronics, where it can be safely disposed of during regular maintenance and cleaning.

Multi PHS - uses the rotary effect and gravity - cyclonic separation - to remove solid particles from the air circulating in the system, without the use of filters.



Fig. 3.2 The isolated motor of the ATEX/Intertek vacuum cleaner.

The **ATEX/Intertek Vacuum Cleaner** - comes with an ATEX or Intertek explosion-proof certification (depending on the ordered model). The motor is entirely isolated from the circulating dust, ensuring the highest safety standard. The hoses are anti-static and do not facilitate sudden discharge.

The **Powder Separator** - an attachment for the Sinterit ATEX/Intertek Vacuum Cleaner. Collecting the powder so that it can later be reused. This device is unpowered and the risk of static discharge is mitigated as long as proper procedures are observed.



Fig. 3.3 The vacuum connected to the sealed chamber of the Sandblaster SLS.

The **Sandblaster SLS** - an isolable post-processing solution, where the vacuum swiftly removes any excess powder from within the sandblasting chamber. The HEPA filter further ensures that it does not make its way back.



3.3 Arrangement

While placing and setting up the devices, it pays to understand the workflow in order to achieve the best performance, as well as minimise the losses of powder during transmission.

Arranging the workspace in the proper way, you will not only increase the efficiency but also the satisfaction of work. The Sinterit Solution was designed in order to holistically limit the transmission of powder throughout the entire process, which at the same time leads to the consolidation of workspace into a single, ergonomic assembly line.

On the following pages you will see examples of the **ergonomic arrangement of Sinterit system elements**. They will help you arrange your workspace appropriately.



Fig. 3.4 Free space considerations while moving between Sinterit devices.



IMPORTANT!

The devices and arrangements listed below are only a suggestion for the user to help plan the workspace. Purchase of peripherals is optional.



Fig. 3.5 Examples of common activities while printing and post-processing, for visual orientation.



Fig. 3.6 Examples of common activities while post-processing, for visual orientation.

IMPORTANT!

One has to remember that SLS printing is a complex process, comprising many separate activities performed on different devices spread across the workspace. For clean operation, it is important to consider the length of the vacuum hose (3 [m] / ca. 10 [ft]) so that it can always reach wherever it is needed (Fig. 3.7).



Fig. 3.7 Optimal placement of the Powder Separator and Vacuum combo.

3.3.1 Example arrangements for Lisa X / SUZY



Fig. 3.8 Minimum optimal setup with Lisa X, Multi PHS and the Sandblaster SLS.



IMPORTANT!

- The *footprint* of the devices (total length side-by-side) should not exceed 4000 [mm]. This will ensure that the amount of movement needed while working isn't excessive, which could otherwise contribute to powder spills and other accidents.













Footprint: 3800 [mm]

Fig. 3.9 Recommended Compact series setups.

4. IMPORTANT SAFEGUARDS AND WARNINGS PROVIDED BY THE CUSTOMER

4.1 Laser radiation

Ŵ	 WARNING! Danger through invisible laser radiation! An enclosed machine meets laser protection class 1. A laser without a laser beam protector corresponds to protection class 4 and can cause severe damage to the body and equipment. Only trained personnel are allowed in the laser hazard area. It is imperative to observe the following safety regulations and locally applicable regulations related to laser radiation. 	
Ŵ	 WARNING! Danger through invisible laser radiation! All access doors to the room must be marked with the sign "Caution, laser radiation" (see right side) along with the description "Caution-Class 4 laser radiation". All access doors to the room must be lockable and equipped with laser warning lamps. They must be turned on during laser service work. The laser radiation hazard area must not contain materials that pose a fire and/or explosion hazard. 	
	 WARNING! Danger through invisible laser radiation! Only an authorised Sinterit service technician may work with the laser beam protector removed! When servicing the laser area, wear personal protective equipment: Laser safety goggles with safety class OD=6+ for wavelengths in the range of 950-1080 [nm] for Lisa X according to CE/EN 207. 	\bigcirc

4.2 Working with powders



ATTENTION!

- Polyamide powder should be stored in tightly closed containers (e.g. Sinterit metal container), in a room at room temperature and low humidity.
- The powder should be stored out of reach of children and pets.
- If the device is not used for a long time, the powder should be removed from the printer and stored in a sealed package (e.g. Sinterit metal container).



ATTENTION!

When printing the smell of melting material may be emitted in intensities which do not affect the health of users. However, in the case of long-term operation of the printer in a poorly ventilated room, the smell may become unpleasant and irritating. Adequate ventilation is recommended in order to create the optimal printing conditions.

4.2.1 Working with hazardous and potentially hazardous powders



4.3 Fire and explosion protection



WARNING!

- Do not attempt to burn/melt polyamide powder.
- The resulting sparks and hot mass can cause severe burns.
- Keep the powder material away from fire.
- All doors to rooms where powders and/or machine are located should bear a warning label (see right side of the table).



WARNING!

- Polyamide powder is flammable and can create an explosive atmosphere together with air!
- Use an ATEX-certified explosion-proof vacuum cleaner for all vacuuming or cleaning of the machine from the powder. Sinterit recommends using the ATEX Vacuum Cleaner available in the standard portfolio.
- Avoid the accumulation of powder and/or dust in the working area of the machines, their surroundings and accessories. This will minimize the risk of an explosive atmosphere or fire.







WARNING!

DEVICE - EXTINGUISHING FIRE

- Risk of electrocution when extinguishing fires on electrical equipment!
- Observe local fire regulations when extinguishing a fire.
- If only possible, disconnect the power from the device.
- Match the extinguishing medium and the extinguishing equipment to the general conditions on-site.
- Sinterit recommends using Dry Chemical Powder (ABE/BE) or Carbon Dioxide extinguishers for electrical extinguishing devices.

WARNING!

POWDERS - EXTINGUISHING FIRE

All commonly used fire extinguishers are permitted - Carbon dioxide (CO₂), dry extinguishing powder, alcohol-resistant foam, and atomized water. Do not use a high-pressure water jet!



COMBUSTION PRODUCTS

The range of possible combustion products includes simple asphyxiants (CO₂, nitrogen oxides) and toxic substances (carbon monoxide, cyanide). It is paramount to avoid inhaling the smoke, and in such an event, promptly evacuate onto fresh air and seek immediate medical attention.





5. LEGAL INFORMATION

5.1 General legal information

Where this manual refers to Sinterit or the Company or "us/our", this means Sinterit sp. z o.o. with its legal seat in Krakow, registered by the District Court for Kraków-Śródmieście in Krakow, XI Commercial Division of the National Court Register under number: 535095, NIP (tax number): 6793106416.

This document contains material protected under copyright and industrial property laws. In particular, this means that the document may not be reproduced or modified without the consent of Sinterit.

This manual serves to assist you in receiving delivery and setting up the devices you purchased from us in an safe and efficient manner.

This manual contains content exclusively for the provision of information and for use by individuals who have been professionally trained in the operation and maintenance of the equipment described below.

It does not cover all of the information necessary for safe and correct operation of the devices - you must carefully read their respective full user manuals before using them.

The information contained in this document is intended for use only with the products made by Sinterit - part of the Compact line, that is Sinterit SUZY/LISA X printers, Sinterit Sandblaster SLS, Sinterit Powder Separator, Sinterit ATEX/ Intertek Vacuum Cleaner, and Sinterit Powder Sieve.

Due to the constant development of Sinterit products the information contained in this manual as well as any specifications and markings issued or placed on Sinterit products by the Company are subject to change without notice.

5.2 Disclaimer

Sinterit is not responsible for any use of this information about other products.

Although every effort has been taken to provide accurate information about the product, Sinterit disclaims, to the widest extent permitted under the applicable law, any and all liability for any incorrect information or omission, and for anything that may result from such errors or omissions. Sinterit reserves the right to correct any and all errors and omissions at any time.

Further limitations or exclusions of Sinterit liability may result from the applicable laws or agreements entered into with the buyer of the products.

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