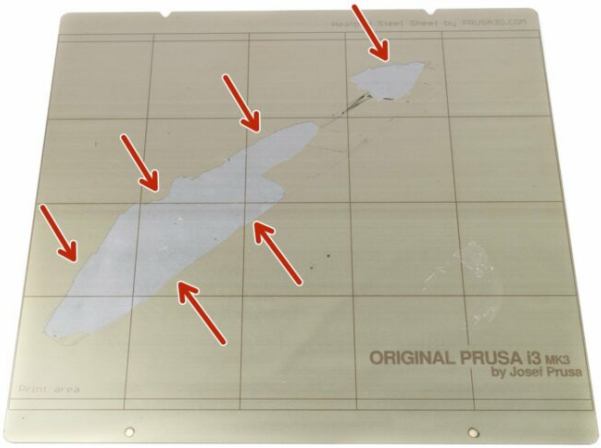
Table of Contents

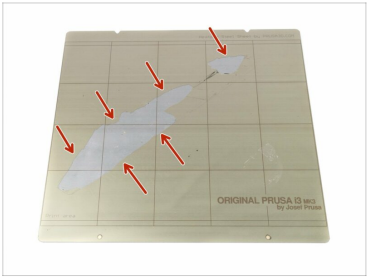
Replacing the PEI sheet on the (MK3S/MK3/MK2.5S/MK2.5)

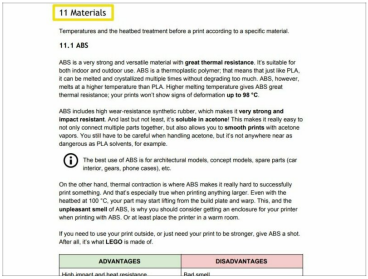


help.prusa3d.com/g23920

Scan the QR code to display the latest version of this chapter.

STEP 1 Damaged PEI surface





11 Materials

Temperatures and the heatbed treatment before a print according to a specific material.

11.1 ABS

ABS is a very strong and versatile material with **great thermal resistance**. It's suitable for both indoor and outdoor use. ABS is a thermoplastic polymer; that means that just like PLA, it can be melted and crystallized multiple times without degrading too much. ABS, however, melts at a higher temperature than PLA. Higher melting temperature gives ABS great thermal resistance; your prints won't show signs of deformation **up to 95 °C**.

ABS includes high wear-resistance synthetic rubber, which makes it **very strong and impact resistant**. And last but not least, it's **soluble in acetone**! This makes it really easy to not only connect multiple parts together, but also allows you to **smooth prints** with acetone vapors. You still have to be careful when handling acetone, but it's not anywhere near as dangerous as PLA solvents, for example.

The best use of ABS is for architectural models, concept models, spare parts (car interior, gears, phone cases), etc.

On the other hand, thermal contraction is where ABS makes it really hard to successfully print something. And that's especially true when printing anything larger. Even with the heatbed at 100 °C, your part may start lifting from the build plate and warp. This, and the **unpleasant smell** of ABS, is why you should consider getting an enclosure for your printer when printing with ABS. Or at least place the printer in a warm room.

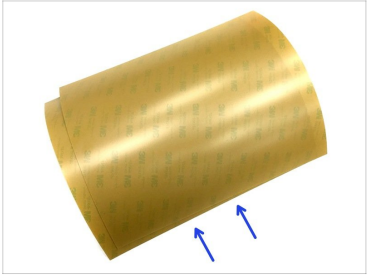
If you need to use your print outside, or just need your print to be stronger, give ABS a shot. After all, it's what **LEGO** is made of.

ADVANTAGES	DISADVANTAGES
High impact and heat resistance	Bad smell

- The PEI surface is very durable, however, it is possible to damage it.
- Make sure you always wait a while after bigger prints are finished. Before you try to remove the printed objects.
- Have a look in the 3D Printing Handbook for materials, which need special treatment of the PEI surface to avoid future damage to your printer.
- If your printing surface is damaged severely, let's move to the next step.

ⓘ As soon as you remove the damaged PEI sheet, please apply a new one. The PEI sheet works also as protection against atmospheric corrosion.

STEP 2 Shopping list (part 1)



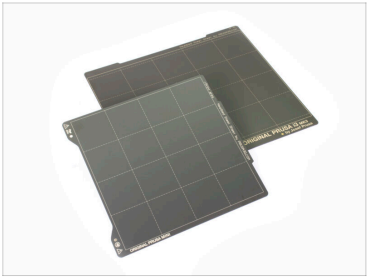
- **Please prepare following tools and equipment before you start:**
- Kitchen freezer
- New PEI sheet (order here, you must be logged in)
- Slotted screwdriver for PEI sheet removal
- Limonene (Lemonesol, D-limonene or something similar)
- Nitrile gloves (more than one pair)
- Paper towels (on a roll)
- Disposable fabric towels (on a roll)

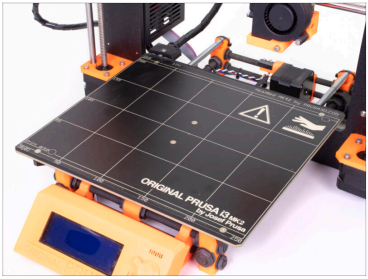
STEP 3 Shopping list (part 2)

- Sharp knife for PEI sheet trimming
- Plastic scraper (ice scraper will do fine)
- Microfibre cloth to prevent scratches to the new PEI surface
- Plastic bag bigger than the steel sheet
- Surface to work on - best is sturdy foam board, ideally at least twice the size of the steel sheet. A thin plastic sheet isn't recommended.
- Glass of clean tap water
- IPA or acetone

ⓘ Get all those items in advance, it is very complicated to stop or even pause in the middle of the process.

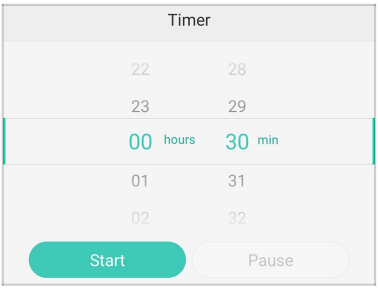
STEP 4 Other compatible products





- This guide works also for **Original Prusa MINI/MINI+** smooth PEI steel sheets. Since these are a little bit smaller, the difference is that after applying a new PEI sheet you have to trim more material from its sides.
- The same new uni-size replacement MK3S+ PEI sheet can also be used for older MK2S printer heatbed. Compared to the discontinued MK2S PEI sheet, the MK3S+ PEI is a bit larger and more material has to be trimmed after applying. After you get the new PEI sheet and all the other necessary materials, please follow the older guide for MK2S printer.

STEP 5 Freezing the damaged PEI surface



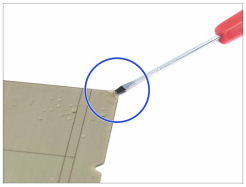
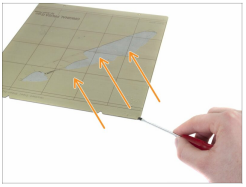
- For easier removal of the damaged PEI surface, we need to place it in the freezer.
- Set the temperature below -20°C (-4°F) or lower if your freezer allows it.

ⓘ The more you freeze the steel sheet the more time you get to remove the PEI sheet before the glue starts to stick again.

- Place the steel sheet in **at least for 30 minutes**.

ⓘ Don't place the new PEI sheet in the freezer as well ;)

STEP 6 Removing the PEI sheet

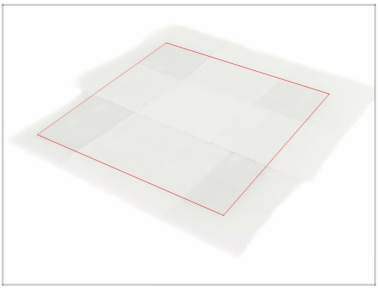




- **Time is of the essence here**! As soon as the temperature increases, the glue between the PEI sheet and surface of the steel sheet activates again!
- Take the steel sheet out from the freezer and using a sharp tool (e.g. screwdriver) lift one edge of the PEI sheet.
- Peel the entire PEI sheet off. The frozen glue will remain on the steel sheet. Proceed quickly!

⚠ Be careful, you can easily scratch the steel sheet or hurt yourself!

ⓘ If your PEI surface is damaged from the other side as well, you can remove it now.

STEP 7 Glue removal - placing the PAPER towels



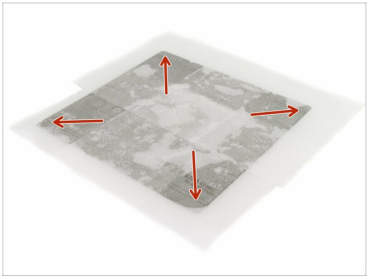
- As stated in the previous step, the glue will remain on the sheet and we need to remove it.

⚠ First, take the board or any sturdy disposable underlay and place the steel sheet on it. Don't take the board away until you finish the glue removal process.

- Place the paper towels on the steel sheet as shown in the picture. The whole glue surface has to be covered.

ⓘ The red line represents the steel sheet under the towels.

STEP 8 Glue removal - it is Limonene time



⚠ **IMPORTANT:** this step requires you to work the cleaning solvent (e.g. Limonene). Use the nitrile gloves and don't leave the bottle unattended. **Read the safety instructions first!!!**

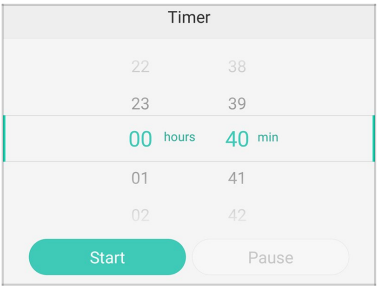
- Pour the Limonene on the paper towels until they are completely soaked with it.

  ⚠ Keep in mind that Limonene can be extremely toxic for your pets, keep them out!

- Place the steel sheet with towels in a plastic bag to slow down Limonene evaporation.

ⓘ Seal the bag to prevent the Limonene evaporating out. You can use the plastic bubble bag your steel sheet originally arrived in or any other plastic bag, which can be reasonably sealed.

STEP 9 Glue removal - letting the Limonene work

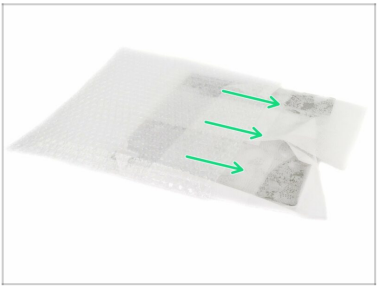


- Let the Limonene do its magic **for at least 40 minutes.**

⚠ Make sure no child or your house pet can reach plastic bag during this period.

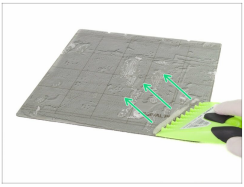
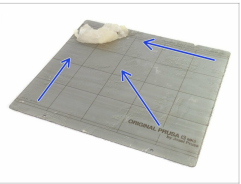
ⓘ Open window(s) and let new fresh air in the room, however, don't allow the room temperature drop too much.

STEP 10 Glue removal - removing the plastic bag



- Remove the steel sheet from the plastic bag.
- Make sure you still have the disposable board below your steel sheet as now it gets a bit messy.
- Remove the paper towels.

STEP 11 Glue removal - scrapping the glue


⚠ Proceed carefully and with patience. You might damage the scraper or the steel sheet.

- Get a plastic scraper and start peeling the glue from one corner.
- Try concentrating the glue in one place, it will be easier to remove it as one piece.
- Sheet looks almost clean, but we need to make sure all the glue is out. Proceed to the next step.

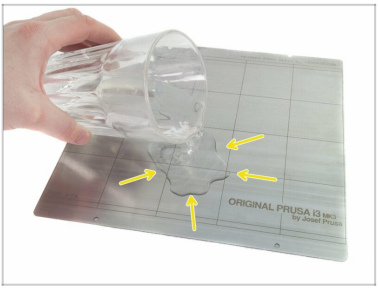
ⓘ Now, use the fabric towels to clean the scraper. Paper ones tend to tear up easily.

STEP 12 Glue removal - looking for "dirty" spots

- Take a closer look at the sheet, there might be spots with the remaining glue.
- Soak them with Limonene again, let it interact for few seconds and start removing the glue with the scraper again.
- This is how the steel sheet should look like. No bumps or spots with the glue.
- Apply this procedure on the entire sheet and repeat it until the steel sheet is completely "glue-free". Clean your scraper after each round, so you won't spread the previously removed glue.

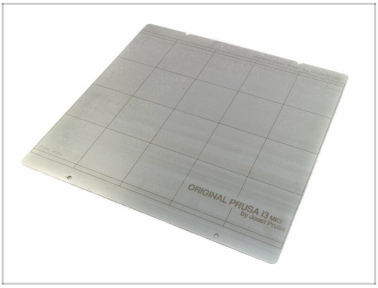
Use the fabric towels to clean the scraper. Paper ones tend to tear up easily.

STEP 13 Cleaning the steel sheet (water)



- Limonene tends to evaporate, but we need to make sure, there is none of it left including the smallest particles of the glue.
- Use distilled or clean tap water and pour (or spray) a reasonable amount on the surface.
- Wipe the entire sheet with a towel (paper or fabric).

STEP 14 Cleaning the steel sheet (IPA)



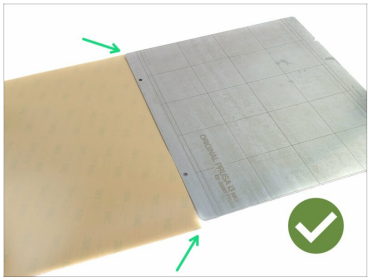
- Clean the steel sheet using IPA (or something similar that can remove grease marks) and a fabric towel.

⚠ After doing this, make sure no dust or fibres remain on the steel sheet surface! Also, avoid touching the sheet with your bare hands!

- The cleaning process is finished, now you can close the Limonene and get rid of the board below the steel sheet. Make your workspace clean.

ⓘ If you removed the PEI sheet from both sides, turn the sheet to the other side, go back to the Step 6 and repeat the glue removal process.

STEP 15 The PEI sheet preparation

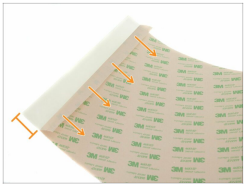
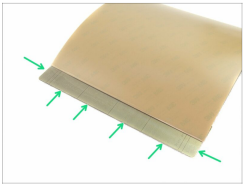
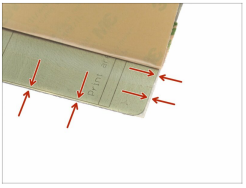


⚠ **WARNING:** Read all the instructions first and proceed carefully. Once you glue the PEI sheet wrong, there is **NO WAY BACK !!!**

- The **PEI sheet** is **NOT SQUARE**, compare it to the steel sheet to find proper orientation
- Properly oriented PEI sheet must stick out 1-2 mm on each side. There may be a larger overhang if you´re replacing the PEI sheet on Prusa **MINI/MINI+** steel sheet or your **MK2/MK2S**

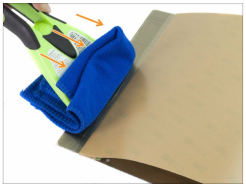
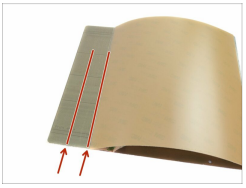
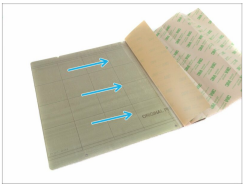
⚠ **DO NOT** try to peel out the PEI sheet when it's glued, even in small area, it'll ruin the glue at that place!

STEP 16 Gluing the new PEI sheet

- Peel out about 2 cm (1 inch) of glue protector from the SHORTER side of PEI sheet as shown in the picture.
- Make sure the PEI sheet is placed as shown in the picture. **The edges of the PEI sheet have to be aligned with the edges of the steel sheet.** The PEI sheet can slightly overlap the steel sheet edges, we will trim it later.
- Take a closer look to ensure both the PEI sheet and the steel sheet edges are aligned (parallel).

STEP 17 Bonding the PEI and steel sheet

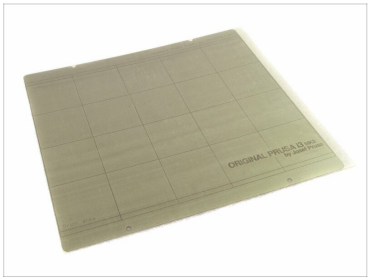




- Wrap the plastic scraper in the microfibre cloth and start pressing the PEI sheet against the steel sheet.

⚠ Proceed by 2-3 cm strips at MAX!!! Larger strips might trap air inside and cause an uneven surface.

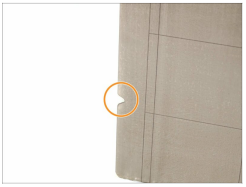
- Cover the entire surface of the steel sheet, use the scraper in all directions, **BUT BE CAREFUL** around the edges! See the next step for more.

STEP 18 Applying the PEI sheet near the edges



- **BE EXTRA CAREFUL** while working near the edges. **ALWAYS** swipe only out from the sheet, **NEVER** back. You might accidentally lift the PEI sheet up and let some air under it.
- Swipe across the entire surface and be careful around the edges.
- When ready, leave the glue do its work for a few minutes. You can clean most of the tools, leave just the knife, IPA and towels with you.

STEP 19 Trimming the edges


- Trim the extra PEI sheet using a sharp knife you prepared earlier. **ALWAYS** cut from the side of the applied PEI sheet.
- No need to perforate the circular openings. Those are used to hang the steel sheet during the manufacturing process.
- Be careful while cutting out the V-shaped openings, **ALWAYS** cut towards the steel sheet, **NEVER** outwards. Again, you might lift the PEI sheet.

STEP 20 ALL DONE!

- **Congratulations!** Your printing surface is like brand new!
- Place the steel sheet on the printer, clean it with IPA and give it a test print ;)

Notes:

Notes:

Notes:

Notes: