



# RIGID MATERIALS

Printing on Rigid Materials with the Gerber Solara ion™ & Gerber CAT I UV™

*This document instructs on the proper use of rigid materials when printing on the flat bed of the Gerber Solara ion & Gerber CAT I UV.*

## Application Notes!

The Gerber Solara ion & Gerber CAT I UV can print in a wide variety of materials up to 1" (25mm) thick and 64" (162cm) wide. Since there are so many different materials, Gerber recommends obtaining the manufacturer's specifications for storage, cleaning, and usage. This document covers the storage and care of some of the more common materials.

### Reviewing material product bulletins

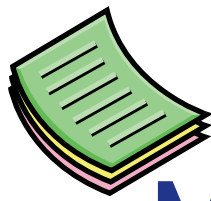
- Material manufacturers provide important information on usage, storage, cleaning, and disposal, as well as application tips for their materials. Review these documents and follow the instructions BEFORE printing for most up-to-date information.

### **Rigid material standards**

The Gerber Solara ion & Gerber CAT I UV can print on a wide range of rigid materials including, but not limited to: PVC, polystyrene, corrugated plastic, painted aluminum, acrylic, glass, MDO/MDF, plywood, and sign foam.

- Maximum rigid material width is 64" (162cm).
- Maximum rigid material thickness is 1" (25mm).
- Maximum rigid material length with roll-to-roll option is 120" (305cm).
- Maximum rigid material length without roll-to-roll option is 100" (254cm).
- Minimum sheet size is 12" x 12" (30.5cm x 30.5cm). (See "Printing small jobs" later in this document.)
- Rigid sign blank material must be flat within 0.03" (0.76mm).
- Warped material may jam in the printer and/or cause damage to the printer.
- Material that is bowed downward will scrape the platen and potentially cause print defects.
- Material that is bowed upward will contact the print carriage and cause damage to the printer or the job.





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### Old versus new materials

- Materials that are aged may have inferior surface and performance properties as compared to new materials of the same type. This degradation of quality can be due to storage conditions, chemical changes (plasticizers can migrate within the material), and other physical changes. Please follow manufacturer's guidelines for optimal results.
- Be cognizant that the age of materials may have a negative effect on print quality and receptivity to ink.

### Printable versus non-printing sides

- Some rigid materials have a printable side and a non-printable side. Make sure you are printing on the correct side.
- Printing on the non-printable side will yield inferior or unacceptable results.

### **Material preparation**

#### Normalizing rigid materials

- The size of materials can change depending on the temperature and/or humidity of the storage and working environment.
- For the best color-to-color and print-to-cut registration, "normalize" the rigid material in the working environment for at least 24 hours before printing.
- If the material has been stored in a location with temperature and humidity that is beyond the recommended range for the Gerber Solara ion & Gerber CAT I UV, or for the materials themselves, be aware that materials deep within a stack of material may take longer to normalize than the surface pieces.
- Properly prepare the material by making sure it contains no rough, bent or crumpled edges that pose a risk of a head strike.

*NOTE: It is STRONGLY recommended that materials with bent edges are NOT used because the print head to material distance is very small. Even slight changes in material height can cause head strikes and/or damage to the print.*





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### Removing protective films

- Some materials such as Dibond® or Sintra® come with a protective plastic film which must be removed before printing. Depending on the material, the protective film can be very difficult to detect; therefore, look closely at the material.
- When using a material for the first time, be careful to check for and remove the protective film or coating prior to printing.
- After removing the protective film, some materials should be allowed to “outgas” for a period of time before cleaning and usage. Consult the manufacturer’s product bulletin.
- If the protective film is removed with “jerky” motions it can leave lines of adhesive which can show through the printing (especially with light colors).
- The best way to remove the protective film is to wind it onto an empty roll core. Wrap the beginning of the protective film around the empty core and roll it across the material to wind up the film using a smooth motion.
- Any residual adhesive should be removed as described in “cleaning rigid materials” or according to the manufacturer’s instructions.

*NOTE: Even when carefully following the film removal instructions, lines in light colored prints may be unavoidable, particularly when using older materials which have been covered with the protective film for a lengthy time period.*

### Cleaning rigid materials

The surface to be printed must be wiped clean of any dust and debris. Some materials such as corrugated plastic, polycarbonate, expanded PVC, and painted aluminum require cleaning prior to printing to remove dust or debris which is often attracted by static electricity.

The proper method for cleaning rigid materials:

- Liberally spray a lint-free cloth with 99% isopropyl alcohol until the cloth is saturated.

*NOTE: Gerber does NOT recommend using 60% rubbing alcohol, 70% isopropyl alcohol, or other common cleaners because they may leave a residual film on the material.*





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- Wipe the material in a fluid motion in one direction, pushing the dirt off the edge of the material. The alcohol should be apparent on the surface.
- Do not wipe the material using a circular motion which can result in moving the dirt around into swirled patterns which may be visible after printing.
- Wait until the cleaning solution fully evaporates before loading or printing on the material. Complete evaporation of the solution may take several minutes. Refer to the material's product bulletin for specific instructions.

### Fingerprints and skin oils

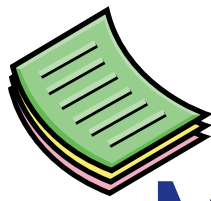
- Fingerprints and skin oils can interfere with ink adhesion. Remove any hand oils from the material as described in "cleaning rigid materials."
- Handle the clean material by the edges, or wear cotton gloves when handling it to avoid re-contaminating the surface.

### **Loading rigid material**

Occasionally the edges of a rigid material will not be pulled flat against the table by the vacuum and may curl upward or bow downward. Follow these instructions to properly secure the material to the table. Remember the distance between the material and the print head is very small and slight variations in material thickness can cause print head strikes or damage to the job.

- If necessary, secure the edges of the material to the table using a LIGHT adhesive tape.
- Do not use heavy-duty (thick) adhesive tape which may cause print head strikes.
- Make sure there are no wrinkles in the adhesive tape as they can be larger than the print gap and cause print head strikes.
- Do not use double-sided foam tape as it increases material thickness and can cause print head strikes.
- Do not layer heavy material on top of the material to force it to lay flat as this will interfere with the printer's ability to determine material height.
- Straighten out bent or crumbled edges to avoid print head strikes due to variations in material thickness.





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### Masking the table

Masking off unused portions of the table with non-porous material can help to increase the vacuum hold-down. Masking is also used when printing full-bleed jobs to protect the table from ink. Follow these important guidelines when masking the table:

- To increase vacuum suction, use non-porous material of the same thickness or a slightly thinner thickness than the job material (within 1/16" (1.6mm)). Never use thicker masking material as it will cause head strikes.
- A difference of 0.25" (6mm) or more between the thickness of the job material and masking material can cause print quality issues.
- When printing full-bleed, if there is a large difference between the material surface and the table or masking material, the ink spraying off the edge of the sheet may begin to cure in mid-air before it reaches the table or masking material. Partially cured ink droplets swirl around, ending up on the edge of the printed sheet, on the job, or on the bottom of the print head carriage. Always use masking materials that are the same thickness or slightly thinner than the job (within 1/16" (1.6mm)).

### Printing rigid material

#### Printing small jobs

- When printing small jobs (when the graphic width is less than 48" (122cm)), UV curing may be less than optimal when using Performance 1 bidirectional on the CAT I UV or 360 two-pass bidirectional mode on the ion.
- To ensure proper ink curing, create a repeat job and arrange the sign blanks across the table so that the total width is more than 48" (122cm).
- To ensure adequate exposure to UV light which results in proper curing, for unique printing applications GSP recommends using Production 2 mode or higher for the CAT I UV and 360 four-pass unidirectional mode or higher for the ion.





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### Printing long jobs

- When the printer is equipped with the optional roll-to-roll unit you can print jobs up to 10 feet (304.8cm) long.
- When printing materials in excess of 9 feet (274.3cm), in which a portion of the media comes to rest on the roll-to-roll platen, reinforce the platen vacuum by taping down the last foot of rigid material with a light adhesive tape. This will keep materials from bowing at the roll-to-roll end and prevent the possibility of head strikes that could ruin the job or damage the print heads.
- For jobs shorter than 9 feet (274.3cm) when using a printer equipped with a roll-to-roll unit, or shorter than 100 inches (2.5m/254cm) when using a flatbed-only printer, the material will rest fully on the table, and therefore no tape is necessary unless there are curled material edges.
- You may use a light adhesive tape to secure the edges of material to the table and prevent head strikes or damage to the gantry.

### Material quality affects results

- High quality rigid materials usually yield superior results over lesser quality materials.
- Some economically-priced materials have surface defects that can show through the ink no matter how well the surface is cleaned prior to printing.
- Inherent surface defects are most noticeable in light colored areas of a print. Busy prints or dark colors show fewer defects.
- Many materials look alike and do not have identifying marks. If possible, confirm that the product that was ordered is the product that was received. Request NO substitutions from your supplier.
- Dings, dents, and warps will also affect printability. Carefully inspect incoming products for shipping damage before accepting delivery.
- Notify your material supplier that you are using the material for digital flat bed printing and require a higher level of quality than other graphic sign making techniques.

### Options to improve adhesion

- Do not attempt to improve ink adhesion by changing profiles. Profiles have no effect on UV lamp power. Instead choose a higher quality print mode that requires more time to print.





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- If you are running in bidirectional mode, try unidirectional mode or increase the pass mode.
- Properly prepare the material before printing for best adhesion. This may include:
  1. Removing protective film present on some rigid materials.
  2. Allowing a period of time for the material to “outgas” before cleaning and usage.
  3. Cleaning with recommended solutions such as 99% isopropyl alcohol or IP Surface Cleaner for many rigid materials, and distilled water for vinyl.
  4. Allowing time for full evaporation of the cleaning solution before printing. Complete evaporation of the solution may take several minutes to several hours.
  5. Reviewing the manufacturer’s product bulletins for specific cleaning and usage instructions.
- While printed jobs are immediately ready to touch or cut, you can also allow the job extra time to cure as adhesion strength increases with time.

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