

foamalu_x

PRINTING & SURFACE PREPARATION



Foamalu_x is an extruded, closed cell, unplasticised PVC foam sheet. The extruded sheet has a smooth semi matt surface finish.

Foamalu_x has a preferred printing surface which is protected by a factory applied film. The reverse surface of the sheet has the same surface properties, however due to the nature of the extrusion process there may be a slight variation in the surface texture. As the reverse surface of the sheet does not have a protective film applied additional surface preparation may be required before printing.

Foamalu_x is successfully used in many applications where two sided printing is required.

Surface Preparation

A perfectly clean surface is an essential prerequisite to any substrate use; it must be free of dust, grease and fingerprints. Film protection at point of manufacturing maintains surface cleanliness and should be retained until the latest possible stage in processing.

Foamalu_x can be cleaned by wiping with a soapy water solution to remove any dust or dirt from prolonged storage. Residual soapy film may affect keying of inks and vinyl's, and should be removed using a lint free wipe moistened with aliphatic solvent – heptane or octane. These solvents will remove greasy deposits and dust or dirt adhering to the surface, as will methyl alcohol or methylated spirits. Always check the cleaner before use as they can dull the surface or embrittle the material. Cleaners must not contain silicone compounds, as residues of these prevent vinyl inks adhering. Wipe in one direction only; wiping with a circular motion can create additional static charge.

To remove any paint or other substances, isopropyl alcohol can be used carefully, though the sheet will need to be cleaned, rinsed with water and dried with a soft cloth afterwards. Never use brushes, squeegees or other sharp materials as they will damage the sheet surface. Abrasive and alkaline cleaners will harm the surface finish and must be avoided.

Printing

The preparation required will be determined very much by the printer's experience of the foam sheet types and the printing equipment, inks and processing conditions which are used to give best results. Preparation may involve applying an anti-static or cleaning agent such as isopropyl alcohol or a suitable detergent.

Printing on thin sheets

Foamalu_x is successfully used in many applications where two sided printing is required. However, when printing, drying and UV curing 1mm sheet, care should be taken.

Heat and IR from the UV curing process or drying process can naturally cause 1mm sheet to warp and distort more easily than thicker foam substrates.

A small sample of sheet should be matched with new or unfamiliar combinations of inks and the envisaged printing process. It should be assessed for acceptability before going into series production.

1mm sheet has less flexural strength than thicker sheets and may not be suitable for all applications especially those in suspended applications. The end-user should satisfy themselves that the product is suitable for the proposed application.



Brett Martin Ltd. pursues a policy of continuous product development and reserves the right to amend specifications without notice.

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Screen Printing

UV curable, solvent based and vinyl inks formulated for rigid PVC adhere well to the surface of Foamalux Foam PVC. Use of unsuitable inks, i.e. with a high solvent content, is advised against as these may cause damage to the substrate and result in poor printing results. Tixotrope varieties are preferential over liquid based inks, whereas epoxy and enamel paints are unsuitable as they can cause substrate brittleness and even breakage on impact.

New or unfamiliar combinations of inks should be trialled prior to printing, the combination of ink and substrate should be matched with the envisaged printing process before launching a series production. Conditions of use (e.g. outdoor signage), high traffic areas or additional processing of the printed substrates should also be considered when choosing ink type.

Care should be taken during the drying process as the intense UV & IR energy may cause warping or discolouration of the sheet if over-exposed. The temperature must not exceed 50°C.

Good quality results have been achieved using a 150-31 mesh with dot size resolution of 23.

Digital Printing

Foamalux Bright White has been engineered specifically for use with the new breed of high definition wide format digital printers and is increasingly chosen as the substrate for direct digital printing. Developed in consultation with digital equipment manufacturers and ink producers it meets the specific demands which this new technology has brought in terms of product performance and quality.

There is an array of environmental factors which are crucial for producing a quality print:

UV Lamp & Bulb Settings - Too low UV setting can result in inadequate ink adhesion due to insufficient cross-linking between the ink and substrate. Too high a setting may cause the substrate to discolour. The IR energy discharged by the bulbs may lead to overheating and possibly cause warping of the substrate.

Humidity - Excess ambient humidity increases static levels, which can lead to inadequate ink adhesion. Ink adhesion should be assessed 24 – 48 hours post print.

Colour/Image - Bright and transparent shades adhere better to the substrate than dark and opaque shades. Large blocks of singular colours are more likely to show static related printing anomalies in comparison to other images.

To achieve the best print image, it is recommended to run a trial print to ensure the optimum print settings are obtained.

Static

Static Electricity is a natural environmental phenomenon that can produce unacceptable results in digital printing applications. In the case of PVC sheets, static can be generated from various sources, for example, when the protective film is removed, friction from transport, pressure of stacked sheets etc. The ultra-fine inkjet nozzles in modern printing equipment fire miniscule droplets of ink onto the surface of the print media and the presence of static electricity can cause these droplets to deflect from their intended path, resulting in variable ink coverage across the media causing overspray, shading and banding issues.

Static charge attracts dust prior to or during the printing process, causing poor quality prints and white-spotting. Ink can wick from the ink head onto the substrate if dust is transferred onto it.

Many of the substrates used within the Digital Print industry can be sensitive to static and it is vital that all precautions are taken when preparing these materials before printing. Listed below are a series of recommendations relating to the preparation of Foam PVC Sheets prior to processing through a digital print machine.



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Material Handling & Storage

- Always use lint free gloves when handling sheets and ensure that the surface to be printed is not touched by uncovered hands, as this can leave a greasy residue on the sheet.
- Avoid dragging sheets across each other, as this can impart additional and unwanted static into the material.
- Allow newly delivered material time to settle before printing, as movement during transportation can cause an increase in static.

Humidity & Temperature

Humidity & temperature can have a direct influence on the static levels within all materials:

- Try to maintain the relative humidity at 50% or more within the area of the printing machine. This can be controlled with the use of a Hygrometer.
- Avoid fluctuations in temperature around the machine by keeping doors and windows closed and minimising drafts and areas of rapidly moving air.

Reducing Static Electricity

Print on the filmed side of the sheet, film should be removed slowly, in one direction to avoid additional static charge build up, for optimum print results clean using an ionized air bar/gun or anti-static brush.

The use of professional ionizing equipment is the most effective way of discharging static electricity and it is recommended that ionization should take place immediately prior to printing.

- **Anti-static bars** are now standard on many machines and in most cases these can also be retro-fitted to printers that do not already have one installed.
- **Ionizing air guns** are also highly effective. They replace the need to wipe the sheet with an anti-static brush or cloth whilst also ionizing the surface at the same time.

The curtains or nozzles should be placed carefully at the sheet sides or above the surface of the sheet to maintain a constant stream of ionised air across the substrate.

- **Anti-static brushes** are less effective than a bar or a gun but can be used in the absence of the other two options. It is recommended to use an Anti-Static Brush with a range of surface resistivity between 10¹² to 10¹⁶ Ohms for insulative materials such as Foam PVC.

It is advisable to always wear protective gloves and keep sheets covered when not in use. It is in the interest of the printer to ensure that all static is discharged from substrates prior to digitally printing them.



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