Biplex®

Biplex® : Processing Guide

IPB NV
PLASTIC SHEET EXTRUSION

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Biplex® - Cutting

Cutting of Biplex® sheets :

Biplex® sheets are cutted on the production line with a shearing-knife into the desired dimension.

Biplex can be cutted by means of a shearing-knife (guillotine) or by hand with a sharp knife.

If big quantities are required it is recommended to diecut the sheets, as this is a faster and more economic solution.
For special forms and small pieces diecutting is also the most economic solution.

Biplex can also be cutted up to the desired shape on a plotting table.

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Biplex® - Diecutting

Diecutting of Biplex® sheets :

Biplex® can easily be diecutted on conventional cardboard diecutting machines.

If big quantities are required it is recommended to diecut the sheets, as this is a faster and more economic solution.
For special forms and small pieces diecutting is also the most economic solution.

The pressure on the diecutting tool is dependant on thickness of the sheet, weight/m² and width of the channels of the sheet.

The lower the pressure on the tool, the longer the lifetime of this tool.

We recommend to use steel rules on the diecutting tool. The less sharp this steel rules, the more pressure is required to cut through the sheet.

Proper testing is advised prior to diecutting of the Biplex sheets.

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Biplex® - Welding

Biplex® can be welded by different methods :

- heat welding
- ultrasonic welding
- hot air welding

The welding method to be applied is dependant on the design and nature of the application.

Some important recommendations when welding :

- The areas that will be welded, need to be free from dirt and grease
- It is preferred that the sheets are corona treated for welding applications
- Certain additives can have an impact on the welding of the sheets
  (Anti-static can cause segregation to the surface of the sheets)
- The ideal temperature for heat welding is between 190 & 240°C.
  (variation in the welding spot can not be higher then 2°C)
- The pressure applied on the welding spot should be high enough to press all the air out of the weld (+/- 1kg/cm²). This prevents oxidation.
  Take in mind that overpressure on the weld can influence the quality of the weld.
- The time interval between heating and pressure cannot be higher than 1 second.
- The welded parts are to be kept in position till sufficient cooling is obtained.
- The use of heated nitrogen (N_2) is preferred to normal heated air.

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Biplex® - Printing

Biplex® sheets are preferably printed by means of screenprinting.

To assure a good adhesion of the inks, corona treatment of the sheets is obliged.
For screenprinting it is recommended to use solvent-based or UV inks.

Water-based inks are giving poorer results.

Advised screens :
The finer the mesh of the screen, the finer the print. The rougher the screen, the thicker will be the print layer.
For printing with solvent-based inks, screens with 120 lines/inch are recommended.
For thicker prints, rougher screens should be used.
For printing with UV-based inks, screens with 150-180 lines/inch are recommended.
If rougher screens are used with UV-based inks, the ink would not dry fast enough.

Drying of solvent-based inks :
The drying of the ink can be realised in dry-racks in a drying oven (furnace).
The drying time and temperature is dependant on the sheet thickness, the thickness of the printed layer and the type of drying oven. Proper tests prior to production are recommended.

Drying of UV-based inks :
UV-based inks are dried by UV-radiation. The drying happens in a split second.
The speed of exposure to this UV-radiation source is dependant on the intensity of the UV-radiation, thickness of the printed layer, colour of print, etc....

Whilst using solvent-based inks, it is advised to keep in mind that the ink can dry after a while into the screen when not operating.
Printing with UV-inks doesn't have this risk, since inks are drying only under UV-radiation.

There are a lot of ink-suppliers who offer inks suitable for printing on polypropylene sheets.
The best ink will be different for every printer, so proper testing is advised.

We can recommend the following inks :

Solvent-based ink suppliers :

- POLYPRO TPP	*SICO Screen inks NV*
- MASTERFLEX RA	*SunChemical NV*
- UNIVERSAL SE	*SunChemical NV*

UV-based ink suppliers :

- PLASTOLUV	*SICO Screen inks NV*
- UV EXCURE	*ARETS GRAPHICS*

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Biplex® - Bonding

Due to the good chemical resistance of Biplex, bonding is quite difficult.
It is important that the areas to be bonded are clean and free of grease.
The best results are obtained by using hot melt types, based upon atactic polypropylene.
Also glues based upon ethyl vinyl acetate (EVA) are giving satisfying results.

Suppliers of EVA-type glues :

3M
Henkel
Loctite

Suppliers of atactic polypropylene hot melt types :

FA BOTTA
Industriestrasse 39
D-86169 Mannheim
Tel. 0049/621.330.40

FA HARDCAST-EUROPE BV
Bloemendalenweg 25-33
NL-1382 KB Weesp
Tel. 0031/294.014.155

FA JOWET
Wittekindstrasse 19
D-4930 Detmold
Tel. 0049/523.174.90

Biplex can also be stapled :

The Biplex sheet do not require any special pretreatment.
The maximum distance on which can be stapled is 250 mm.

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Biplex® - Sterilising

Biplex® can easily be applied in the medical and food industry, because of the fact that it can easily be sterilised.

Biplex® can easily be cleaned with alcohol without damaging the material.

Biplex® can easily be sterilised, with following methods :

- sterilisation with ethylene Oxyde (ETO) fluid :

  (this doesn't affect the material and can be repeated multiple times)
  Sterilisation time and temperature are inverse ratio to each other.
  The advised sterilisation time and temperature is the following :
  - 20 min. @ 120°C
  - 10 min. @ 134°C

- sterilisation through gamma radiation :

  Standard gamma sterilisation at AECL-2.5 Mega Rad or 25 kGy.
  Repeated gamma sterilisation makes Biplex brittle. (reduces the mechanical charactiristics)

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Biplex® - Recycling

Recycling of Biplex® sheets :

Biplex® sheets are produced out of a polypropylene and polyethylene copolymer.
Both materials are recyclable.

After regrinding of the sheet into granulates, it can be reprocessed (extrusion, injection, ...)

Polypropylene is a class 5 product :

Biplex® sheets are biologically inert and are not bio-degradable. A selective collection and recycling is to be preferred above landfilling.
If collection for recycling is not possible, full incineration with heat-recuperation is an option, if approved by local authorities (the caloric value of PP is higher than wood for example).

All above information is based on current knowledge and experience. The data does not imply any warranty from the manufacturer towards third parties. Users should consider the above data as a guideline and gather additional information, to make independant decisions regarding the proper use, disposal, safety towards other parties and the protection of the environment.
For more specific information, please feel free to contact our technical department :

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Biplex® - Stocking and handling

Stocking of Biplex® sheets :

Biplex® sheets are supplied in sheet or roll form stacked upon a wooden pallet.
The pallet should be perfectly flat to avoid deformation of the sheet.
The pallet should be placed upon a flat undergound to avoid sliding/dammage to the sheets.
It is preferable that the pallets have at least the size of the sheets, this to prevent external dammage to the sheets.

Biplex® sheets should always be stocked indoors, sheet and protection material may not be exposed to sun and rain.

It is advised to stock the sheets at room temperature, as this facilitates the further conversion of the sheets.

Handling of Biplex® sheets :

It is advised when handling the sheets, not to slide the sheets over each other to avoid scratching of the sheets.

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Biplex® - Cleaning

Cleaning of Biplex® sheets :

Biplex® sheets are produced out of a polypropylene and polyethylene copolymer.

As Biplex® sheets have an excellent chemical resistance, a variety of products for cleaning can be used.

Biplex® sheets have a high static load which can cause attraction of dust, if the sheets are not produced with anti-static additives.

Biplex® sheets do not absorb water, they are in some applications washed after every use in automatic washing tunnels.

Some products suitable for cleaning Biplex sheets are :

- Alcoholic substances (as Isopropylalcohol)
- Aceton
- Anti-static sheet cleaners
- White spirit
- PVC-cleaners
- Water-soap solutions

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