

TECHNICAL DATA

PRODUCT SIZE

Width: 1220mm
 Length: 50m/roll
 Thickness: ca0.2mm

ADHESION DURABILITY AFTER HEATING

No adhesion degradation after being left in an atmosphere at 70°C for 1 month.

COLOUR FASTNESS

SW, W, WA, WB, CM, DA, FM, K, F, BR, CY, EW, EM. No appreciable change after 5000hrs. All other Belbien vinyls, no appreciable change after 300hrs.

» Sunshine Carbon Arc Weathering Test (ISO 4892-4)

STAIN RESISTANCE

The following substances can be removed, even after 24 hours, with a neutral detergent or ethyl alcohol wipes.

» Coca- Cola	» Facial Soap Diluted Water (1%)
» Wine	» Body Soap Diluted Water (1%)
» Ketchup	» House-Use Ammonia
» Vinegar	» 10% HCL
» Soy Sauce	» Formalin
» Water-Ink Marker (Black)	» Oxygenated Water

Residue of Oil-Ink Marker and Shoe Polish can be removed from EM and EW with neutral detergent or ethyl alcohol.

CHEMICAL / SOLVENT RESISTANCE

Test Result	Type of Chemicals / Solvent
No change	Petroleum Benzene
	Ethyl Alcohol
	Heptane
	N-hexane
	Ammonia Water
	10% HCL
	10% NaOH
Change on surface	Toluene
	Ethyl Acetate
	Methyl Ethyl Ketone

» EM, EW is not damaged by the above-mentioned chemicals/solvents.
 » Chemical was applied to the Belbien and after 6 hours, the Belbien was washed and inspected. (ISO 4586-2)

DIMENSIONAL STABILITY

The cut width expansion is within 0.3mm (ISO 11501)

ADHESION STABILITY UNDER MOISTURE

No adhesion degradation after being left in an atmosphere at 45°C and RH at 95% for 1 month.

ABRASION RESISTANCE

Abrasion ends at 7000 cycles.
 » Taber Abrasion Test
 CS-17 wheel loaded with 1kg weight

HEAT CYCLE DURABILITY

Neither delamination or colour change is observed.
 » Installed Belbien at size of 120 x 120mm on an aluminum plate. Left for 2hrs at -20°C, ten times. Then checked the adhesion and colour change.

ANTI-CRACK UNDER LOW TEMPERATURE

No crack observed after 24 hrs at 0°C.

ANTI-MOULD PROPERTIES

Anti-mould properties testing (by JIS Z 2911: 2010)
 » No visible mould growth was observed under a microscope.

BONDING STRENGTH

	With Primer	No Primer
Plywood (Lauan)	40.18	-
Plywood (Basswood)	45.25	-
Plaster Board	5.33 ¹	-
Silicate Calcium Board	46.08	-
Galvanized Steel	47.04	38.22
Aluminum Plate	-	29.40
Stainless Steel	-	31.36
Acrylic Board	-	32.34

» After 24hrs of adhesion onto each of the above mentioned substrates, Belbien was peeled off the substrate at 180° angle (N/25mm wide).²
 Results in MPa

1 Destroy the substrate.

2 This value is for Belbien W-216. Each value slightly differs according to the type of Belbien.

FIRE PERFORMANCE

Group Number Classification 2
 Average Specific Extinction Area 65 m²/kg
 » As determined by AS 5637.1-2015

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BELBIEN WHITEBOARD

Belbien Whiteboard sheet is designed and manufactured for interior use.

PRODUCT DIMENSION

Width: 1250mm
Length: 30m/roll
Thickness: ca.0.2mm

BONDING STRENGTH

No Primer

Aluminum plate	over 19
Stainless Steel	over 30

- » After 24 hrs of adhesion onto each of the above-mentioned substrates, peel Belbien off the substrate at 180° angle (N/25mm wide). Results in MPa

DIMENSIONAL STABILITY

The cut width expansion is within 0.3mm
» Install Belbien on an aluminum plate with a cut in the center the size of 200mm x 200mm. The plate then needs to be placed into an oven for 2hrs at 100°C. (ISO 11501)

CHEMICAL/SOLVENT RESISTANCE

Test Result	Type of Chemicals/Solvent
» No change	» Petroleum Benzene » Ethyl Alcohol » Toluene
» Testing by JIS K 6902	

PROCESSING CHARACTERISTICS CHART

Base material (metal)

Pattern number	Flat surface	2D curved surface	3D curved surface
BWH (Belbien Whiteboard Sheet)	○	△	×

○: good △: Caution required ×: Inadaptable

FEATURES AND BENEFITS

- » The production lot number of each product is displayed on the paper core and on the side of the cardboard carton. Please note the number before starting to work with the product. If problem occurs, please let us know the lot number.
- » The product appearance can be slightly different between production lots. Please avoid applying products from different lots on the same surface.
- » Do not use or store products outdoors or in any place exposed to direct sunlight, fire, heat source, direct blow from an air-conditioner.
- » Do not use the products near any heat-producing object such as a pan, kettle, or steam iron: it may result in the deterioration of the sheet.
- » Some types of lighting fixtures (e.g., three-band fluorescent lamps), if combined with Belbien whiteboard sheet, can cause a rainbow to appear.

- » Note that if adhesive or curing tape is left affixed to the surface of a Belbien whiteboard sheet for a long time, it may become sticky and difficult to remove.
- » Before installing film, check compatibility between colour of substrate and Belbien. If the colour compatibility is poor, the finish may be different from what you had expected.

INSTALLATION

Installation environment

- » The product needs to be conditioned in the room of installation for a minimum of 2 hours at stable temperatures ie $\pm 2^{\circ}\text{C}$ prior to installation. For adhesive strength to improve, the temperature needs to remain stable after installation for 24 hours.
- » If the ambient temperature is below 10°C , the film adhesive does not activate well. This causes poor contact, resulting in film bubbling or separation. In this case, raise the ambient temperature and the temperature of the substrate.
- » The substrate must be sufficiently pretreated to ensure that the surface is smooth.
- » If the substrate has been finished with a teflon based paint, the surface MUST be lightly sanded and primer applied to provide adhesion.
- » A film surface will be unrepairable if it is scratched by a thumbtack, ballpoint pen, nail, or other sharp objects.
- » Each film is ruled into approx. 50mm squares, which you can use as a guideline for cutting the film.
- » Before cutting or rewinding a Belbien product, place on the floor or workbench a sufficiently cleaned sheet-cutting underlay to prevent the film from being scratched or causing static electricity to attract dust and dirt onto the surface.
- » Please note that when a sheet in roll form is unwound into a flat state, the separator (release paper) may be separated from the sheet.
- » If an uninstalled length must be temporarily stored, wind it with the separator facing inwards, tape the edge with masking tape, and then keep it standing. Avoid laying it down to prevent it from being flawed or creased.

Application

- » Please be careful not to get a hand or any other part of your body cut by the edge of the sheet.
- » For perfect adhesive performance, make sure that the film is in full contact with the substrate. Even if the film seems to be adhered enough, a trace amount of air may be left between the film and base material. The air may expand as the ambient temperature increase, creating bubbles on the surface.
- » The adhesive on the backside is designed to increase the adhesion with the substrate over time.
- » If the substrate has been finished with a teflon based paint, the surface MUST be lightly sanded and primer applied to provide adhesion. (eg. smoothing and sanding), and apply primer so that it is firmly adhered to the surface.
- » To apply a film, use a squeegee with a soft cloth wound around it (rubbing the surface with a hard object will scratch the surface, making marks hard to erase).
- » When a film must be bent, curled, or overlapped on an existing film, coat the substrate thoroughly with a primer to ensure that the film will adhere to the material firmly (corners to which the film is applied should desirably have a radius of at least 2R. If a Belbien film is applied by overlapping on an existing decorative film, it is not regarded as fire-safety-certified).
- » Ensure that the existing film is securely fastened to the substrate and the new film is pressed firmly onto the existing film.
- » Belbien film does not require a heat gun for installation on flat surfaces. If the film needs to be installed around or into a corner, then it may be heated slightly to assist. Do not use force to bend the film as irreversible stress whitening may occur. (Note: Overheating of the film may deform it or result in poor adhesion).

- » The product needs to be conditioned in the room of installation for a minimum of 2 hours at stable temperatures ie $\pm 2^{\circ}\text{C}$ prior to installation. For adhesive strength to improve, the temperature needs to remain stable after installation for 24 hours. Please do not use a marker pen, residue may collect in the gaps between the two films and stain the product permanently.
- » Two films of the same pattern can look slightly different from each other in colour and gloss level if they are from different production lot. If you want to apply two same patterns from different production lot, please pay particular attention. To prevent a possible problem, we recommend you provide a gap between two films for the joint.
- » Even a solid colour film has a correct orientation. If the orientation is different between two films in the same colour, they look different. When applying films, please make sure that the orientation of the logo printed on the separator looks correct.
- » Depending on the light source, environment, and viewing angle, the texture difference on the joint may become conspicuous.

Overlapping installation

- » Please note that is a Belbien is applied to decorative film which already exists on the substrate and if fire-certification is required, Belbien may not be considered fire-rated.
- » Before applying a Belbien film on an existing film, apply the Belbien primer and wait until it dries. Please pay attention not to allow the primer to be extruded.

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