

# Technical Data

## Product Size

Width : 1220mm Length : 50m/roll Thickness : ca.0.2mm  
 (Width : 48 inches Length : 54 yards/roll Thickness : ca.0.008 inches)

## Color Fastness

**BELBIEN EX** No appreciable change after 5000 hrs.  
**BELBIEN INTERIOR** No appreciable change after 300 hrs.  
 Sunshine Carbon Arc Weathering Test ( ISO 4892-4)

## Adhesion Durability After Heating

No adhesion degradation after being left in an atmosphere at 65 °C (149 °F) for 1 month.

## Anti-crack Under Low Temperature

No crack observed after being left in an atmosphere at 0 °C (32 °F) for 24 hrs.

## Dimensional Stability

The cut width expansion is within 0.3mm (0.012")  
 Install BELBIEN in the size of 120mm×120mm (4.724"×4.724") on an aluminum plate with cut in the center in the size of 100mm×100mm (3.937"×3.937"). The plate is put in an oven for 5 hrs. at 100 °C (212 °F). (ISO 11501)

## Heat Cycle Durability

Neither delamination or color change is observed.  
 Install BELBIEN in the size of 120mm×120mm (4.724"×4.724") on an aluminum plate. Left them for 2 hrs. at -20°C (-4°F) and 70 °C (158 °F) ten times. Then check the adhesion and color change.

## 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 3 days of adhesion onto each of the above-mentioned substrate, peel BELBIEN off the substrate at 180 ° angle (N/25mm wide).\*2

\*1. Destroy the substrate.

\*2. Those value is of BELBIEN W-216. Each value slightly differs according to the type of BELBIEN.

## Chemical / Solvent Resistance

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

\* BELBIEN EX or FR is not damaged by all of the above-mentioned chemicals/solvents.

Drop the above-mentioned chemicals on BELBIEN and leave it on a watch dish for 6 hrs. before flushing the surface with water for final evaluation. (ISO 4586-2)

## Stain Resistance

Stain can be removed with neutral detergent or ethyl alcohol after direct contact with the following substances for 24 hrs.

<input type="checkbox"/> Coca-Cola	<input type="checkbox"/> Facial Soap Diluted Water (1%)
<input type="checkbox"/> Wine	<input type="checkbox"/> Body Soap Diluted Water (1%)
<input type="checkbox"/> Ketchup	<input type="checkbox"/> House-Use Ammonia
<input type="checkbox"/> Vinegar	<input type="checkbox"/> 10% HCL
<input type="checkbox"/> Soy Sauce	<input type="checkbox"/> Formalin
<input type="checkbox"/> Water-Ink Marker (Black)	<input type="checkbox"/> Oxygenated Water

\* Residue of Oil-Ink Marker and Shoe Polish can be removed from BELBIEN EX and FR with neutral detergent or ethyl alcohol.

## Abrasion Resistance

Abrasion ends at 7000 cycles.  
 (BELBIEN FR's abrasion ends at 5000 cycles.)  
 Taber Abrasion Test :  
 CS-17 wheel loaded with 1kg (2.2 pounds) weights

## Adhesion Stability Under Moisture

No adhesion degradation after being left in an atmosphere at 45 °C (113 °F) and RH at 95% for 1 month.

## Fire And Smoke Ratings

ASTM E-84 and UL-723 Class A (Class 1)

## Certification For Shipbuilding Interior Use

DNV MED-B-4011 (BELBIEN) MED-B-4012 (BELBIEN EX)

BELBIEN is produced under very strict quality control, however color and glossness may vary slightly on each product lot.

All statements in this Data regarding BELBIEN are based on procedures and tests which we believe are reliable, and may be changed for improvement of quality without notice; but it will be the sole responsibility of the customer and/or end user to use BELBIEN properly, and therefore assume all risk and liability in connection therewith.