

# ChemLam®

## Technical Bulletin



### Product Description

#### Composition

Both thin or Compact ChemLam® high pressure laminate HPL are made with high-tech thermosetting resin and special decorative papers that give design and high performance surface properties, Its core is composed of several layers of phenolic resin impregnated papers that are consolidated under processing conditions of 90 kg/cm<sup>2</sup> of pressure and temperature about 135°C (275°F). After pressed, ChemLam® thin laminates are sized to its final dimensions. Thin laminates are back sanded to allow optimal gluing and adhesion on substrates.

#### Recommended Uses

ChemLam® HPL, resistant to chemicals, on horizontal and vertical interior surfaces, which requires appearance, quality, durability and resistance to strong acids, corrosive salts, alkalis and other substances commonly used in surfaces of chemical laboratories, laboratories clinical, photographic rooms, hospital furniture, beauty salons, clinics, work surfaces in the food industry and cold rooms.

#### Basic Limitations

ChemLam® is a surface for indoor use. Does not support extreme humidity or temperature above 135°C (275°F). It should not be exposed to direct and continuous sunlight. Only available in matt finish. Due to the type of materials that give it its chemical resistance, ChemLam® final designs change slightly in tone with respect to line laminates. We recommend requesting the approved line for this type of application and its corresponding sample in order to make the best selection. Any additional guidance please consult our commercial representative.

Dimensions: 1.22x2.44m (4x8ft) - 1.22x3.06m (4x10ft) - 1.53x3.66m (5x12ft) For additional guidance on quality, designs, availability, sizes, costs, etc., please consult our collection at [www.lamitech.com.co](http://www.lamitech.com.co) and contact one of our representatives.

Chart Weight/m <sup>2</sup>	
Thickness (mm)	kg/m <sup>2</sup>
0.7	1.0
1.0	1.4
1.2	1.7
1.6	2.2
2.0	2.8
3.0	4.2
4.0	5.6
6.0	8.4
8.0	11.2
10.0	14.0
12.0	16.8
13.0	18.2

# ChemLam®

## Technical Bulletin



ChemLam® (High Chemical Resistance Decorative Laminate) for 24 Hours (Stain Resistance Test specified by international standard EN-438 part # 2 Numeral 26). At the end of this time, the laminate was cleaned with plenty of water and a soft cloth. Once clean and dry, the visual inspection and qualification were carried out under the following criteria: Qualification 5: No change. Rating 4: Light color or brightness change, only visible at certain angles Rating. 3: moderate color or brightness change. Rating 2: Severe color and brightness change. Rating 1: Destruction and / or surface blowing.

AGENT	CHEMICAL SUBSTANCE	GRADE
1	Nitric Acid 65%	2
2	Sulfuric Acid 96%	2
3	Hydrochloric Acid 37%	5
4	Acetone	5
5	Toluene	5
6	Chloroform	5
7	Phenol 90%	5
8	Sodium Hydroxide 50%	5
9	Sodium Hypochlorite 13%	5
10	Hydrogen Peroxide 5%	5
11	Gasoline	5
12	Potassium Permanganate	2
13	Silver Nitrate 1%	5
14	Glacial Acetic Acid 99%	5
15	Dimethylformamide 99%	5
16	Amyl Acetate	5
17	Methylene Chloride	5
18	Ammonia 25%	5
19	Solid Iodine 100%	2
20	Phenolphthalein 1%	5
21	Methylene Red 1%	5
22	Methylene Blue 1%	5
23	Methanol	5
24	Tymol Blue	5
25	Ferric Chloride 10%	5
26	Sodium Chloride 10%	5
27	Chromic Acid 60%	5
28	N-Hexane	5

# ChemLam®

## Technical Bulletin



AGENT	CHEMICAL SUBSTANCE	GRADE
29	Boric Acid	5
30	Ethyl Acetate	5
31	Trichlorethylene	5
32	Tetrahydrofuran (THF)	5
33	Formic Acid 85%	5
34	Phosphoric Acid 85%	5
35	Sodium Hydroxide 10%	5
36	Sodium Hydroxide 20%	5
37	Sodium Hydroxide 40%	5

Agents rated 3-4: They should be cleaned with soap and water in less than one (1) hour. Agents with 1-2 rating: They should be cleaned with soap and water immediately. Coffee stain caused by potassium permanganate, can be removed with 3% hydrogen peroxide leaving for an hour and then clean with soap and water immediately.

Test of resistance to international normative staining EN-438 Part # 2 Numeral 26.  
Exposure time: 24 hrs.

### Transport & Transfer

The Compact ChemLam® panels must be transported in a horizontal position, perfectly aligned one above the other, without exceeding 10 height modules. It is recommended to protect the perimeter with cardboard to prevent them from being knocked out on contact and should preferably be transported on pallets.

The manipulation of the modules on site must always be done with gloves to avoid cuts by the edges of the panels. Manual transfer must be performed in a horizontal position. If vertical transport devices are required, they should be designed with the same dimension of the panels. Despite the excellent hardness of the surface and the protective film for assembly, the weight of the stack of panels can be a possible cause of damage. Therefore, always avoid any kind of dirt or dust between the panels.

The ChemLam® panels must be secured against slipping during transport, when loading or unloading, the panels must be lifted. Do not push or drag them around the edges. The transport protection film must not be exposed to heat or direct sunshine.

### Storage

Storage of the panels must always follow the following recommendations, independent from their modulation:

# ChemLam®

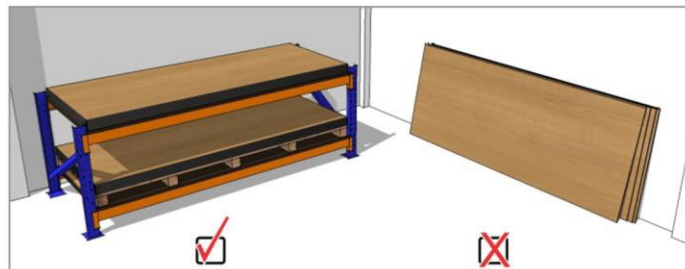
## Technical Bulletin



The ChemLam® should be conditioned in a dry and ventilated place, never outdoors. It must be stowed horizontally and stored as much as possible at ambient temperature of less than 30°C and relative humidity less than 60%. Avoid differences in temperature on the two surfaces of the panel, for no reason should the panels be supported on walls or placed in vertical position, because, due to the force of gravity and frequent changes in temperature, the panels can lose their dimensional stability. The excess of humidity can damage the dimensional stability of the panels, they should never be stored outdoors because the horizontality of the storage, the modules can be affected by water stagnation.

It must be verified that the modules are one on top of the other in a continuous manner, without corbelled panel areas on other panels. A maximum of 10 continuous modules should be stored. It is advisable to place the panels on pallets or any other type of platform that allows the lower circulation of air and protect from possible water deposits. Always place the protective laminate above and below the panels and put a weight on top. After removing the panels, the protective laminate must be closed over the stack of panels. The same will have to be done with stacks of cut panels. Improper storage can cause permanent deformation of the panel. The frontal protective film with which the panels of Compact ChemLam® are delivered should only be removed once the ChemLam® installed, as it protects it from the friction to which it is exposed during transport, storage and installation, however, the protective film backup must be removed before installation to avoid unbalance of the installed product. As soon as the protective film is removed, the first cleaning process must be done to remove any trace or residue of the adhesive from the film completely, the longer the product installed with the protective film passes, the more difficult it is to remove the residue from the adhesive. With pre-installed fastening elements, therefore, care is to be taken that the climatic effect is uniform on all sides. Use intermediate layers of wood or plastic.

Note that contaminants (for example, waste from the oil of the cutting or drilling machine, grease, adhesive residue, construction mortars, sunscreens, chemicals in general, etc.), which are placed on the surface of the ChemLam® during storage or assembly should be removed immediately, leaving no residue. In case of disregarding this recommendation, claims related to color, finish and surface will not be accepted / recognized. Refer to the Maintenance and Cleaning Instructions chapter.



# ChemLam<sup>®</sup>

## Technical Bulletin



### How To Cut ChemLam<sup>®</sup>

The following general guidelines apply to cuts made onto ChemLam<sup>®</sup> high pressure laminate (HPL) using circular saws.

Feed: 7 - 22m/min (23 - 72ft/min)

- Teeth: alternate or flat-top V-shaped teeth.
- Positioning: always position the teeth on the decorative side of the panel.
- Edge cutting: best results are obtained using bench machinery. Sharp edges can be rounded by means of sandpaper or a milling machine.
- Rake angle: best performance are obtained with a 45° rake angle. Use rubbers shims to prevent the panels from sliding in case the machine is not equipped with a mobile work top.



When using a hand-held circular saw, the panel side with no decorative should be turned upwards.

### Bench Circular Saw

- Keep decorative side facing upwards when saw cutting, drilling and milling.
- When a decorative side must be slid over the machine's worktop while machining, it is recommended to place a protective panel on the worktop (E.g. hardwood).

### Jig Saw

Carbide-tipped, interior corners of cut-outs should be drilled first with 8 - 10mm ( $\approx 5/16 - 3/8$ in) hole diameter. Consider the use of a specific jig saw blade for decorative surfaces.

# ChemLam®

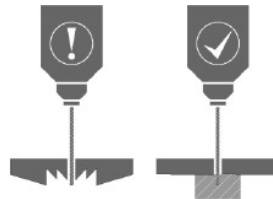
## Technical Bulletin



### Drilling

The use of carbide-tipped HSS-drill bits with 60-80° angle is recommended. ChemLam® high pressure laminate (HPL) should be drilled using support sheets. Large holes, such as those for suspension and locking equipment, should be drilled using combination drill bits. The exit speed of the drill bit must be carefully selected so as not to damage the product surface. Shortly before the drill bit exits the work piece in full diameter, the feed rate must be reduced by 50%.

During drilling operations, the counter-pressure should be increased using hardwood or equivalent material to prevent the surface from breaking.



### Milling

Milling shapes:

- Straight and slanted bits for cutting edges and beveling.
- Hollow or round ground bits for rounded edges.
- Diamond circular saw blades for grooves.

Material:

Hard metal or diamond cutters manually operated milling cutter or spindle moulder:

Diameter		RPM	Speed		Feed	
mm	in	1/min	m/s	ft/s	m/min	ft/min
20-25	1	18000-24000	20-30	65-100	5	16
125	5	6000-9000	40-60	130-200	5-15	16-50

# ChemLam®

## Technical Bulletin



For thin ChemLam® high pressure laminates (HPL) the selection of the adhesive to be used there are several alternatives, the most common is solvent-neoprene based contact cement, which is recommended for manual applications where the pressure exerted is low. When it comes to industrial applications, we recommend PVA (polyvinyl acetate) adhesives, which are not reactivatable with heat and have high resistance to moisture. For a good adhesion of the high pressure laminate (HPL) ChemLam®, we recommend using between 80 and 140g/m<sup>2</sup> of PVA adhesive and exert a pressure of 2 to 3kg/cm<sup>2</sup>. At the end of the application, in case of residues of adhesive in the high pressure laminate (HPL) ChemLam®, clean the surface with a soft cloth moistened with organic solvent or with a 50:50 mixture of alcohol- organic solvent. It should be rinsed with mild temperature water.

To prevent the plating surface with high pressure laminate (HPL) ChemLam® from buckling or warping, we suggest applying the laminate balance to the back face of the veneer in order to obtain the optimum balance in the moisture absorbed by the layer of the substrate.

Compact ChemLam® high pressure laminate (HPL) panels can be glued to each other and onto many materials using one or two component adhesives, such as epoxy or polyurethane adhesive systems.

Gluing is in many cases carried out together with a mechanical joint to provide sufficient pressure during drying.

Please follow the instructions below for edge thickening with ChemLam® Compact Strips:

1. Make sure panels and strips have the same "grain direction".
2. Pre-condition panels, strips and adhesive in the same way (temperature and humidity preferably adjusted as for future conditions of use).
3. Remove grease from surfaces to be glued, slightly roughen them and ensure they are dust-free.
4. Strictly follow the instructions provided by the adhesive manufacturer.

Type of glue	Application	Open time	Pressure	Set time/ Temperature
Epoxy adhesive	100 - 250 g/m <sup>2</sup>	Depending on the type	0.2 N/mm <sup>2</sup>	4-8 Hrs - 68°F
Polyurethane	101 - 250 g/m <sup>2</sup>	Depending on the type	0.2 N/mm <sup>2</sup>	4-8 Hrs - 68°F

# ChemLam®

## Technical Bulletin



### Edges / Milling Templates

Edges should be safe, free from saw marks and jagged edges. For better appearance it is advised to polish edges. There are several edge treatments for both functional and aesthetic consideration.

Some examples follows:

Diagram	Detail	Name	Code
		Straight	00
		Bevel Edge	0-CH
		Curved	0C-C (Circular) 0C-R (Straight)
		Standard Bezel	0B-R



# ChemLam®

## Technical Bulletin



### Corner Solutions

When joining two ChemLam® Compact in a corner it is important to take the panel movement into account. To avoid tension at the joint it is advisable to keep the leg length of the corner element as small as possible (max 400mm).

Compact panels can be joined together in corners in various ways:

- Glued aluminum or plastic corner profile.
- Glued aluminum or plastic tongue.
- Built-in tongue and groove joint with support.

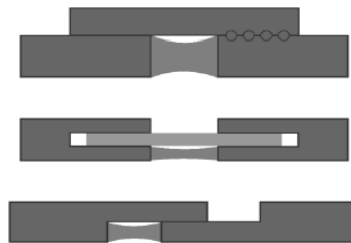
### Joints and Connections

Solutions for vertical joints include:

- Expansion joint.
- Built-in Groove.
- Rebated joint.

In view of possible changes in size as a result of moisture and temperature changes, joints should be left free both for vertical and horizontal connections in such a way that the panel can move by a maximum of 2.5 mm/m. Thanks to the excellent workability of the material, it is possible to accurately seal vertical and horizontal joints without auxiliary profiles.

For panel thicknesses from 8mm upwards it is possible to make connections in the form of rebated joints or as built-in groove connections.



Horizontal joints: either built-in groove or rebated joint connections can be used for horizontal joints.

Joints must be made in such a way that the panels can move by 2.5mm/m maximum. The recess in the rebated joint must measure at least twice the width of the joint itself.

Vertical joints: built-in groove connections can be used for vertical joints. Panel thickness on each side of the groove must be at least 2.9mm. In case aluminum grooves are used, a panel thickness of 8mm is sufficient.

# ChemLam®

## Technical Bulletin



### Joint Sealing Using Mastic

When ChemLam® Compact are used for interior applications where high standards of hygiene are required, wall constructions with airtight seals are often preferred. The joints are then sealed with an elastic mastic.

This sealing material must be mould repellent (ISO 846) and resistant to disinfectants, if it is used in the aforementioned applications. Furthermore, for maximum bond between the sealing material and the panel, it is necessary to avoid draughts, damp, dust and dirt. It is recommended to use ChemLam® Compact in combination with silicone or polyurethane mastic.

- The joint must be absolutely clean, dry and free of grease.
- If necessary, a primer should be applied to facilitate bonding.
- The sealing material must on no account adhere to the reverse side (bonding on three x sides) because this can cause breakage of the panel. It is advisable to use a separating film or a polyethylene tongue.
- To ensure that the sealing material is not under excessive strain, grout joints should be wide enough, and their depth should not be greater than their width.

### Maintaining And Cleaning

#### Instructions Daily Maintaining

ChemLam® in particular is a surface of very high stain resistance, but it is not an obstacle that it is periodically cleaned, in this sense clean with a soft damp cloth, with warm water and, if necessary, use mild detergent. Almost all common household cleaning and disinfection products can be used.

For common imperfections, simply clean the surface with warm water using a non-abrasive cloth, the most difficult stains can be removed with the help of non-abrasive solvents and household cleaners.

Normally the staining of a surface depends on 3 factors namely:

- The concentration of the staining substance, the higher the concentration, the surface must be cleaned faster.
- The exposure time normally for a very concentrated substance the exposure time should not exceed 8 hours before being removed and rinsed with sufficient clean water.
- The amount of spilled substance.

# ChemLam<sup>®</sup>

## Technical Bulletin



Clean out only by using a wet soft cloth, with mild temperature water and, if necessary, use soft detergent. Almost all common non-abrasive household cleaning and disinfection products can be used.

For common blemishes, simply clean the surface with mild temperature water by using a non-abrasive cloth, harder stains can be eliminated aided with non-abrasives domestic solvents and cleaners.

When old stains, dry and accumulate, use a magic sponge or soft cloth to take them out. After using any solvent it is mandatory to rinse the surface with warm water and a mild detergent and repeat the rinse with water.

### Useful Cleaning Tips

To obtain the best results when clean Compact, it is very important to remind the following tips:

A Compact should NEVER be cleaned with products containing abrasives, metal sponges, sanding paper or Steel wool. Avoid strong acid or alkaline substances because the surface can be irreversibly stained.

Chlorinated substances can degrade and discolor the surface. Sodium hypochlorite must be used at concentrations under 5% allowing continuous contact not more than 5 minutes and, after cleaning, surfaces must be rinsed by using enough mild temperature water and soft clothes.

Hydrogen peroxide must be used at concentrations under 3% allowing continuous contact not more than 10 minutes and, after cleaning, surfaces must be rinsed by using enough mild temperature water and soft clothes.

When solvents are used, cloth should be very clean to avoid residual marks on the Compact surface. It is recommended to wash out and rinse with mild temperature water.

Do not use furniture restoration products or wax-based cleaning products because they tend to leave residual grease on the surface that traps dirty particles. Do not use metallic scrapers, metallic brushes or any other metallic tool to remove residuals from Compact surfaces, like gypsum or dry paint because surface can irreversibly damage.

At the beginning, use a dry cloth or paper towel, then use water between 35-40°C (95-105°F) with domestic soft soap or detergent, allowing to act until dirt starts to soften.

If dirty and blemishes remain, use a solvent like white spirit and, then use water between 35-40°C (95-105°F) with domestic soft soap or detergent, permitting to act until dirt starts to soften.

# ChemLam®

## Technical Bulletin



If dirty and blemishes remain, clean the surface with a soft cloth or use a 50:50 mixture of alcohol and organic solvent, so as not to affect its original tone and design. The resistance to staining is high however we DO NOT recommend its use on lab type work surfaces where they use oxidizing chemicals, alkalis and strong acids in their daily work.

### Cleaning And Disinfection Instructions

For routine cleaning of both thin and compact high pressure decorative laminate (HPL), it is recommended to use water, mild non-abrasive soaps and a soft cloth such as microfiber. Do not use the abrasive side of the sponge, it is normally green.

For cleaning difficult stains such as: Tea, coffee, pencil, chalk, grease stains, dust or soap residue, use household cleaning agents such as grease remover soaps, Binner cleaner for dust and shine, odorless varnish, window cleaner, liquid soaps, or 0.1% strength sodium hypochlorite solution. It is important that the cleaning is done for a maximum of 5 minutes and then thoroughly clean the surface with water and a clean cloth.

Our full range of HPL contains silver phosphate glass antimicrobial technology (Antimicrobial Plus) and is resistant to highly effective common disinfectants for the removal of SARS-CoV-2, the cause of Human Coronavirus disease, meeting the criteria of the EPA (United States Environmental Protection Agency (2\*)). For disinfection work, use disinfecting agents such as:

- Sodium hypochlorite, brands such as Clorox Bleach, which comes in concentration between 4.5% and 5.5%. This product should mix one part of hypochlorite with 10 parts of water. Disinfection is obtained with 0.5% sodium hypochlorite in water.
- Ethyl alcohol (70% Ethanol), to disinfect the laminate surface use this solution and a clean cloth.
- Quaternary ammonium at 0.1% concentration, it is recommended to use products such as Durobacter TC - 31 which comes with a concentration of 10% of active component, for this mix one part of the product with 99 parts of water and clean with a cloth soft.
- Hydrogen peroxide, this product contains hydrogen peroxide in a concentration of less than 3%, the solution is applied to the laminate surface with a clean cloth.

After 5 minutes of carrying out the disinfection process, the cleaning process should proceed, long exposure times of sodium hypochlorite, hydrogen peroxide, quaternary ammonium and other disinfection products can generate deterioration in the high pressure laminate.

(2\*) <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>

# ChemLam®

## Technical Bulletin



### Cleaning And Disinfection Chart

Product name	Active ingredient	Purpose	Recommended concentration (%)	Max contact time (minutes)	Formulation type	Should it be cleaned after using the product?
Clorox Bleach	Sodium hypochlorite	Routine cleaning	<0,1	N.A.	Dilute 1 part bleach in 50 parts water	No
Clorox Bleach	Sodium hypochlorite	Difficult stains cleaning	0,1	3	Dilute 1 part bleach in 50 parts water	Yes
Clorox Bleach	Sodium hypochlorite	Disinfection	0,5	5	Dilute 1 part of Bleach in 10 parts of water	Yes
Ethyl alcohol	Ethanol	Disinfection	70	5	Use 70% commercial formulation	No
Peroxide	Hydrogen peroxide	Disinfection	<3	5	Use 3% commercial formulation	Yes
Durobacter TC- 31	Quaternary ammonium	Disinfection	0,1	5	Dilute one part of the product in 99 parts of water	Yes

### Instructions For Removing Difficult Stains

Acetone or nail remover, alcohol, gasoline, turpentine, White spirit, trichloroethylene, perchloroethylene and trichloroethane are suitable to remove neoprene residues.

3M Graffiti Remover, paint diluent or Hauser Vandal are some commercial substances that can be used. Remember to always rinse by using enough water.

Note: Product Brand names are only suggestions and its effectivity is not guaranteed.

It is the responsibility of the distributor / installer to verify the updated technical documents updated on the respective website. Visit us at [www.surfacematerials.com](http://www.surfacematerials.com) for more information.

VERSION OCT2021 This document supersedes all printed and electronic technical and installation guides previously distributed by LAMITECH.

# ChemLam®

## Technical Bulletin



Test	Standard	Field	Unit	Lamitech
Density	ISO 1183	Mass	g/cm <sup>2</sup>	≥ 1.35
Length and width	EN 438 2-6	Size	mm	+5/-0
Straightness of edges	EN 438 2-7	Plate	mm/m	≤ 1.5
	EN 438 2-8	Size	mm/m	≤ 1.5
Squareness	Lamitech	1220 x 2440 mm	mm	≤ 4.0
		1220 x 3060 mm		≤ 5.0
		1530 x 3660 mm		≤ 6.0
Resistance to surface wear	EN 438 2-10	Initial point	Cycles	350
		Final Wear	Cycles	600
		Appearance	Grade	≥ 4
Scratch resistance	EN 438 2-25	Unit	Grade/N	4 / 4N
Surface quality	EN 438 2-4	Stains, dirt, similar defects on the surface	mm <sup>2</sup> /m <sup>2</sup>	≤ 1
		Fibers, hairs and stripes	mm <sup>2</sup> /m <sup>2</sup>	≤ 20
Thickness	EN 438 2-5	5 ≤ e < 8	mm	tol +/- 0.4
		8 ≤ e < 12		tol +/- 0.5
		12 ≤ e < 16		tol +/- 0.6
Flatness	EN 438 2-9	2 ≤ e < 6	mm/m	5
		6 ≤ e < 10		5
		10 ≤ e		3
Resistance to boiling water immersion	EN 438 2-5	Increase gain	% e < 5.0mm	< 2
		Increase gain	% e > 5.0mm	< 2
		Thickness increase	% e < 5.0mm	< 2
		Thickness increase	% e > 5.0mm	< 2
		Bright finished appearance	Grade	≥ 3
		Appearance other finishes	Grade	≥ 4
		Appearance of edges	Grade	≥ 3
Electric resistance	EN 613140 4-1	RV (23°C / 50% RH)	Ohm	1 x 10 <sup>7</sup> - 1 x 10 <sup>11</sup>
High temperature dimensional stability	EN 438 2-17	Longitudinal	%	≤ 0.25
		Transversal	%	≤ 0.25
Impact Resistance (Large diameter ball)	EN 438 2-21	Drop height	mm (min) 2 ≤ e ≤ 6	1400 ≤ 8
			δ ≤ e	1800 ≤ 8
Moisture resistance	EN 438 2-15	Increase gain	%	≤ 3
		Appearance	Grade	≥ 4
Screw retention	ISO 13894-1	thickness	N	≥ 2000
		thickness	N	≥ 2000
		thickness	N	≥ 3000
Resistance to the climatic shock	EN 438 2-19	Flexural strength index	Index	1.02
		Flexion module index	Index	0.97
		Appearance	Grade	5
Lineal thermal expansion	ASTM D 696	Dimensional Variation	°K -1	L = 1.6 x 10 <sup>-5</sup> T = 3.4 x 10 <sup>-5</sup>
Cracking susceptibility	EN 438 2-24	Appearance	Grade	≥ 4
Resistance to light (Xenon arch lamp)	EN 438 2-27	Contrast (Grayscale)	Grade	≥ 4
Modulus of elasticity	EN ISO178	Longitudinal	Mpa	≥ 12000
		Transversal	Mpa	≥ 12000
Flexural strength	EN ISO178	Longitudinal	Mpa	≥ 133
		Transversal	Mpa	≥ 133
Tensile strength	EN ISO527-2	Longitudinal	Mpa	> 70
		Transversal	Mpa	> 70
Reaction to fire	ASTM E84	Rating	Class – thickness ≥ 6mm	Standard Compact B, Fire Rated Compact A
	EN 13501-1			Standard Compact Bsm1 < 10mm B-s2, d0, Standard Compact B-s1 10mm Fire Rated Compact B-s1, d0
Formaldehyde emissions	EN 438-7:2015 EN 717-2	Rating	Class	E1
Thermal conductivity	EN 12664 : 2001	Thermal conductivity	W/mK	0.3
Resistance to dry heat (160°C/320 °F)	EN 438 2-16	Appearance	Grade	≥ 4
Moist heat resistance (100°C/212 °F)	EN 438 2-18	Appearance	Grade	≥ 4
Resistance to stains	EN 438 2-26	Appearance group 1-2	Grade	5
		Appearance group 3		≥ 4