

Stainless Steel HR

Technical Bulletin



Product Description

Composition

The thin and Compact Stainless Steel HR is made of metallic foil and kraft paper impregnated with phenolic resin as the core or support of the laminate. This set is subjected to a specific high pressure 90kg/cm² and at a temperature of 135 ° C. Once pressed, the thin Stainless Steel HR is cut in nominal dimensions and sanded on its back to provide greater adhesion when applied with adhesive on the wood substrate.

Recommended Uses

Lamitech Stainless Steel HR combines the properties of our horizontal high-pressure decorative laminates with the avant-garde design of metallic foil. The Stainless Steel HR is designed with special lacquers that give excellent rubbing surface properties, abrasive elements and high scratch resistance, especially for horizontal use applications (except industrial kitchens, restaurant kitchens and heavy duty tables), ideal for interior spaces where a special accent is required such as: restaurants, jewelers, hotel receptions, boutiques, theaters, offices and department stores, among others.

Basic Limitations

Stainless Steel HR is a surface for indoor use, it is not a structural material, it does not admit extreme humidity or high temperatures, it should not be exposed to direct and continuous sunlight. Stainless Steel HR should not be post-formed, it is marketed with protective film to protect its surface in transformation processes, it must be used in normal or straight applications. Any additional guidance please consult our commercial representative.

And Thicknesses

The Stainless Steel HR laminate is available in 4x10ft size (1.22x3.06m) and in thicknesses from 1mm onwards.

Due to its excellent performance and surface properties, it is widely recommended for compact laminates between 2 and 13mm.

STAINLESS STEEL HR		
Properties	Units	Stainless Steel HR
Mar resistance	N	> 10
Scratch resistance	N	4
Scrub Resistance	Loss of brightness	3.2MSR A1
Scrub	Effect	MSR-B1 Scratch Effect
Gloss DM laminate	Units	15,5
Gloss CM lamina	Units	15,6
Laminated appearance		According
Impact resistance with large ball	Mm	F8 = 500 F100> 2000
Initial Abrasion	Ciclos	150

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Useful Information

1. The Stainless Steel HR laminate should be conditioned and stored in a dry and ventilated place, never in the open, It should be stowed horizontally and stored as much as possible at room temperature below 30°C and relative humidity less than 60%.
2. In the selection of the adhesive to be used there are several alternatives, the most used are the types of contact cement based on solvent-neoprene, which is recommended for manual applications where the pressure exerted is low. When it comes to industrial applications, PVA adhesives (polyvinyl acetate) and urea-based adhesives are used, which are not reactivable with heat. It is sanded on the back which promotes better adhesion, it is recommended to consult with your adhesive supplier which confers the best properties. If adhesive residue remains on the laminate, it is recommended to clean the surface with a soft cloth dampened with Varsol type organic solvent or with a 50:50 mixture of alcohol-organic solvent.
3. To prevent the plating surface with Stainless Steel HR laminate from buckling or deforming, we suggest you apply (on the back side of the veneer) the balance laminate, in order to obtain the optimum balance in the moisture absorbed by the wood layer. It is recommended that the Stainless Steel HR and its backer be the same thickness.
4. The cutting of Stainless Steel HR should be done with disc saws with speeds between 8-12 m./min. and 3000 to 5500 r.p.m. Special care must be taken during cutting as the metal sheet can generate a spark, this does not affect the performance of the laminate. The saw teeth must have a flat trapezoidal alternate geometry. For routing work you must use cylindrical drills of 12000 rpm, minimum.
5. To drill the Stainless Steel HR laminate, use 10000 rpm drills. With a tungsten carbide drill bit with a biangular tip, the selected drill bit must be 0.002inches (0.05mm.) larger than the specified diameter of the hole to be made.

Transport & Transfer

The Compact Stainless Steel HR 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 Stainless Steel HR 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.

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Storage

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

The Stainless Steel HR 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 Stainless Steel HR are delivered should only be removed once the Stainless Steel HR 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.

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 Stainless Steel HR 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.

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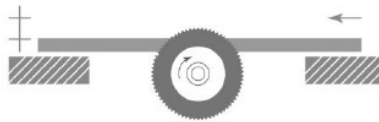


How To Cut Stainless Steel HR

The following general guidelines apply to cuts made onto Stainless Steel HR 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 is 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.



Hand-Held Circular Saw

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).

Diameter		Teeth	RPM	Thickness of the blade		Blade height adjustment	
mm	in			mm	in	mm	in
150	6	36	4000	2.5	7/64	15	5/8
200	8	36	4000	3	1/8	20	3/4

Jig Saw

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

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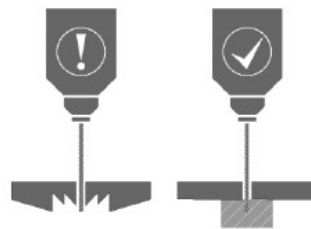
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Drilling

The use of carbide-tipped HSS-drill bits with 60-80° angle is recommended. Stainless Steel HR (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 molder:

Diameter		RPM		Speed		Feed	
mm	in	1/min	m/s	ft/s	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	

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Gluing

For thin Stainless Steel HR 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) Stainless Steel HR, we recommend using between 80 and 140g/m² of PVA adhesive and exert a pressure of 2 to 3kg/cm². At the end of the application, in case of residues of adhesive in the high pressure laminate (HPL) Stainless Steel HR 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) Stainless Steel HR 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 Stainless Steel HR 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 Stainless Steel HR 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 ²	Depending on the type	0.2 N/mm ²	4-8 Hrs - 68 °F
Polyurethane	101-250 g/m ²	Depending on the type	0.2 N/mm ²	4-8 Hrs - 68 °F

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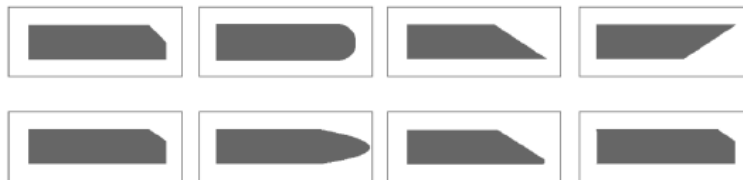
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Edges / Milling Templates

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:



Corner Solutions

When joining two Stainless Steel HR 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.

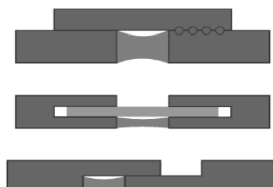
Joints and Connections

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.



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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.

Joint Sealing Using Mastic

When Stainless Steel HR 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 Stainless Steel HR ® 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.

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Maintaining And Cleaning Instructions

Daily Maintaining

Stainless Steel HR 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.

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.

We recommend that when doing cutting work these are done on a protective element of wood or ceramic and never directly on the laminate, to avoid deterioration. If you are going to place very hot objects (temperatures above 135°C) such as pans with hot oil or irons, on surfaces covered with Stainless Steel HR laminate, use a wooden or ceramic base as a protective element.

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Useful Cleaning Tips

To obtain the best results when clean Stainless Steel HR surfaces, it is very important to remind the following tips:

A Stainless Steel HR Surface should NEVER be cleaned with products containing abrasives, metal sponges, sanding paper or Steel wool.

At first, use a dry cloth or paper towel, then use water between 35-40°C with mild soap or household detergent, allowing it to act until the dirt begins to soften.

If spots and imperfections remain, use a solvent such as Varsol and then use water between 35-40°C with mild soap or household detergent, allowing it to act until the dirt begins to soften.

Do not use furniture restoration products or oil-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 Stainless Steel HR surfaces, like gypsum or dry paint because surface can irreversibly damage.

Cleaning Tips

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.

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.

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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 for more information

VERSION DEC218 This document supersedes all printed and electronic technical and installation guides previously distributed by LAMITECH.
