

# Formica® AR Plus® Laminates

**Formica® AR Plus® Laminates are a high gloss laminate with mark and scuff resistance superior to traditional laminates. It may be readily heat formed down to a radius of 8 mm in the machine direction (MD), using special equipment without loss of durability or appearance.**



## APPLICATIONS

Formica® AR Plus® Laminates are widely used for countertops, benchtops, vanity units, bars, store fixtures and other applications where good appearance, resistance to marking and scuffing, and resistance to stain and heat from ordinary sources is required.

## PRODUCT CHARACTERISTICS

Size	3595mm x 1395mm
Thickness	0.7mm nominal (-0.1 + 0.1mm)
Weight	1.0kg/m <sup>2</sup> approx.
Finish	High Gloss
Colours and pattern range	Refer to Formica National Complete Product Offer 2014

## FIRE HAZARD INDICES

(Typically achieved when tested to AS/NZS 1530.3)

Indices	Result	Range
Ignitability	8	0-20
Spread of flame	9	0-10
Heat evolved	4	0-10
Smoke developed	5	0-10

\*Laminate tested free standing

Cone Calorimeter AS/NZS 3837	
Classification	Result
Group number <sup>†</sup>	I
Average heat release rate	49.0kw/m <sup>2</sup>
Average specific extinction area <sup>†#</sup>	64.2m <sup>2</sup> /kg

<sup>†</sup> Refer to Specification C1.10a section 3(c) of the Building Code of Australia

<sup>#</sup> Refer to Specification A2.4 of the Building Code of Australia

\* Laminate tested free standing

## PROPERTIES

(AS/NZS 2924.1)	
PROPERTY	RESULTS
Resistance to surface wear	Initial wear not less than 150 cycles. Average wear not less than 350 cycles.
Resistance to immersion in boiling water	No more than a marked change of gloss and/or colour. Gain on weight of not more than 19%
Resistance to dry heat at 180°C	No more than a moderate change of gloss and/or colour
Resistance to steam	Marked change of gloss and/or colour
Dimensional stability	Dimensional change of not more than 0.7% with grain and 1.2% across grain.
Resistance to staining	Reagents Groups 1 and 2 = no visible change. Reagents Groups 3 and 4 = no more than a moderate change of gloss and/or colour
Resistance to colour change in artificial light*	Not more than slight colour change in Xenon arc light minimum 6 on Blue Wool Scale

Resistance to cigarette burns	No deterioration other than moderate change in gloss and/or moderate brown staining
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\* Formica AR Plus Laminates have good colour retention and dimensional stability in normal interior applications. However, prolonged exposure to sunlight may cause shrinkage and/or some change in colour. Formica AR Plus Laminates are therefore not recommended for external applications or interior applications with prolonged exposure to direct sunlight.

## SCUFF RESISTANCE

More than 95% gloss retention after being scrubbed with a 3M Scotch-Brite™ Heavy Duty scouring pad attached to a Sheen Model 903 Wet Abrasion Scrub Tester, using 800 gram applied weight and 30 scrubs.

## WHEN SPECIFYING

Surfacing shall be Formica AR Plus Laminates as supplied by Laminex. Colours and/or patterns shall be .....

## PROCESSING

### Board Substrate Bend Profile

Formica AR Plus Laminates should be fully supported when glued. Do not bond directly to plaster, plasterboard or concrete. The correct profile on particleboard or medium density fibreboard can be obtained by using specially shaped router blades with a radius not less than 8mm. Profile should be uniform along the full length of the board with none of the following faults to either substrate or profile:

1. High spots
2. Bumps
3. Low spots
4. Ridges
5. No surface dust or chips.

For consistent results it is recommended the profile be smooth and have a gentle taper leading into the profile from the board's surface.

### Gluing and Bonding tips

All high gloss laminates, due to their high reflective surface have an inherent tendency to display undulations. To minimise this effect the following recommendations may assist to provide the best results.

#### 1. Cross linking PVA Gluing (CPVA) System:

CPVA glue is a water based adhesive that when applied to a substrate causes the fiber to swell. Adding heat to the process produces steam, which exacerbates the swelling. High gloss laminates have a greater tendency to show this swelling/unevenness through to the top of the sheet. Too much glue will amplify unevenness because of the higher water content. Ensuring that glue is not applied above the required bonding level will reduce the effect; as will maintaining a uniform glue line quality and consistency. Similar to adhering all laminate, the glue line should be evenly applied avoiding lumps of glue, sawdust, chips, etc, as they may fracture the laminate when pressure is applied during bonding or cause blistering during post-forming.

Reference the adhesive manufacturer's directions. If the glue is not evenly distributed, at the time of pressing, high points can be telegraphed by the gloss surface.

2. Using a Poly Urethane glue (PUR), which contains no water, will provide a better result.
3. Low temperatures and pressures on the press bonding equipment will provide best results. The lower the pressure the better the surface appearance.

*It is important to note that for a given press pressure the actual pressure applied to the work piece is dependent of the size of the piece. A large piece will be exposed to less pressure than a smaller piece, if for example the press gauge pressure remains unchanged.*

*To achieve a consistent finish calculate the pressure requirement versus work piece size for your installed equipment (this information is generally available from the equipment manufacturer).*

Using a flat surface or pad, such as 3mm MDF to press against the decorative surface provides for smoother results.

4. Maintain glue applicators to avoid contamination. Contamination may result in pressing imperfections into laminate surface. Similarly, maintain pressing surfaces free of dints and lumps.
5. Contact glue is generally not recommended for high gloss surfaces; mainly due to visual appearance of the finished laminate, which has a tendency to amplify unevenness of the glue line. The expectation of appearance and decision of acceptability is that of the customers not of Laminex .

More uniform results may be achieved using spray application;

however the appropriate OH&S technique and work practices are the responsibility of the fabricator.

## FORMING PROFILE

Formica AR Plus Laminates grade is designed to be post-formed using commercially specific post-forming machines.

- Forming to an 8mm radius in the machine direction (MD) is recommended.
- Forming in the cross direction (CD) / "end roll" is not recommended. (Guideline for the CD radius is 15 times the individual laminate sheet thickness. Choosing to form an end roll in the CD of the laminate is the decision of the fabricator).

Formica AR Plus Laminates grade has very good operating tolerance between the heat required to bend and the additional heat exposure time required before the laminate blisters. The average tolerance between, heat time exposure to bend is approximately 20 to 28 seconds and the additional time to blister is approximately 15 to 30 seconds.

## PROFILE TIPS

- Determining the heat-up rate control becomes important to the thinner, the laminate, and Formica AR Plus Laminates are no exception. With reference to the temperature indicator 163°C tempilaq, set the heat up rate to achieve melt in 26 to 28 seconds. With the heat-up rate set, 8mm or 10mm radius bends may be achieved slightly before tempilaq at 22 to 25 seconds. Note if the heat-up rate of the laminate is too rapid, overshoots or if heat applied is variable random failure due to blistering may occur.
- As a safeguard against this, it is recommended that regular heat up time checks are undertaken to track machine performance, temperature control fluctuations (i.e. overshoot, undershoot and stability).

**Note:** The sheet thickness, as well as ambient temperature and drafts close to the work piece, board temperature or speed of movement of forming may affect uniform heating and overall heating time over the distance of the profile.

## MAKING THE BEND

Firstly, the ends of the laminate sheet 8cm either side of the centre line of the bend should be filed smooth to remove any edge chips or small cracks. Removal of these will help prevent any larger cracks from propagating into the sheet when bending.

Accurately locate the laminate and board in the forming machine so that the bend is made in the correct position, not attempting to pull the laminate around the profile under too much tension.

If too much tension is developed on the bend, tension cracks along both top and bottom radius may occur. This cracking is usually evident immediately after the top is removed from the machine.

Too little pressure will leave a gap between the laminate and the board, leaving this susceptible to impact cracking.

## PROBLEM SOLVING

The most common problems in post-forming are normally caused by:

### Cracks:

Contaminated and/or uneven substrate, unsuitable profile, unsanded rough profile, or cold substrate, insufficient heat, uneven heat distribution or heat up rate requires optimising.

### Blisters:

Uneven heat distribution, warped material, too much heat or too fast heat up rate, too much or unevenly distributed CPVA.

### Delamination:

Insufficient heat, insufficient suitable adhesive, insufficient bonding.

## PROTECTIVE FILM

Formica AR Plus Laminates grade is supplied with a polyester protective film which provides a protective layer to the high gloss surface for transport and handling. The film can be heated when the laminate is subjected to post-forming processes and can be released afterwards.

During film application some small particles may become trapped between the laminate and film. These particles can cause an indentation when the laminate is subjected to press bonding. It is recommended that the surface is inspected and any specks removed prior to pressing. Consequently the film may be removed and the laminate cleaned prior to pressing and post-forming and then the finished laminated work piece recovered for delivery to the worksite.

The polyester film has a shelf life and can be difficult to remove after nine months from application to the laminate, this is the nature of the film.

It is recommended that if laminate is to be stocked at the fabricators for an extended period the film be removed.

This information is intended as a guide and should not necessarily be regarded as applying to all situations. It is therefore advised that if problems arise which are not covered, then the technical services section of Laminex should be contacted through your local branch.

The data in here is believed to be accurate to the best of our knowledge, but users should carry out their own assessment of the product to satisfy themselves that it is suitable for their requirements.

### General Site Work Notes

Appendix 1. Handling & Product Application Guidelines  
Section 9:1

### Laminate Product: Care & Maintenance

Appendix 2. General Care and Maintenance  
Section 9:2