

WHITEPAPER

# Getting coat weights right in flat lamination

A practical guide to performance, precision and process



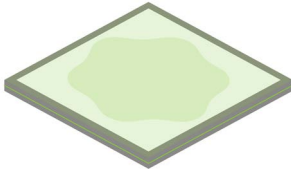


## Why do coat weights matter?

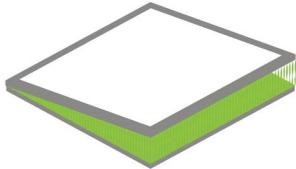
In flat lamination, adhesive coat weight is a critical but often misunderstood factor. Applying too much glue can lead to blistering, bond failure, and costly rework – while too little risks structural weakness.

This whitepaper offers production managers and operations directors a practical guide to understanding, measuring, and optimising coat weights for flat lamination. It draws on real-world experience and expert insight to help teams avoid common pitfalls and improve consistency across production.

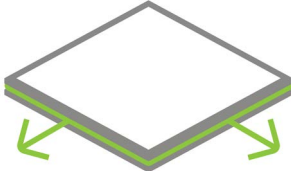
### Incorrect coat weights Common symptoms:



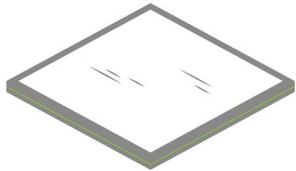
Bleed-through



Bond failure



Squeeze-out



Blistering

## The problem: signs of excess adhesive

Incorrect coat weight – especially over-application – is a frequent cause of production issues. The signs vary by adhesive type, but the consequences are consistent: wasted time, compromised quality, and increased costs.

### PVA adhesives

Excess use of PVA glue is not a major issue from a performance point of view, as tight clamping will normally squeeze out excess glue. However, it can cause bleed-through with veneers and can cause a hydroplaning effect between the two materials, making it harder to work with. However, the most common issues with excess PVA is messy squeeze-out, requiring equipment clean-up and product refinishing, coupled with the straightforward wastage of glue.

### PU adhesives

PU adhesive creates CO<sub>2</sub> when curing, evidenced by foaming. Excess adhesive can mean that the glue is still curing (and foaming) after pressing. This results in CO<sub>2</sub> being trapped in the glue line, which makes the glue line more susceptible shearing, creating a pocket of air at that spot. This then expands with heat, causing panel bowing and blistering. This is particularly problematic in applications like GRP skins on doors or refrigerated lorry panels, where structural integrity is critical. Blistering may only appear in warmer conditions, once the product has left the factory.

### Water- and resin-based adhesives

Overuse of standard water-based glues often results in bleed-through, which causes costly rework. With Adkwik's flagship resin glue, Ubabond U30, bleed-through is rarely an issue. But higher moisture content requires increased press time, which many don't realise. Without the increased press time, the moisture is not evaporated quick enough so the glue tends to emerge uncured. When taking a hot piece of material out of a hot press, everything then shrinks, and the veneer tends to ripple. The other main issue caused by excess use of glue within this category is simply cost and time. The cost of wasted glue through excess application, and the time taken to clean up equipment and compromised output.

### Solvent spray adhesives

With solvent spray adhesives, too much glue traps propellant, which reactivates with heat and causes rippling or blistering. This is especially common with canister-based systems where visual judgement is difficult and it is easy to over-apply adhesive.



## Why coat weight guidelines matter

Adhesive manufacturers provide coat weight guidelines for a reason – they’re based on lab testing and designed to ensure optimal performance. Ignoring them can lead to:

### ✘ Structural failure

Too little or too much glue compared to the tested coat weights could result in compromised structural performance. For example, a thick glue line may become brittle and fail under stress, especially during transport.

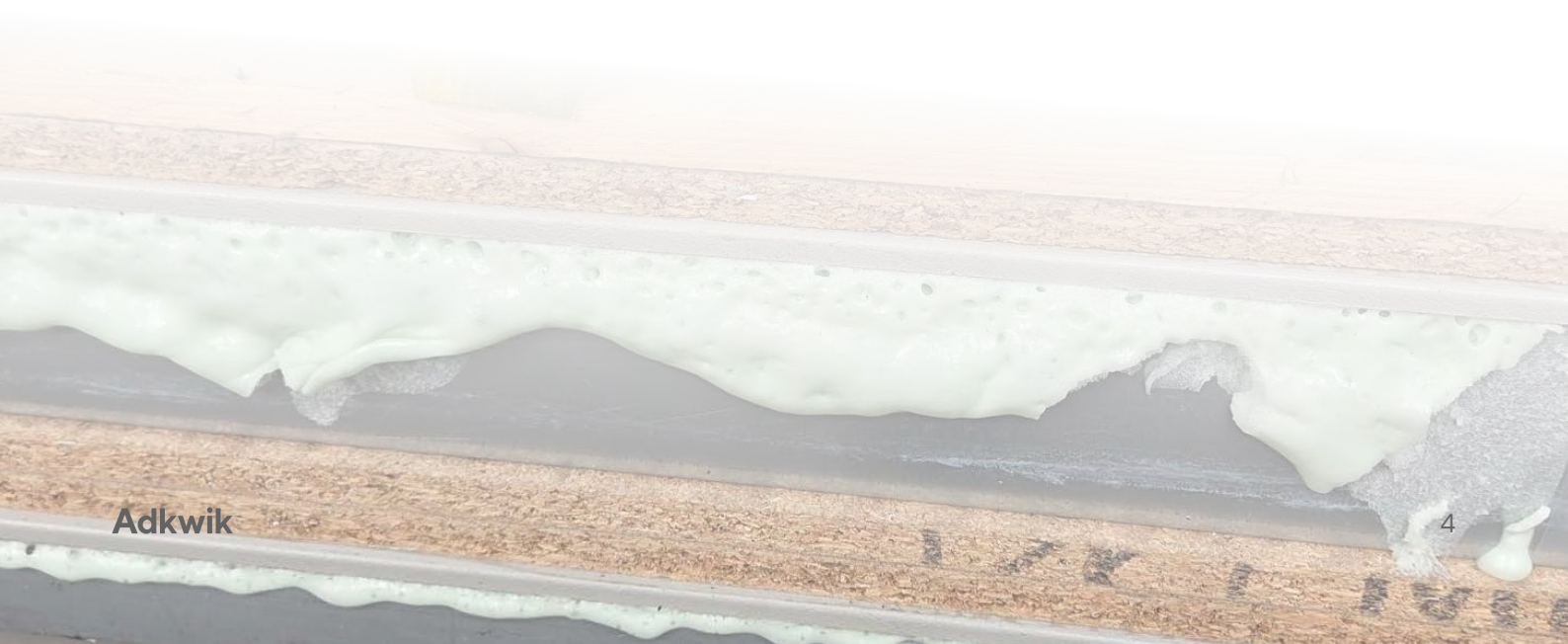
### 🗑️ Wasted material

It’s estimated up to 20% of glue sold never bonds anything – it’s lost to overuse or poor application.

### £ Costly rework

Excess glue often means longer drying times, more clean-up, and refinishing.

The myth that “more glue equals better bonding” is persistent but misleading. In reality, all testing and performance guarantees are based on specific coat weights. Deviating from these – even with good intentions – can compromise the bond.



# Factors that affect coat weight



Temperature



Material porosity



Application method

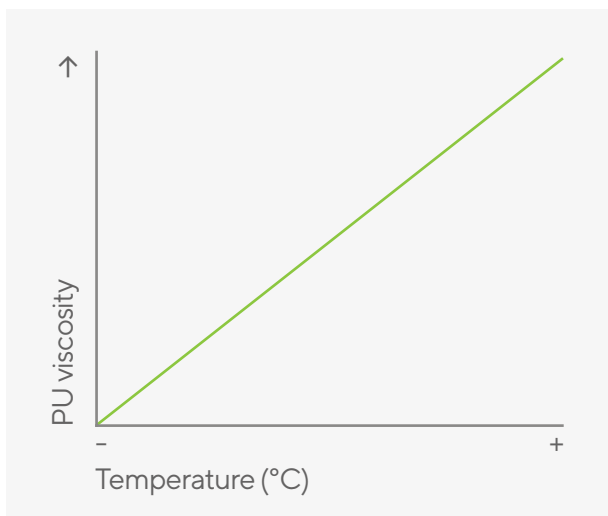


## Temperature

Temperature is the most significant variable affecting coat weight accuracy.

Cold conditions increase PU viscosity by 10-15% for every 5°C below 20°C. This makes the adhesive harder to dispense and work with, which leads to overuse. In winter, site teams often report running out of glue faster – not because they’re bonding more, but because they’re applying thicker beads due to increased viscosity. Equally, in the summer when temperatures are very high, the viscosity reduces and it can be easier to put too much on because it pours so easily.

Another aspect is that when both ambient conditions and the materials being glued are hot, moisture is drawn out of PVA and resin-based glues more quickly, accelerating curing and reducing working time. To compensate, coat weight may need to be increased by up to 20% to maintain open time. Alternatively, up to 10% water can be added to PVA or urea resin to slow the set time.



## Material porosity

Porous materials like rough chipboard absorb more adhesive, requiring higher coat weights. Spec sheets are typically based on standard substrates – often MDF or chipboard – so adjustments may be needed for more absorbent surfaces. Inconsistencies in chipboard density can cause uneven absorption, leading to patchy bonding.



## Application method

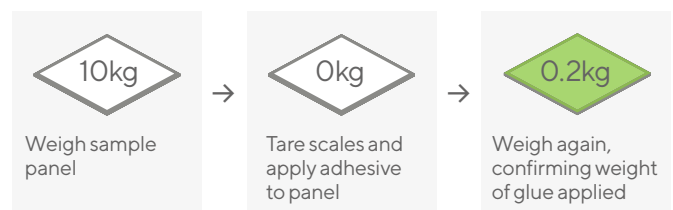
Hand rollers and spray glues rely on operator skill and are prone to inconsistency. Visual judgement of glue coverage – such as checking whether a pencil line is still visible through the adhesive – is common but not fully reliable.

Automated glue rollers offer controlled, repeatable application – but must be calibrated correctly.

The recommended method is the “weigh-tare-weigh” process:

- 1) Weigh a sample panel
- 2) Tare the scale
- 3) Apply adhesive
- 4) Re-weigh to calculate grams per square metre

This method is surprisingly underused, even in large factories. Many operators still rely on visual cues or legacy habits, leading to inconsistent results.



# Applying the right coat weight without compromise

Getting coat weight right isn't just about following guidelines – it's about building a robust process.

## Review equipment setup:

Ensure glue rollers are calibrated and maintained. Adjust roller settings based on measured output, not visual appearance.

## Factor in seasonal changes:

Store adhesives in temperature-controlled environments. During winter, keep glues off the floor and away from exterior walls, doors, and windows. Consider using a drum heater or a heated cabinet to keep them at the right temperature. In summer, increase coat weight slightly to compensate for faster curing.

## Condition materials:

Avoid bonding to freezing metal or damp timber. Allow materials to reach ambient temperature before use. In one case, a manufacturer installed a heated mini-cabin to pre-condition metal panels before bonding – significantly reducing blistering.

## Train operators:

Provide practical, on-the-tools training. Operators often resist change unless they understand the rationale. Framing training as “support” rather than “instruction” helps build trust.

## Follow spec sheets:

Use manufacturer guidelines as direction, not just a suggestion. These are based on lab testing and represent the optimal balance of performance and efficiency.

## Validate with trials:

Run pre-production tests to confirm performance before full-scale production. This builds confidence and reduces risk.

## Recommended coat weight ranges for flat lamination

Adhesive type	Recommended coat weight (g/m <sup>2</sup> )
PU adhesives	180-230
Ubabond	90-110
Standard PVA	120-180
Urea resins	120-180
Solvent spray adhesives	60-80 pr surface (120-160 total)

Note: These ranges apply specifically to flat lamination. Other applications – such as frame assembly – may require different coat weights.

For example, furniture frame assembly may use up to 250 g/m<sup>2</sup> due to imperfect joints and the need for gap-filling.

## In summary: the 3-step rule for getting coat weight right

When using a new adhesive or bonding a new material, follow this simple process:

1

### Consult the spec sheet

Manufacturer guidelines are based on lab testing – they're your starting point.

2

### Measure accurately

Use the weigh-tare-weigh method to calibrate your application levels.

3

### Conduct pre-production trials

Validate the process on scrap material before committing to a full production run.

This rule helps teams avoid guesswork and ensures that bonding performance aligns with expectations.



## Hands-on support from the experts

Adkwik offers support, training, and troubleshooting for adhesive application in flat lamination. Whether you're setting up a new process or refining an existing one, we can help you get coat weights right – and keep production running smoothly.

[Get expert advice](#)

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