PWS

PWS

QUALITY STANDARDS

Quality Mission & Methodology

How PWS tests, inspects and certifies painted timber kitchen doors and panels — and the standards we use to assess quality and acceptable natural variation.



PWS · October 2026

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01.

ABOUT PWS

A Fourth – Generation Family Business, founded in 1909.

PWS

A fourth-generation family business, founded in 1909



Delivering high quality materials to exacting standards that exceed customer needs is central to our business and as such undertake an extensive range of testing procedures to ensure that these standards are met.

We want to help you to propose the best PWS kitchen solution for your consumer needs, and believe part of this is for you to understand the steps we take to ensure our products reach you in the best condition possible. In addition, we want to offer you support when discussing the different finish and materials of our kitchen offer, and how the correct choice should be made for individuals tastes and requirements.

Our products are constructed from a variety of materials all of which behave differently in the varying conditions of the average household's kitchen. In particular, it's important that you appreciate the finish variations of natural materials, such as painted timber doors, in a kitchen environment. This is something that should be discussed at the outset.

Components that make up a kitchen design



02.

QUALITY TESTING & METHODOLOGY

Industry standards, adhesion, moisture, bow and colour testing procedures.



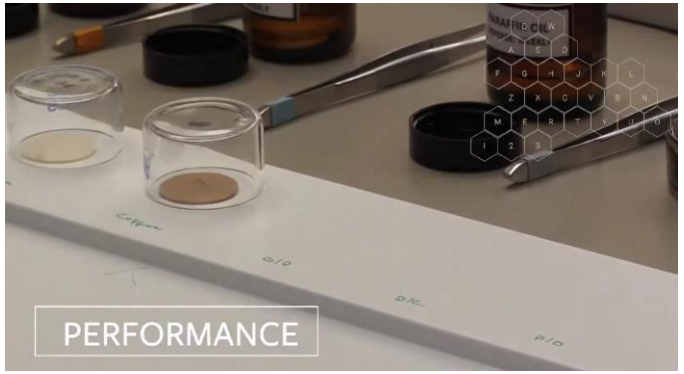
Industry Quality Standards & Testing

Recognised across the furniture industry, FIRA Gold Certification is the mark of quality which demonstrates that products comply with all relevant legislation and have gone through a rigorous assessment against specified performance tests which align with European (ISO) and British (BS EN) standards.

We pride ourselves on satisfying your needs and meeting high expectations around quality.

We therefore ensure we source only the very best products and materials from around the world, and rigorously inspect and test those products to ensure quality standards remain the highest in the industry.

We at PWS are proud that our products have been awarded FIRA Gold standard, it is proof that our product is manufactured to the highest of standards.

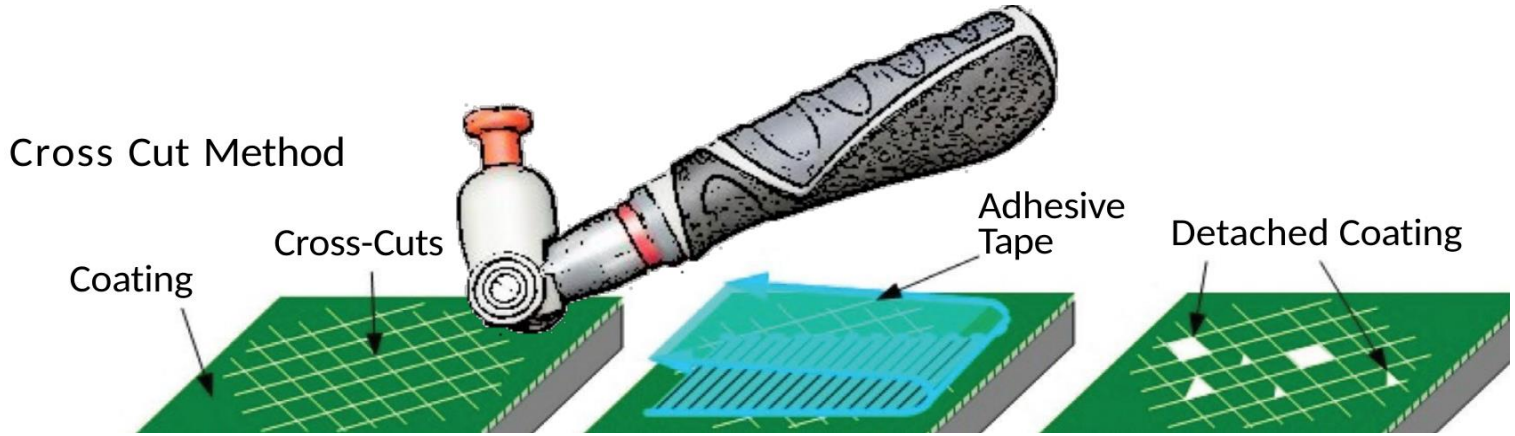


Adhesion Testing

To ensure proper and long lasting adhesion; a cross-cut adhesion testing method following British and International (ISO) Standards is regularly performed.

The Procedure

Two series of parallel cuts cross angled to each other to obtain a pattern of 25 squares is administered to the surface of the door then cleaned with a stiff brush and adhesive tape.



Adhesion Testing

To ensure proper and long lasting adhesion; a cross-cut adhesion testing method following British and International (ISO) Standards is regularly performed.

The Results

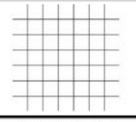
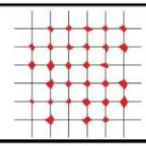
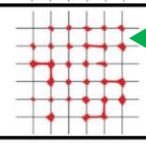
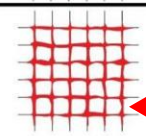
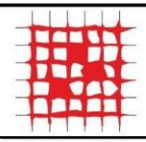
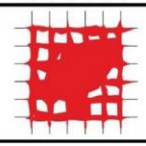
The surface is examined and classified. A British Standard 3962 rating of 3 or more is deemed acceptable, anything below would be considered for reworking or replacement, dependant on the finish.

Please note: after testing a returned item, due to the nature of the test procedure, the door will not be suitable to be refitted. Should an item pass the required standard, any costs to replace it will have to be met by the customer.

Tighten acceptance criteria above and beyond industry acceptance classification to mitigate risk to customer.

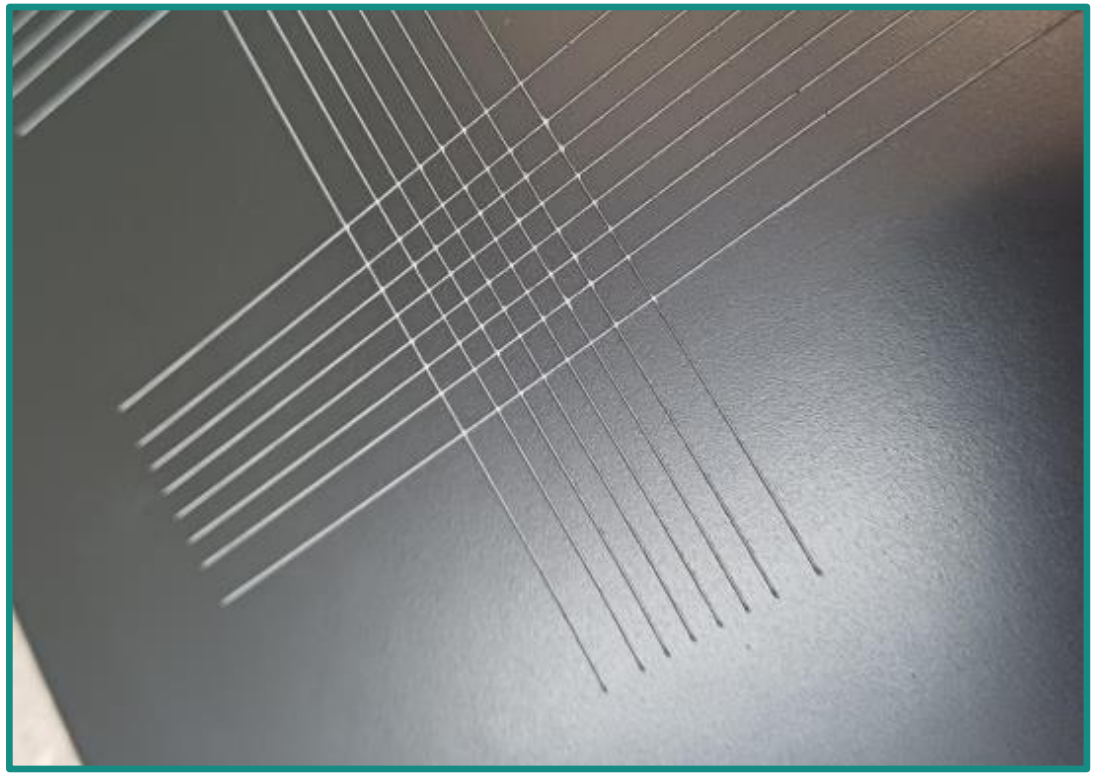
SAFE

RISK

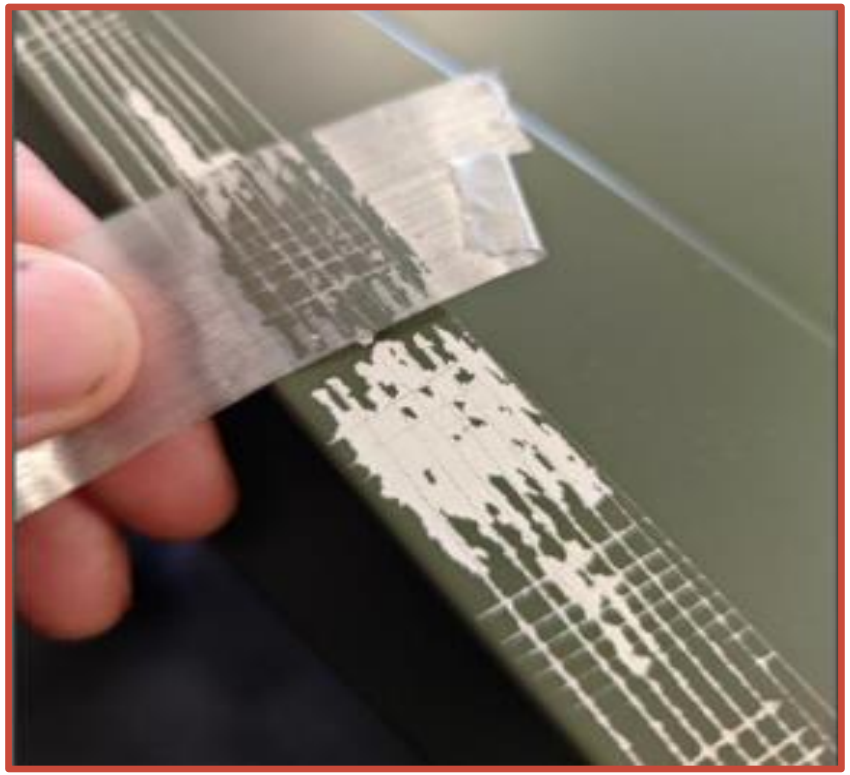
Classification			Description	Appearance of Cross-Cut Area
BS 3962	ISO 2409	ASTB 3359		
-	0	5B	The edges of the cuts are completely smooth; none of the squares of the lattice is detached.	
5	1	4B	Detachment of small flakes of the coating at the inter-sections of the cuts. A cross-cut area not greater than 5 % is affected	
4	2	3B	Finish removed at intersections and intermittently along the cuts	
3			The coating has flaked along the edges and/or at the intersections of the cuts. A cross-cut area greater than 5 %, but not greater than 15 %, is affected.	
2	3	2B	The coating has flaked along the edges of the cuts partly or wholly in large ribbons, and/or it has flaked partly or wholly on different parts of the squares. A cross-cut area greater than 15 %, but not greater than 35 %, is affected.	
1	4	1B	The coating has flaked along the edges of the cuts in large ribbons and/or some squares have detached. partly or wholly. A cross-cut area greater than 35 %, but not greater than 65 %, is affected.	
-	5	0B	Any degree of flaking that cannot even be classified. by classification 4.	

Adhesion Classification Chart

Adhesion Test Result Classification



Result – Perfect Pass Classification



Result – Extreme Fail Classification

To BS 3962, see Adhesion Classification Chart, page 8.

Adhesion Test Result Classification (2)

Subjective Decisions

In cases where the result shares characteristics between CLASS 2 = PASS and CLASS 3 = FAIL, PWS must make a customer-centric decision.

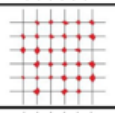
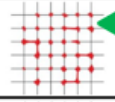
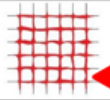
Where this result is achieved and subjectivity may introduce risk in the decision-making process it is important to maintain high standards and not accept high risk conditions.

Risk Mitigation

Tighten acceptance standard beyond industry acceptance classification by establishing CLASS 4 BS 3962 as the PWS low level acceptance limit. Any result deemed to meet CLASS 3 should be reviewed and agreed.

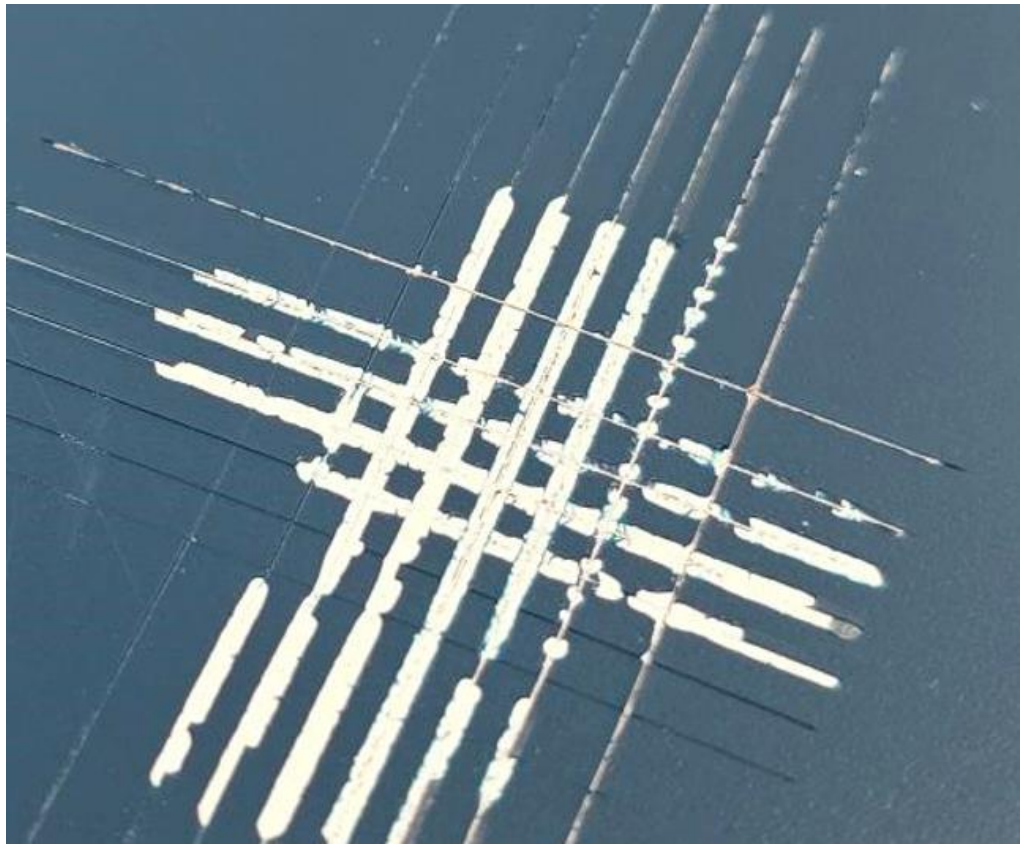
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Adhesion Classification Chart

Classification BS 3962	Classification ISO 2409	Classification ASTB 3359	Description	Appearance of Cross-Cut Area
-	0	5B	The edges of the cuts are completely smooth; none of the squares of the lattice is detached.	
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SAFE

RISK



Result – *Characteristics fall between '2/3' classification to ISO 2409, see Adhesion Classification Chart, page 8.*

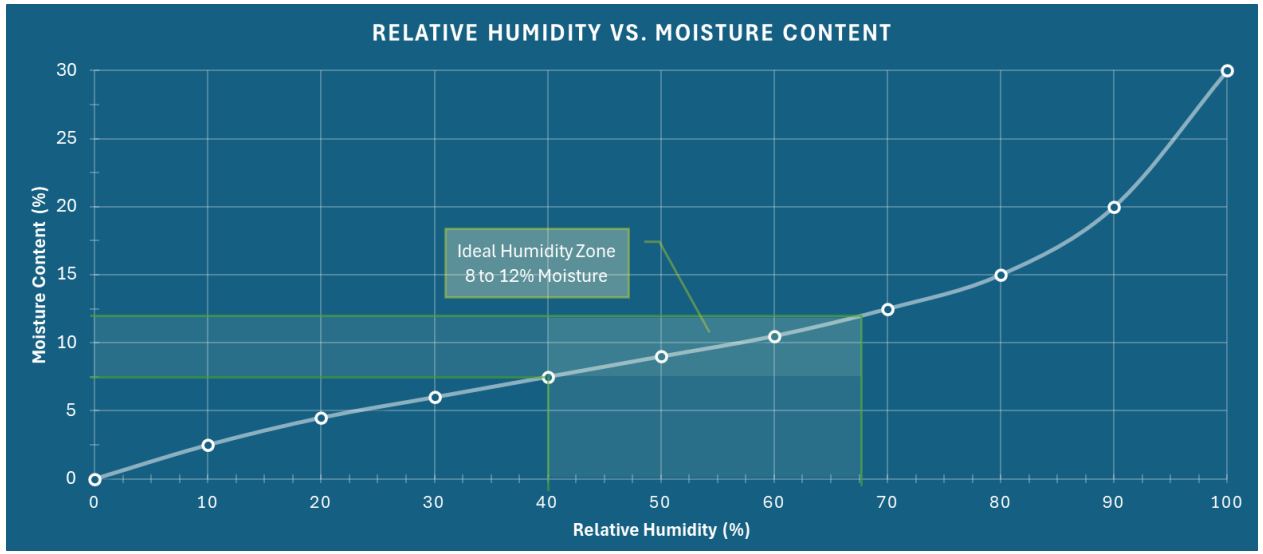
Moisture Testing & Ingress

Timber is a natural “living” material which is subject to swelling or shrinkage due to shifts in temperature and humidity. Extreme humidity changes can cause wood to warp, expand and shrink, and at different rates depending material and grain (direction and type).

To ensure uniformity during production moisture levels are monitored and controlled during production and prior to shipping, to remain between 9% and 11%.

Signs of excess moisture could be shown by distortion, warping, swelling or splitting; especially around joints. Timber product may expand or contract by 1% per 4% change across the grain (but very little in length) in moisture content, which could result in 1-2mm movement in even ideal conditions.

Therefore, PWS recommend timber products be kept in an environment between 40% and 65% relative humidity, as exposure lower than 35% or greater than 70% can result in permanent damage to the timber.







Excessive moisture causes joints to split

Moisture & Painted Surfaces

Moisture is one of the biggest threats to painted wood surfaces. When water sits or pools — especially around the bottom of doors, in the centre panel recess or beading — it can slowly seep into the wood beneath the paint. Over time, this causes the wood to expand and contract, which puts stress on the paint.
The result? Cracking, peeling, or bubbling paint.

To keep your paint looking great:

Keep surfaces dry
Wipe away standing water or condensation from steam.

Ensure proper ventilation
Kitchens should be well-ventilated to prevent condensation buildup, especially when using appliances that produce heat and steam.

Taking these simple steps can help your paint last longer and protect the wood beneath.





Excessive moisture causes cracks to appear

Bow Testing

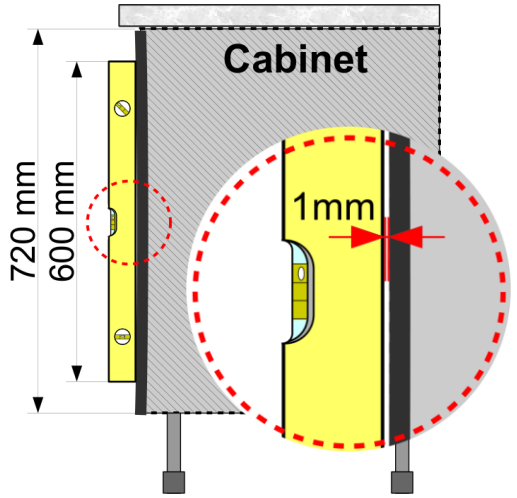
Bowing, a concave or convex warp across a panel, is a result of uneven changes in humidity which causes differing expansion / shrinkage rates across the construction.

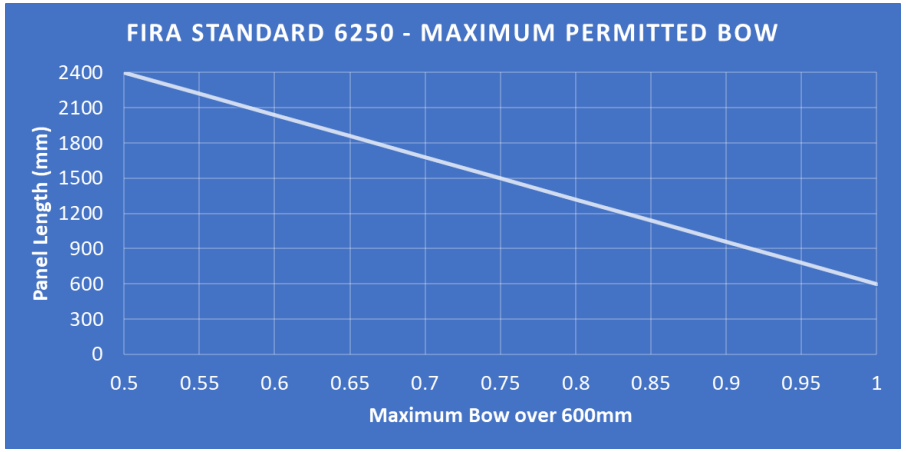
In order to ensure that our products are to standard we use a calibrated FIRA bow meter and the FIRA 6250 sliding scale guide to assess acceptable levels of bowing across all our product ranges.

In the field a 600 mm straight edge can be used from the concave side of the panel, (for example a 600mm / 24” spirit level), and a ruler or feeler gauge used to determine the gap at the mid point.



Calibrated 600 mm bow meter.





Please note: whilst testing panels, they should not be laid flat on a work surface, as they will tend to conform to the profile of the worksurface. We will always hold the panel vertically (or in situ, e.g. attached to the cab) to remove the influence of gravity.

Colour Measurement & Matching

We test paint samples against the measurements data of master samples using a high accuracy calibrated Spectrophotometer. The colour difference is measured as a delta E (ΔE) difference, to a tolerance of ≤0.5 ΔE on all door ranges. Delta E is the calculated difference to the master sample, where ΔE less than 1 is typically visually undisguisable to the human eye.

Key Benefits:

Precision
A Delta E Spectrophotometer provides a quantitative measurement of colour difference, while the human eye relies on subjective perception.

Sensitivity
While a trained eye can discern small colour differences, a Spectrophotometer can detect even smaller variations, especially in situations where high colour accuracy is required.

Consistency
Unlike human perception which can vary based on lighting conditions, fatigue, and individual variations, a Spectrophotometer provides a consistent colour difference measurement.



Calibrated spectrophotometer

Colour Visual Inspection

In addition to spectrophotometer testing, visual inspection in a controlled 1000 lux, 6500K light environment ensures colours are assessed under consistent, daylight-simulated conditions.

This allows trained inspectors to identify subtle visual factors such as finish, texture, and metamerism that may not be fully captured by numerical data alone.

Combining instrumental measurement with human evaluation provides a more complete quality check, ensuring colours not only meet technical specifications but also appear correct to the end user.

Colour Ageing and Variances

Painted colours and veneers may vary between batches and substrates. Over time colours also subject to natural aging, which can slightly alter its original appearance due to factors like lighting, placement in the kitchen, and cleaning products used.

Replacement items placed separately from the original order may show slight colour differences. As noted in PWS literature: “While we strive for consistency, painted products may exhibit batch-to-batch variances, and an exact colour match cannot be guaranteed.”

If colour variance is a concern, customers should first provide photos to our customer service team for review. If necessary, a physical sample may be requested for assessment using the Colour Measurement Test, after which a decision will be made regarding replacement or rework.



Colour Inspection

03.

QUALITY STANDARDS

Our commitment to quality, evaluation criteria and defect detection process.



Quality Standards

At PWS, we are committed to supplying high-quality painted cabinet panels and doors that meet customer expectations.

Our standards balance the craftsmanship of hand finished products with the realities of everyday use, ensuring a consistent quality level while preserving the character of our painted finishes.

Quality Standards & Manufacturing Reality

While we strive for the highest possible quality, perfection is not achievable in any manufacturing process. Kitchens are produced through multiple stages of skilled workmanship, and small, natural variations can occasionally occur.

To ensure fairness and consistency, all products are assessed against defined quality standards using objective inspection methods. Most importantly, these standards are set with the customer experience in mind - any imperfection that is noticeable, distracting, or stands out in normal use is not acceptable.

Our aim is that nothing detracts from the overall appearance, performance, or enjoyment of your finished product.

If you have any concerns regarding panel or door quality, please contact our customer service team, who will be happy to assist.

Visual Inspections of Doors and Panels

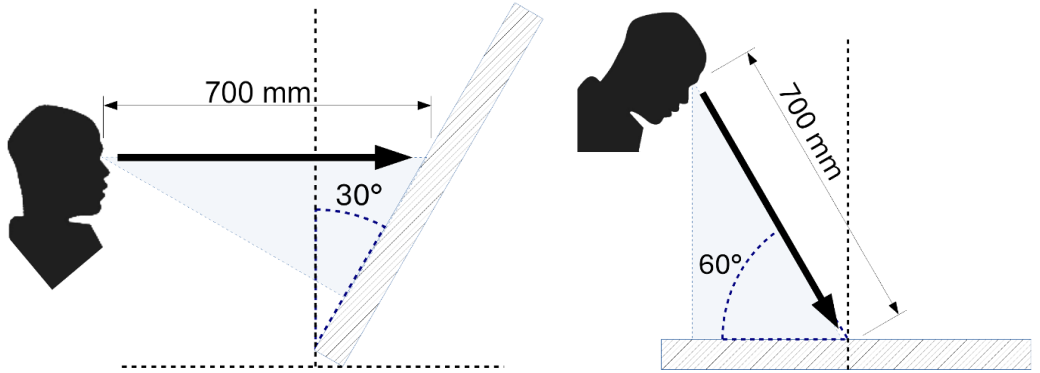
When a potential defect is inspected, either on-site (in situ) or during a bench inspection, the examination should be conducted from realistic viewing angles whenever possible. The panel should ideally be observed from a distance of 700 mm and at the typical angle it would be viewed.

During the inspection process, varying viewing angles and heights is recommended to ensure a comprehensive assessment of the defect. This should encompass expected viewing ranges between 140 cm (5 ft) and 185 cm (6 ft) and within ±30°.

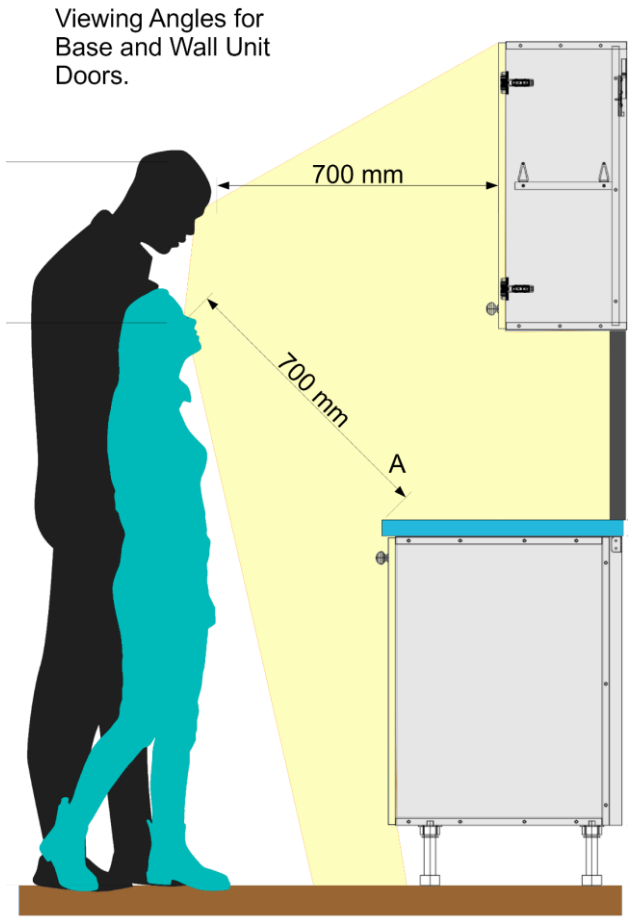
The lighting conditions should provide a minimum of 1000 lux at a colour temperature of 6500K for optimal evaluation.

Small imperfections that are not clearly visible under these conditions are not considered defects.

Light: 6.500 °K (diffuse light),
Distance: 700mm
Duration (max): 30 seconds.



Bench inspection method for loose panels.



In Situ Inspection

Colour Variation

Painted colours may vary from batch to batch and substrate to substrate. All painted surfaces are susceptible to aging over time, which may cause a slight change in the original appearance of the colour. This can be due a many contributing factors, such as position within the kitchen, external and internal lighting and the use of cleaning products.

Ordering replacement items at a different time from the original order may potentially incur a slight colour variation. Although we strive to maintain consistency PWS cannot guarantee and exact match between orders.

What to do

Should a colour variation occur you should firstly send pictures to PWS Customer Services who will then assess the issue and potentially request a sample door for a Colour Measurement Test.

Detection of Defects

In any manufacturing process, especially those involving natural materials, minor visual imperfections are inevitable.

We strive to minimize and mitigate these imperfections at every stage of production.

Each product undergoes thorough inspection before shipping to ensure that any minor imperfections present will not impact the overall quality and satisfaction of our customers.



Size Estimation Chart

To accurately assess imperfections a size estimation chart is used. This allows a repeatable and objective evaluation of imperfections and irregularities to determine if the part being inspected is outside of acceptable quality limits.

These evaluation criteria, and upper limits are determined by the Danesmoor Group Quality Standards.



Continued.....

Size Estimation Chart (2)

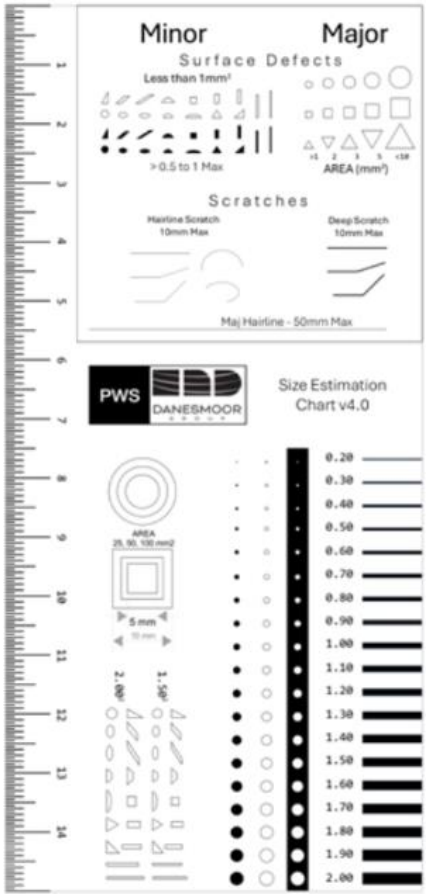




<1mm Acceptable



>1mm Unacceptable



04.

GUIDES:

Acceptable Quality (General)

Visual reference examples for whisper lines, surface defects and scratches.



Whisper Lines

Some of our door frontals are crafted from solid timber, a natural material that responds to changes in moisture levels. As a result, hairline cracks, often referred to as “whisper lines,” may develop along the joint lines of painted surfaces. These are inherent traits of smooth painted furniture and are not classified as defects.

If, however, a whisper line deviates from the joint line or exhibits unusual characteristics within 12 months of purchase, it may be eligible for replacement under our quality assurance policy.

What is acceptable



The shadow of the joint is visible underneath the finished top coat. Paint unbroken.



Slight step in the joint between frame and rail. Paint unbroken.

What is unacceptable



The whisper line has formed but caused the paint to flake off the surface of the door.



The whisper line does not follow the line of the joint.

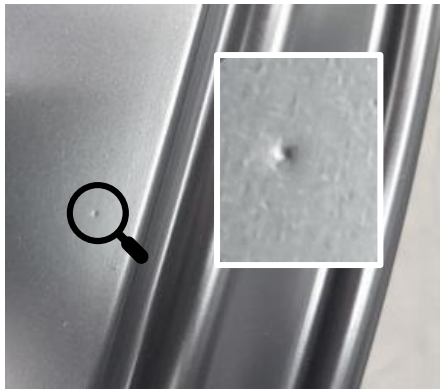
Surface Defects

PWS

Paint blobs, pinholes and fisheyes.

Any small defect in the surface will be rejected if it falls outside the quality standards (in size or quantity).

Single Fisheye
less than 1mm - Acceptable



Single blob
not visible at 700mm - Acceptable

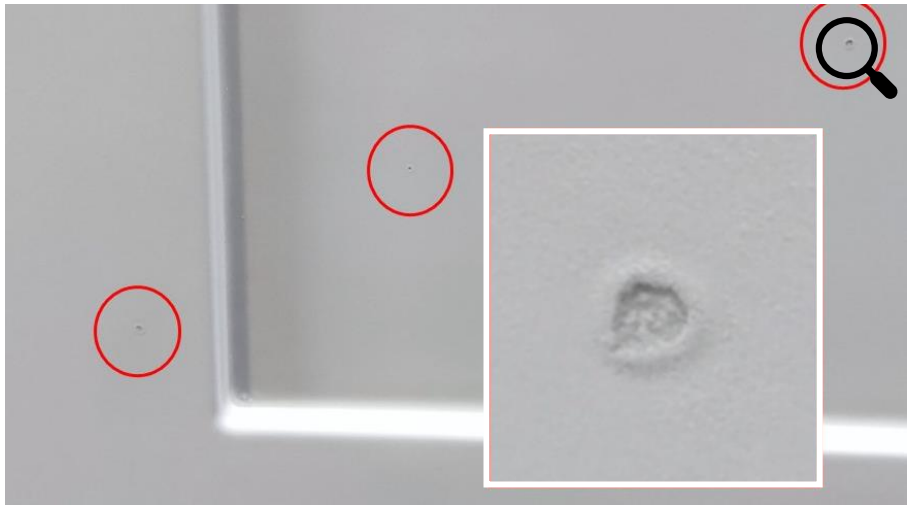


For exposed [A] surfaces

Acceptable Minor – <1.0mm diameter

Unacceptable >1.0mm

Small Panels	Medium Panels	Large Panels	Extra Large Panels
1	2	3	4

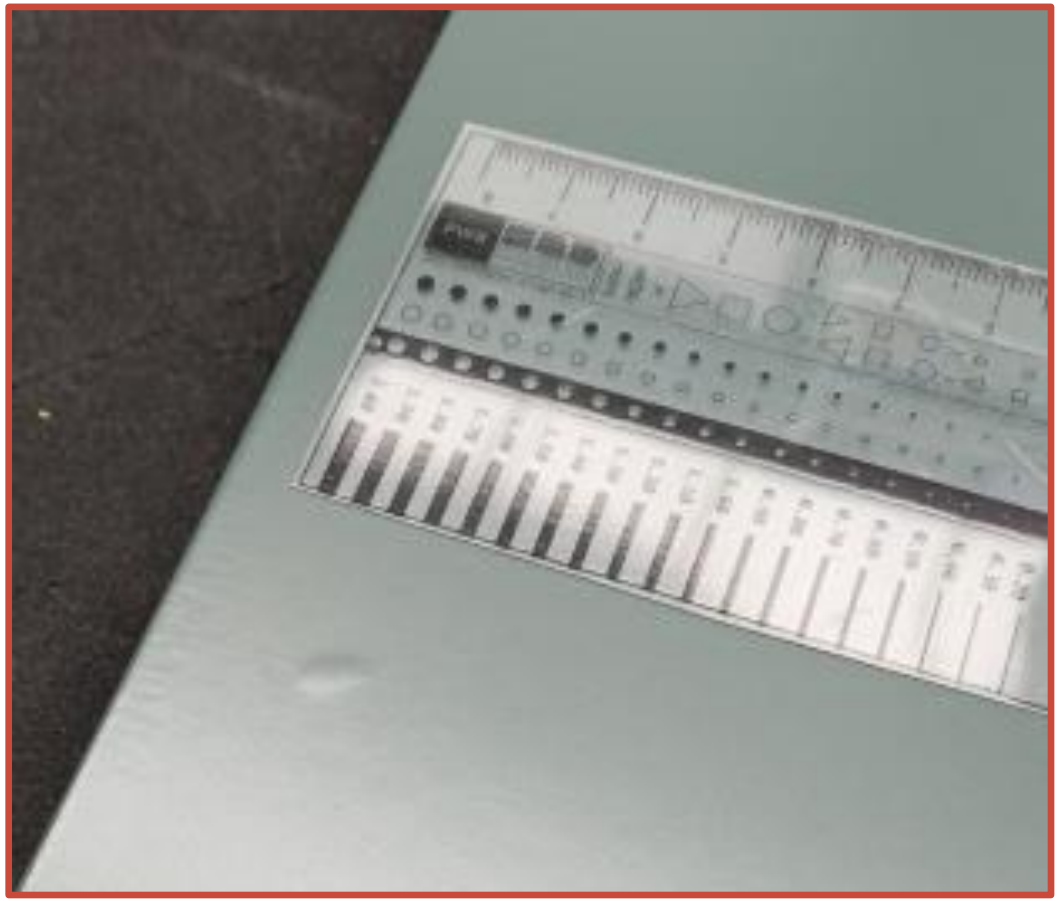


3 popped bubbles — Unacceptable



Large blob — Unacceptable

Surface Defects (2)



Unacceptable >2mm



Unacceptable >2mm

Dents

For exposed [A] surfaces

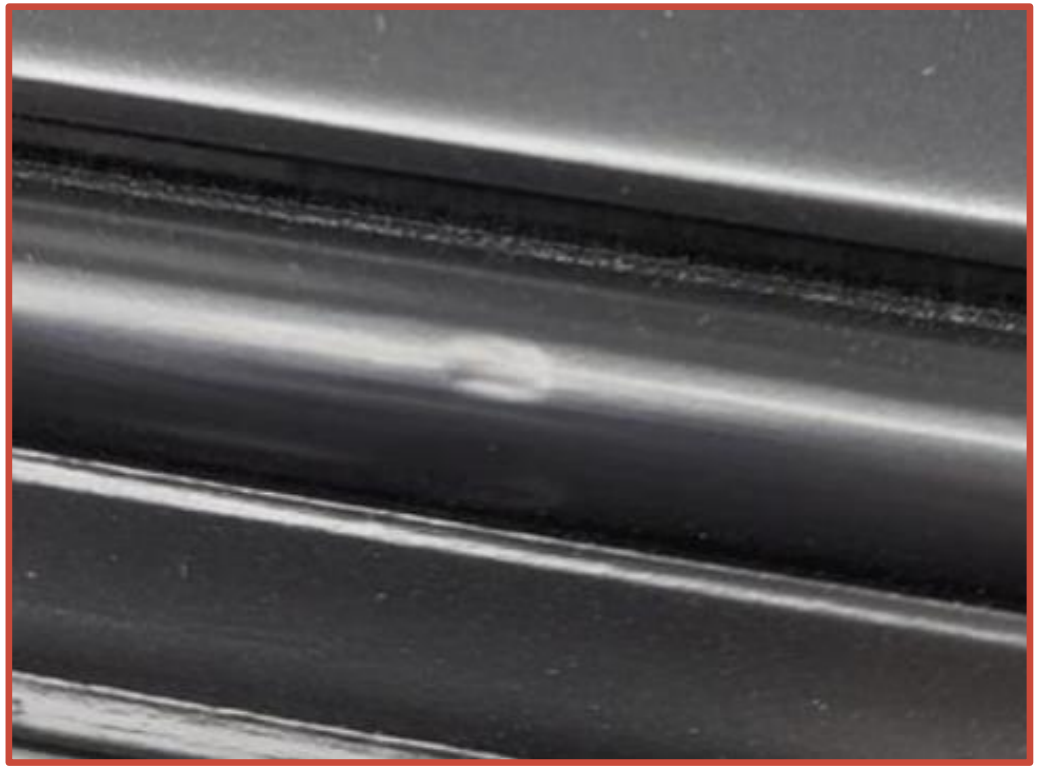
Acceptable Minor – <1.0mm diameter

Unacceptable >1.0mm

Small Panels	Medium Panels	Large Panels	Extra Large Panels
1	2	3	4



Dent <1.0mm - Acceptable



Dent >1.0mm - Unacceptable

Fibres

For exposed [A] surfaces

Acceptable Minor – <1.0mm diameter

Unacceptable >1.0mm

Small Panels	Medium Panels	Large Panels	Extra Large Panels
1	2	3	4



Acceptable





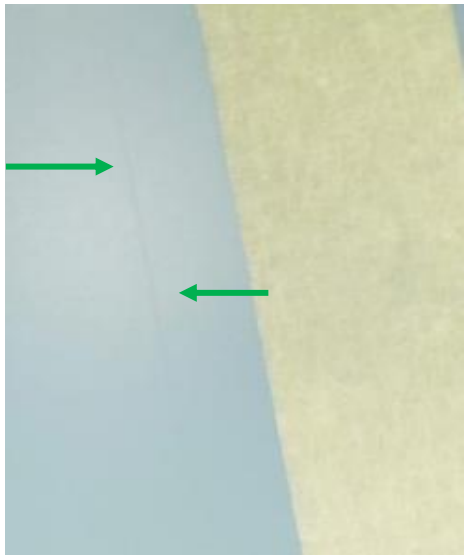


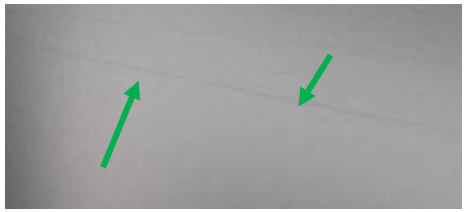
Unacceptable

Scratches

For exposed [A] surfaces Acceptable Minor Scratches – Faint Hairline <10.0mm			
Small Panels	Medium Panels	Large Panels	Extra Large Panels
0	1	2	3

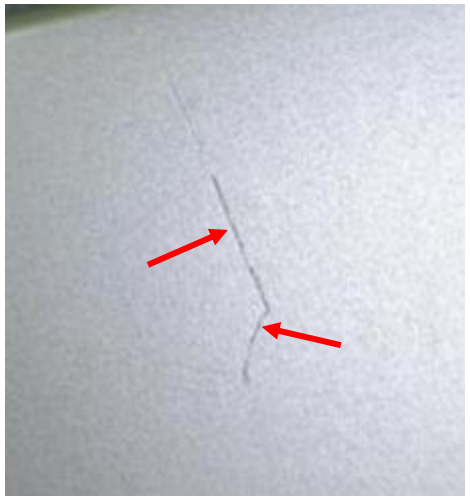
Hairline Scratches
Minor if less than 10mm

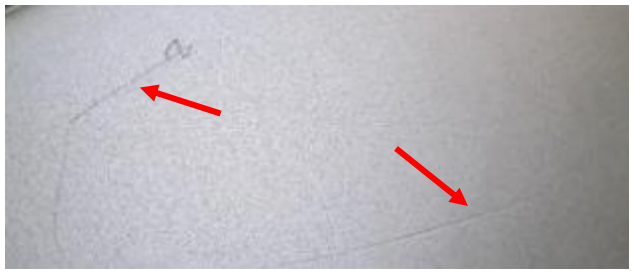




Acceptable

Deep Scratch - Major



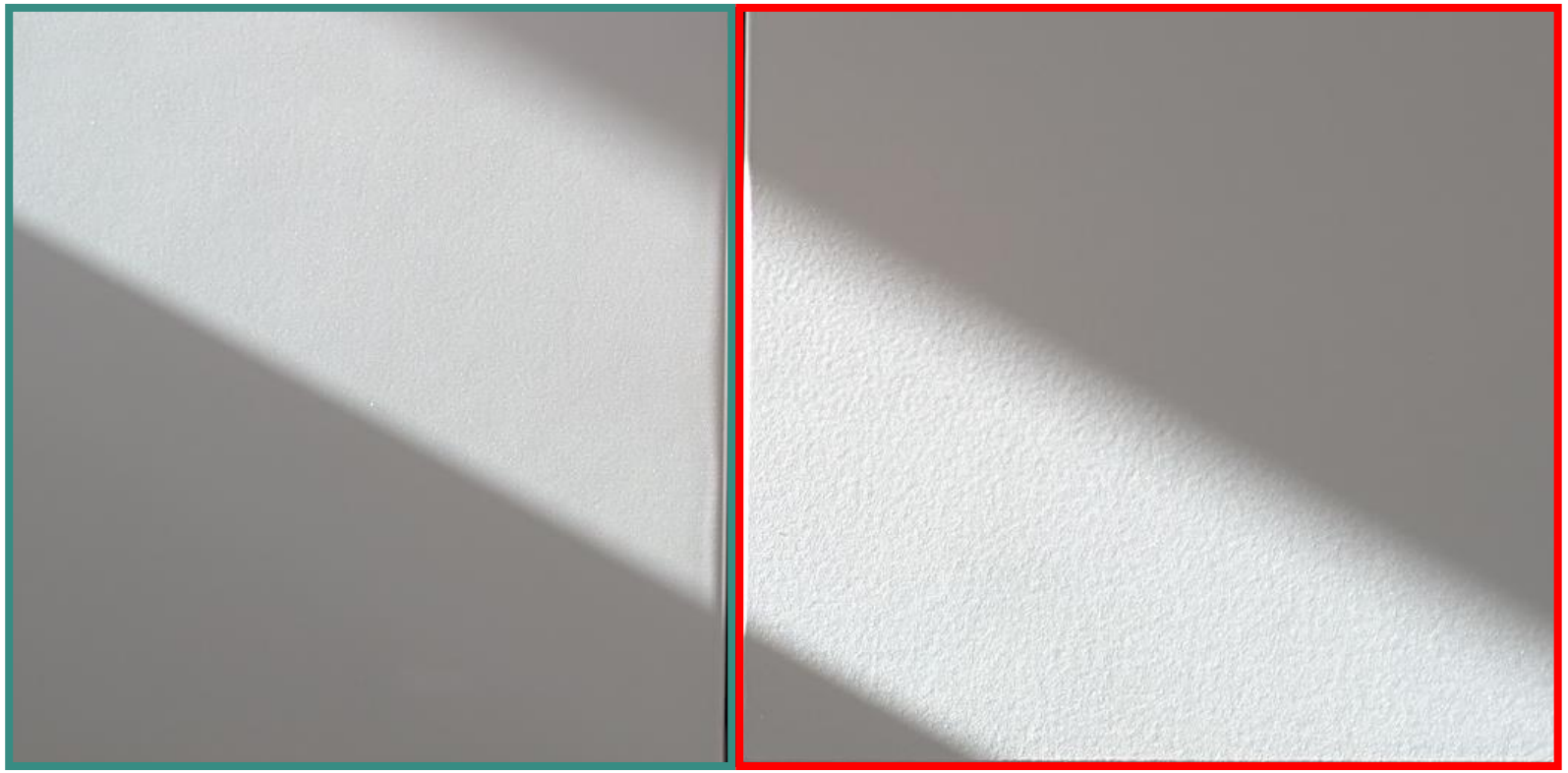


Unacceptable

Surface Texture – Paint Finish

A subtle textural defect that is more noticeable by feel.

When side by side the acceptable paint finish (shown in green) is a much more consistent finish than the unacceptable (shown in red).



Acceptable **Unacceptable**

Surface Texture – Paint Finish (2)

Side by Side drawer fronts — Zoomed

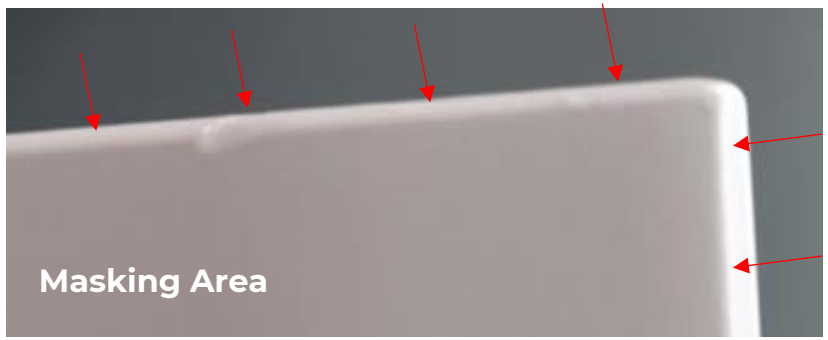


Acceptable



Unacceptable

Masking Lines



No Masking lines are acceptable.

Caused when paint accumulates against masking tape during the painting process leaving an unacceptable finish on the edge of the piece.



Unacceptable



Unacceptable

Veneer Lift

All veneer lift is unacceptable.

Veneer lift is caused by moisture ingress between core material and the veneer surface.



Unacceptable Veneer Lift

05.

GUIDES:

Acceptable Quality (Grain Standard)

Visual inspection standards for natural ash open-grain doors.

Visual Inspections of Doors and Panels

The panel should ideally be observed from a distance of 700 mm and at the typical angle it would be viewed. This should encompass expected viewing ranges between 140 cm (5 ft) and 185 cm (6 ft) and within ±30°. The lighting conditions should provide a minimum of 1000 lux at a colour temperature of 6500K for optimal evaluation. Small imperfections that are not clearly visible under these conditions are not considered defects.

Class A — Exposed Surfaces

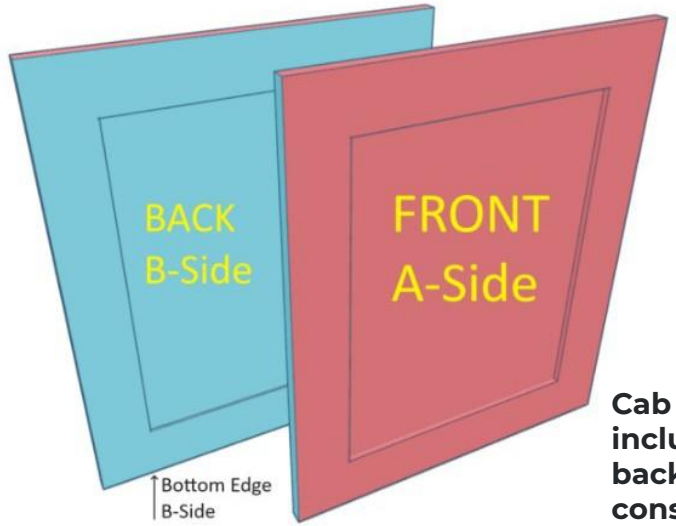
Frontals that are always on display, door fronts and top edges, drawer fronts, décor gables and facing edges.

Class B — Obscured Surfaces

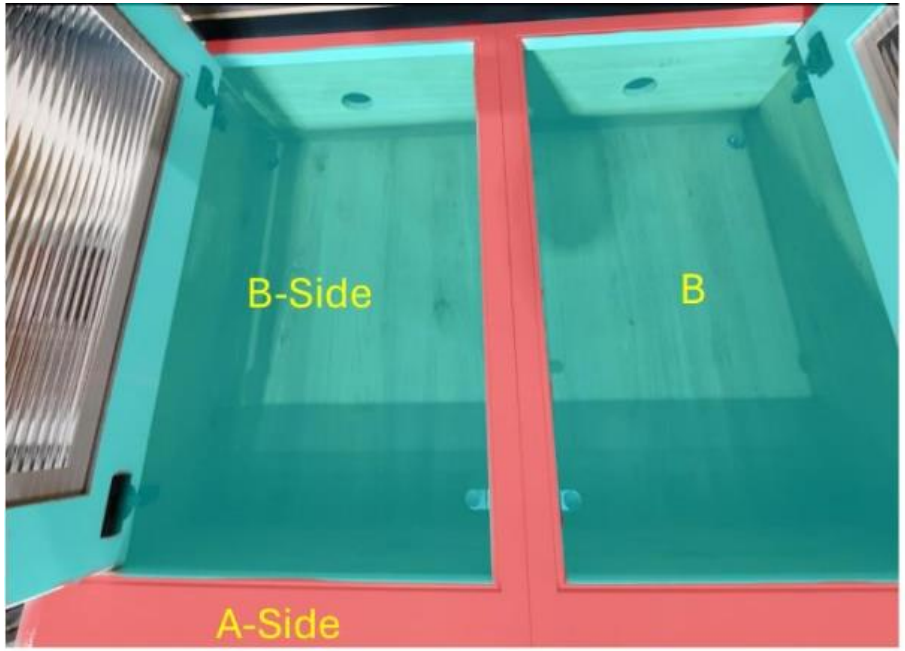
Surfaces partially hidden or not always visible in daily operation. Surfaces partially hidden behind other components or panels.

Class C — Concealed Surfaces

Entirely hidden from view at normal viewing angles. Surfaces entirely hidden behind other components when fitted.



Cab internals, including the backs of doors are considered B side



Ash Grain Variation Explanation

Natural Timber Characteristics

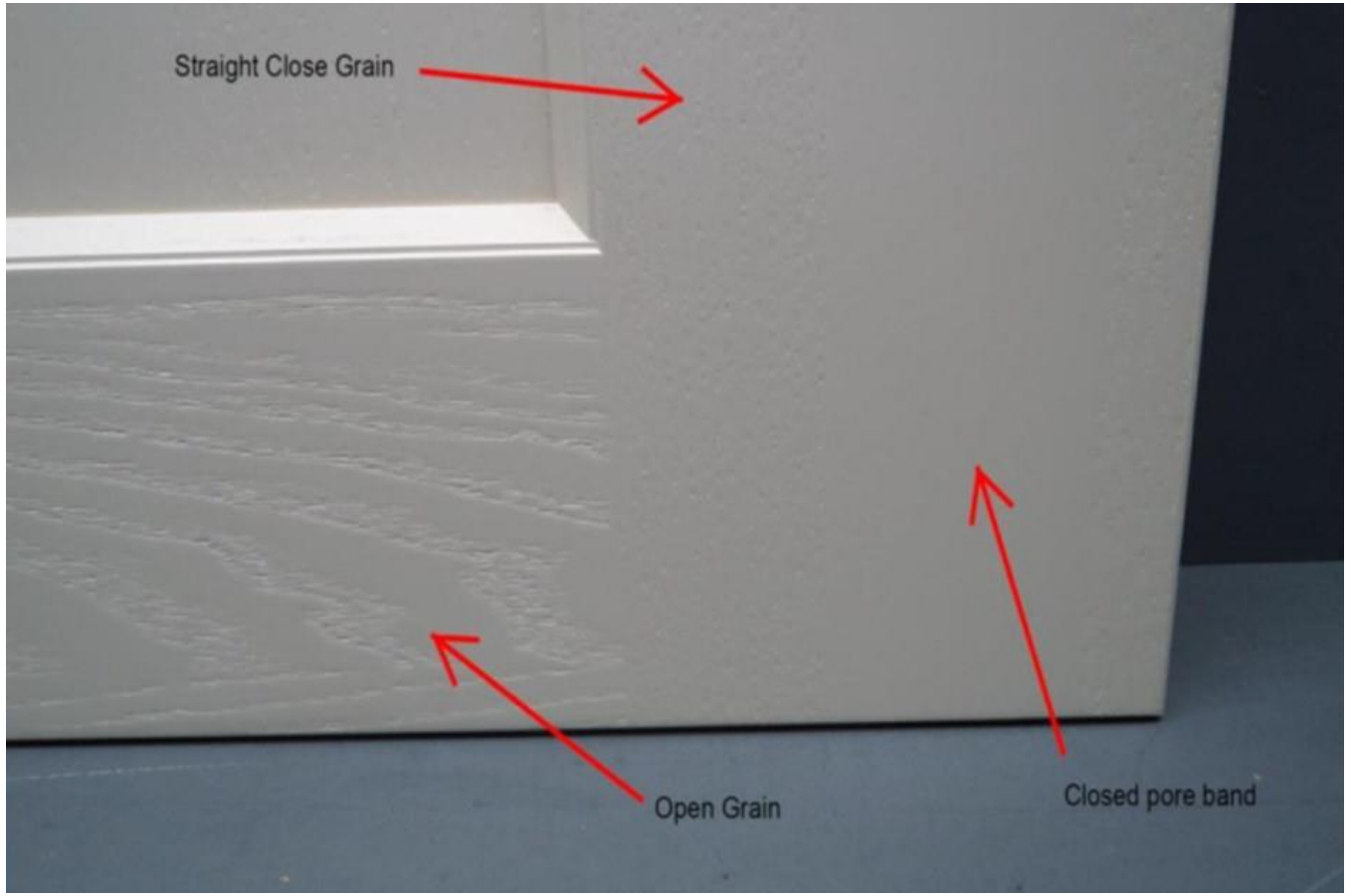
As natural ash timber doors are produced in solid wood and veneers there is natural variation in texture and grain which is entirely normal and expected to vary from door to door.

Paint Absorption

Ash features ‘open grain/ flowered grain’ and ‘linear/ closed pore grain’ which absorb paint differently, creating natural texture variation.

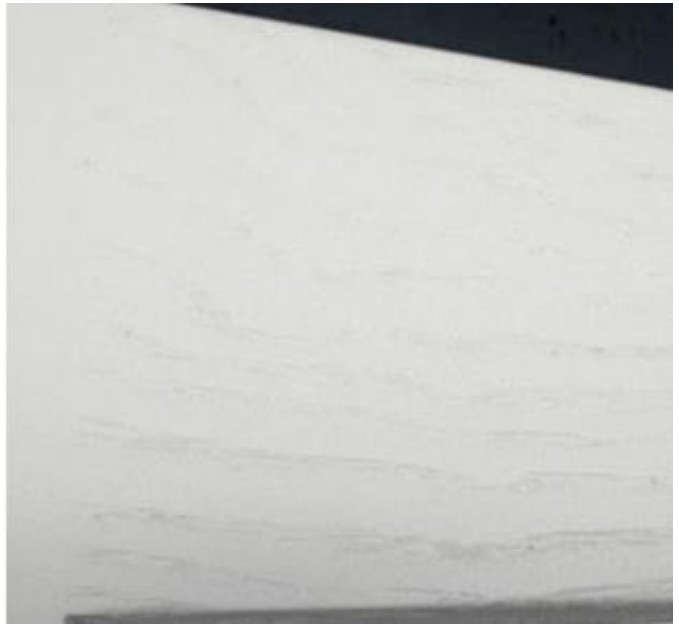
Finishing Standards

Natural timber grain should remain visible through the finish as a hallmark of premium kitchen furniture construction.



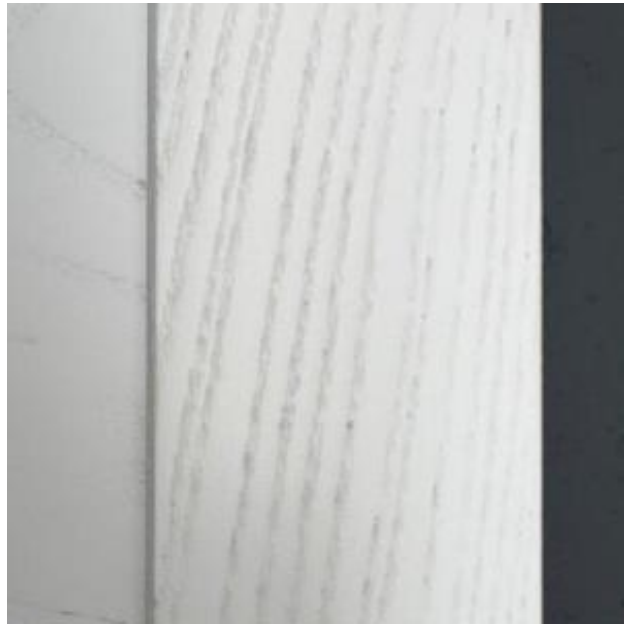
Open Grain – Ash Door, Rails and Styles

Due to the nature of the manufacturing process angled surfaces can show increased open grain. In addition, areas with concentration of end grain such as the ends of the rail and styles will be more absorbent and display more grain than other parts of the door.



Acceptable

Rails and Styles – Open Grain



Unacceptable

Rails and Styles – Open Grain

Open Grain – Centre Panels

On veneered centre panels large areas where paint has not absorbed into the grain across the centre panel is Unacceptable.

Open grain where centre panel meets the frame is Acceptable.



Acceptable

Centre panel – Open Grain



Unacceptable

Centre panel – Open Grain



Centre panel & frame – Open Grain

Conforming Ash Open Grain / Beaded

The beaded profile is machined from the same solid Ash timber as the frame. As a natural characteristic of solid Ash timber, grain variation may be visible on the rounded bead profile, as shown in these examples.



Acceptable



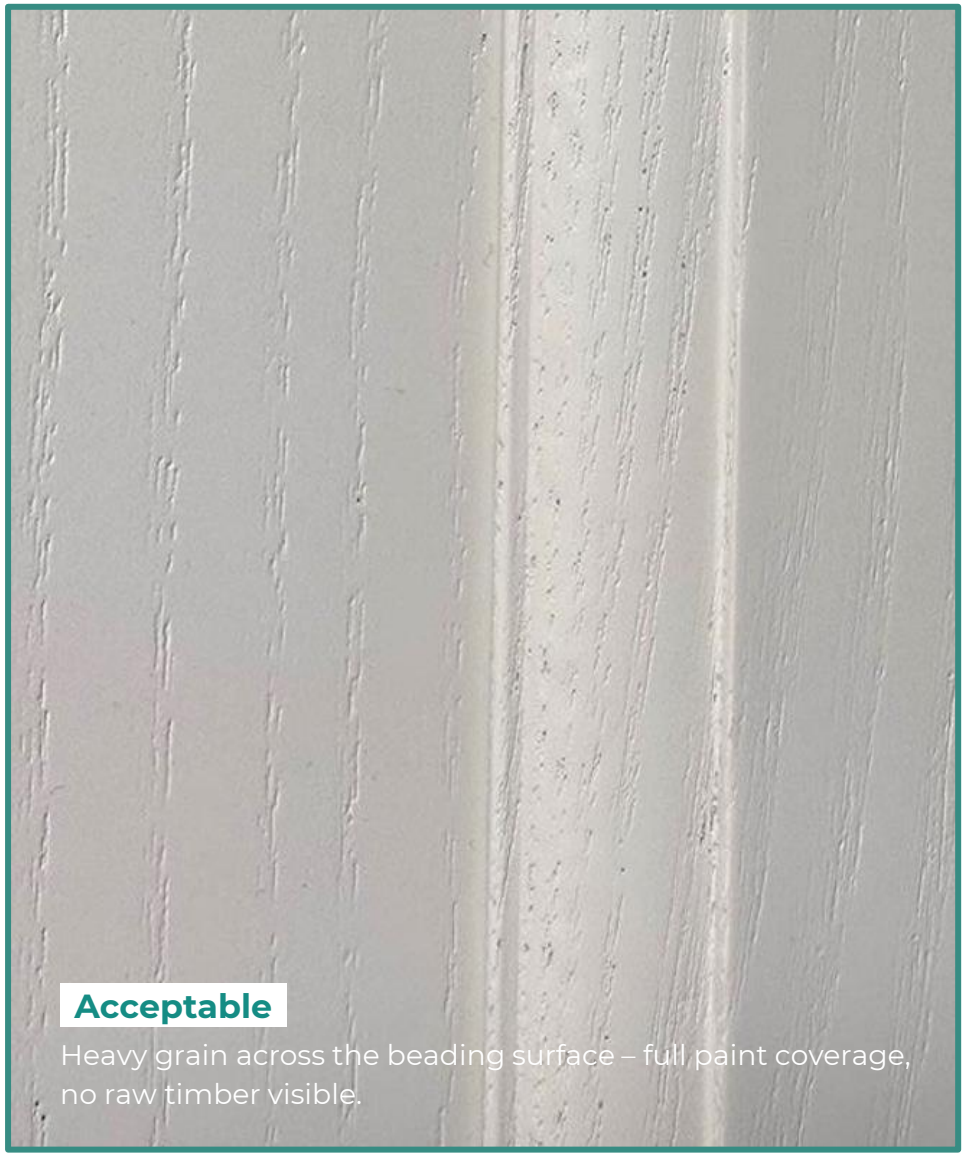


Unacceptable

Examples shown above and right show clear lack of paint coverage within the grain structure leaving raw timber exposed.

Ref – Limit sample xyz0001 @ PTO sample cabinet

Conforming Ash Open Grain / Beaded (2)



Acceptable

Heavy grain across the beading surface – full paint coverage, no raw timber visible.

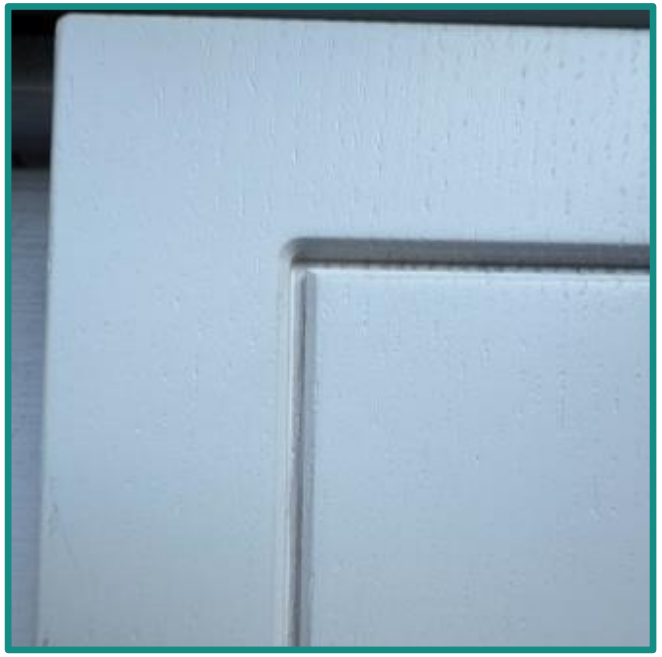


Unacceptable

Heavy grain across the beading surface – lack of paint coverage, raw timber visible.

Conforming Ash Open Grain / In-Frame Effect

Inside the in-frame effect groove may appear more textured as this is machined but not sanded – however we still ensure a consistent paint coverage inside this groove. Acceptable. Where paint coverage is not achieved within the in-frame feature, Unacceptable.



Acceptable



Unacceptable

Knots

Knots are a feature of a natural timber door, however may appear as unsightly defect; acceptance must be controlled to ensure customer satisfaction.



<1.0mm - Acceptable



Unacceptable





06.

GUIDES:

Timber

Understanding Timber

Timber: Material Finish Variations and Defects



Understanding Timber and Painted Kitchen Doors

Timber is a natural material, and its unique characteristics make it a beautiful choice for bespoke kitchen doors. However, certain factors influence the appearance of painted timber. Here's what you need to know:

Natural Variations in Timber:

- Even within the same species, timber varies in density, moisture content, and absorbency.
- The grain structure plays a significant role in how the timber looks, even affecting the perceived colour.
- These variations are part of the charm and uniqueness of timber but may result in slight differences in appearance.

Impact of Grain Structure on Paint Appearance in Open-Grain Timber:

- Has a higher absorbency rate.
- Paint may absorb into the grain, creating a textured finish.

Ensuring Quality:

- We carefully apply a consistent amount of paint to every door.
- Despite this, variations in appearance may occur due to: the natural grain structure and absorbency of the timber; the use of engineered materials in some accessories.

07.

GUIDES:

Wear & Tear

Everyday wear, and how to care for your kitchen.



Wear & Tear: Understanding What It Means

Wear and tear refers to the natural and expected deterioration of materials or components over time due to regular, everyday use. It is the gradual decline in condition that occurs as part of normal living or usage. Importantly, wear and tear are not caused by misuse, abuse, neglect, or accidental damage but rather from consistent, routine activity.

Wear and tear is inherent to the lifecycle of materials and do not indicate a flaw in workmanship or design.

Examples in Daily Life:

The kitchen, much like other high-traffic areas, is particularly prone to wear and tear due to the constant use it experiences. Similar to how a car's paint may chip from small stones on the road, minor impacts and abrasions in the kitchen are a normal part of its lifespan. These occurrences are not considered defects and are therefore not covered under our guarantee.

Examples of Wear and Tear Not Covered:

The following are typical instances of general wear and tear that fall outside the scope of warranty coverage:

Surface Scratches:
Minor scratches on countertops, cabinet surfaces, or flooring resulting from regular use.

Fading or Discoloration:
Changes in colour due to sunlight exposure or natural aging of materials.

Small Dents or Chips:
Marks on cabinetry, appliances, or components caused by everyday activities.

Loose Fittings:
Gradual loosening of screws, hinges, or handles over time.

Kitchen Care & Maintenance Guide

To keep your kitchen looking its best, please follow the care instructions below. Proper cleaning, moisture control, and careful use of appliances will help maintain the finish and prevent avoidable damage.

Cleaning

Use a 5% liquid soap / 95% water solution with a damp cloth, then dry with a soft cloth. Remove splashes, fingerprints and daily marks promptly. Dust with a soft, dry cloth – a clean microfibre cloth is recommended.

Do Not Use

Avoid products that can damage the finish, including: wax polishes, metal cleaning sprays used on handles, abrasive cleaners or pads, bleach, chlorine or multipurpose chemicals, solvents such as acetone or alcohol. These can cause discolouration, scratching, or residue build-up.

Spills, Oils & Moisture

Immediately clean any oil-based substances (e.g., cooking oils, butter). Do not allow water or condensation to sit on doors, edges, plinths or panels - dry thoroughly. Extra care is required around sinks, taps, dishwashers and wet appliances. Moisture damage is not covered by warranty.

Heat & Steam

Keep steam-producing appliances (kettles, coffee makers, steamers) away from the underside of cabinets. Do not open dishwasher doors mid-cycle or immediately after finishing. Ensure heat-generating appliances such as toasters, microwaves and air fryers are well ventilated and not positioned directly beneath units.

Environment

Maintain a stable room environment: Temperature: 16°C - 24°C, Relative humidity: 40% - 60%. This prevents warping, cracking and stress to painted and timber-based surfaces.

Painted & Finished Surfaces

Handle with care to avoid chips and dents. Minor marks can be cleaned with mild soapy water; deeper damage may require professional refinishing.