

APPLICATION GUIDE**TimberClear****TimberOne****TimberWhite****Timber Whitewash**

Fireshield intumescent coating systems for interior timber surfaces.



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1. INTRODUCTION

Fireshield® offers the following coating systems for the protection of interior **timber-based substrate** surfaces to provide a compliant fire rated Group Surface Rating in New Zealand and Australia.

This document gives guidance on the use and application of:

- Fireshield Timberclear+ Top Coat.
- Fireshield TimberOne+ Top Coat
- Fireshield TimberWhite
- Fireshield Timber Whitewash

This document should be read in conjunction with the relevant Technical Datasheet and Material Safety Datasheet for each product.

It is also recommended that reference is made to Local Government, Governing Bodies and Council guidelines for installation licensing requirements and compliance requirements particular to the on-site application of intumescent coatings.

All four products have been developed, formulated and optimised for surface fire rating of internal timber-based substrates (wall and ceiling linings.)

1. 1 Fireshield Timberclear + Top Coat

The Fireshield Timberclear basecoat is a clear, waterborne, halogen free intumescent coating designed for use on interior timber surfaces. Timberclear basecoat must be sealed with Timberclear Topcoat Matt or Semi Gloss sealer.

1.3 Fireshield TimberWhite

Fireshield TimberWhite is a white, pigmented halogen free waterborne intumescent paint designed for use on interior timber surfaces.

1. 2 Fireshield TimberOne + Top Coat

The Fireshield TimberOne basecoat is a waterborne, halogen free, intumescent coating with a translucent finish for use on light coloured timber substrates. TimberOne can be sealed with TimberOne Top Coat.

1.4 Fireshield Timber Whitewash

Fireshield Timber Whitewash is a semi-transparent, halogen free, waterborne intumescent paint designed for use on light coloured interior timber surfaces.

2. AREAS OF USE

Fireshield® timber intumescent coating systems (ICS) are designed to be used on **internal** wall and ceiling linings. **Do not use in exterior environments.**

Application can occur on-site or off-site depending on the project requirements to provide fire protection to the surface of timber-based products. For off site application see storage and transport of coated timber.

PRIMERS, STAINS AND TOP COATS:

All Fireshield® timber coating systems can be used with a range of Fireshield® approved:

- Primers.
- Clear sealers and stain systems.
- Clear top-coat sealers.
- Pigmented top-coats.

Timberclear can **only** be top-coated with Fireshield® TimberClear Top Coat Matt or Semi Gloss sealer.

TimberOne can **only** be top-coated with Fireshield® TimberOne Top Coat Matt sealer.

TimberWhite can be top-coated with a range of approved top-coats for protective or decorative reasons. Only Fireshield® approved top-coats can be used.

Fireshield® Timber Whitewash can be top-coated with a Fireshield® approved clear sealer when used in areas with high humidity or when a washable surface is required.

STORAGE OF FIRESHIELD PRODUCTS

All Fireshield® Timber ICS products recommended storage conditions:

- Store at a temperature above +5°C and below +35°C
- Store indoors and undercover in temperate conditions.
- Store away from direct sunlight, do not expose to extreme heat.
- Do not allow to freeze.
- Keep containers closed when not in use.
- **Keep out of reach of children!**
- The shelf life of all Fireshield Timber ICS products at +25°C is 12-months with the month/year label found on the bucket.

3. HEALTH AND SAFETY

Fireshield® timber ICS systems are only to be used by trained, professional Fireshield Registered Applicators.

All applications are to be in accordance with the advice on product Material Health and Safety Data Sheets (MSDS), which Fireshield® Coatings provides to its customers. A copy of the MSDS should be kept on site during application.

If for any reason a copy of the relevant Material Health and Safety Data Sheet is not immediately available, the user should obtain a copy before using the product.

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent MSDS containing physical, ecological, toxicological and other safety-related data.

Protective measures should be taken when handling or applying the products in accordance with the product Material Safety Data Sheet. In particular:

- Wear eye protection.
- Use respiratory protection for spraying meeting the requirements of AS/NZS 1715 and AS/NZS 1716.
- Wear overalls, impervious gloves and safety shoes.
- When using do not eat, drink or smoke.

4. COMPLIANCE

Fireshield® Timber ICS' are passive fire compliance products designed and tested to provide the highest Group Surface Rating possible for fire protection of interior timber-based substrates.

Ensure that the correct country-specific compliance approvals that are required are being used. Consult Fireshield® for the latest information if required or see the latest Technical Datasheet for the required film thickness to achieve the required group rating.

It is imperative that this Application Guide is read and understood prior to application, all compliance paperwork is accurately completed and the minimum dry and wet film thicknesses listed on the product data sheet are adhered to achieve compliance.

Failure to meet the minimum film thicknesses will require immediate and costly rectification.

5. APPLICATION PAPERWORK

All Fireshield® timber ICS products are compliance-based, passive fire protection systems that must be installed by a trained, Fireshield® Registered Applicators that are suitably qualified able to sign off their own work.

By completing the relevant paperwork, the Applicator is confirming that their aspect of the building work complies with the building approval and the applicable building laws.

- Complete the Daily Record Sheet recording wet film measurements as per Table 3.1.

- Complete and sign a Statement of Construction, a Producer Statement (PS3) or Form 16 (only one of these depending on the local Council/Building Certifier requirements).

A copy of the signed Statement of Construction, a Producer Statement (PS3) or Form 16 combined with the daily application record must be forwarded to the Main Contractor or in the absence of a Main Contractor, the property owner or his agent.

In some territories or provinces local Council requires that Passive Fire Installers are registered and licensed, please enquire with your local Council prior to installing any Fireshield timber ICS products. Contact Fireshield for further information.

Leave a copy of the Fireshield® Maintenance Guide on-site with the Main Contractor or Client.



Large product description label to be installed in the switchboard cupboard serving the coated area and one small product label on or in close proximity to the coated surface. (Compulsory in Australia)

Install one small product label on or close to the coated surface and a large product description label in the switchboard cupboard serving the coated area. Contact Fireshield® for these labels. These labels must be used in Australia, in New Zealand it is voluntary.

Area to be coated m ²	Min. WFT measurements
1m ² to 3m ²	9
> 3m ² to 10m ²	15
> 10m ² to 30m ²	21
> 30m ² to 100m ²	27
> 100m ² +	27 for first 100m ² + 9 each additional 100m ² .

6. SURFACE REQUIREMENTS & PREPARATION

All timber surfaces to be coated should be:

- Clean, dry and;
- Free from contamination including dirt, salts, oil and grease.

If required, prepare as per AS/NZS 2311 Sec 3.2.7, any contaminant left on the surface could affect the visual appearance of the Fireshield® timber ICS system and adhesion.

Timber moisture levels must be below 15% and remain that way permanently, to ensure this occurs:

- Allow the timber to equilibrate in a location protected from the weather, near to its final in-service conditions, to avoid moisture levels increasing above 15% after installation.
- On-site timber storage should be such that it will allow that equilibrium to be achieved. Achieving equilibrium may take several days for small, relatively dry timber specimens to many weeks for large timber specimens that have been stored outdoors.
- Dressed timber should be smooth, and free from raised or woolly grain, planing burrs, or other machining defects.
- The standard of finish should be appropriate to the end-use (see NZS 3610 and NZS 3617). Rough-sawn timbers should be thoroughly brushed with the grain to remove dust and dirt before coating.
- Timber substrates with low water absorption or wetting difficulties should be roughened thoroughly with fine sandpaper (P240-320).
- All sanding, especially where clear finishes are to be used, should be carried out with the grain.

All timber-based substrates must be:

1. Minimum $\geq 8\text{mm}$ or thick
2. Minimum $\geq 338 \text{ kg/m}^3$ density.
3. Maximum 15% moisture content and at equilibrium.



This photograph shows an example of contamination left on the timber surface and then clear coat applied leaving visible marks on the surface.

PREVIOUSLY COATED TIMBER SURFACES:

Fireshield® always recommend that the existing coating be removed and the substrate is taken back to bare timber if possible, however, in some circumstances this is impractical, and the following should be done when using TimberClear or TimberWhite.

TimberOne and Timber Whitewash should not be applied over existing coatings, both coatings require a natural timber surface to get the full benefit of the whitewash effect.

TimberClear and TimberWhite can be applied over previously coated timber surfaces either directly or by using the Fireshield® approved clear sealer/tie coat or pigmented primer first depending on the existing coating condition and type.

Always remove surface blemishes and thoroughly sand the existing coating to promote inter-coat adhesion and remove any flaking coatings.

TIMBERCLEAR ON PREVIOUSLY COATED TIMBER SURFACES

Where the existing, fully cured waterbased coating is an ink, soluble dye or pigmented stain that has penetrated the timber surface and it has adequate adhesion and the coatings are compatible as per AS NZS 2311, it may be over coated directly with Fireshield® TimberClear system.

The existing coating may still leech or bleed into the Fireshield® ICS and an approved primer/tie coat can be used to minimize this risk.

For dark stained substrates, applying TimberClear in two thinner coats can help to maintain the dark stain finish and avoid whitening.

TIMBERWHITE ON PREVIOUSLY COATED TIMBER SURFACES

Where there is an existing fully cured clear or pigmented coating, and it has adequate adhesion to the timber substrate and the coatings are compatible as per AS NZS 2311, it may be over coated directly with TimberWhite.

It is always recommended that a small test area should be applied to test the adhesion of the Fireshield® timber ICS to the coated surface, as per AS NZS 2311.

TIMBER SUBSTRATES

Waterborne coating products, such as the Fireshield® timber ICS range can be affected by the natural :

- Fatty timbers that contain resins and oils which may leech tannins into the Fireshield® coating leading to dis-colouration.
- Some timbers, such as western red cedar, redwood and eucalypt hardwood's can leach out coloured water-soluble extractive and discolour the Fireshield® coating.
- Raise or "fir" occurring in the grain of timber panel surfaces with high surface tension in the grain, (a simple test is to wet the substrate surface with water to see if furring will occur).

It is recommended that the approved Fireshield® clear sealer/tie coat or pigmented primer be used in these situations before the application of the Fireshield® timber ICS.

A small test area should be completed to test the adhesion of the primer/tie coat to the timber substrate, as per AS NZS 2311.

7. APPLICATION ENVIRONMENT

During application, drying and curing of all Fireshield® timber ICS' ensure that:

- The relative air humidity level is below 75%.
- The air temperature should be between +10°C and +35°C.

If the relative humidity rises above 75%, the surrounding air has less capacity to absorb moisture being released by the coating as it dries and drying could be slowed or in the case of TimberClear, the coating may not dry clear leaving a milky appearance or blotches which can appear over the following weeks.

As drying proceeds and the circulating air absorbs more moisture, it is important to remove the air directly above the coated surface and replace it with dryer air from an external source.

One to two air changes per hour are typically required, however, where the ambient relative humidity is high, up to 10 air changes per hour can be required.

Conversely, if the air is too dry, the coating surface can dry too quickly and may skin over, inhibiting thorough drying. For further assistance see AS NZS 2311 Sec 6.3 Climatic Conditions for further details on internal climatic conditions for painting.

Fireshield® TimberClear can take three weeks (21 days) to cure and harden fully depending on the environmental conditions, this period may be shortened significantly by increasing the airflow above the coated surface by using mechanical air flow systems.

During application and curing of all Fireshield® timber ICS' ensure that:

- The relative air humidity level is below 75%.
- The air temperature should be between +10°C to +35°C.

During curing ensure adequate air flow to the area being coated to assist in the curing process, heaters and dehumidifiers can also be used to help control the environmental conditions if necessary.

Immediately after the final coat of the Fireshield® timber ICS refer to the Fireshield® Maintenance Guide for coating care, in particular when applying the TimberClear system, ensure that:

- The system remains dry and free from water and humidity above 75%.
- Do not clean or introduce detergents or water to the coating surface.
- There should be no use of adhesives or other installations that may interfere with the coated surface.

8. OFF SITE APPLICATION:

The Fireshield® range of timber intumescent are designed for on site application, however with careful planning, drying and transport solutions they can be applied off site.

TimberOne, TimberWhite and Timber Whitewash dry to a hard surface but should be top coated or protected before transporting.

The **TimberClear** system does not dry hard immediately and will stick to one another or other surfaces if excessive weight is applied to the coated timber when stacked and packaged for transport.

OFF SITE APPLICATION PRECAUTIONS.

Take care to protect coated timber surfaces from damage when undergoing off-site application. Use drying racks in a dry, well ventilated and warm warehouse environment to dry coated timber and to help the curing process.

Be prepared to store the TimberClear coated timber in racks as it can take three weeks to cure fully and harden, this period can be shortened significantly with mechanically forced air movement across the drying surface and dehumidification.

Experiment with packing solutions that suit the particular substrate and coating, for example stack substrates on edge during transport to site to prevent excess pressure on coated surfaces. If this is not possible, slip sheet timber substrates with re-usable thin air cell foam sheeting or similar to prevent adhesion between the timber surfaces.

- Do not use timber battens touching the coated surface to separate boards particularly with TimberClear.
- Do not stack coated timber substrates under excessive weight causing boards to adhere to one another, minimise each board package size, do not stack separate packages onto one another on site during transport or after delivery.
- Ensure timber does not "sweat" or get wet during transportation and is unpacked in a dry environment or the area of installation immediately upon delivery.
- Do not store wrapped in an uncontrolled environment outside of the recommended conditions in the technical datasheet.



Photograph shows an example of "blotching" due to application outside of the conditions listed on the product datasheet.

8. APPLICATION EQUIPMENT

All Fireshield® timber ICS' achieve the best results when spray applied. The required film thicknesses for compliance can be achieved in one coat.

Fireshield® timber ICS' can be applied by brush or roller, however, it may take several coats to achieve the required film thickness. Also, the resulting finish may not be acceptable.

A sample should be provided to the Specifier prior to application for approval when brush or roller application is used.

AIRLESS SPRAY APPLICATION

Application by airless spray is advised for all Fireshield® timber intumescent and top coats.

Airless spray recommendations for intumescent basecoats:

- 5 litres per minute delivery e.g. Graco Mk 5 or Wagner 3.39
- Atomising pressure 2200 to 3300 psi.
- Filters should be removed.
- Orifice size range of 511 to 517 tip size. Choose appropriate fan width depending upon substrate to be coated 30° - 60°
- Hose diameter not below 3/8", dedicated hoses should be used.
- In colder temperatures warming the product can help with application to standard room temperatures. Do not heat above 35°C.

Airless spray recommendations for Fireshield topcoats:

- 5 litres per minute delivery e.g. Graco Mk 5 or Wagner 3.39
- Atomising pressure 1885 to 2610 psi.
- Orifice size range of 512 to 513 tip size. Choose appropriate fan width depending upon substrate to be coated 30° - 60°
- Hose diameter not below 3/8", dedicated hoses should be used.
- Solvent resistant hoses must be used for Fireshield® TimberClear Top Coat!

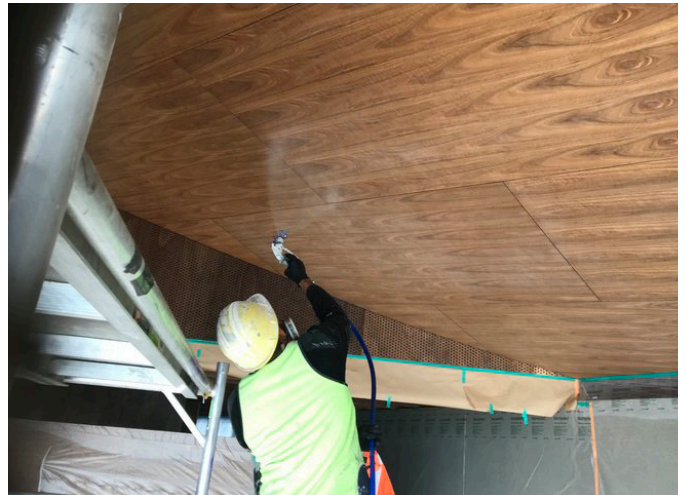
Ensure the airless spray unit has been **THOROUGHLY** cleaned to prevent contamination from other products that may have been used previously.

Dedicated hoses are recommended for all Fireshield® products to prevent possible chemical reaction between coatings that may degrade the aesthetic finish and leave unwanted marks and blemishes.

Airless spray application can be made easier by storing Fireshield® Timber ICS products in a warm environment at +15°C to +25°C for 24 hours before commencement of spraying.

DRY TIMES

All dry times are on the product datasheets and are measured at an air temperature of +23°C and at a relative humidity of 50%. Dry times may be lengthened by poor air flow and environmental conditions differing from those listed, which are a guide only. Application should not take place in conditions which are deteriorating, e.g. the temperature is falling or there is a risk of condensation forming.



Typical spray application.

BRUSH APPLICATION

Brush application is only suitable for small areas or touch-up work and may result in a textured finish.

TimberClear can be successfully brush applied to some linear timber boards, it is advised to have a sample signed off prior to commencing the final application.

Care must be taken to achieve the required specified dry film thickness. Typically the required WFT may take several coats. For brushing, use only high-quality brushes.

When brushing Fireshield® TimberClear and Timberwhite apply two coats at half the required wet film build. It is not recommended that TimberOne or Timber Whitewash are applied by brush.

ROLLER APPLICATION

Roller application is only suitable for small areas or touch-up work and may result in a textured finish.

Care must be taken to achieve the required specified dry film thickness.

When rolling Fireshield® TimberClear and Timberwhite apply two coats at half the required wet film build. It is not recommended that TimberOne or Timber Whitewash are applied by roller.

For rolling we recommend a 5-8mm microfibre blend sleeve is used.

On linear timbers or timber battens, or if roller or brush application is completely unavoidable, the resulting surface finish **MUST** first be approved by the specifier or architect.

9. APPLICATION PROCEDURE

The application procedure for Fireshield® TimberClear, TimberOne, Timberwhite and Timber Whitewash basecoats are very similar, the following is a guide only and not exhaustive:

- Fireshield® TimberClear requires sealing with Fireshield® TimberClear Top Coat Matt or Low Sheen to protect the intumescent basecoat. It is a 2-coat system for C1 interior dry zones.
- Fireshield® TimberOne can be installed in dry C1 zones without a top coat (e.g. ceilings), however it requires sealing with Fireshield® TimberOne Top Coat when used in areas with constant air humidity higher than 75%, or when a washable surface is required.
- Fireshield® Timberwhite and Timber Whitewash can be installed in dry C1 zones without a top coat (e.g. ceilings). When used in interior zones with constant air humidity higher than 75%, or when a washable surface is required they should be sealed with a Fireshield® Approved top coat.

PRIOR TO APPLICATION

- Obtain copies of the latest Technical Data Sheets and Material Safety Data Sheets from www.fireshieldcoatings.com prior to collecting, receiving or opening any Fireshield® products.
- Obtain written confirmation that the timber-based substrate to be coated has a density $\geq 338 \text{ kg/m}^3$ and is $\geq 8 \text{ mm}$ thick.
- Verify and record in writing that the moisture content of the timber substrate to be coated is below $< 15\%$, is in equilibrium and will remain that way. (Daily Record Sheet)
- Fill in the Daily Record sheet with the required environmental conditions information for the entire coating application period day and night, data loggers should be used.

In Australia only: ensure that all the limitations and conditions of use pertaining to the **Codemark Certificate of Conformity** have been met prior to application. Go to www.fireshieldcoatings.com for the latest copy of the Codemark Certificate.

- $\geq +10^\circ\text{C}$ air temperature and maximum 75% relative air humidity should be maintained throughout the coating and curing process for best results.
- In colder climates, Fireshield® timber intumescent buckets can be warmed to between $+23^\circ\text{C}$ and $+30^\circ\text{C}$ to aid in the application as they become easier to apply, continue to stir periodically during use. Do not heat above $+35^\circ\text{C}$!
- **DO NOT THIN** any of the Fireshield® timber ICS basecoats.
- If the timber substrate requires a stained finish, it must be applied under Fireshield® TimberClear directly to the substrate. Contact Fireshield® to ensure a Fireshield® approved stain is used prior to coating or see fireshieldcoatings.com.
- If existing coatings are present on the timber substrate see Section 4 of this guide.

APPLICATION OF FIRESHIELD INTUMESCENT BASECOAT

- Power stirring is essential to ensure that the coating is mixed to a uniform consistency.
- Spray a coat of the Fireshield® intumescent basecoat at the desired wet film thickness, it may be possible to achieve the required Group Surface Rating in one coat (see the Technical Data Sheet for film thickness requirements) however it may be beneficial to complete the application in 2 thinner coats if required.
- Do not apply TimberClear too thick as it may not dry clear.
- Care should be taken to achieve an even wet film thickness and smooth appearance when dry.
- The thickness of the wet film should be checked at regular intervals when applying the Fireshield® timber ICS. It is also important to carry out a final inspection of the coating before applying any protective top coats.
- Record the appropriate number of wet film measurements (see Table 3.1) using a wet-film-comb and record on the Daily Record Sheet.
- Allow to cure for the recommended drying time as per the product technical datasheet.
- **Note:** if Fireshield® Timberwhite or Timber Whitewash is to be top coated with a Fireshield® Approved Top Coat, the required wet film thickness for the basecoat is higher than that used for an unprotected basecoat, see the latest product datasheet for details.
- It is recommended that the topcoat be spray applied over TimberWhite and Timber Whitewash. Roller application may not be successful. See the topcoat Manufacturers product datasheet and Application Instructions for the top coat to be used prior to application, use the recommended DFT and maximum of 2 coats for the top coat.

APPLICATION OF FIRESHIELD CLEAR TOP COATS:

- Fireshield® TimberClear must always be sealed with TimberClear Top Coat Matt or Low Sheen. Top coating TimberOne is optional, see the product datasheet.
- Do not apply the clear top coat if the intumescent basecoat has not dried. The dry times on the relevant product datasheet are a guide only.
- Application should not take place in conditions which are deteriorating e.g. the temperature is falling below $+10^\circ\text{C}$.
- Fireshield® clear top coats should be sprayed in one coat at a minimum wet film thickness as per the product datasheet. Ensure the entire surface receives an even and full coverage at the minimum WFT to protect the basecoat.
- Periodically stir the contents of Fireshield clear top coats during application, failure to do so may affect the finish of the clear coat when dried as is the case for standard clear finishes and varnishes.
- Fireshield® clear top coats can be thinned, see the latest TDS for maximum percentage and type of thinner. Adjust wet film thickness accordingly.

10. MAINTENANCE & ONGOING INSPECTIONS

MAINTENANCE:

All Fireshield® timber intumescent systems can resist contact with moisture, day to day human impact and abrasion. However, excessive wear or moisture contact may damage the system and if so, require inspection and possible re-mediation.

The Fireshield® Maintenance Guide provides information and is broken into two definitive areas:

1. Minor damage to the coating system that does not affect compliance and the repair is optional.
2. Major damage to the coating system that does affect compliance and must be re-mediated immediately.

A copy of the Maintenance Guide is to be left with the Main Contractor or Client for future reference on site.

ONGOING SITE INSPECTIONS:

Routine visual inspection of the Fireshield timber ICS helps to ensure that the product will perform in actual building fire conditions. The system is typically specified and installed in areas where the timber wall or ceiling linings will be exposed to view and where high amounts of foot traffic and contact may be prevalent.

Identify all areas throughout the building that have the Fireshield® timber systems installed, Fireshield® labels (see above) will be installed in the local switchboard serving the coated area and near the installation.

AUSTRALIA ONLY: In accordance with the Fireshield® Codemark Certificate of Conformity and the Fireshield® Application Guide, coatings must be inspected at least once every 12 months. This can be as part of the annual Essential Services Inspection or as a standalone inspection.

This is to be carried out by a Fireshield® Registered Applicator or a suitably qualified and Experienced Practitioner with a full understanding of the Fireshield® coating systems.

