



# Fire-Resistant Coatings for Bushfire Protection

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## A COATING FOR COMPLIANCE document

This draft document is designed as a starting point for the industry to help bring clarity to specifying external fire resistance coatings on timber and composite surfaces.

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When specifying fire-resistant coatings for compliance with AS3959:2018, it is crucial to consider the key factors outlined below to ensure the safety and compliance of buildings in bushfire-prone areas. This draft document aims to highlight important aspects that Certifiers, Builders, Fire Engineers, Architects, and Home Owners should evaluate when selecting fire-resistant paint and coating products. Fire-rated coatings are among the most difficult passive fire protection measures to perfect, especially when it comes to striking the right balance in messaging to end users. These systems boast remarkable technology, but their delivery to the market must prioritise safety and clarity. It's critical to avoid muddying the waters between fire test performance, real-world performance, and code compliance.

## Importance of Tested Systems

- **Testing:** Fire-resistant coatings must undergo comprehensive testing by Australian accredited laboratories to ensure their effectiveness and compliance with relevant standards, as required by AS3959:2018, including Amendments 1 (2019) and 2 (2020).
- **NATA Accreditation:** Testing laboratories should have National Association of Testing Authorities (NATA) accreditation for the specific standards being assessed.
- **Objectivity:** Broad general opinions or assessments for compliance may raise concerns about objectivity and thoroughness.
- **Weathering Testing:** Coatings, impregnations, and retardant solutions **MUST** undergo accelerated weathering testing prior to fire testing to ensure the systems will perform in fully exposed areas for a suitable length of time. Compliant Tested Systems should have the accelerated weathering component incorporated into the fire test, as required by AS3959:2018



## Understanding Tested Systems for Bushfire Resistance

When considering tested systems utilising coatings for bushfire resistance, it's crucial to understand the following key points:

- **Replication of Intended Use:** Tested systems must accurately replicate the intended real-world application.
- **Timber-Specific Testing:** For timber applications, specific timber species should undergo accelerated weathering before fire testing, as per AS3959:2018 requirements.
- **Testing Standards:** Tests must replicate the building system and timber species to be used in the field.

### Limitations of Test Results

- **Specificity of Results:** A test under specific heat load on one assembly does not constitute a BAL performance or Fire Resistance Level (FRL) for all other assemblies.
- **Trafficable Surfaces:** Trafficable surfaces cannot be coated and deemed compliant.
- **Weathering Component:** Tested systems should include a compliant accelerated weathering component prior to fire testing, referenced in the test report and required by AS3959:2018.

## Fire Retardant Coatings in BAL-40 and BAL-FZ

AS3959:2018 explicitly states that fire retardant coatings cannot be used to reclassify non-compliant timbers for use in BAL-40 and BAL-FZ areas. Claims about BAL-40 reclassification compliance using such coatings may be misleading. It's essential for architects, certifiers, and building professionals to carefully scrutinise test reports and ensure that proposed systems match tested configurations for compliance with AS3959:2018.

## Key Considerations for Product Evaluation

### Testing and Certification

- Verify that the product has been tested for compliance at the specified coating thickness for each Bushfire Attack Level (BAL) rating claimed and for the intended use, as per AS3959:2018.
- Ensure that test reports and certifications are from independent, NATA-accredited laboratories accredited for those test standards. NATA accreditation for specific standards can be checked on the NATA website under the laboratory name.
- Check for comprehensive test reports across various timber species.
- Assessments are not tested systems and often have clauses or statements within stating as such.



## Application Guidelines

- Clear and detailed application guidelines should be provided, including specific instructions for achieving the required tested system compliance in a realistic manner.
- Systems need to be applied, including surface preparation, primers, and topcoats, as per the tested system (e.g., if the test report states 1mm DFT or 1000 microns DFT, this thickness must be realistically replicable in the field at the relevant Wet Film Thickness).
- Recognised applicator network for coatings applications, who can certify the application is as per the Technical Data Sheet (TDS) and tested systems.

## Quality Assurance

- Look for products with established quality control processes and clear quality assurance procedures.
- Consider the track record and reputation of the manufacturer/company in the fire protection industry, including proven systems and long-term performance in the field.
- If unsure, contact the company to clarify your requirements.

## Marketing Claims

- Scrutinise marketing claims and ensure they are backed by verifiable test data and certifications that align with the code requirements of AS3959:2018 and the National Construction Code (NCC) 2022 Amend. 1
- Be cautious of broad claims that may not be supported by specific tested systems.

## Compliance Documentation

- Verify that the product has clear, tested systems for specific timber species and relevant test standards.
- Ensure that compliance documentation is clear, comprehensive, and aligned with AS3959:2018 and NCC 2022 requirements.

## Red Flags

- Solutions marketed for BAL ratings without supporting formal test reports meeting the requirements listed above.
- Inconsistencies between product labels, marketing materials, and technical documentation regarding application thickness and number of coats.
- Lack of specific application guidelines for achieving realistic tested film builds and system compliance.
- Tested systems without supporting accelerated weathering testing for that assembly.
- Marketing materials that may overstate the product's code compliance performance or confuse fire performance with code compliance.



## General Thoughts

Let's keep this in perspective: these are paints, with inherent limits. Their success hinges on clear, tested systems tailored to specific industry challenges—proper preparation, application, and certification are non-negotiable for safe and effective use. There's no question this technology excels at preventing timber ignition, slowing flame spread, and insulating combustible surfaces. These solutions hold real potential to safeguard properties and infrastructure. But extreme care is needed to ensure marketing themes and buzzwords don't blur the line between fire performance and actual building code compliance. There is a real responsibility for companies in this space to remember these systems are sold as fire systems, not decorative finishes, and to clearly relate the correct information to the market.

If sold outside of a controlled recognised applicator network for risk reduction, end users must understand what constitutes a tested system, and companies promoting these systems must clearly disclose and detail how these tested systems and film builds can be realistically met in the field. For example, there is a significant difference between applying a coat of paint that covers the surface versus applying an intumescent coating at film builds of 500 microns Wet Film Thickness or more. A general user brushing on a coat of paint to cover the surface may be 10X less than the thickness needed to achieve the tested system. This is a critical aspect of the risk reduction market that companies must ensure does not mislead the public in any way. In the compliance sector, this is even more critical.

Timber species and building assemblies behave very differently in fire situations, both in the lab and in real-world fire scenarios. Add multiple years of weathering of coatings and timber movement, and they behave differently again. Code compliance testing needs to be species- and system-specific with detailed accelerated weathering run on samples and specimens prior to fire testing, as required by AS3959:2018. The addition of real project performance alongside accelerated weathering testing can help substantiate any claims by the manufacturer on long-term performance. There is a danger in assuming one species and assembly will perform just because a similar species or assembly did in a specific fire test. Fire Engineers and Testing Laboratories will understand this more than anyone.

## NCC 2022 Compliance:

The National Construction Code (NCC) 2022, Volume One, provides additional requirements for bushfire protection. Specifically:

- **Part G5: Construction in bushfire-prone areas** outlines the framework for ensuring buildings meet bushfire resistance standards, including the use of fire-resistant materials and coatings Part G5.
- **Specification 43** introduces mandatory bushfire protection measures for certain Class 9 buildings, such as healthcare facilities, schools, and residential care buildings, including minimum distances from fire sources and clear access pathways Specification 43.

These provisions complement AS3959:2018 and should be considered when specifying coatings for compliance.



## Conclusion

When specifying fire-resistant coatings for bushfire protection or general risk reduction solutions, it is essential to prioritise products with comprehensive, transparent testing, NATA-accredited and compliant reports, weathering testing incorporated into tested systems, clear application guidelines, and an application method that can realistically be achieved and certified at the required film builds as per the tested system. By evaluating these factors, industry professionals can help ensure the safety and compliance of buildings in bushfire-prone areas and that suitable products and solutions are used for compliance.

This document is not written by a Fire Engineer or Certifier; it is intended as a starting point for the industry, a discussion tool, and a work in progress written by members of the industry concerned with recent developments in the space and seeking a need for documents such as this. Please assist with your comments so this can evolve from a starting point and initial discussion to something useful for the industry.

## References

- AS3959:2018, Construction of buildings in bushfire-prone areas, including Amendments 1 (2019) and 2 (2020). Available from Standards Australia.
- National Construction Code (NCC) 2022, Volume One, including:
  - Part G5: Construction in bushfire-prone areas.
  - Specification 43: Bushfire protection for certain Class 9 buildings. Available from the Australian Building Codes Board (ABCB).
- National Association of Testing Authorities (NATA) accreditation details. Available from NATA.

## Disclaimer

*© This document provides guidance on fire-resistant coatings for bushfire protection and is not a substitute for the full requirements outlined in AS3959:2018 and the National Construction Code (NCC) 2022. Users should consult the official standards for detailed and legally binding requirements. The information is current as of April 2025; please verify the latest versions of these standards for updates.*