An Introduction to Fire Retardant Cladding

First Consideration
For any new timber cladding project you first of all need to assess whether fire retardant protection is required. The best way to do this is to consult directly with the local fire officer or building control officer in terms of what is necessary to comply with Building Regulations.

If fire protection is required then it is vital that you choose a durable and accredited product that is fully compliant with the latest industry standards.

Click here for key information.

Working in partnership with **Arch Timber Protection**, **Vincent Timber** can offer the builder and specifier highly effective fire retardant treatments for timber cladding projects to help protect your work and reputation, as well as saving lives.

Both **DRICON** and **NON-COM Exterior** are proven treatments that effectively reduce flame spread, heat release and the rate of fire growth.

DRICON is the **only** BBA certified fire retardant treatment for timber available and is suitable for interior and weather protected, exterior applications.

It is also a **fully Approved** Wood Protection Association humidity resistant treatment.

NON-COM Exterior has been used for over 25 years for the high performance fire protection of exterior and severe damp timber end uses.

It is also the **only** Wood Protection Association **Approved** leach resistant treatment.

It is also now accepted by the NHBC for the fire protection of exterior cladding.

Dricon™
FIRE RETARDANT TREATED TIMBER AND PANEL PRODUCTS

Non-Com™ EXTERIOR
FIRE RETARDANT TREATED TIMBER

Fire Protection for Wood - Specifiers Beware!

Correct design specification and the use of modern fire retardant impregnation treatments, compliant with the most up to date European Standards, can help to ensure that wood is a long lasting and safe choice of material. Compliance, durability and quality application are primary considerations when selecting fire retardant treatments to meet the requirements of Building Regulatory Authorities and insurance loss adjusters.

Timber protection specialists Archexplain the 'what and why' for fire retardant treatment of timbers used in construction.

Download it now.

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A Choice of Fire Protection Treatments

INTERIOR APPLICATIONS

Dricon

FIRE RETARDANT TREATED TIMBER AND PANEL PRODUCTS

- **The ONLY BBA certified fire retardant treatment (Certificate No 87/1841).**
- **Wood Protection Association (WPA) Approved HR (humidity resistant) treatment.**
- **DRICON** fire retardant treated timbers and plywoods are suitable for use in interior and weather protected exterior applications.
- Waterbased, non-hygroscopic formulation - unaffected by high and fluctuating relative humidities.
- Applied by vacuum-pressure impregnation in factory controlled conditions and kiln dried to an end use moisture content.
- For timber cladding, treatments are to Euroclass C in accordance with BS EN 13501-1: 2002 or alternatively to Euroclass B in accordance with BS EN 13501-1: 2002.
- The **DRICON** treatment is non corrosive to metal fastenings and fixings. However, metal fixings appropriate to the timber species should be used.
- Treatment does not significantly reduce strength of treated timber.
- Fire performance that lasts. An independent study by the WPA and subsequent fire testing by Warrington Fire confirmed the initial fire performance of **DRICON** treatment was maintained after 21 years of internal exposure.

For full **DRICON** Specification Guide **click here**

EXTERIOR APPLICATIONS

Non-Com EXTERIOR

FIRE RETARDANT TREATED TIMBER

- **The only Wood Protection Association Approved LR (leach resistant) treatment.**
- **NON-COM Exterior fire retardant treated timbers are now accepted by the National House Building Council Building Control service for timber cladding in situations adjacent to boundaries or above 18 metres in new build projects.**
- For use with wide range of timber cladding species.
- Waterbased, polymer formulation with leach resistant properties.
- Non-hygroscopic formulation - unaffected by high and fluctuating relative humidities.
- Applied by vacuum-pressure impregnation in factory controlled conditions and kiln dried and heat cured to an end use moisture content.
- For timber cladding, treatments are to Euroclass C in accordance with BS EN 13501-1: 2002 or alternatively to Euroclass B in accordance with BS EN 13501-1: 2002 for exterior cladding applications to meet the requirements of UK Building Regulations.
- For cedar shingles/shakes, treatment is to BS 476: Part 3 AA/P60 Roof Penetration Test.
- The **NON-COM Exterior** treatment is non corrosive to metal fastenings and fixings. However, metal fixings appropriate to the timber species should be used.
- Treatment does not significantly reduce strength of treated timber.
- **NON-COM Exterior** fire retardant treated timbers are suitable for exterior or severe damp situations without the need for a protective coating.
- Treatment offers a fire performance maintenance free service life in excess of 30 years.

For full **NON-COM Exterior** Specification Guide **click here**

Both **DRICON** and **NON-COM Exterior** fire retardant treatments involve pressure impregnation followed by careful kiln drying. **NON-COM Exterior** treated timbers are also heat cured as part of the treatment process.

bsi. ISO 9001 Quality Management FS 613321 ISO 14001 Environmental Management EMS 539413

The dedicated Arch treatment centre has both ISO 9001 and ISO 14001 accreditations - the only one of its type in the UK.

WPA Wood Protection Association

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Vincent Timber

Fire Protected Shingles from Stock

We carry stocks of **Cedar Shingles** which are fire retardant pre-treated with **NON-COM Exterior** to meet BS 476 Part 3 AA/P60.

Please contact us for further details.

Non-Com™ EXTERIOR

FIRE RETARDANT TREATED TIMBER

Fire Protected Cladding to Order

We can offer the choice of **DRICON** and **NON-COM Exterior** for a wide range of cladding species. See the table below for full details.

Timbers can be treated to meet the requirements of Euroclass B or C, BS EN 13501-1.

Treatable Species	Dricon	NCX
Cumaru	✗	✔
Douglas fir (North American)	✔	✔
European redwood	✔	✔
European whitewood	✔	✔
Ipe	✗	✔
Iroko	✗	✔
Larch (Siberian) - not Scottish or European	✔	✔
Oak (American White)	✔	✗
Oak (European)	✔	✔
Thermowood pine	✗	✔
Western red cedar	✗	✔
Western red cedar f/edge (ex 32=18/9 and ex 38=22/10)	✔	✔

Please note Classification Reports to meet BS EN 13501-1 for all the above species are available to meet a **particular thickness of the timber**. **Different species have a different minimum treatable thickness**. Please contact Vincent Timber directly to confirm your specific requirements.

Fire retardant Impregnation treatments commonly take between 5-6 weeks for orders of 20-30m^3. For larger orders this time frame may be extended. Manufacturing and delivery lead times also need to be taken into consideration. Please contact Vincent Timber directly to discuss these aspects.

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Vincent Timber

Frequently asked

Questions & Answers

1. What is the difference between DRICON and NON-COM Exterior fire retardant treatments?

DRICON is a waterbased, Humidity Resistant (HR) type formulation that is applied by Arch Timber Protection under controlled conditions in a vacuum pressure impregnation plant, commonly followed by kiln drying to return the timber to an acceptable or specified moisture content. **DRICON** treated timber/sheet materials are suitable for all interior applications and also for weather protected external use. Typical end uses for **DRICON** treated material would be internal building timbers and lining material, internal timber cladding, internal staircases, scaffold boards, rail and transport industries.

NON-COM Exterior is a polymer based, Leach Resistant (LR) type formulation. It is applied by Arch Timber Protection to the timbers by the same process as **DRICON** – a high pressure impregnation process and kiln drying - but the treated material is then also subject to a high temperature curing process to return it to an acceptable or specified moisture content. **NON-COM Exterior** treated timbers are suitable for full exterior and severe damp applications, without the need of a protective coating. Typical end uses for **NON-COM Exterior** treated material would be exterior cladding, exposed timber structures, cedar shingles and shakes and Yorkshire boarding material.

2. What are Euroclasses and why are they replacing the old Class 1 / Class 0?

Under the Construction Products Regulation there is a move towards European harmonisation of Standards for fire retardant treatment of timber – Euroclasses B & C have now replaced Class 0 and Class 1 respectively for timber cladding and plywood used in construction.

To meet either Euroclass B or C Specifications, timber/plywood is tested to EN ISO 11925 (Ignitability Test) and BS EN 13823:2002 (SBI or Single Burning Item Test).

The SBI test records parameters relating to the rate of fire growth, lateral flame spread, total heat release and levels of smoke and toxicity.

Euroclass Classifications are in accordance with BS EN 13501-1 (Fire classification of construction products and building elements).

The thresholds for compliance in relation to the above SBI criteria are more stringent for Euroclass B than for Euroclass C. Therefore, by definition, if timber/plywood conforms to Euroclass B then it also conforms to Euroclass C.

In England and Wales, the fire requirements for buildings are dealt with by Approved Document Part B to the Building Regulations.

Euroclass B has replaced Class 0 and Euroclass C has replaced Class 1.

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Frequently asked
Questions & Answers

3. How many new Euroclasses are there and which are relevant to timber?

The table below lists the new Euroclass classifications. Fire retardant impregnation to timber / plywood can elevate timber from Euroclass D (essentially untreated) to Euroclass B or C to give the material in question compliance with the requirements of UK Building Regulations depending upon the location of the material within the building.

Typical Products	Euroclass	Smoke Class	Flaming droplets	Euroclass test requirements
Totally inorganic products made from stone, concrete bricks, ceramics, glass or steel	A1			EN ISO 1182 EN ISO 1716
Products as Euroclass A1 but containing not more than 1% by weight or volume (whichever is the lower) of homogeneously distributed organic material. Gypsum boards, mineral wool	A2	s1-s3	D0-d2	EN 13823 EN ISO 1182 EN ISO 1716
Highest possible level for fire retarded wood products. Gypsum boards with thin surface linings. Cement-bonded particleboard = 10mm thick	B	s1-s3	D0-d2	EN 13832 (SBI) EN ISO 11925-2 (SFI)
Fire Retarded wood products. Gypsum boards with thick surface linings.	C	s1-s3	D0-d2	EN 13832 (SBI) EN ISO 11925-2 (SFI)
Untreated wood products with a thickness = 5mm and density of =400 kg/m^3. Plywood & OSB = 9mm thick	D	s1-s3	D0-d2	EN 13832 (SBI) EN ISO 11925-2 (SFI)
Untreated wood products with a density of < 400 kg/m^3. Low density fibreboard. Plastic-based insulation.	E			EN ISO 11925-2 (SFI)
Untested products	F			No requirements

4. Are these new Euroclasses as good as the old Class 1 / Class 0?

The simple answer to this is that these new Euroclasses are different to the old British Standards and measure a different set of parameters. Euroclasses are fully accepted in UK Building Regulations in place of Class 1/0.

5. Do Lonza still process timber / plywood to Class 1 or Class 0 for material to be used in permanent construction?

Under the Construction Products Regulation from 1st July 2013 it became mandatory to treat timber cladding in permanent construction to Euroclasses only.

6. I have a specification that asks for a FR5 fire retardant treatment. What does this mean?

The Wood Protection Association (WPA) has a number of commodity specifications relating to fire retardant treatment, with the one selected at the point of specifying dictated by the end use of the timber. Exterior timber cladding is usually assigned an FR5 commodity specification.

WPA
Wood Protection Association

WPA FR Commodity Specifications	
FR1	Non load bearing dry interior use
FR2	Load bearing dry interior use
FR3	Interior use with a Relative Humidity >75%
FR4	Weather protected exterior use
FR5	Weather exposed situations

Frequently asked
Questions & Answers

7. What do I need to consider when specifying a quality fire retardant treatment for timber / plywood to ensure that I have a product that when treated is fully compliant with the fire performance required and fit for purpose long term?

There are three keys aspects to consider:

1. CERTIFICATION

To support a Euroclass performance, Classification Reports from a notified body according to BS EN 13501-1 are a key requirement.

Treatment certificates alone are insufficient. The timber species itemised in the Classification Report has to be comparable with the specification of the timber components to be used in the project.

The priority is to check with your supplier if they have a relevant Classification Report to match your particular requirement. All Arch Timber Protection fire testing is done through Exova Warrington Fire Research. Lonza has invested in Classification Reports to match a wide range of timber species, thicknesses and end uses.

Exova Warringtonfire
Testing. Advising. Assuring

2. DURABILITY

Whilst initial compliance is a primary consideration, the ability of the fire treatment to remain stable within the timber / plywood during its service life is also key.

DRICON

DRICON is commonly used internally and has the ability to resist moisture to Relative Humidity's in excess of 90% without any migration of the fire treatment within the plywood or timber.
An independent study by the WPA and subsequent fire testing by Warrington Fire confirmed the initial fire performance of **DRICON** was maintained after 21 years of internal exposure.

Dricon™

NON-COM Exterior

The heat curing process involved in the **NON-COM Exterior** treatment polymerises the organic resins to form insoluble polymer molecules, locked inside the timber cells. The leach resistance of **NON-COM Exterior** within the treated timber ensures the durability of the fire performance in exterior exposure and severe damp situations. It is the **ONLY** approved type LR (leach resistant) treatment in the UK Wood Protection Association (WPA) Manual.

The long term durability of fire performance for **NON-COM Exterior** treated timber has been confirmed to be maintained following exposure to the accelerated weathering regime detailed in American Standard Test Method ASTM D2898. It is also classified in accordance with Nordic Test method NT Fire 054 as a Durability of Reaction to Fire 'DFR Class EXT' fire retardant, meeting the requirements of Nordic standards for use in all exterior applications.

Non-Com™ EXTERIOR

3. QUALITY ACCREDITED APPLICATION

The key philosophy of Arch Timber Protection is 'Duty of Care'. Arch is the only WPA approved and listed treater with ISO 9001 and ISO 14001 accreditations which gives you and your customers the assurance that they consistently send out fire retardant treated boards and timbers that have full compliance to the Euroclass required.

8. What timbers can be treated with NON-COM Exterior and DRICON?

Click here for full details of timber species that can be fire retardant treated.

Frequently asked
Questions & Answers

9. Does DRICON or NON-COM Exterior alter the characteristics of fire treated timber?

The following treatment characteristics can occur with **DRICON** and **NON-COM Exterior** fire retardant treated timber:

- Odd pieces may cup/twist / bow
- There is potential for odd face and end checks
- Surface residue may be found on odd pieces

As a general rule:

NON-COM Exterior treated timber looks slightly darker than un-treated timber but will weather down the same as un-treated timber.

DRICON treated timber looks slightly lighter than un-treated timber but will weather down the same as un-treated timber.

Timber Species	Dricon	Non-Com Exterior
Western red cedar	✗	See general comments above. A slight orange hue can occur
European redwood	See general comments above.	See general comments above.
European whitewood	Redwood is recommended for fire treatment rather than Whitewood as Whitewood can be prone to twisting during post impregnation kilning.	Redwood is recommended for fire treatment rather than Whitewood if possible as Whitewood can be prone to twisting during post impregnation kilning / curing.
Iroko	✗	See general comments above.
Thermowood pine	✗	See general comments above.
Cumaru	✗	See general comments above.
Siberian larch *(Larix sibirica)* (not Scottish or European)	A slight orange hue can occur. The degree of colour change and movement can vary from batch to batch	A slight orange hue can occur. The degree of colour change and movement can vary from batch to batch
Douglas fir (North American)	A slight yellow/orange hue can occur. The degree of colour change can vary from batch to batch	A slight orange hue can occur. The degree of colour change can vary from batch to batch
Oak (Dricon - American & European) (Non-Com - European only)	Odd pieces may cup / bow after treatment. The degree of movement can vary from batch to batch. Max board width of 150mm is recommended.	Odd pieces may cup / bow after treatment. Max board width of 150mm is recommended.

10. How do Arch fire retardant treatment impregnation treatments work in a fire situation?

The **DRICON** or **NON-COM Exterior** fire retardant remains dormant in the impregnated timber until heated. It then reacts with the combustible gases and tars generated when timber burns to form carbon char and harmless compounds. These act to insulate the timber, reducing the amount of heat released and limiting flame spread and smoke production within set parameters defined within the SBI (Single Burning Item) Test BS EN 13823. These test results are evaluated under BS EN 13501 and only when a Classification Report is issued for the species / thickness range tested is the timber said to have full Euroclass status.

Frequently asked
Questions & Answers

11. I urgently need to achieve a fire performance to my timber not yet on a building. Impregnation will take too long. What do I do? What are the benefits of factory controlled impregnation treatments over brush/spray/site applied FR coatings?

Good planning at the outset to allow time for impregnation treatment (commonly 5-6 weeks for treatments between 20-30m^3) within a project would be the first recommendation. Manufacturing and delivery lead times also need to be taken into consideration. Please contact Vincent Timber directly to discuss these aspects.

A coating tends to be considered when lead time is an issue but it is important to understand the benefits of a durable, quality, factory applied impregnation treatment against the potential issues associated with a 'quick fix' site applied coating:

Factory Controlled Fire Retardant Impregnation Treatments

- Applied by controlled factory conditions
- Full traceability
- Deep impregnation of all faces
- Lasts for the service life of the cladding species.

Brush/Spray/Site Applied Fire Retardant Coatings

- Can be non-film forming and film forming
- Typically there is a requirement to remove and re-coat after 3-5 years – costly and time consuming.
- Usually brush or spray applied on-site to one face only
- Potentially less evidence of quality of application.

12. What fire performance is commonly required for external timber cladding?

Generally timber cladding within 1 metre of a boundary is treated to Euroclass B fire performance with **NON-COM Exterior** to comply with the requirements within UK Building Regulations.

13. Can you recommend a decorative coating for use with NON-COM Exterior fire retardant treated timber?

NON-COM Exterior treated timbers do not require a coating to protect the performance of the fire retardant properties of the timber. However if you are looking to add a coating system to **NON-COM Exterior** treated timbers please contact Vincent Timber directly for further information.

At present there is no currently approved coating specification for **DRICON** treated timber.

14. Building Control want evidence that the fire treated timber / plywood I am supplying will be Euroclass B / Euroclass C compliant. What documentation do I need?

Arch Timber Protection can supply the relevant species / thickness specific Euroclass Classification Report on request to forward to Building Control.

15. If the fire treated timbers are cut on-site do they need any extra protection?

Providing that the cut edges of the treated timber are butt jointed, timbers can be sawn without affecting the fire retardant properties.

16. Do I have to preservative treat exterior timbers as well as fire treat them?

As a secondary mode of action, **NON-COM Exterior** treatments offer a high level of biological resistance to fire treated exterior claddings and therefore additional preservative treatment is not required. Also, clean, virgin timber must be supplied for fire treatment.

17. How should timbers be presented for fire retardant pressure treatments?

All timbers/board products should be clean and untreated timber ready for fire treatment pressure treatment.

The moisture content of the cladding timbers supplied should preferably be at its end use moisture content level.

For both **DRICON** and **NON-COM Exterior** treatments, timber cladding is required to have a moisture content of 13-19%.

Frequently asked
Questions & Answers

18. Can I achieve 30 or 60 minute fire resistance to structures with external timber cladding?

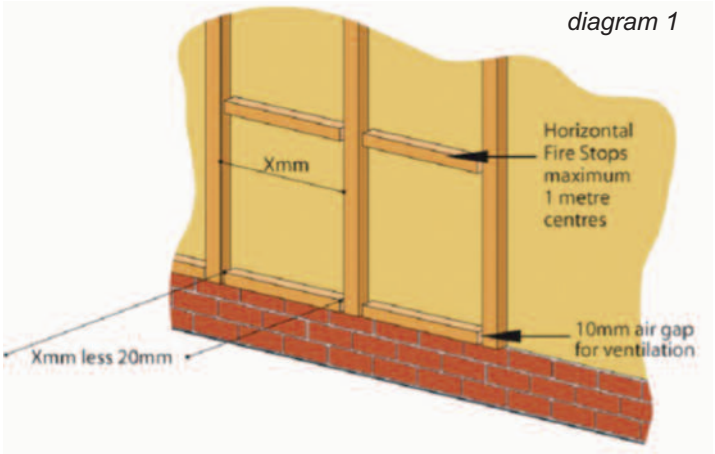
Timber Frame Structures

The plywood sheathing to the timber frame must be replaced with non-combustible boards (Superlux or similar) with a 30 or 60 minute fire resistance, as required.

The fixing battens are fixed as normal. For vertical battens (horizontal cladding) fire stops are required. These fire stops are fixed at the top and bottom of the cladding panel, and every 900mm up the face.
The fire stops are cut 20mm less overall (10mm each side) than the distance between the vertical battens to provide ventilation to the rear face of the cladding. *See diagram 1.*

The cladding, the battens and fire stops are all fire retardant treated to Euroclass B specification.

diagram 1

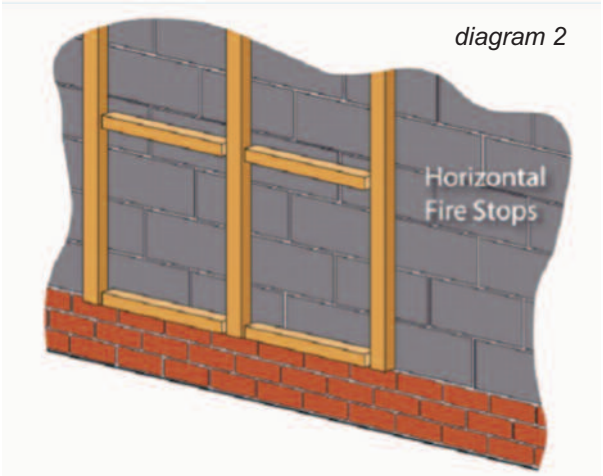


Brickwork/Blockwork Structures

The brick/block provides the fire resistant structure with the specification for the battens/cladding as above.
See diagram 2.

The cladding, the battens and fire stops are all fire retardant treated to Euroclass B specification.

diagram 2



19. What fire retardant treatment is recommended for my cladding battens?

For closed cladding, where the battens will never be exposed to direct wetting, either **DRICON** or **NON-COM Exterior** treatment can be used for the battens.

For open cladding e.g. rainscreen, where the design of the cladding means the battens will be exposed to direct wetting from rain or snow, only **NON-COM Exterior** should be used as the fire retardant treatment for the battens.

20. Can you impregnate green oak?

The simple answer is no. Timber must be kiln dried before impregnation. Commonly cladding is supplied for fire treatment with a moisture content of 13-19%. The nature of modified timbers is that they are manufactured with lower moisture contents typically ranging 6-10%.

21. Do I need to increase my material wastage allowance to take into account changes in timber properties after FR treatment?

For treatment orders on the majority of species customers should supply a minimum 5% extra material with each order to allow for kiln degrade, kiln samples and moisture content samples. Also some species will require more of a wastage factor than others. For Siberian Larch and Oak this extra material should be 5-10%. Consult Vincent Timber for further advice.