

Arch Timber Protection — a Lonza company

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Agrément Certificate
87/1841
Product Sheet 1

ARCH TIMBER PROTECTION FIRE-RETARDANT TREATMENT

DRICON

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Dricon⁽¹⁾, a fire-retardant impregnation treatment for timber and plywood. Dricon-treated timber and plywood is for use internally, or externally in weather-protected positions (ie where the timber is protected from the weather and from leaching, but where condensation is possible).

(1) Dricon is a registered trademark of Arch Timber Protection.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Properties in relation to fire — a range of timber and plywood species and thicknesses, when treated with Dricon, can achieve Euroclassifications of B and C when tested in accordance with BS EN 13501-1 : 2007 (see section 6).

Performance in humid conditions — Dricon-treated products have low hygroscopicity and can therefore withstand humid exposure conditions without suffering deleterious effects (see section 7).

Durability — Dricon-treated timber and plywood will retain fire-retardant properties for the life of the building in which they are installed in situations where they are used internally or protected (by design or under a maintained coating) from the weather and leaching, (see section 14).

The BBA has awarded this Agrément Certificate to the company named above for the product described herein. The product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément



Simon Wroe
Head of Approvals — Materials



Greg Cooper
Chief Executive

Date of First issue: 8 February 2012

Originally certificated on 16 April 1987

The BBA is a UKAS accredited certification body — Number 1113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, Dricon, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales)

Requirement:	B2(1)(a)(b)	Internal fire spread (linings)
Requirement:	B4(1)	External fire spread
Comment:	Certain species of timber and plywood can be treated so as to be unrestricted by these Requirements. See sections 6.1 to 6.3 of this Certificate.	
Requirement:	Regulation 7	Materials and workmanship
Comment:	The product meets this Requirement. See section 14 and the <i>Installation</i> part of this Certificate.	



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:	The product can contribute to a construction satisfying this Regulation. See sections 13 and 14 and the <i>Installation</i> part of this Certificate.	
Regulation:	9	Building standards – construction
Standard:	2.5	Internal linings
Comment:	Certain species of timber and plywood can contribute to a construction satisfying this Standard, with reference to clause 2.5.1 ⁽¹⁾⁽²⁾ . See sections 6.1 to 6.3 of this Certificate.	
Standard:	2.6	Spread to neighbouring buildings
Comment:	Dricon-treated timber products are not classified as ‘non combustible’ and are therefore restricted under this Standard, with reference to clauses 2.6.4 ⁽¹⁾⁽²⁾ , 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See sections 6.1 to 6.3 of this Certificate.	
Standard:	2.7	Spread on external walls
Comment:	Dricon-treated timber products are not classified as ‘non combustible’ and is therefore restricted under this Standard, with reference to clause 2.7.1 ⁽¹⁾⁽²⁾ . See sections 6.1 to 6.3 of this Certificate.	
Standard:	7.1(a)	Statement of sustainability
Comment:	The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.	
Regulation:	12	Building standards – conversions
Comment:	Comments made in relation to this product under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).	



The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:	The product meets this Regulation. See section 14 and the <i>Installation</i> part of this Certificate.	
Regulation:	B3(2)	Suitability of certain materials
Comment:	The product is acceptable. See section 13 of this Certificate.	
Regulation:	E3(a)(b)	Internal fire spread – Linings
Regulation:	E5(a)	External fire spread
Comment:	Certain species of timber and plywood can be treated so as to be unrestricted by these Regulations. See sections 6.1 to 6.3 of this Certificate.	

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 3 *Delivery and site handling* (3.2) and 15 *General* (15.2) of this Certificate.

Additional Information

NHBC Standards 2011

In the opinion of the BBA, the use of Dricon, in relation to this Certificate, is not subject to the requirements of these Standards.

Technical Specification

1 Description

Dricon is a fire-retardant impregnation treatment for timber and plywood using an aqueous solution of fire-retardant chemicals which does not contain halogenated products, formaldehyde, heavy metals, sulphates, ammonium phosphates or VOCs (volatile organic compounds).

2 Manufacture

2.1 Dricon fluid is manufactured in a batch blending process.

2.2 The fluid is factory-applied to solid timber and plywood using a full cell pressure treatment process, and the treated timber is kiln dried or air dried depending upon the end use, or customer requirements.

2.3 To ensure product quality is consistently maintained to the required specification, the BBA has:

- agreed with the Certificate holder the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis as part of a surveillance process to ensure that standards are maintained and that the product or system remains as Certificated.

2.4 The management systems of Arch Timber Protection have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by BSI Quality and Environmental Management Assurance (Certificates FM 1636 and EMS 539413).

3 Delivery and site handling

3.1 Treated timber or plywood is labelled or branded as 'DRICON' and its fire performance, with the BBA identification mark bearing the number of this Certificate.

3.2 Each pack carries instructions on the handling and use of Dricon-treated timber.

3.3 After kiln drying, the timber should be stored in accordance with normal good practice, ie under cover in dry conditions, on a level floor, properly supported and preferably in the area in which it is to be installed.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Dricon.

Design Considerations

4 Use

4.1 Dricon is suitable for use as a fire-retardant impregnation treatment for timber or exterior grade plywood (WBP — weather and boil-proof), where used internally, or externally in weather-protected positions (ie where the timber is protected from the weather and from leaching (by design or under a maintained coating), but where condensation is possible). Typical end-uses are:

- internal cladding and wall and ceiling linings
- weather-protected external cladding
- high-humidity applications (eg swimming pools and lifeboat stations)
- areas where low smoke emission is important (eg underground stations)
- structural timbers.

4.2 The treatment does not significantly affect the appearance of timber or plywood.

4.3 Dricon fluid contains ingredients which confer enhanced biological durability to treated timber or plywood.

5 Practicability of installation

Dricon-treated timber and plywood can be installed using the same methods as conventional timber and plywood.

6 Properties in relation to fire

6.1 A range of solid timber and plywood species, when tested at a variety of thicknesses and constructions, achieved the Euroclassifications of BS EN 13501-1 : 2007 given in Table 1 of this Certificate.



6.2 The performance of other materials in these tests cannot be predicted with certainty. If a particular performance for a material not listed in Table 1 is required, a trial treatment and test must be conducted on the specific combination of species and thickness, to establish whether treatment to this standard is possible.

6.3 In tests to ASTM E 662 : 1997, the treated timber and plywood produced less smoke than conventional fire-retardant treatments, and less smoke than untreated wood.

Table 1 Classes of reaction to fire performance for construction products excluding floorings and linear pipe thermal insulation products

Species	Classification to BS EN 13501-1		
	Classification report No	Thickness (mm)	Euroclass ⁽⁴⁾
Plywood			
Birch plywood ⁽¹⁾	E139541	4–25	C-s2, d0
Birch plywood ⁽²⁾	184309	≥12	B-s1, d0
Spruce plywood ⁽²⁾	E139539	12–25	B-s1, d0
Far eastern plywood ⁽¹⁾	E139538	3.6–25	C-s2, d0
Far eastern plywood ⁽¹⁾	E139537	9–25	B-s2, d0
Far eastern plywood ⁽²⁾	E139536	12–25	B-s2, d0
Solid timber			
Pine ⁽²⁾	195539	≥12	B-s2, d0
Spruce ⁽²⁾	173603-2	≥12	B-s1, d0
Thermally modified timber ⁽²⁾	192993-2	≥18 (≥18/9) ⁽³⁾	B-s1, d0
Western red cedar ⁽²⁾	192994	≥17 (≥17/8) ⁽³⁾	B-s1, d0
Larch ⁽²⁾	192995	≥18 (≥18/9) ⁽³⁾	B-s2, d0
European oak ⁽²⁾	197217	≥18	B-s1, d0
White ash ⁽²⁾	305990	≥18	B-s1, d0
Douglas fir ⁽²⁾	305989	≥18	B-s1, d0
Opepe ⁽²⁾	305988	≥21	B-s1, d0

(1) Tested over a 12.5 mm thick, paper-faced plasterboard substrate with a density of 800 kg·m⁻³.

(2) Tested over the substrate in ⁽¹⁾, with sawn softwood battens mechanically fastened to the reverse face to create a 25 mm non-ventilated air space between the product and the substrate.

(3) Values correspond to t_1/t_2 where t_1 is the total thickness of cladding and t_2 is the minimum exposed thickness of cladding, as defined in BS EN 14915 : 2006, Figure 1.

(4) Classification reports for products that achieve a Euroclass B classification are equally valid for uses which require a Euroclass C classification provided there is no change in the field of application as detailed in the classification report.

6.4 The description of the product and the field of application given in the classification report should always be compared with the specification of the timber components to be used in any particular project, to ensure the classification in the report can be taken to apply to the timber to be used in the project.

7 Performance in humid conditions

7.1 Dricon-treated timber has low hygroscopicity.

7.2 When exposed to humid conditions, Dricon-treated timber and plywood absorb moisture at a similar rate as untreated materials, and a substantially lower rate than timber and plywood treated with conventional fire retardants. Unlike conventional fire-retardant treatments, the treated timber and plywood will not exceed the fibre-saturation point.

7.3 Consequently, metal fixings in the treated timber and plywood exposed to humid conditions do not corrode more than fixings in untreated material, and corrode substantially less than fixings in material treated with conventional fire retardants.

8 Compatibility

8.1 The treatment of timber and plywood has no effect on the curing characteristics, adhesion or colour of acrylic, polyurethane, fungicidal, Pliolite or conventional alkyd paints, varnishes or stains, but may delay the curing of alkyd emulsion systems. It has no effect on the adhesion or curing of sealants, PVA or epoxy adhesives.

8.2 If fire-retardant chemicals are present on the surface, or if the grain is raised, the contact area should be sanded. For lamination, Aerodux 185/HRP155 resorcinol-formaldehyde adhesive is recommended by the Certificate holder.

9 Strength of timbers

9.1 The treatment causes a negligible loss of bending strength and a small but significant loss in impact resistance of the treated timber and plywood. This loss of strength is similar to that experienced with CCA preservatives and is less than that associated with conventional fire retardants, and need not be considered in structural calculations (unless impact resistance is important). This reduction in strength is not caused by the chemicals present, but by the wetting and drying inherent in the treatment.

9.2 Dricon-treated timber has low hygroscopicity. Consequently, when exposed to moist conditions it will perform in the same way as untreated timber and will not suffer the marked increase in moisture content and consequent loss of strength associated with conventional fire-retardant treatments.

10 Cutting

10.1 Treated timber may be cross-cut, mitred, drilled, lightly planed or sanded, and Dricon-treated plywood may be sawn, without affecting the fire properties (provided that the cut edges are butt-jointed).

10.2 Cutting timber along its length (eg by rip-sawing or re-profiling) or extensive drilling or planing will expose the core (which may have a lower standard of treatment and inferior fire properties) and should not be carried out. Alternatively the re-worked material can be returned to the treatment plant for re-impregnation.

11 Effect on electrical properties

The treatment can slightly increase the electrical conductivity of the timber to give an artificially high-moisture content reading on moisture meters using that principle.

12 Overpainting

If treated timber and plywood is painted, care should be taken in selecting the paint used to ensure that the fire properties are not affected.

13 Maintenance



There are no special maintenance requirements for the product compared to conventional timber and plywood with the exception that, where timber is over-painted and is in an exposed situation, the durability of the fire-retardant treatment will depend upon the continued maintenance of the applied topcoat. The topcoat should be maintained in accordance with the instructions from the manufacturer, bearing in mind that any future maintenance over-painting will increase the paint film thickness, and may affect the fire properties. It is recommended that the paint film be stripped periodically, using a hot-air method.

14 Durability



Dricon-treated timber and plywood will retain fire-retardant properties for the life of the building in which they are installed in situations where they are used internally or protected (by design or under a maintained coating) from the weather and leaching.

Installation

15 General

15.1 Dricon-treated timber is installed using conventional techniques for timber linings and structural timbers. Any surface deposits of chemicals should be removed by sanding before the treated timber is fixed.

15.2 Treated timber should be handled and used in accordance with the Certificate holder's instructions (see section 3.2) and presents no hazard to health in handling, installation or in the event of a fire.

Technical Investigations

The following is a summary of the technical investigations carried out on Dricon-treated timber.

16 Tests

Tests were carried out on samples of Dricon-treated timber, and the results assessed, to determine:

- effect of treatment on appearance of timber
- compatibility with building materials
- effect on paints, sealants and adhesives
- effect on electrical properties of timber.

17 Investigations

17.1 An assessment was made of existing data relating to:

- fire classification of treated timber and plywood to BS EN 13501-1 : 2007
- effect of overpainting on fire properties
- effect of treatment on mechanical properties of treated timber
- effect of surface damage and cut ends on fire properties
- effect of glueline on treatment of plywood
- secondary effect of Dricon fluid on biological durability
- leachability of treatment
- corrosivity to metals
- ignitability
- smoke release
- hygroscopicity
- adhesion to joinery adhesives
- toxicity.

17.2 The manufacturing and product treatment processes were evaluated and the raw material specifications and quality control procedures were established.

17.3 Visits were made to sites in progress to assess practicability of installation.

17.4 Visits were made to established sites to evaluate performance in use.

Bibliography

- BS EN 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*
- BS EN 14915 : 2006 *Solid wood panelling and cladding — Characteristics, evaluation of conformity and marking*
- BS EN ISO 9001 : 2008 *Quality management systems — Requirements*
- BS EN ISO 14001 : 2004 *Environmental Management systems — Requirements with guidance for use*
- ASTM E 662 : 1997 *Standard Test method for specific optical density of smoke generated by solid materials*

18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

18.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

18.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

18.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

18.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- individual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

18.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

