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**Agrément
 Certificate
 No 87/1841**
*Fifth issue**

Designated by Government
 to issue
 European Technical
 Approvals

DRICON

Traitement d'ignifugeant pour bois de construction
 Flammhemmend Nachbehandlung

Product



- THIS CERTIFICATE RELATES TO DRICON, A FIRE-RETARDANT TREATMENT FOR TIMBER AND PLYWOOD.
- Dricon-treated timber and plywood are 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).
- The treatment is factory applied using a pressure impregnation process.

Regulations

1 The Building Regulations 2000 (as amended) (England and Wales)

The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of fire-retardant treatments with the Building 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.

Requirement: A1(1)(a)	Loading
Comment:	The product is an acceptable preservative treatment against House Longhorn beetle <i>Hylotrupes bajulus</i> L. See sections 10.1 and 10.2 of this Certificate.
Requirement: B2(1)(a)(b)	Internal fire spread (linings)
Requirement: B4(1)	External fire spread
Comment:	Certain timber species and plywoods can be treated so as to be unrestricted by these Requirements. See sections 9.1 to 9.4 of this Certificate.
Requirement: Regulation 7	Materials and workmanship
Comment:	The product meets this Requirement. See sections 11.1 to 11.3, 13.1 and 13.2 and 18 of this Certificate. It is an acceptable preservative treatment against House Longhorn beetle <i>Hylotrupes bajulus</i> L. See sections 10.1 and 10.2 of this Certificate.

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2 The Building (Scotland) Regulations 2004



In the opinion of the BBA, Dricon, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Mandatory Standards as listed below.

Regulation:	8	Fitness and durability of materials and workmanship
Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The product can contribute to a construction satisfying this Regulation. See sections 11.1 to 11.3, 13.1 and 13.2 and 18 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	2.5	Internal linings
Comment:		The product can contribute to a construction satisfying this Standard, with reference to clause 2.5.1 ⁽¹⁾⁽²⁾ . See sections 9.1 to 9.4 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		The product is not classified as ‘non combustible’ and is 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 9.1 to 9.3 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		The product can contribute to a construction satisfying this Standard, with reference to clause 2.7.1 ⁽¹⁾⁽²⁾ . See sections 9.1 to 9.3 of this Certificate.
Regulation:	12	Building standards – conversions
Comment:		All comments given for this product under Regulation 9, 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).

3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, Dricon, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product meets this Regulation. See sections 11.1 to 11.3, 13.1 and 13.2, and 18 of this Certificate.
Regulation:	E3	Internal fire spread – Linings
Regulation:	E5	External fire spread
Comment:		Certain timber species and plywoods can be treated so as to be unrestricted by these Regulations. See sections 9.1 to 9.4 of this Certificate.

4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections: 5 *Description* (5.3), 7 *Delivery and site handling* (7.2) and 15 *Toxicity* (15.1).

Technical Specification

5 Description

5.1 Dricon treatment fluid is an aqueous solution of fire retardant and wood preservative chemicals.

5.2 The treatment fluid is manufactured using a batch blending process to produce a concentrate. Quality control tests is exercised over the raw

materials, during production and and the finished product.

5.3 The product is approved under the Control of Pesticides Regulations 1986 for the uses described in this Certificate.

5.4 Ensele is used on cut timber ends, is supplied in 5 litre polythene containers and approved under the Control of Pesticides Regulations 1986. There are no special safety precautions for this product other than normal hygiene protection. For further details contact the Certificate holder.

6 Treatment

6.1 The product is applied to timber and plywood by the Certificate holder.

6.2 The treatment is conducted by pressure, using a full cell process, and the treated timber is kiln dried to an average moisture content of 19%, plywood to 15%.

6.3 The Certificate holder regularly conducts a chemical analysis on the Dricon at the treatment plant, retains the records for each charge treated, and regularly conducts fire tests on the treated product.

7 Delivery and site handling

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

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

7.3 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 they are to be installed.

Design Data

8 General

8.1 Dricon is a satisfactory fire-retardant treatment for timber or WBP plywood, where used internally, or externally in weather-protected positions (ie where the timber is protected from the weather and from leaching, but where condensation is possible).

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

8.3 The treatment is applied using a full cell pressure treatment process, and the timber species with treatability classes 1–3 to BS EN 350-2 : 1994⁽¹⁾ (easy to treat, moderately easy to treat, difficult to treat) can generally be treated to a Class 1 spread of flame standard.

(1) These classifications were previously defined in the *Handbook of hardwoods* and *Handbook of softwoods* (HMSO) as permeable, moderately resistant and resistant. Certain timbers of treatability Class 4, or 'extremely resistant' can be treated to a Class 1 Standard (see Table 1).

9 Properties in relation to fire

9.1 The treated plywoods and timbers listed in Table 1, when tested to BS 476-7 : 1971 and BS 476-7 : 1987, have Class 1 surfaces.

Table 1 Dricon-treated timber and plywood achieving a Class 1 surface

Species and type	Fire Certificate No	Thickness (mm)
Solid timber		
American Willow	27673/110	21
Douglas Fir	T2239	21
European Redwood	31258	20
European Redwood	T2239	50
Hem-Fir	41095	50
Iroko	59932	22
Maple	J80456/3	17.5
Oak	46582	28
Spruce (Whitewood)	T2239	19
Spruce (Whitewood)	31257	38
Spruce (Whitewood)	36165	46
Western Red Cedar	41092	12.5
Western Red Cedar Shingle	46862	13
Western Red Cedar	27/0114	20
Yellow Pine	35517	12
Plywood		
Birch	112843	4
Birch	31396	12
Birch Combi	T2239	6
Birch Combi	31434	12
Brazilian	T1499/T1539/ T1595/36066/ 27-0047	4
Douglas Fir	31395	13
Douglas Fir	T2604	15
Douglas Fir	35867	18
Far Eastern	35861	4
Far Eastern	31394	6
Far Eastern	35862	9
Far Eastern (White Malayan)	35928	9
Far Eastern (Lauan)	T2604	10
Far Eastern (Malayan)	35866	12
Far Eastern (Keruing)	27/0114	12
Far Eastern (Keruing)	27/0114	14
Far Eastern (Lauan)	T2604	15
Far Eastern (Red Malayan)	35925	18
Far Eastern (Lauan)	27/0174	18
Gaboon (Okoumé)	31339	10
Gaboon (Okoumé)	27/0047/C	13
Gaboon (Okoumé)	T2604	15
Gaboon (Okoumé)	T1539/B	18
Khaya Faced	27/0114	12
Khaya Faced	27/0114	15
Mahogany	27/0047/A	37
Mahogany	T1499/B	40
Makore	27171/111	10
Makore Faced	55752	10
Mokore Faced	27190/121/A	25
Moabi	27235/012/A	10
Oak Faced	27/0174	14
Yellow Pine	27/0047/B	40

9.2 Some thicknesses and species of timber or plywood can be treated to give a fire propagation index of $I \leq 12$ and sub-index $i_1 \leq 6$ in tests to BS 476-6 : 1981 and BS 476-6 : 1989, ie to

give Class 0/‘low risk’ performance as required by the various Building Regulations. This performance has been given in tests on the materials described in Table 2.

9.3 A range of plywoods, when tested at a variety of thicknesses and constructions, achieved the Euroclassifications to Clause 10 of BS EN 13501-1 : 2002 given in Table 3.

9.4 The performance of materials in these tests cannot be predicted with certainty. If a particular performance for material not listed in Table 2 or 3 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.

9.5 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 2 Dricon-treated timber and plywood achieving a fire propagation index of $I \leq 12$ and sub-index $i_1 \leq 6$

Species and type	Fire Certificate No	Thickness (mm)
Solid timber		
Hem-Fir	45310	50
European Redwood	27028/024	15.5
European Redwood	10514/024	15
European Redwood	35923	22
Western Red Cedar	43696	14
Western Red Cedar Shingle	46861	13
Plywood		
Birch	27600/090/D	15
Brazilian	38842	4
Brazilian	27600/090/E	18
Douglas Fir	32122	12
Douglas Fir	32122	20
Far Eastern (Lauan)	35696	10
Far Eastern (White Malayan)	C75917/1	12
Far Eastern	41096	18

Table 3 Classification to BS EN 13501-1

Species	Classification report No	Thickness (mm)	Density kgm^{-3}	Euroclass
Finnish Birch Plywood ⁽¹⁾	E139541	4-25	520-710	C-s2, d0
Finnish Birch Plywood ⁽²⁾	E139540	12-25	600-710	C-s2, d0
Finnish Spruce Plywood ⁽²⁾	E139539	12-25	410-510	B-s1, d0
Far Eastern Plywood ⁽¹⁾	E139538	3.6-25	529-823	C-s2, d0
Far Eastern Plywood ⁽¹⁾	E139537	9-25	529-704	B-s2, d0
Far Eastern Plywood ⁽²⁾	E139536	12-25	562-704	B-s2, d0

(1) Tested over a 12.5 mm thick paper-faced plasterboard substrate with a density of 800 kgm^{-3} .

(2) Tested over the above substrate, but with 25 mm x 38 mm sawn pine redwood battens mechanically fastened to the reverse face to create a 25 mm non-ventilated air space between the product and the substrate.

10 Preservation



10.1 The treatment is an effective wood preservative against insect or fungal attack, where there is a possibility of condensation, but no possibility of leaching from running water, ie in situations defined as Hazard Class 2 by BS EN 335-1 : 1992.

10.2 Ensele should be applied to cut ends, to maintain the preservative effectiveness.

11 Performance in humid conditions



11.1 The product is not hygroscopic.

11.2 When exposed to humid conditions, treated timber and plywood absorb moisture at a slower rate than untreated materials, and substantially slower 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.

11.3 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.

12 Compatibility

12.1 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.

12.2 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.

13 Strength of timbers



13.1 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 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.

13.2 Treated timber is not hygroscopic. 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.

14 Cutting

14.1 Treated timber may be cross-cut, mitred, drilled, planed or sanded lightly, and Dricon-treated plywood may be sawn, without affecting the fire properties.

14.2 Cutting timber along its length (eg by rip-sawing) will expose the core (which may have a lower standard of treatment and inferior fire properties) and should not be carried out.

15 Toxicity

15.1 If treated timber is handled and used in accordance with normal good practice for timber, it presents no toxic hazard in handling or installation.

15.2 The product presents no toxic hazard in service, and gives no unusual toxic products in fire conditions.

16 Overpainting

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

16.2 Maintenance painting will increase the film thickness, and may affect the fire properties in time. It is recommended that the film should be stripped periodically, using a hot-air method.

17 Effect on electrical properties

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

18 Durability



In the situations described in this Certificate, where protected from the weather and from leaching, treated timber and plywood will retain their fire retardant and preservative properties for the life of the building in which they are installed.

Installation

19 General

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.

Technical Investigations

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

20 Tests

20.1 Tests were carried out to determine:

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

20.2 An assessment was made of existing data relating to:

- surface spread of flame⁽¹⁾
- fire propagation⁽¹⁾
- effect of overpainting on fire properties
- effect of timber species on fire properties of treated timber
- ignitability
- smoke release
- effect of surface damage and cut ends on fire properties
- effect of glueline on treatment of plywood
- hygroscopicity
- fungicidal properties
- insecticidal properties
- effect on mechanical properties of treated timber
- corrosivity to metals
- leachability of treatment
- adhesion to joinery adhesives
- toxicity.

(1) These data are summarised in Tables 1 and 2.

21 Investigations

21.1 The manufacturing process was examined and the raw material specifications and quality control procedures were established.

21.2 Visits were made to sites in progress to assess practicability of application.

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

21.4 A visit was made to the treatment company to establish the methods of treatment and control.

Additional Information

The management systems of Arch Timber Protection have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2000 by the British Standards Institution Quality Assurance (Certificate No FM 1636).

Bibliography

BS 476-6 : 1981 *Fire tests on building materials and structures — Method of test for fire propagation for products*

BS 476-6 : 1989 *Fire tests on building materials and structures — Method of test for fire propagation for products*

BS 476-7 : 1971 *Fire tests on building materials and structures — Surface spread of flame tests for materials*

BS 476-7 : 1987 *Fire tests on building materials and structures — Method for classification of the surface spread of flame of products*

BS EN 335-1 : 1992 *Durability of wood and wood-based products — Definition of hazard classes of biological attack — General*

BS EN 350-2 : 1994 *Durability of wood and wood-based products — Natural durability of solid wood — Guide to natural durability and treatability of selected wood species of importance in Europe*

BS EN 13501-1 : 2002 *Fire classification of construction products and building elements. Classification using test data from reaction to fire tests*

BS EN ISO 9001 : 2000 *Quality management systems — Requirements*

ASTM E 662 : 1997 *Standard test method for specific optical density of smoke generated by solid materials*

22 Conditions

22.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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.

22.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

22.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant 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.

22.4 In granting this Certificate, the BBA is not responsible for:

- 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 or system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

22.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.



In the opinion of the British Board of Agrément, Dricon is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 87/1841 is accordingly awarded to Arch Timber Protection.

On behalf of the British Board of Agrément

Date of Fifth issue: 16th October 2006

Chief Executive

**Original Certificate issued 16th April 1987. This amended version includes reference to revised national Building Regulations, change of Certificate holder's address, additional product information, revised Treatment section and new Conditions of Certification.*

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For technical or additional information,
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For information about the Agrément
Certificate, including validity and
scope, tel: Hotline 01923 665400,
or check the BBA website.