



FIRE RETARDANT TREATED TIMBER AND SHEET MATERIALS CODE OF PRACTICE

Helping you make the most of timber

GUIDANCE FOR USE

This document is designed to assist those using or specifying DRICON treated materials. The Code of Practice gives guidance prior to treatment and supplies information on ancillary properties and post-treatment use. Consult the Arch Specifier's Guide for DRICON fire retardant treated timber for general information.

DESCRIPTION

DRICON fire retardant treated material is material which has been impregnated with DRICON fire retardant under controlled conditions in a vacuum pressure timber impregnation plant, followed, when required, by kiln drying to return the material to an acceptable or specified moisture content. DRICON treated material can be kiln dried or air dried depending upon the end-use.

DRICON is an advanced waterborne fire retardant which does not contain halogenated products, formaldehyde, heavy metals, phosphates or VOCs. It is the only UK Wood Protection Association (WPA) approved status type HR (Humidity Resistant) product. DRICON is also classified as INT2, the highest classification for internal products and EXT for exterior applications under a well maintained coating, in accordance with the draft European Standard on fire retardant durability (prEN15912). DRICON is the only BBA (British Board of Agrément) certified fire retardant treatment for timber (Certificate N°87/1841 since 1987).

TYPICAL APPLICATIONS

DRICON treated materials are designed to be used in all interior and weather protected situations. Typical applications include permanent constructions, both residential and commercial projects (internal cladding, wall and ceiling linings and external coated cladding), high humidity applications (e.g. swimming pools, lifeboat stations), smoke critical situations (e.g. transport and rail industry timbers, railway and underground stations), high strength requirements (e.g. scaffold boards, structural joists, staircases) and refurbishment projects (e.g. listed buildings, churches). This list is not totally exhaustive and gives an indication of the range of uses for DRICON treated materials.

It is advisable to consult with Arch Timber Protection using the contact details given in this document if in doubt about any particular area of application or compliance with other relevant standards or specifications.

BEFORE TREATMENT

A wide range of timber and sheet materials can be treated with DRICON. Oriented strand boards (OSB), particleboards, fibreboards and similar generic materials are generally not suited to impregnation with a waterborne solution. Such treatment can cause swelling and loss of integrity of the substrates.

Before treatment, always obtain full details of where and how the timber will be used and then discuss your requirements with Arch Timber Protection to confirm test data and European fire (Euroclass) classification reports are available.

The responsibility for determining that any product or building component complies with the relevant Building Regulations or Codes of Practice rests solely on the client or specifier.

To help define the relevant project specific standards and requirements, consult the Arch Specifier's Guide to DRICON Fire Retardant Treated Timber which also gives guidance on recommended wording of specifications. Full assistance with specification writing is available on request.



PREPARATION OF TIMBER FOR TREATMENT

The quality and appearance of the end-product is dependent on the quality and appearance of the substrate prior to processing. Timber and plywood should be presented to the treatment centre in a dry and clean condition as follows:

- Timber boarding must be dried to a moisture content of 22% or less, and preferably to its end use moisture content.
- Large cross sectional timber must have a moisture content of 28% or less, and preferably to its end use moisture content.
- Plywood must be dried prior treatment to a moisture content of 15% or less, and preferably to its end use moisture content.
- All inner and outer bark must be removed from solid timber prior to treatment.
- Material should be free from dirt, sawdust, surface coatings, surface water, plastic wrapping, ice and snow.
- Material should be free from all signs of attack by bacteria, blue staining fungi, wood destroying fungi or insects.
- As far as possible, all ripping, profiling and extensive machining should be completed before treatment. See section on post-treatment machining.
- Timber and plywood must be adequately sheeted at all times during transport to and from the treatment plant and on-site.
- Packs must be adequately banded (not too tight) to avoid degradation during transport and handling and to allow good penetration during treatment. For maximum length and relevant pack size, please contact Arch Timber Protection.
- Staircases should come in component form, strapped to a pallet.
- All plywood should be Exterior grade (according to BS EN 636 and BS EN 314: Part 2 bonding class 3). For other panel product grades, there is a risk of swelling and loss of physical characteristics.
- Supply a minimum 5% extra material with each order to allow for kiln degrade, kiln samples and moisture content samples. Some species will require more of a wastage factor than others. Consult Arch Timber Protection for further advice.
- Timbers to be machined to close tolerances should be dried down to their estimated service equilibrium.

Slight dimensional changes can occur during treatment and Arch Timber Protection should be consulted if this may cause a problem.

It is advisable to have representative samples treated prior to carrying out full scale treatments. The client can then be assured of the acceptability of the treated product.

TREATMENT OF PRE-GLUED ASSEMBLIES AND PLYWOOD

In general, glued assemblies (including glued laminated timber and plywood) can safely be treated with DRICON providing a suitable waterproof adhesive has been used. Always consult the adhesive manufacturer on the suitability and use of their particular product and follow the directions of the appropriate regional standards.

The adhesive must be allowed time to gain sufficient strength to tolerate the effect of the vacuum pressure treatment.

Plywood can safely be treated with DRICON provided it is an Exterior grade (according to BS EN 636).

Under previous systems, plywood was graded WBP (Weather and Boil Proof) under BS1204. This standard has now been withdrawn. Now plywood grades are based on BS EN 636 (Dry, Humid and Exterior classifications), which themselves are based on bonding classes 1, 2 and 3 from BS EN 314 Part 2. Plywood that is BS EN 636 Exterior grade (BS EN 314 Part 2 bonding class 3) should now be specified. Humid grade (bonding class 2) might be acceptable, but the board manufacturer or supplier should be asked to confirm that Humid grade board can be put through a high vacuum-pressure treatment process. Delamination can occur with plywood of grading other than Exterior.

In the case of veneered plywood, veneers and plywood should be treated separately and bonded after treatment. The treatment of veneers is carried out on veneer flitches only, not lay-on veneers.

APPEARANCE

DRICON treated material may be used internally without a coating. For external applications, the treated material has to be weather protected with a coating.

The appearance of timber is not significantly affected by DRICON treatment.

Treatment may leave white deposits on the surfaces, particularly near the end of boards. These can be removed prior to fixing by sanding followed by wiping with a damp cloth to remove all traces of deposits.

The treatment process can generate splitting, cracking, cupping or bowing of certain materials. Movements are dependent on species and commodities.

When material is to be used decoratively, if specified and where possible, it will be dried with a sticker mark free face for an architectural finish.

For pre-glued materials, any weaknesses in the glueline may be exaggerated as a result of treatment. This is most noticeable where uneven glue is spread or pre-curing has occurred in manufacture.

Plywood treatment can result in slight degree of movement of the board.

CONFIRMATION OF TREATMENT

DRICON treatments are carried out in accordance with BBA requirements and the WPA Quality Scheme operating under ISO 9001 Quality and ISO 14001 Environmental standards.

Full details of the DRICON treatment process are recorded for each charge treated. This ensures that the treatment conforms to specification and that the correct treatment procedure has been followed. A Treatment Certificate will be issued on request.

Please note that the treatment process parameters are varied according to the timber species and end use of the treated material commodity, taking into account the required fire performance.

POST TREATMENT STORAGE

Before and after processing, the timbers and plywood must be protected from the weather during storage.

DRICON processed material, being kiln dried, will reach the building site at a pre-specified moisture content and is ready for immediate installation. If the treated material is to be stored on-site, prior to installation, this should be in a building with atmospheric conditions corresponding to its service environment.

If storage in a building is not possible, the treated material must be stored out of ground contact and well protected from the ingress of moisture and dirt by a protective covering (e.g. a tarpaulin or plastic sheeting) whilst allowing it to breathe.

DRICON treated timber and sheet materials are valuable building products and should be stored with care at all times to avoid physical damage and surface disfigurement.

POST TREATMENT MACHINING

As far as possible all cutting, machining, notching and boring is to be carried out prior to treatment.

Fire classification applies to the final form of a material. The fire performance of any rip sawn, thicknessed, equalised, planed or extensively drilled material will be downgraded. The machined material must be returned to the treatment plant for re-treatment with DRICON.

POST TREATMENT GLUING

It is the end user's responsibility to ensure compatibility of any adhesive to be used. When DRICON treated material is to be bonded, always consult the adhesive manufacturer for suitable recommendations.

In consultation with the adhesive manufacturer, select an adhesive appropriate to the in-service exposure conditions and the load bearing or non-load bearing requirements. The adhesive manufacturer should also inform you on the suitability and use of their particular product and give guidelines to follow the directions of the appropriate regional standards.

Prior to bonding, a preparation of the material might be required. Always consult your adhesive manufacturer for appropriate recommendations on surface preparation and specifications during bonding. For your information, the curing time and temperature during bonding might have to be increased.

SURFACE COATINGS

Uncoated DRICON fire retardant treated timber should be installed only where it will not be exposed to precipitation or direct wetting in service. For exterior end-uses, DRICON treated material, prone to direct wetting, must only be used, when protected with a well maintained coating.

It is the end users responsibility to ensure compatibility of any coating to be used. When DRICON treated material is to be coated, always consult the coating manufacturer for suitable recommendations, and confirmation of adhesion and long term durability characteristics. Coated surfaces will require maintenance in accordance with the coating manufacturer's instructions.

When painting or staining, as with untreated timber, the surface should be clean and dry throughout the surface. A light sanding and thorough wiping with a damp cloth, or power washing should be performed prior to the application of any finish to provide a clean surface and to smooth any raised grain to optimise adhesion. In the case of rough sawn timber or textured plywood, brush the surface prior to staining.

As with untreated wood, excessive surface moisture can cause finishing problems. The timber surface should be dried to appropriate moisture content prior to finishing. If coating is to be undertaken on site, it is important to take appropriate precautions to protect the treated product from exposure to rain or extreme dampness.

The paint or stain manufacturer's recommendations should be followed taking note of the recommended maximum moisture content. The recommendations on sound painting practices, which are detailed in BS6150 - Code of Practice for the Painting of Buildings - should be followed.

It is important to confirm the final finish does not downgrade fire performance, achieved by the DRICON treatment. Highly flammable finishes such as nitro-cellulose based lacquers must not be used.

Always consult your coating manufacturer before applying a coating product to DRICON treated material.

METAL FIXINGS AND FITTINGS

Tests data show that corrosion of most metals in contact with DRICON treated materials is no greater than with untreated timber.

It is important to follow the recommendations of the manufacturer of any metal products used for specific advice regarding suitability, desired service life expectations and particular exposure conditions.

DRICON pressure treated timber has a long life expectancy and it is appropriate to use metal fixings and fastenings that will have a comparable length of life.

- Performance of metal fixings is influenced by the environmental conditions including moisture content, temperature, atmospheric pollution, proximity to coastal locations, timber species, as well as the thickness of any galvanising.
- It is good practice to drill pilot holes for fixings, in particular when screwing near the edge or end of a piece of timber.
- Attach connectors/fasteners/fittings after treatment and only after the timber has re-dried to less than 20% moisture content.
- In addition to the above, for internal building timbers, e.g. trussed rafters, it will be necessary to re-dry the timber to a moisture content of 22% or less before assembly and to maintain the timber in this condition during storage and delivery to site as recommended in BS 5268 Part 3 Section 5.5.
- Galvanising provides a sacrificial zinc barrier. It is important that the specifier is aware that there are many thicknesses of galvanised coating available and the thicker the galvanised coating the longer the expected service life. The level of galvanising should be commensurate with the end use.
- Electroplated metals only provide a thin coating and are unsuitable for exterior applications.
- For exterior use, where the timber is likely to become wet and a long service life is required, greater corrosion resistance will be achieved with use of austenitic grade 316 stainless steel, silicone bronze or copper in preference to other types of fittings.
- To prevent bimetallic corrosion between fastener/connector components it is important not to mix metals in the same connection. DO NOT mix galvanised and stainless steel components.

METAL FIXINGS AND FITTINGS (continued)

- Eurocode 5 (BS EN 1995-1-1: 2004) gives minimum specifications for material protection against corrosion for fasteners and fixings used in internal building, low hazard situations (Service Classes 1 and 2) where the moisture content of the treated timber will not exceed 20% throughout its service life.
- Fixings and fastenings used on safety critical and load bearing components should be inspected regularly and replaced if necessary.
- Specialist advice should be obtained in the selection of connectors for use in swimming pool buildings. Detailed advice is contained in the Nickel Development Institute document Stainless Steel in Swimming Pool Buildings 1995.

DURABILITY OF FIRE PERFORMANCE

DRICON treated timber has low hygroscopicity. It is suitable for interior use with up to 90% relative humidity and for exterior applications under a well maintained coating.

The durability of the reaction to fire performance in accordance with prEN15912*, classifies DRICON treated timber as DRF Class INT2, the highest classification for an interior product.

DRICON treated timber, under a well maintained coating, is also classified as Class EXT for exterior applications, as defined in Eurocode 5, EN1995-1-1 as Service Class 3 and in EN 335 as Use Class 3.

*prEN15912: the draft European Standard on Durability of Reaction to Fire Performance - Classes of fire retardant treated wood based product in interior and exterior end-use applications.

DESIRED SERVICE LIFE

PrEN15912 makes reference to the service life of flame retardant treated timber in terms of flame retardant durability. DRICON fire retardant treated timber also confers enhanced biological durability (EBD). DRICON fire retardant treatment offers a 60 year desired service life to timbers in a Use Class 2 situation (as defined by EN335-1) and a 30 year desired service life in a Use Class 3 situation, with a maintained coating.

HEALTH, SAFETY, HANDLING AND DISPOSAL

Reference should be made to the Consumer Information Sheet for DRICON fire retardant treated timber and sheet materials. This is available from the Arch Timber Protection Advisory Service. The Consumer Information Sheet is also relevant for COSHH purposes.

FURTHER INFORMATION

Specifier's guide for DRICON fire retardant treated timber and sheet materials.

Consumer Information Sheet for DRICON fire retardant treated timber and sheet materials.

For further information please contact Arch Timber Protection using the contact details below.

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This Code of Practice has been written for businesses purchasing DRICON service treatment for timber and sheet materials from Arch Timber Protection Limited. The customer is advised to read the Code of Practice in full as it contains important information, but the customer needs to decide for itself whether or not the product is suitable for its or the end users particular purposes and should ensure that its employees, contractors and others working for it and who will use the products do so in a safe manner. This document is intended for use by businesses only and is not intended to be used by retail consumers.



**Arch
Timber
Protection**

Wheldon Road, Castleford, West Yorkshire, WF10 2JT.
Tel: (01977) 714000 Fax: (01977) 714001
E-Mail: advice@archchemicals.com www.archtp.com

IN CASE OF EMERGENCY TELEPHONE (01235) 239670 (24 hours).



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