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1 GENERAL

1.1 GENERAL REQUIREMENTS

1.1.1 Scope

1 This section specifies materials, accessories, and workmanship for the use of wood in building construction.

2 The purpose of QCS is to provide as a general technical guide for acceptable construction work practices in the State of Qatar, considering this; any addition for technology, material, specification, standard that are not mentioned in this section or their modification, shall be subject to approval as stated in the introduction of QCS (00-02).

3 Related Sections are as follows:

This Section:

Part 2 ..... Wood Treatment
Part 3 ..... Structural Timber
Part 4 ..... Architectural Timber
Part 5 ..... Joinery
Part 6 ..... Fasteners and Adhesives
Part 7 ..... Ironmongery

1.1.2 References

1 The following standards are referred to in this Section:

BS 476.....Fire tests on building materials and structures

BS 729.....Specification for hot dip galvanized coatings on iron and steel articles (ISO 1461 Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods)

BS 1088.....Marine plywood. Requirements

BS 1142.....Specification for fibre building boards; (EN 622-1 Fibreboards - Specifications - Part 1: General requirements; EN 622-2 Fibreboards - Specifications - Part 2: Requirements for hardboards; EN 622-3 Fibreboards - Specifications - Part 3: Requirements for medium boards; EN 622-4 Fibreboards - Specifications - Part 4: Requirements for softboards; EN 622-5 Fibreboards - Specifications - Part 5: Requirements for dry process boards (MDF); EN 310 Wood-based panels - Determination of modulus of elasticity in bending and of bending strength; EN 316 Wood fibre boards - Definition, classification and symbols; EN 317 Particleboards and fibreboards - Determination of swelling in thickness after immersion in water; EN 318 Wood based panels - Determination of dimensional changes associated with changes in relative humidity; EN 320 Particleboards and fibreboards - Determination of resistance to axial withdrawal of screws; EN 321 Wood-based panels - Determination of moisture resistance under cyclic test conditions; EN 322 Wood-based panels - Determination of moisture content; EN 323 Wood-based panels - Determination of density; EN 324-2 Wood-based panels - Determination of dimensions of boards - Part 2: Determination of squareness and edge straightness; EN 325 Wood-based panels - Determination of dimensions of test pieces; EN 382-1 Fibreboards - Determination of surface absorption - Part 1: Test method for dry process fibreboards; ISO 12460-5 Wood-based panels — Determination of formaldehyde release — Part 5: Extraction method (called the perforator method)

BS 1186-1 .....Timber for and workmanship in joinery. - Specification for timber; (EN 942 Timber in joinery. General requirements)

BS 1186-2 .....Timber for and workmanship in joinery - Specification for workmanship

BS 1186-3 .....Timber for and workmanship in joinery - Specification for wood trim and its fixing

BS 1202.....Specification for nails

BS 1203.....Hot-setting phenolic and aminoplastic wood adhesives. Classification and test method

BS 1204.....Synthetic resin adhesives (phenolic and aminoplastic) for wood; (BS 1204-1 Synthetic resin adhesives (phenolic and aminoplastic) for wood - Specification for gap-filling adhesives: EN 301 Adhesives, phenolic and aminoplastic, for load-bearing timber structures - Classification and performance requirements; BS 1204-2 Synthetic resin adhesives (phenolic and aminoplastic) for wood - Specification for close-contact adhesives: EN 302-1 Adhesives for load-bearing timber structures - Test methods - Part 1: Determination of longitudinal tensile shear strength; EN 302-2 Adhesives for load-bearing timber structures - Test methods - Part 2: Determination of resistance to delamination; EN 302-3 Adhesives for load-bearing timber structures - Test methods - Part 3: Determination of the effect of acid damage to wood fibres by temperature and humidity cycling on the transverse tensile strength; EN 302-4 Adhesives for load-bearing timber structures - Test methods - Part 4: Determination of the effects of wood shrinkage on the shear strength)

BS 1210.....Wood screws

BS 1282.....Wood preservatives. Guidance on choice, use and application; (BS 8417 Preservation of wood. Code of practice).

BS 2572.....Specification for phenolic laminated sheet and epoxy cotton fabric laminated sheet; (EN 60893-3-4 Insulating materials. Industrial rigid laminated sheets based on thermosetting resins for electrical purposes - Specifications for individual materials. Requirements for rigid laminated sheets based on phenolic resins)

BS 3444.....Specification for blockboard and laminboard;

BS 3621.....Lock assemblies operated by key from both the inside and outside of the door.

BS 3794.....Decorative, high pressure laminates (HPL) based on thermosetting resins;(BS 3794-1 Decorative, high pressure laminates (HPL) based on thermosetting resins - Specification for performance; BS 3794-2 Decorative, high pressure laminates (HPL) based on thermosetting resins - Methods of determination of properties; EN 438-1 High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 1: Introduction and general information; EN 438-2 High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 2: Determination of properties; EN 438-3 High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 3: Classification and specifications for laminates less than 2 mm thick intended for bonding to supporting substrates; EN 438-4 High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 4: Classification and specifications for compact laminates of thickness 2 mm and greater; EN 438-5 High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 5: Classification and specifications for flooring grade laminates less than 2 mm thick intended for bonding to supporting substrates; EN 438-6 High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 6: Classification and specifications for Exterior-grade compact laminates of thickness 2 mm and greater; EN 438-7 High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (Usually called Laminates) - Part 7: Compact laminate and HPL composite panels for internal and external wall and ceiling finishes)

BS 4072.....Copper/chromium/arsenic preparations for wood preservation

BS 4079.....Specifications for plywood for marine craft; (BS 1088 Marine plywood. Requirements)

BS 4756.....Specification for ready-mixed aluminium priming paints for woodwork

BS 4965.....Decorative laminated plastics sheet veneered boards and panels

BS 5268-5 .....Structural use of timber - Code of practice for the preservative treatment of structural timber

BS 5358.....Specification for solvent-borne priming paints for woodwork; (BS 2523 Specification for lead-based priming paints; BS 7956 Specification for primers for woodwork)

BS 5589.....Code of practice for preservation of timber

BS 5666.....Methods of analysis of wood preservatives and treated timber; (EN 212 Wood preservatives. General guidance on sampling and preparation for analysis of wood preservatives and treated timber)

BS 5707.....Specification for preparations of wood preservatives in organic solvents

BS 6459.....Door closers - Specification for mechanical performance of crank and rack and pinion overhead closers

BS 6462.....Specification for mechanical performance of peg-type casement stays and face-fixed wedge-action fasteners

BS 6566.....Plywood; (EN 313-2 Plywood. Classification and terminology – Terminology; EN 315 Plywood. Tolerances for dimensions; EN 636 Plywood. Specifications; CEN/TS 1099 Plywood - Biological durability - Guidance for the assessment of plywood for use in different use classes; EN 635-1 Plywood - Classification by surface appearance - Part 1: General; EN 635-2 Plywood - Classification by surface appearance - Part 2: Hardwood; EN 635-3 Plywood - Classification by surface appearance - Part 3: Softwood)

BS 7036.....Code of practice for safety at powered doors for pedestrian use; (BS 7036-0 Power operated pedestrian doorsets. Safety in use - Code of practice for risk assessment and risk reduction)

BS 7352.....Specification for strength and durability performance of metal hinges for side hanging applications and dimensional requirements for template drilled hinges; (EN 1935 Building hardware. Single-axis hinges. Requirements and test methods)

BS 8201.....Code of practice for installation of flooring of wood and wood-based panels

EN 635 .....Plywood - Classification by surface appearance; (EN 635-1 Plywood - Classification by surface appearance - Part 1: General; EN 635-2 Plywood - Classification by surface appearance - Part 2: Hardwood; EN 635-3 Plywood - Classification by surface appearance - Part 3: Softwood)

EN 1014 .....Wood preservatives - Creosote and creosoted timber - Methods of sampling and analysis; (EN 1014-1 Wood preservatives - Creosote and creosoted timber - Methods of sampling and analysis - Part 1: Procedure for sampling creosote; EN 1014-2 Wood preservatives - Creosote and creosoted timber - Methods of sampling and analysis - Part 2: Procedure for obtaining a sample of creosote from creosoted timber for subsequent analysis; EN 1014-3 Wood preservatives - Creosote and creosoted timber - Methods of sampling and analysis - Part 3: Determination of the benzo(a)pyrene content of creosote; EN 1014-4 Wood preservatives - Creosote and creosoted timber - Methods of sampling and analysis - Part 4: Determination of the water-extractable phenols content of creosote)

Timber Research and Development Association (TRADA) Wood information sheets

1.1.3 Definitions

1 Concealed surfaces: Surfaces which after installation in the building will be concealed by the surrounding work, not merely by decoration.

2 Semi-concealed surfaces: Surfaces such as the internal parts of cupboards or fittings which are not visible when the fittings are closed.

3 Class 1 finish: Refers to the exposed surfaces of joinery which are selected for clear finish.

4 Class 2 finish: Refers to the exposed surfaces of joinery which are selected for painting.

1.2 TIMBER TYPES

1.2.1 General Description

1 Softwood is to comply with the relevant provisions of BS 1186, Part 1.

2 Hardwood is to comply with the relevant provisions of BS 1186, Part 1. Planed representative samples of each hardwood species specified are to be submitted to the Engineer before the manufacture of any joinery work.

3 The following hardwoods are approved for use:

(a) Iroko
(b) Afrormosia
(c) Dark Red Meranti
(d) Opepe

4 Under no circumstances shall Light Red Meranti be used.

5 Where Teak is specified no alternative hardwood will be acceptable.

1.3 QUALITY

1.3.1 General Description

1 Timber should comply with the requirements of Table 1.1 and should be free of the following defects:

(a) unsound knots, dead knots, loose knots and knot holes.
(b) sapwood on any external hardwood or Class 1 finish surface.
(c) splits extending through the piece from one surface to another and ring shakes.
(d) decay and insect attack other than pinholes as defined in Tables 1.1 and 1.2.

2 Except in Class 1 finish work, defects arising from manufacture and knots may be cut or bored out and replaced with a plug or inserts of the same species, well glued in. The plug is to be the full depth of the hole and the grain to be in the direction of the grain of the piece into which it is inserted. The width of any plug or insert should not be more than 6 mm greater than the maximum limit of the knot size.

3 In jointed panels each piece is to be of the same species and in Class 1 finish work all the exposed surfaces of each piece are to have the same character of grain and are to be matched.

Table 1.1
Quality of Timber

Features	**Exposed Surfaces**	
	Class 1 Finish	**Class 2 Finish**
Knots	Pin knots up to 6 mm diameter only unless the knots are specified as a feature.	Up to 25mm width - one half of timber 25-50mm width - 15mm 50-100mm width - one quarter Over 100mm width - 25mm
Checks, Width splits Length and Depths Shakes	0.3 mm 300 mm One quarter of timber	1.5 mm (filled if over 0.5 mm) 300 mm One Quarter of timber
Pitch pockets	Not Permitted	Not Permitted unless cut out and filled
Plugs and inserts	Not Permitted	Width not to be 6mm greater than maximum limit of permitted knot size
Joints and Lamination Glue Lines	None	Not unduly conspicuous
Rate of Growth	Not fewer than 8 growth rings per 25 mm at any point on any cross section	
Slope of grain	Not greater than 1 in 10 in softwoods and 1 in 8 in hardwoods	
Boxed Heart	Permitted in softwoods only if there is no shake on exposed surfaces	
Pitch	Not permitted	Permitted if hard
Pin-holes	Not permitted	Permitted if filled

Table 1.2
Quality of Timber

Features	**Concealed and Semi-Concealed Surfaces**	
Knots	Up to 45mm width 45-60 mm width 60-100 mm width Over 100 mm width	- two-thirds of timber - 20 mm - one half - 50 mm
Checks, Width splits Length and Depths Shakes	Any width Not continuous for whole length One Half of timber	
Pitch pockets	Permitted	
Plugs and inserts	Width not to be 6mm greater than maximum limit of permitted know size	
Joints and Lamination Glue Lines	No specified requirement	
Rate of Growth	Not fewer than 8 growth rings per 25mm at any point on any cross section	
Slope of grain	Not greater than 1 in 10 in softwoods and 1 in 8 in hardwoods	
Boxed Heart	Permitted in softwoods	
Pitch	Permitted	
Pin-holes	Permitted	

1.4 MOISTURE CONTENT

1.4.1 General Description

1 All timber is to be kept in stores, properly stacked, for a minimum period of three months to ensure conditioning to a maximum moisture content from time of delivery and during site storage to be no more than the following:

(a) timber 50mm and less in thickness to have a moisture content of 19% or less

(b) boards to have a moisture content of 19% or less

(c) timber over 50mm thick to have a moisture content of 25% or less.

2 Particular care is to be taken to ensure that all carpentry and joinery timbers, plywood, blockboard and other timber based composite board, whether in prefabricated or loose form, are delivered and maintained at the required maximum moisture content stated. Refer to BS 6566 Part 5 for moisture content in plywood.

3 When instructed by the Engineer the Contractor is to make available a moisture meter for the testing of moisture content on site. The test is to be carried out according to the instrument manufacturer's instructions at a point not nearer than 600 mm from either end or at the centre if the length is less than 1200 mm.

4 For information related to use of moisture meters refer to the following Timber Research and Development Association (TRADA) wood information sheets, reference:

(a) No. 14 Moisture in timber 4284 910

(b) No. 18 Moisture metres for wood 461795.

1.5 STORAGE OF MATERIALS

1.5.1 General Requirements

1 The Contractor is to comply with the following requirements when dealing with structural timbers (rough carpentry):

(a) protect timber and other products from dampness both during and after the delivery to the site.

(b) pile timber in stacks in such a manner as to provide air circulation around the surfaces of each piece.

(c) stack plywood and other board products so as to prevent warping.

(d) locate stacks on well drained areas, supported at least above ground and cover as necessary for protection from driving rain and prolonged sun exposure, whilst providing ventilation.

2 The Contractor is to comply with the following requirements when dealing with architectural timber (finished carpentry and shopwork).

(a) joinery is to be stacked on bearers on level, dry floors. Components are to be staggered or separated with spacers as necessary to prevent damage by and to projecting ironmongery, beads, etc.

(b) components which cannot be immediately unloaded into conditions of storage recommended by the manufacturer or approved by the Engineer are not to be delivered to the site.

(c) during transit and while stored on site, doors are to be stacked horizontally in piles, each pile on not fewer than three cross bearers laid level and true.

END OF PART