

# FINAL DRAFT UGANDA STANDARD

FDUS 1874

First Edition  
2018-mm-dd

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## Codes of Practices for Selection, Installation and Maintenance of Wooden Door Shutters

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Reference number  
FDUS 1874:2018

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## Foreword

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- (a) a member of International Organisation for Standardisation (ISO) and
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The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of key stakeholders including government, academia, consumer groups, private sector and other interested parties.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

The committee responsible for this document is Technical Committee UNBS/TC12 *Furniture*.



# Code of practice for selection installation and maintenance of wooden door shutters and windows

## 1 Scope

This code covers the selection, installation and maintenance of wooden doors, windows and ventilator frames and shutters for residential buildings, schools, hospitals and other non-industrial buildings. This code does not cover industrial doors and windows and fire-resistant doors and windows.

## 2 Normative reference

The following referenced documents are referred to in the text in such a way that some or all of their content constitute requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

DUS 1602, Timber door, window and ventilation frames — Specification

US 1622, *Glossary of terms in timber technology and utilization of wood, bamboo and cane*

US 1652 (all parts), *Wooden flush door shutters (solid core type)*

US 1657 (all parts), *Wooden flush door shutters (cellular and hollow core type)*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in US 1622 apply.

## 4 Materials and guidance for selection

### 4.1 General

For permanent door frames, Grade I wooden or pressed steel door frames shall be used. For temporary and portable type of doorframes, the wooden may be of grades I or II

### 4.2 Wooden frames

Wooden door, window and ventilator frames for residential buildings shall conform to US 1602.

### 4.3 Wooden panelled and glazed shutters

**4.3.1** Wooden paneled and glazed door and window shutters shall meet the required quality

**4.3.2** The thickness selected for door shutters shall be not less than 40 mm for permanent installations. The thickness may be reduced for temporary installations. These, however, would require additional care in maintenance.

**4.3.3** For aesthetic and decorative purposes in high class buildings, decorative type of door shutters may be used. The most commonly used decorative surface wooden is teak (*Tectona grandis*). These require polishing and waxing as against painting required for commercial door shutters.

**4.3.4** The user may specify one face decorative and one face commercial (non-decorative) panel door as required for the colour scheme in the room and based on other aesthetic considerations.

#### **4. Wooden flush door shutters**

**4.4.1** These shall comply with US 1652 (all parts) and US 1652.

**4.4.2** For permanent buildings wooden flush doors of the solid core or cellular or hollow core type are recommended. For temporary buildings, cellular or hollow core type of flush door shutters may be used.

**4.4.3** For aesthetic and decorative reasons in high class buildings, decorative type of door shutters may be used. The user shall specify the wooden for the face of the shutter.

**4.4.4** The user may also specify one face decorative and one face commercial for the flush door depending on his need for colour scheme in the room.

#### **4.5 Door and window hardware**

**4.5.1** Door and window hardware shall meet the requirements of relevant Uganda Standards.

**4.5.2** Each wooden door shutter shall have a minimum of three door hinges and two fastenings like tower bolt, hasp and staple, mortice lock, etc. Floor door stoppers and handles are optional. Swing-damping type of arrangements like hydraulic door closers may be fixed as an optional item. Push plate, name plate, kick plate, etc, are also optional fittings depending on the choice and requirement of the user.

**4.5.3** Each window shutter shall have a minimum of three hinges, and one fastening like tower bolt and one handle for opening and closing. Additional fastenings or tower bolts may be provided as optional items.

**4.5.4** Selection of door and window hardware shall depend on the economy desired and the climatic conditions. In coastal towns the hardware should be selected keeping in view the resistance of hardware to salty sea winds. For especially heavy doors, additional hinges specially made shall be provided.

**4.5.5** The material for hardware may be mild steel, brass, oxidized iron, anodized aluminum, etc, and the user has to carefully choose the material to suit his requirements.

#### **4.6 Paints and varnishes**

White lead primer paint, aluminum or other primer, wood filling putty, ready mixed paints, varnishes and polishes and all other materials used for painting and finishing of door and window shutters shall conform to the relevant Uganda standards.

#### **4.7 Glass**

The type of sheet glass used for glazing shall be specified by the user, such as frosted glass, wired-glass and coloured glass and the requirements for them in the place of use;

### **5 Required information**

**5.1** When placing order for door, window and ventilator frames and shutters, the purchaser (or user) shall give full information to the manufacturer as specified in the various specifications for the materials. This also applies to hardware and paint and finishing materials.

**5.2** The following points will determine the type of material for doors and windows to be ordered:

- a) the type and nature of buildings whether permanent, temporary or portable;
- b) climatic conditions of the place of use;
- c) architectural consideration and other special requirements like louvers and vision panels;
- d) the need for standard sizes and modular consideration; and
- e) availability of materials.

**5.3** Where special louvres, vision panels, or other special fixtures are required on the shutters, full details shall be given of the same in the order and preferably the drawings should also be provided.

## **6 Selection**

### **6.1 General**

For permanent buildings, wooden door, window and ventilator frames of Grade I, wooden or pressed steel door frames shall be used. The shutters for these type of buildings shall also be of Grade I wooden. For temporary buildings, frames of Grade I or Grade II wooden and paneled shutters of Grade I or Grade II wooden or flush door shutters of cellular or hollow core type may be used.

**6.2** All windows shall be of Grade I wooden for permanent buildings and Grade II wooden for temporary buildings.

6.2.1 For high class buildings and when required for architectural and aesthetic reasons Grade I type of frames and decorative type of paneled doors or flush doors may be used. for all general purpose buildings non decorative type door shutters are recommended.

### **6.3 Choice of type of shutter**

The choice between paneled doors, glazed doors and flush doors is primarily based on considerations of aesthetic and functional requirements and economy. Where glazing is desired, the shutters may be fully glazed or partly paneled and partly glazed.

### **6.4 Choice of type of fittings**

The choice of fittings may be determined by considerations of economy, durability, aesthetic and architectural consideration as well as serviceability.

### **6.5 Selection of sizes**

The sizes of frames and shutters selected shall conform to the standard sizes covered in the relevant Indian Standards.

### **6.6 Choice of wooden-door**

The choice of wooden for door frames and doors may be according to the taste of the purchaser from any of the species specified in the relevant Indian Standards. For termite and insect affected areas and permanent type of buildings, durable wooden like teak shall preferably be used for door frames and paneled doors.

## **7 Handling and storage**

### **7.1 General**

While unloading, shifting, handling and stacking of wooden door, window frames and shutters, care shall be taken that the material is not dragged one over the other as it may cause damage to the surface of the material particularly in the case of decorative shutters. The material should be lifted and carried preferably flat and avoiding damage of corners of sides.

### **7.2 Storage**

**7.2.1** All wooden frames and shutters shall be stored in a dry and clean covered space away from any infestation and dampness. The storage shall preferably be in well ventilated dry rooms. The frames shall be stacked one over the other in vertical stacks with cross battens at regular distances to keep the stack vertical and straight. These cross battens should be of uniform thickness and placed vertically one over the other. The door shutters shall be stacked in the form of clean vertical stacks one over the other and at least 8 cm above ground on pallets or suitable beams or rafters. The top of the stack shall be covered by a protecting cover and weighed down by means of scantlings or other suitable weights. The shutter stack shall rest on hard and level.

**7.2.2** Separate stacks shall be built up for each size, each grade and each type of material. When materials of different sizes, grades and types are to be stacked in one stack due to shortage of space, the bigger size shall be stacked in the lower portion of the stacks. Suitable pallets or separating battens shall be kept in between the two types of material.

**7.2.3** If any material becomes wet during transit, it shall be kept separate from the undamaged material. The wet material may be dried by stacking in shade with battens in between adjacent boards with free access of dry air.

**7.2.4** Metal hardware, glass panels, glazing bars and other material shall be stored as recommended by the supplier to avoid any damage to the same by moisture or any other adverse weather conditions.

## **8 Installation of wooden door shutters and window frames**

### **8.1 General**

Wooden door and window frames shall be installed either by 'Built-in method' or 'Prepared opening method' as described in 8.2 and 8.3. Installation into prepared openings shall be preferable, the advantage being that the frame is less liable to distortion and moisture changes.

### **8.2 Built-in method**

#### **8.2.1 Door frames**

Frames shall be installed at the required place and each door frame shall be provided with three holdfasts on either side, one at the top, one at the bottom (30 cm away from the top and bottom edge) and one in the middle. Masonry or concrete in the wall shall be built after installation of the doors so that holdfasts and pins at the bottom are well anchored into them. Before construction of masonry, the outside of the frames coming in contact with masonry shall be given a thick coat of coal tar or other water proofing paint. Suitable arrangements shall

#### **8.2.2 Window frames**

Window frames shall also be installed in the same manner as door frames except that at least two holdfasts shall be provided on either side to anchor them in position. The size of the opening shall first be checked and cleaned including the place of the holdfasts of all obstructions. The position of the unit in the reveal shall be taken off the drawings and a vertical chalk line shall be marked on the reveal at the jambs, using a plumb line



at the correct distance from the face of the wall. The chalk line shall also be run along the head and sill of the opening.

### **8.2.3 Fixing datum**

To ensure that all units are set at the appropriate heights in their openings, the datum line for the sill of the door, window or ventilator shall be taken from a fixed point on the wall or from finishes floor or ceiling with the help of a level. This datum level shall be given by the builder to the fixer.

## **8.3 Prepared opening method**

**8.3.1** In this method the fixing in the opening may be flush or rebated as given in the drawings. The clearance between the frame and opening shall be kept depending on whether the opening is externally rendered or fair faced. The frame shall be checked before fixing in the positions that the same is square and in the proper position. The holdfast opening and the bottom pin shall then be grouted. Plastering of the sides shall be done and allowed to dry before the door, window or ventilator shutters are fixed.

**8.3.2** When cleaning the surroundings, after the plaster and grouting have dried, all splatter and marks of cement shall be removed and the frames cleaned.

## **8.4 Other precautions**

Precaution shall be taken to fix the door frame so as to take care of the final floor level and also the following points:

- a) whether the shutters are inside the opening or outside the opening; and
- b) whether the frames are for exterior use or interior use and in the case of latter direction and position of water carriers, slopes, etc.

## **9 Installation of door and window shutters**

**9.1** Before installation it shall be ascertained that all materials, that is, the shutters, hard wares, etc, are at site and of the correct size and quality. The size of openings and the door frames shall be checked and also the verticality of the side frames and the level position of the floor and the wall. Any adjustment necessary shall be made before installation of the shutters. The shutters shall be installed only after the walls on either side have dried. Good ventilation at the time of installation is necessary.

**9.2** The size of the shutters shall be checked before installation. Usually adjustments will be possible by planing the sides, top and bottom to the extent of 6 mm. It is not necessary to cut any door shutter by more than 9 mm unless agreed to by the supplier of the shutters. The door shutters shall be adjusted and fixed with two screws on each hinge (blank fittings) before the polishing of the terrazzo and similar type of floorings is taken up. Such shutters shall then be removed the terrazzo flooring polished and the shutters re-fixed in position with all screws.

**9.3** During installation the shutters shall be carefully lifted, carried and fixed. Dragging of shutters particularly decorative shutters one over the other or on ground is likely to scratch and damage the surfaces.

**9.4** Any special instruction by the door and window manufacturers regarding the-position of hinges, all drops and locks shall be noted and complied with during installation.

**9.5** Any transit defects or storage defects in a shutter should be rectified. Any crack should be filled up with a good putty. Any damaged surface veneer particularly in decorative shutter may be rectified by inserting a matching veneer and use of suitable glue and pressing by use of 'C' clamps or other suitable device. Any corner-opening may be rectified by the use of glue and pressing by 'C' clamps. Any damage to moulding or glazing bars or other fixtures shall be done at site by use of similar material.

**9.6** Unless otherwise specified, door shutters shall be fixed to the frames with 100-mm long hinges and width to suit the thickness of the door and using suitable wood-screws. The hinges shall be fixed one at the centre and the other two at 25 cm each from the top and bottom of the shutter. In the case of window shutters each shutter shall be fixed to its frame. With 80-mm hinges at suitable places preferably at quarter height from up and down. When driving the screws it is advisable that in case of hard wooden pilot holes are drilled before fixing the screw. The screw shall be driven tight fit and straight. The ventilator shutters shall be fixed with two hinges per shutter on sides or at top as required and with the same precautions as for fixing window shutters.

**9.7** The door and window shutters shall be checked again after fixing for proper location, alignment and swinging. Any rectification necessary shall be done.

**9.8** The shutters shall then be fixed with locks, tower bolts, handles and other fixtures like floor stoppers and aldrops as required. The manufacturer's instructions for fixing these hardware shall be followed. The shutters may also, if required, shall be fixed with name plates, vision panels, louvres, etc. After all the fixtures have been fitted the shutter shall be tried for proper closure, handling and movement and shall then be prepared for painting or finishing.

**9.9** Glass panels, where desired should be fixed taking precautions that correct type and correct size of glass panels and glass fixtures are used. The opening at the edges shall be filled up with glass fixing putty or beading.

**9.10** Where combination of doors, windows and ventilators is desired, care shall be taken that the symmetry of the combination both as to the dimension, colour and fixture is preserved.

**9.11** Flush doors for bath room shall preferably be avoided. However, when flush doors are used in such situations, suitable water protection at bottom of the door shall be provided with a 15-cm high plate of aluminum or plastic.

**9.12** Special fixtures for doors where provided shall be according to the drawing or specifications of the builder.

## **10 Painting, polishing, waxing or other finishing**

**10.1** The site finishing of wooden doors, windows and ventilators shall ensure protection from weather as well as of decoration.

**10.2** Site finishing of the frames and shutters shall consist of preparation of the surface by sanding or otherwise smoothing, filling with putty in depression and application of an undercoat. Add a finishing coat of paint or varnish or wax or lacquer as required. Any touching up necessary shall be done finally.

Wooden surface shall be well sanded to smoothness and any patch requiring filling shall be so done with wood putty. The surface shall then be prepared by use of a suitable filler or primer paint of white lead or a suitable aluminum primer or varnish filler and allowed to dry and again sanded smooth. The door frame shall also be similarly prepared for final painting or varnishing.

The two surfaces of a door shutter shall be prepared and given the primer coat and paint or varnish simultaneously.

**10.3** Two coats of suitable desired paint or varnish shall be given as a finishing coat on either side of the shutters. Such a finish shall be given to the frame and all other exposed wood work. The colour and the type of paint and finish shall be as desired by the user. In case the doors are required to be varnished or polished this will be carried out with the material and to a finish as desired by the user.

**10.4** Usually all commercial door and window shutters are painted and all decorative panels are either varnished or polished with French polish or wax polish. Further finish shall be done, only in consultation and as per the instructions of the supplier of doors, windows, etc.

**10.5** The edges of shutters shall be given either a protective paint or protective varnish in the same way as the surface. This particularly applies to bottom edge which is likely to come in contact with moisture from the floor.

**10.6** Precautions shall be taken to protect the glass surface when painting by the use of a suitable protector and the glass surface, cleaned thereafter. Care shall be taken of fixtures like name plates and hardware during finishing and these shall be finished to the colour and smoothness suitably rectified and well finished.

## **11 Inspection**

After installation, the doors, windows and ventilators shall be inspected with regard to proper and correct installation, accessories, clearances and smooth working.

## **12 Sequence of building operations in relation to fixing of doors, windows, ventilator frames and shutters**

Before starting door fixing operations, it should be examined whether the frames have been correctly installed and the margin of adjustment of sizes for frame and shutters would be possible. The clearance with regard to openings and frames and also the tolerances in the sizes of door shutters are already covered in the relevant Indian Standards and it will be advantageous to stick to these sizes. The shutter shall open freely when a clearance not exceeding 3 mm is provided and the fittings shall fit easily and smoothly. Painting and finishing work, glazing work, etc, shall be done wherever necessary. When finishing is done at site, the door should be left clean and free from dirt, putty and other adhering material after the work is over.

## **13 Maintenance**

**13.1** The wooden door, windows and ventilators shall be inspected periodically and re-painted or re-varnished at least once in two years and any damage noted shall be rectified suitably.

**13.2** Any damage by insects should be promptly taken note of and suitable heat or chemical sterilization and other protective methods shall be adopted to rectify them.



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