


4. Fabrication

Assurance of the quality and performance of doors starts in the factory where the door components are fabricated and assembled.

4.1. PLANNING FOR FABRICATION

For effective planning of the fabrication schedule, it is important that the following information is provided in time.

Planning for fabrication	Information to note
1. Delivery time	<ul style="list-style-type: none">Suppliers should plan the delivery of materials to site in accordance with the installation schedule to minimize storage and handling on site.
2. Types of materials & finishes	<ul style="list-style-type: none">The types and finishes of the door frame, door panel and architrave should be pre-determined so that supplier has sufficient information to ensure that the physical quality of the timber and its finishes is as per the approved samples. <div data-bbox="711 974 1337 1435"></div> <ul style="list-style-type: none">According to SS 347:1990, moisture content of timber door should be within 10-15%. Where this moisture content range is unsuitable for a particular location or purpose, the moisture content of the component should be within 2% of an agreed value.

4.2. FABRICATION PROCESS

High quality doors can be effectively achieved by fabricating and assembling as many components as possible in the factory. This helps to minimize site assembly where quality control is relatively more difficult. The use of automated machinery will help to improve production efficiency and deliver more consistent quality products.

Fabrication process	Good practices
<p>1. Cutting</p>	<ul style="list-style-type: none"> • Door frames & panels are cut to the specified sizes based on project information. Where applicable, site measurement on door openings should be obtained before proceeding with the cutting of sub-frames, main frames and door panels.  <ul style="list-style-type: none"> • After cutting, physical measurement should be carried out to ensure there is no inconsistency in size and alignment. Also, visual inspection should be carried out to ensure no physical defect in finishes.
<p>2. Wrapping</p>	<ul style="list-style-type: none"> • Hot press machine should be used to laminate veneer on flat panel surfaces. Edge banding machines should be used to ensure short edges is banded to match the curve. 

Fabrication process	Good practices
3. Cutting for installation of ironmongery	<ul style="list-style-type: none">• Materials are then cut to provide for the installation of ironmongeries, such as hinges and handles. Wherever possible, openings for ironmongeries, such as hinges and locksets, should be pre-cut in factory to minimize site cutting. 
4. Surface preparation & finishing	<ul style="list-style-type: none">• Door components are smoothed via the sanding process. To achieve better quality, the use of sensor sanding machine is recommended.• For better finishes, Ultraviolet (UV) light machine can be used for the application of door panel from the base coat to finishing coat in a single cycle. 

Fabrication process	Good practices
<p>5. Quality control</p>	<ul style="list-style-type: none"> • Carry out visual inspection for proper finishes and colour tonality. • Measurement should be taken to ensure the door is fabricated in accordance with the specified dimensions and design. • For door panels (<i>source SS347:1990</i>), the following tolerances should be achieved during fabrication: <ul style="list-style-type: none"> ◦ Height : $\pm 2\text{mm}$ ◦ Width : $+2\text{mm}$ and -0mm ◦ Thickness : <ul style="list-style-type: none"> • for joinery doors <ul style="list-style-type: none"> ◆ ledged & braced $+1\text{mm}$ and -2mm ◆ interior & exterior $\pm 1\text{mm}$ • for other doors <ul style="list-style-type: none"> ◆ interior & exterior $+1\text{mm}$ and -2mm ◦ Squareness : The difference between the lengths of the diagonals of a door panel should not exceed 3mm. ◦ Flatness : When a door is measured in accordance with Appendix A of SS 347, twist should not exceed 5mm and bending should not exceed the following : <ul style="list-style-type: none"> • Door height $\leq 2150\text{mm}$: 4mm • Door height $> 2150\text{mm}$ and $\leq 2400\text{mm}$: 6mm • Door width $\leq 1020\text{mm}$: 2mm
<p>6. Assembly of finishing parts</p>	<ul style="list-style-type: none"> • Power & holdfast straps should be used to assemble and secure the sub-frame. After checking the squareness of sub-frame, length of batten should be fit across the angle of the head to maintain the squareness of the frame during delivery, storage and installation. <div data-bbox="774 1373 1276 1666" data-label="Image"> </div> <ul style="list-style-type: none"> • Wherever possible, mainframe, architrave and door panel should be assembled in the factory for better quality control. <div data-bbox="660 1785 997 2087" data-label="Image"> </div> <div data-bbox="1015 1785 1396 2087" data-label="Image"> </div>

Fabrication process	Good practices
7. Packing	<ul style="list-style-type: none">• Check the finished products to ensure the door components are in accordance with the project specifications.• Pack the product using “shrink-wrapping” or “strap wrapping” method. Corrugated cardboard may be used to give additional protection to the door panels.  <ul style="list-style-type: none">• All fabricated sub-frame, mainframe, architrave and door panel should be organised in batches and properly labelled for ease of identification. 