SEMPAT306

Producing components using woodworking hand tools

Overview

This standard identifies the competencies you need to produce wood and composite components for engineering woodworking activities, using hand tools, in accordance with approved procedures. You will be required to select the appropriate tools to use, based on the type of operations to be performed, the size of the components, and the materials used. The size and complexity of the components produced will vary, but will involve finishing them using hand tools only. The components produced will be used to produce items such as frames, cases, storage units, jigs and fixtures, formers, transportation units, furniture and structures.

Your responsibilities will require you to comply with organisational policy and procedures for the activities undertaken, and to report any problems with the activities, materials or equipment used that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work with minimum supervision, taking personal responsibility for your own actions and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will provide a good understanding of your work, and will provide an informed approach to applying hand-finishing procedures to woodworking. You will understand the equipment being used, and its application, and will know about the cutting tools, their function and maintenance requirements, in adequate depth to provide a sound basis for carrying out the activities, correcting faults and ensuring the work output is to the required specification. You will be able to identify blunt and damaged cutting tools, and will know how to sharpen and adjust them in use, in order for them to work efficiently.

You will understand the safety precautions required when carrying out the hand-shaping activities. You will be required to demonstrate safe working practices throughout, and will understand the responsibility you owe to yourself and others in the workplace.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. follow relevant specifications for the component to be produced
3. obtain the appropriate tools and equipment for the shaping operations and check they are in a safe and usable condition
4. cut and shape the component materials using appropriate methods and techniques
5. produce components to the required specification
6. check that all the required shaping operations have been completed to the required specification
7. complete relevant data and documentation
8. deal promptly and effectively with problems within your control and report those that cannot be solved

Knowledge and understanding

You need to know and understand:

1. the specific safety precautions to be taken whilst carrying out the wood-shaping activities (such as any specific legislation, regulations or codes of practice relating to the activities, equipment or materials)
2. the health and safety requirements of the work area in which you are carrying out the woodworking activities, and the responsibility they place on you
3. the personal protective equipment and clothing (PPE) to be worn during the woodworking activities
4. the hazards associated with cutting and shaping wood and composite materials, and with the tools and equipment that is used, and how they can be minimised
5. how to obtain the necessary job instructions, drawings and specifications for the woodworking activities, and how to interpret the information
6. the various hand tools that are used to cut and shape the materials, and the range of operations they are capable of performing (such as rip saws, tenon saws, fret/bow saws; smoothing planes, jack planes, rebating planes; chisels and gouges; files and rasps; spokeshaves)
7. how to check the cutting tools are in a usable and safe condition, and the procedure for sharpening and adjusting these when required
8. the various methods used to hold the components that are being shaped, formed or dressed by hand
9. why you need to consider grain direction and construction when cutting and shaping wood and composites
10. how to conduct any necessary checks to ensure the accuracy and quality of the components produced, and the type of equipment that is used
11. recognising defects in the components (such as material defects, those produced through the cutting and shaping activities)
12. why it is important to keep the tools and equipment clean and free from damage, to practice good housekeeping of tools and equipment, and to maintain a clean and unobstructed working area
13. the extent of your own responsibility and whom you should report to if you have problems that you cannot resolve

Scope/range related to performance criteria

1. Carry out all of the following during the hand shaping activities:
1.1 obtain all the necessary information to carry out the hand shaping activities (such as drawings, specifications)
1.2 check that the hand tools are fit for purpose and in a safe and usable condition
1.3 ensure the work area is free from hazards
1.4 use safe and approved hand-shaping techniques at all times
1.5 maintain the cutting tools in a serviceable condition

2 Use hand tools to cut and shape materials, to include six of the following:
2.1 rip saws
2.2 spokeshaves
2.3 tenon saws
2.4 chisels/gouges
2.5 fret/bow saws
2.6 drills/braces
2.7 jack or smoothing planes
2.8 files/rasps
2.9 rebating planes
2.10 sanding blocks/paper
2.11 other specific hand tools

3. Produce components which combine different features and cover eight of the following profiles:
3.1 flat faces
3.2 concave profiles
3.3 parallel faces
3.4 convex profiles
3.5 square faces
3.6 circular/round profiles
3.7 angular/tapered faces
3.8 chamfers and radii
3.9 stepped features
3.10 drilled holes
3.11 curved profiles
3.12 simple joints
3.13 other specific profiles

4. Produce components made from four of the following materials:
4.1 soft woods
4.2 blockboard
4.3 fibreboard (MDF)
4.4 hard woods
4.5 hardboard
4.6 plastic materials
4.7 plywood

4.8 other specific material

5. Use appropriate measuring equipment and tools to check five of the following:
5.1 dimensions
5.2 alignment
5.3 profile
5.4 flatness
5.5 position
5.6 distortion/straightness
5.7 squareness

6. Produce components which meet all of the following quality and accuracy standards:
6.1 dimensionally accurate within specification tolerances
6.2 free from false tool cuts and material defects
6.3 interlocking components (joints) are secure
6.4 appropriate surface texture
6.5 meet the drawing requirements
6.6 meet company and customer requirements

7. Complete the relevant data/documentation from one of the following, and pass it to the appropriate person:
7.1 job cards
7.2 production records
7.3 company specific documentation/computerised system

Behaviours

You will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as:

- strong work ethic
- positive attitude
- team player
- dependability
- responsibility
- honesty
- integrity
- motivation
- commitment

SEMPAT306

Producing components using woodworking hand tools

Developed by	Enginuity
Version Number	2
Date Approved	28 Feb 2018
Indicative Review Date	29 Apr 2021
Validity	Current
Status	Original
Originating Organisation	Semta
Original URN	SEMPAT06
Relevant Occupations	Engineering, Engineering and Manufacturing Technologies, Functional Managers, Managers and Senior Officials
Suite	Engineering Woodworking, Pattern and Model Making Suite 3
Keywords	engineering, woodworking, pattern making, model making, producing, finishing, components, hand tools, saw, planes, spokeshaves, chisels, files, rasps