



ASSEMBLER

National Occupational Standard

Canada 

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WMC CFB

Wood Manufacturing Council
Conseil des fabricants de bois

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National Occupational Standards

This National Occupational Standard (NOS) was developed by the Wood Manufacturing Council (WMC) and industry professionals.

National Occupational Standards (NOS) describe the skills, knowledge and abilities required to perform the duties of an occupation. The *National Occupational Standard for an Assembler* describes what a person who assembles various components used in the wood manufacturing industry needs to know and be able to do to be considered capable of doing his or her job effectively and successfully. Occupational standards can be used for a variety of purposes, including:

- Developing job descriptions
- Conducting performance appraisals
- Informing and assessing training curricula
- Assisting with professional certification
- Identifying ongoing professional development needs
- Managing succession plans

A National Occupational Standard is an extremely valuable resource tool that can be used by a variety of stakeholders, including:

- Owners and employers in the wood manufacturing industry
- Current and future employees
- Human resources personnel
- Managers in the wood manufacturing industry
- Educators and training providers
- Members of the public
- Partner organizations
- Volunteers

About the Wood Manufacturing Council

The Wood Manufacturing Council is a National Sector Council dedicated to addressing the human resource needs of firms involved in the advanced manufacturing of wood products. The mandate of the WMC is to plan, develop and implement human resources strategies that support the long-term growth and competitiveness of Canada's advanced wood products manufacturing industry and meet the developmental needs of its workforce. The Council works to identify and examine the necessary skills and knowledge required to respond to the changing needs of the industry as well as developing an overall strategic plan to address key issues such as the shortage of skilled workers and the need for national standards for worker competencies.

More information on the Council can be obtained online at www.wmc-cfb.ca.

To order additional copies of this standard or to find out about the range of resources the council has available, contact:

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Acknowledgement of Industry Contributors

The Wood Manufacturing Council also wishes to express its sincere appreciation to the many wood manufacturing professionals and other interested parties who contributed directly or indirectly to the publication of this standard. The participation of the woodworking community in focus groups, surveys and interviews was extensive. We appreciate the significant sharing of information, experiences and perspectives that contributed to and resulted in the completion of this work.

The participating volunteers and contributors to this effort are many, and too numerous to name individually. We sincerely appreciate the interest and expertise that the woodworking community provided on this project. The input from the industry, including the significant number of contributors to the original standards that were updated in this project, is substantial and of importance to the efforts to obtain a common understanding of the skills and competencies needed for a worker to perform competently in the workplace.



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The opinions and interpretations in this publication are those of the author and do not necessarily reflect those of the Government of Canada.

Introduction to National Occupational Standards

National Occupational Standards (NOS) describe the skills and knowledge needed to perform competently in the workplace. The NOS is further supported by Essential Skills, which serve as the foundation of what a worker needs to know to be able to do his/her job. Essential Skills are not technical skills but the core skills people need to acquire knowledge and complete workplace tasks and daily activities. A complete Essential Skills Profile for Assembler is included in Appendix A.

This NOS document is the product of multiple interviews and workshops conducted with industry experts across Canada. The standard was originally developed through a series of industry expert consultations in 2007/8 and has been updated through further consultations in 2015/16 in order to reflect the changes in the industry and occupation over the past eight years. For a description of the development process and stakeholder involvement, see Appendix B.

Organization of the National Occupational Standard

The standard is organized into three main sections: Occupational Background, Occupational Health and Safety and Occupational Analysis.

The **Occupational Background** section provides contextual information about the occupation, such as working environment, personal attributes and tools and equipment required to successfully perform the work required.

Occupational Health and Safety (OH&S) is a foundation of any job. The OH&S section details the knowledge, skills and abilities required to handle hazards in the workplace. The section is organized under five areas of responsibility: people, equipment, environment, materials and process.

The **Occupational Analysis** section provides a detailed breakdown of the tasks that an Assembler needs to be able to do in order to perform his/her job effectively. These tasks are grouped in meaningful sections consisting of tasks and sub-tasks that need to be performed. The tasks and sub-tasks are supported by underlying knowledge, abilities and skills required to perform the tasks.

Contextual Information provides additional information on the *frequency, importance* and *difficulty* of the skills required to perform competently in the occupation. This is useful for educators in identifying where focus should be placed in curriculum design, as well as employers seeking to highlight tasks that are particularly important.

Occupational Background

- Working Environment
- Personal Attributes
- Overall Knowledge & Abilities

Occupational Health & Safety

- People
- Equipment
- Environment
- Materials
- Processes

Occupational Analysis

- Sections
- Tasks
- Sub-Tasks
- Contextual Information
- Knowledge & Abilities
- Essential Skills

How to use the National Occupational Standard - Example

Develop a Job Posting

You need to develop a job posting to hire an Assembler. There is a car manufacturing plant close by that employs assemblers. You know that these assemblers have many transferable skills. You are confident that if you can just get the person with the right attitude and essential skills, you can teach them the rest. You decide to focus on Personal Attributes, Physical Requirements and Essential Skills in your job posting.

Develop on-the-job training

You need to hire a new Assembler. You have a good Assembler on staff who can train the new person, but you want to make sure that she follows all the proper assembly and health and safety processes. You use the tasks and sub-tasks as a checklist to make sure that she delivers the training properly and does not miss any steps.

Identify issues with the assembly process

You notice that there has been an increase in defects on the assembly line lately, but you are not quite sure where the problem is. You talk to your assemblers using the tasks and sub-tasks as a checklist to help you pinpoint the issue.

Succeed in a job search

You are a job-seeker searching for new employment as a Assembler. The National Occupational Standard for the Assembler includes information about the knowledge and abilities required for this position. You use this information to develop a résumé that will stand out to employers by highlighting how your skills address all the job requirements.

For more information about using the standard, see the “Wood Manufacturing Council Employer’s Guide to using National Occupational Standards”.

Occupational Background

The purpose of this analysis is to establish a general profile for the occupation and provide contextual information for the National Occupational Standards. Managers, job incumbents and human resource personnel, from various wood manufacturing areas, were interviewed for the purpose of gaining an overall understanding of the profile of the typical Assembler. For an in-depth analysis of the wood manufacturing industry as a whole, consult the Labour Market Information (LMI) study (2016) available from the Council.

Assemblers assemble parts to form subassemblies or complete articles of furniture and fixtures. They are employed in a variety of wood manufacturing companies.¹

Occupational Background

- Working Environment
- Personal Attributes
- Overall Knowledge & Abilities

Example Titles

- Chair Assembler
- Desk Assembler
- Fixture Assembler
- Furniture Assembler
- Metal Furniture Assembler
- Table Assembler
- Wood Furniture Assembler

Main Duties

Assemblers perform some or all of the following duties:

- Prepare, sand and trim wooden furniture and fixture parts using hand, power tools and stationary machines
- Assemble wooden or metal furniture and fixture parts to form sub-assemblies and complete articles using hand and power tools
- Install hardware such as hinges, drawer runners and handles on furniture and fixtures
- Assemble a combination of parts made of wood, metal, plastic, or other materials to form sub-assemblies or complete furniture articles
- Reinforce assembled furniture and fixtures with dowels or other supports
- Perform quality checks on materials before and after final assembly
- Repair minor defects

¹ National Occupational Classification: 9532 Furniture and fixture assemblers and inspectors

Working Environment

Assemblers work in a wide range of types of organizations, ranging from very small locations to large scale production plants. Assemblers working in small organizations (2 to 50 employees) have broad responsibilities while those working in large organizations have very focused assembly tasks. For instance, an assembler working in a small organization may perform finishing, cutting and sanding operations, while assemblers working in large organizations will be tasked solely with assembly operations. Assemblers also work on a large variety of wood manufactured products from windows and doors, cabinets, to store fixtures, etc. Differences in assembly methodologies and techniques exist. Several organizations have reported using quality control principles and efficiency standards from various manufacturing systems (e.g. Lean Enterprise, Kaizen) to maximize space and ensure the efficient mobility of components during the assembly process. The work spaces are usually well lit.

Although the types of products assembled vary greatly, the working environments are similar in terms of the type of machinery used. The working environment may be dusty ² and organizations report putting great emphasis on workplace cleanliness for the health and safety of their employees. Assemblers involved in finishing operations are also exposed to chemical products used in the finishing process. Those not working on finishing activities are only exposed to mild cleaning products or gluing compounds.

Manufacturing facilities are not usually air conditioned, in order to avoid deterioration of raw products, so assemblers may find working conditions to be challenging in hot summer months. For health and safety reasons, workers are often accommodated with increased breaks over the course of their shift or plant closures during periods of extreme high temperatures.

Personal Attributes

Assemblers need to have the following personal attributes in order to be able to do their job and work with others effectively.

Working with Others

Most of the interactions occur with Supervisors/Lead hands and colleagues. Depending on the facility, some assemblers may interact with the design department, shipping department and inventory clerks. External interaction with customers is rare. Assemblers need to:

- Demonstrate mature, respectful, fair and equitable behaviours in all interactions and situations
- Communicate in an honest, respectful and sensitive manner
- Present information/instructions clearly and effectively
- Bring issues to the attention of appropriate personnel, as needed
- Offer ideas or suggest modified approaches to address current situations or issues

² It is important to ensure that workplaces have safety measures in place to control for and reduce the amount of wood dust in the air that meets Occupational Exposure Limits (OEL) across Canadian jurisdictions. See Carex Canada for dust exposure regulations and guidelines, http://www.carexcanada.ca/en/wood_dust/#regulations_and_guidelines

- Communicate technical information clearly and concisely
- Provide and receive feedback from others
- Work effectively as a member of a team
- Be willing to assist others, as required
- Behave professionally by being punctual, understanding personal responsibility, contribution and role
- Handle pressure/stress in getting jobs completed according to a specific time schedule

Personal Qualities

- Stay positive when things change
- Adapt to changes in tasks, assignments and changing production priorities
- Learn and apply new knowledge
- Continuously look for ways to improve efficiencies
- Perform work duties in a conscientious, consistent and thorough manner
- Have a high attention to detail
- Ability to identify problems, know how to resolve them and when to escalate to the appropriate person

Physical Requirements

- Visual spatial intelligence (ability to visualize rotation of shapes in space)
- Hand-eye coordination
- Physical strength to lift raw material or products during the assembly process
- Manipulate tools of varied weight and size
- Stand, bend over and occasionally work in awkward positions to assemble a product

Overall Knowledge & Abilities

Assemblers need to have an in-depth knowledge of woodworking materials and tools, techniques and safety precautions.

Inventory and Manufacturing Processes

- Knowledge of inventory control processes
- Knowledge of assembly processes
- Knowledge and use of bar codes
- Knowledge of lean inventory concepts and practices

Woodworking Material

- Knowledge of raw materials (solid wood and panel products)
- Knowledge of various types of wood products (e.g. laminate)
- Knowledge of various types of hardware
- Ability to identify common wood species, use and properties
- Ability to differentiate between softwood and hardwood

Woodworking Techniques

- Knowledge of and ability to use various woodworking tools, equipment and machinery
- Knowledge of and ability to use computerized machinery to perform the required operations
- Ability to use a wide range of measuring tools, gluing and repairing compounds and joining hardware and tools
- Ability to use work methods that avoid waste, considering time and effort, materials, space and motion/transportation

Quality

- Knowledge of quality standards and procedures
- Ability to use work methods and techniques that ensure the product meets quality standards

Environmental Sustainability

- Ability to identify ways to reduce, reuse and recycle work materials
- Ability to dispose of waste according to green practices

Occupational Health and Safety

The health and safety section details the knowledge and abilities required by every employee to maintain a safe and healthy workplace. There are five main health and safety areas that need to be considered when identifying the knowledge and abilities required to maintain a safe and healthy workplace: people, equipment, environment, materials and processes.

Occupational Health & Safety

- People
- Equipment
- Environment
- Materials
- Processes

People

People can create hazards in the workplace by their actions or inactions. As such, proper training, administration, leadership and supervision are required to ensure that employees engage in the appropriate workplace behaviours.

Each employee is required to know:	Each employee is required to:
<ul style="list-style-type: none">• Occupational Health and Safety legislation relevant to the workplace• Occupational Health and Safety procedures for controlling hazards/risks in the workplace• Accident and emergency procedures as per company policy• Company's safety training requirements• Safe bending, carrying and lifting procedures• Worker safety legislation and procedures• Legislation on violence and harassment in the workplace	<ul style="list-style-type: none">• Use personal protective equipment (e.g. face masks, gloves, safety glasses, steel-toed boots, hearing protection)• Use personal safety measures when performing work (e.g. no loose clothing, no shoelaces untied)• Request assistance to move heavy loads• Use dollies, lifts or carts when possible• Report safety-related situations or incidents• Report incidents of violence and harassment in the workplace

Equipment

When considering tools, machines and equipment in the workplace that can be hazardous, it is important to identify proper use, maintenance and storage requirements.

Each employee is required to know:	Each employee is required to:
<ul style="list-style-type: none">• Safe use, storage, handling of tools, machines and equipment• Grounding procedures	<ul style="list-style-type: none">• Operate tools and machinery as per manufacturer's recommendations and established company policies• Maintain machines and tools in proper operating condition• Inspect tools and equipment to ensure they meet safety requirements• Use lock out/tag out procedures when repairing/servicing tools and equipment• Ground all equipment before use (e.g., ensure ground straps are in place)

Environment

Some hazards can be created by the work environment and can be either naturally occurring (e.g. weather conditions) or the result of an unsafe condition caused by poorly maintained equipment, tools or facilities.

Each employee is required to know:	Each employee is required to:
<ul style="list-style-type: none">• Hazards and unsafe work conditions• Safety requirements related to ventilation and working in an enclosed space	<ul style="list-style-type: none">• Keep work area clean and free of clutter• Use proper cleaning materials• Return and store materials in their designated area• Label products according to WHMIS standards• Report identified safety hazards to designated personnel in accordance with workplace requirements and relevant workplace Occupational Health and Safety legislation• Identify risks to health and safety in the work area (e.g. torn or frayed cords, dirty clothes, debris on floor, broken equipment or tools, spills, exhaust fumes)

Materials

Materials are any workplace substance, matter or provisions used for production that have the potential to cause harm or loss especially if handled improperly, such as paints, stains or glues.

Each employee is required to know:	Each employee is required to:
<ul style="list-style-type: none">• Environmental effects of chemicals• Cleaning materials to use (e.g. mops, sponges, cloths, cleaning agents)• Proper disposal procedures• Proper storage procedures	<ul style="list-style-type: none">• Use dust collecting equipment• Use cleaning materials properly• Return and store materials in their designated area• Remove unpermitted materials from work area (e.g. fuel, paint)• Control the volume of hazardous materials in work area

Processes

Processes involve the flow of work and include factors such as design, pace and organization of the various types of work via policies, procedures and work processes. For example, a poorly designed work process or an increase in production, without considering the effect it can have on people, objects or equipment, can increase the likelihood of an incident.

Each employee is required to know:	Each employee is required to:
<ul style="list-style-type: none">• Safe work procedures• Workplace Hazardous Materials Information Systems (WHMIS)• Hazardous material (HAZMAT) procedures	<ul style="list-style-type: none">• Use Occupational Health and Safety procedures for controlling hazards/risks in workplace• Identify steps and procedures to reduce risk• Follow accident/incident reporting procedures as per company policy



Occupational Analysis

The Occupational Analysis section consists of: Sections, Tasks, Sub-Tasks, Contextual Information, Knowledge & Abilities and Essential Skills related to each task.

Sections

Sections are the largest divisions or groupings of tasks that reflect distinct operations within the occupation.

Tasks

Tasks are distinct activities that, combined with others, make up the logical and necessary steps the worker is required to perform in order to complete a specific assignment within a Section. There is one Section for Assembler: Product Assembly. Within that Section are the following tasks.

Section A: Product Assembly

Task A1: Plan Assembly	Task A2: Perform Pre-assembly Quality Check on Materials	Task A3: Prepare Tools and Equipment	Task A4: Assemble Product	Task A5: Perform Post-assembly Quality Check on Materials
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Sub-Tasks

The smallest division into which it is practical to subdivide any work activity, and, combined with others, fully describe all steps within a Task.

Occupational Analysis

- Sections
- Tasks
- Sub-Tasks
- Contextual Information
- Knowledge & Abilities
- Essential Skills

Contextual Information

Contextual information provides additional information about a skill or task. It is useful in the development of training materials or in identifying appropriate training tools or methods. It can be used for on-the-job training or as part of a formal educational program.

Contextual information is provided under three headings: Frequency, Importance and Difficulty. A brief description of each of these is provided below.

Frequency: defines how often the task is performed. The question asked is: How often do you do this?

Importance: a rating that indicates the importance of the task to competent performance. The question asked is: How important is it that you know how to do this?

Difficulty: defines the levels of effort, challenge, and complication associated with the performance of the task. The question asked is: How difficult is this to learn?

0. I don't do this (Never)

1. Not very often

2. Sometimes

3. All the time

0. Not important to my job (Not Important)

1. Somewhat important to my job (Somewhat Important)

2. Important to my job (Important)

3. Very important to my job (Very Important)

0. Needs no training or practice (None)

1. Needs minimal training or practice (Low)

2. Needs some training or practice (Moderate)

3. Needs significant training or practice (High)

Knowledge & Abilities

The elements of skill and knowledge an individual must acquire to adequately perform the Sub-Task.

Essential Skills

Essential Skills are foundation skills required for all types of work. They are not technical skills but the core skills people need to acquire knowledge and complete workplace tasks and daily activities. Essential Skills are defined as:

- Reading Text
- Document Use
- Writing
- Numeracy
- Oral Communication
- Thinking Skills (includes: Problem Solving, Decision Making, Critical Thinking, Job Task Planning and Organizing, Finding Information and Significant Use of Memory)
- Digital Technology
- Working with Others
- Continuous Learning

They are included in the Occupational Analysis as guidance for training. They are useful for identifying upgrading needs and to see opportunities where they can be reviewed and learned during orientation, training and on the job.

All these elements build on each other to define the knowledge, skills and abilities required to perform as an Assembler. The following section is a detailed breakdown of the Sections, Tasks, Sub-Tasks, Knowledge and Abilities and Essential Skills for Assemblers.

Section A: Product Assembly

Task A1: Plan Assembly	Task A2: Perform Pre-assembly Quality Check on Materials	Task A3: Prepare Tools and Equipment	Task A4: Assemble Product	Task A5: Perform Post-assembly Quality Check on Materials
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Task A1: Plan Assembly

Sub-Tasks		
A1.1	Review information on work order and/or specifications (e.g. bill of material) <ul style="list-style-type: none"> • Check that provided material and hardware matches work order specifications (e.g. size, color, hardware) • Review assembly drawings, pictures and/or samples • Check that the assembly requirements correspond to technical drawing and specifications 	Frequency: All the time Importance: Very important Difficulty: Moderate
A1.2	Identify the parts required <ul style="list-style-type: none"> • Material to be used • Assembly hardware/fasteners 	Frequency: All the time Importance: Very important Difficulty: Moderate
A1.3	Count material and hardware to ensure that all required materials and hardware are accounted for	Frequency: All the time Importance: Important Difficulty: Moderate
A1.4	Stack material in a safe manner in preparation for assembly	Frequency: Sometimes Importance: Not very often Difficulty: Low
A1.5	Complete required documentation	Frequency: Sometimes Importance: Somewhat Important Difficulty: Moderate

Knowledge/Abilities

Knowledge of:

- The assembly process/product line
- Products and materials (e.g. wood species, solid wood, panel products, overlays, hardware)
- Adhesives
- Terminology (e.g. dovetail, mortis and tenon)
- Abbreviations (e.g. Medium Density Fiberboard (MDF), Particle Board (PB), Grille Between Glass (GBG))
- Symbols (e.g. elevation, section, sheet reference, particle board, glass)
- Dimensions metric (e.g. centimeters, millimeters) and imperial (e.g. feet, inches)

Ability to:

- Count material
- Match count to bill of material
- Interpret assembly drawings, including pictorial drawings and technical drawings
- Understand drawing scale
- Identify problems with assembly drawing such as print quality, missing data and unclear information
- Identify and communicate potential delays caused by, for example:
 - Incomplete documentation
 - Conflicting work orders
 - Material availability
 - Tool and equipment maintenance
 - Incomplete hardware

Essential Skills

Reading

- Read instructions such as those for assembling and for the safe use of machine and hand tools
- Read standard operating procedures such as those for assembly

Document use

- Scan work orders and bills of material to verify they have the correct materials and hardware on hand
- Refer to specifications sheets for various wood products to verify material matches specifications
- Complete forms, such as bill of material, order forms and deficiency reports
- Locate assembly procedure on assembly diagrams to assemble wood products

Writing

- Write brief notes in deficiency report to note such things as missing hardware and damaged materials

Numeracy

- Count materials and hardware to verify what was delivered matches work order or bill of material

Oral communication

- Discuss deficient materials and missing hardware with supervisors

Task A1: Plan Assembly

**Task A2:
Perform Pre-assembly
Quality Check
on Materials**

Task A3:
Prepare Tools
and Equipment

Task A4:
Assemble
Product

Task A5:
Perform Post-assembly
Quality Check
on Materials

Task A2: Perform Pre-assembly Quality Check on Materials

Sub-Tasks

A2.1	Ensure that material meets quality standards <ul style="list-style-type: none">Inspect product for imperfectionsEnsure wood grain orientation is consistent across components of productReject materials and sub-assemblies that do not meet quality standards	Frequency: All the time Importance: Important Difficulty: Moderate
A2.2	Check that hardware meets quality, size and standard	Frequency: All the time Importance: Important Difficulty: Moderate
A2.3	Report material or hardware quality issues to Supervisor/Lead hand <ul style="list-style-type: none">Identify issues that could delay an assembly process	Frequency: All the time Importance: Important Difficulty: Low
A2.4	Repair small imperfections and/or defects	Frequency: Sometimes Importance: Important Difficulty: Moderate

Knowledge/Abilities

Knowledge of:

- The assembly process
- The product line

Ability to:

- Verify dimensions, drill hole location, assembly joint location, assembly markings, squareness
- Identify quality issues (e.g. scratches, chips, handling marks, incorrect hardware)
- Repair small imperfections and/or defects
- Identify potential manufacturing delays (e.g. incomplete documentation, material availability, maintenance issues)

Essential Skills

Document use

- Complete forms such as deficiency reports and quality checklists
- Scan work orders and specifications sheets to verify materials meet requirements

Numeracy

- Measure wood products and hardware to verify they match hardware specifications
- Take measurements from assembly and scale drawings to verify materials and hardware match specifications

Oral communication

- Speak with their supervisor to inform them of product shortages and deficiencies

Thinking skills

- Find damaged and/or defective products and hardware
- Perform minor repairs or reject them
- Decide whether to accept damaged products, considering the extent of damage and ability to fix it
- Decide what minor imperfections can be left on a wood product, considering product specifications and company standards

Task A1: Plan Assembly	Task A2: Perform Pre-assembly Quality Check on Materials	Task A3: Prepare Tools and Equipment	Task A4: Assemble Product	Task A5: Perform Post-assembly Quality Check on Materials
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Task A3: Prepare Tools and Equipment

Sub-Tasks

A3.1	Select required tools (e.g. nail gun, drill, glue bottle, scraper, mallet, table saw, tape measure, pencil)	Frequency: All the time Importance: Important Difficulty: Moderate
A3.2	Check tools/equipment for proper functioning	Frequency: All the time Importance: Important Difficulty: Moderate
A3.3	Maintain tools & equipment (e.g. oiling, changing belts)	Frequency: Sometimes Importance: Important Difficulty: Moderate
A3.4	Set-up fixtures (e.g. jigs) and templates	Frequency: Sometimes Importance: Important Difficulty: Moderate
A3.5	Report to Supervisor/Lead hand problems with work area, tools, equipment and fixtures	Frequency: Sometimes Importance: Important Difficulty: Low

Knowledge/Abilities

Knowledge of:

- Tools and equipment

Ability to:

- Identify faulty and unsafe equipment
- Distinguish between safe and faulty or unsafe equipment
- Keep others informed of problems with work area, tools, equipment and fixtures

Essential Skills

Reading

- Read maintenance and operating instructions for assembly tools and equipment
- Read set-up procedures for jigs and other assembly fixtures

Document use

- Complete inspection checklists to verify tools and equipment are safe to operate

Oral communication

- Inform lead hand/supervisor about broken equipment and tools

Task A1: Plan Assembly

Task A2: Perform Pre-assembly Quality Check on Materials

Task A3: Prepare Tools and Equipment

Task A4: Assemble Product

Task A5: Perform Post-assembly Quality Check on Materials

Task A4: Assemble Product

Sub-Tasks

A4.1	Dry-fit a combination of parts prior to assembling (parts made of wood, metal, MDF, plywood, plastic, or other materials to form sub-assemblies or complete work pieces)	Frequency: All the time Importance: Important Difficulty: Low
A4.2	Create markings to assist with assembly process	Frequency: Sometimes Importance: Important Difficulty: Moderate
A4.3	Select adhesive following manufacturer's instructions	Frequency: Sometimes Importance: Important Difficulty: Moderate
A4.4	Apply adhesive (allowing for appropriate length of time for glue to dry)	Frequency: Sometimes Importance: Important Difficulty: Moderate
A4.5	Apply trim	Frequency: Sometimes Importance: Important Difficulty: Moderate
A4.6	Join sub-assemblies using specified joinery techniques	Frequency: All the time Importance: Important Difficulty: Moderate
A4.7	Install hardware according to assembly drawing, assembly instructions, bill of material, or specifications, as required <ul style="list-style-type: none">Adjust hardware for smooth operation and alignment	Frequency: All the time Importance: Important Difficulty: High

A4.8	Remove excess glue (wipe with cloth or a scraper, or a sanding section)	Frequency: Sometimes Importance: Important Difficulty: Moderate
A4.9	Sand assembled product to smooth surface edge	Frequency: Sometimes Importance: Important Difficulty: Moderate
A4.10	Clean product to remove any dust/debris	Frequency: Sometimes Importance: Important Difficulty: Low

Knowledge/Abilities

Knowledge of:

- Proper handling techniques to avoid damaging the product
- Knowledge of adhesives and their applications
- Assembly process
- Various joinery methods

Ability to:

- Interpret assembly drawings, including pictorial drawings and technical drawings
- Locate assembly process from drawing
- Apply adhesives
- Use tools (e.g. drill, hammer, clamps)
- Use joinery materials (e.g. dowels, screws, joints)
- Use appropriate assembly material and tools
- Use joinery methods to achieve proper fit (e.g. clamping, glue and hitting with mallet)

Reading

- Read instructions for the safe use of glues, adhesives, equipment and hand tools
- Read instructions such as assembly instructions for wood products and packaging instructions for hardware and finished products

Document use

- Read signs, such as safety signs and labels on boxes, which indicate the contents
- Read labels on glues and adhesives for application instructions
- Read lists, such as assembly schedules
- Read installation instructions for hardware
- Locate the order of assembly for wood products on assembly drawings
- Read specifications sheets for various wood products, adhesives and joinery to verify products meet specifications
- Locate data about glues and adhesives in material safety data sheets (MSDS)

Task A1: Plan Assembly	Task A2: Perform Pre-assembly Quality Check on Materials	Task A3: Prepare Tools and Equipment	Task A4: Assemble Product	Task A5: Perform Post-assembly Quality Check on Materials
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Task A5: Perform Post-assembly Quality Check on Materials

Sub-Tasks		
A5.1	Ensure that assembled product meets quality standards <ul style="list-style-type: none"> Inspect product for imperfections Repair small imperfections Ensure wood grain orientation is consistent across components of product 	Frequency: All the time Importance: Very important Difficulty: Moderate
A5.2	Check that hardware meets quality, size and standard	Frequency: Sometimes Importance: Important Difficulty: Moderate
A5.3	Report material or hardware quality issues to Supervisor/Lead hand <ul style="list-style-type: none"> Identify issues that could delay an assembly process 	Frequency: All the time Importance: Important Difficulty: Moderate
A5.4	Reject materials and sub-assemblies that do not meet quality standard	Frequency: Sometimes Importance: Important Difficulty: Moderate
A5.5	Do a complete quality inspection	Frequency: Sometimes Importance: Important Difficulty: Moderate

Knowledge/Abilities

Knowledge of:

- The assembly process
- The product line

Ability to:

- Identify quality issues (e.g. scratches, chips, handling marks, incorrect hardware)
- Repair small imperfections and/or defects

Essential Skills

Document use

- Complete forms such as deficiency reports and quality checklists

Numeracy

- Measure wood products and hardware to verify they match hardware specifications (Measurement and Calculation Math)
- Take measurements from assembly and scale drawings to verify materials and hardware match specifications

Oral communication

- Speak with supervisors to inform them of product shortages and deficiencies

Thinking skills

- Find products and hardware that have defects such as scratches, dents or misaligned drawers, performing minor repairs or rejecting them
- Decide whether to accept damaged products, considering the extent of damage and ability to fix it
- Decide what minor imperfections can be left on a wood product, considering product specifications and company standards

Essential Skills Profile – Assemblers: Wood Product Manufacturing

Essential Skills Background

Essential Skills are foundation skills required for all types of work. They are not technical skills but the core skills people need to acquire knowledge and complete workplace tasks and daily activities. These skills are considered essential for learning and completing workplace tasks. Therefore, the term “Essential Skills” has been adopted.

Understanding what Essential Skills are required for different occupations and training programs:

- Allows individuals to compare their skills to those required
- Assists training bodies in developing appropriate academic upgrading materials and programs. Training can be either stand-alone or embedded in other training to ensure individuals have the foundation skills necessary to be successful in training and as supervisors.

Employment and Social Development Canada (ESDC) have defined nine (9) Essential Skills. They are:

Reading	Thinking skills:
Document use	• problem solving
Numeracy	• decision making
Writing	• critical thinking
Oral communication	• job task planning and organizing
Digital technology	• finding information
Working with others	• significant use of memory
Continuous learning	

Definition of an "Example":

Example tasks are tasks generally performed by **most Assemblers**. Each Essential Skill area includes a list of Examples to illustrate the use of that skill. While the Examples are not a comprehensive listing of the duties performed in that occupational group, they do provide a picture of the nature and range of tasks performed.

The qualifier – "may":

Some Examples use the qualifier "may". This indicates that the task may not relate to all Assemblers or relate to only certain job functions.

Definition of Complexity Levels:

The Essential Skills complexity levels are a tool used to rate the difficulty of a particular task. It is not the Essential Skill itself or the learner that is rated, but the increasing demands that a required task makes upon the person to complete it.

With some exceptions, the Essential Skills are divided into five levels of complexity (1 being least complex and 5 being most complex). For example, level 1 indicates tasks requiring minimal literacy skills and level 5 indicates tasks requiring significantly more time and prior knowledge to interpret dense and complex texts and make high-level inferences, and where the consequences of making mistakes are greater.

For more information on Essential Skills complexity levels please refer to the Readers Guide to Essential Skills Profiles on the Employment and Social Development Canada website.

A. Reading

The typical reading tasks of an Assembler are at complexity 1 to 3.

Examples of Reading Tasks

Assemblers:

1. read labels. For example, they skim labels on glues and adhesives containers for application instructions. (1)
2. skim notes in logbooks to learn about events and activities from previous shifts. (1)
3. read memos. For example, assemblers read memos about lifting procedures for oversized pallets. They read daily operating memos about restricted areas. (2)
4. read notices, bulletins and factsheets. For example, read health and safety instruction sheets, such as instructions for wearing a face mask. They read installation instructions for hardware. They read instructions for the safe use of glues, adhesives, equipment and hand tools. (2)

5. read text on forms. For example, they read MSDS to follow disposal procedures for products such as adhesives, glues, etc. (3)
6. review work orders and specification. For example, they review production orders and specifications to learn about particulars such as requirements for special materials and manufacturing processes. (3)
7. read procedures and policies. For example, they read maintenance and operating procedures for assembly tools and equipment. They read hazardous material (HAZMAT) procedures to learn about the properties and safe handling of products. (3)
8. read regulations, Acts and collective agreements. For example, they may read Occupational Health and Safety regulations to learn about requirements for personal protective equipment. They may read sections of Employment Standards to learn about general holidays and exemptions. They may read collective agreements to learn about job classifications, grievance procedures and rules governing discipline and discharge. (3)

B. Document Use

The typical document use tasks for an Assembler are at complexity 1 to 3.

Examples of document use tasks

Assemblers:

1. observe safety, warning and regulatory symbols and signs. They observe signs, which indicate requirements for personal protective equipment such as hard hats and safety gear. Additionally, they observe signs and symbols to ensure health and safety practices are being met. (1)
2. read lists, such as assembly schedules. (1)
3. complete tags such as defect tags to indicate that equipment or tools are not in working order. (1)
4. locate data in lists, tables and schedules. For example, they read lists of hardware parts and product parts to verify that quantities on the bill of materials match those delivered. (2)
5. enter data in lists, tables and schedules. For example, they complete a quality assurance checklist for every batch of wood products and accompanying hardware assembled. (2)
6. locate data in tracking and other administrative forms. For example, they read work orders and production schedules. They scan specifications sheets for various wood products, adhesives and joinery to verify products meet specifications. They scan work orders and bills of material to verify they have the correct materials and hardware on hand. (2)
7. complete tracking and other administrative forms. For example, they complete quality inspection reports to note that inspections were performed, highlight product and safety deficiencies. (2)
8. read and interpret Material Safety Data Sheets (MSDS) and technical data sheets to obtain information on storage, handling, usage and what to do in case of emergency. For example, they locate data about glues and adhesives. (3)

9. locate data on drawings. For example, they locate assembly steps in assembly drawings. They may interpret scale drawings of wood products to learn how to mount hardware. (3)

Document use summary

- Read signs, labels or lists
- Read completed forms
- Complete forms by marking check boxes, recording numerical information or entering words, phrases, sentences or texts of a paragraph or more
- Read completed forms containing check boxes, numerical entries, phrases, addresses, sentences or texts of a paragraph or more
- Read tables, schedules or other table-like text
- Enter information on tables, schedules or other table-like text
- Obtain specific information from graphs or charts
- Draw, sketch or form common shapes such as circles, triangles, spheres, rectangles, squares, etc.
- Take measurements from scale drawings
- Read assembly drawings
- Make sketches
- Obtain information from sketches, pictures or icons

C. Writing

The typical writing tasks of Assemblers are at complexity 1 to 2.

Examples of Writing tasks

Assemblers:

1. write reminders and notes. For example, assemblers write notes about equipment and tool deficiencies on tags. They write comments on work orders to indicate if repairs were made to products. (1)
2. may write comments on forms and checklists. For example, they may enter details about a job on work orders to note any changes made to installations procedures. They write comments about product defects and shortages in quality inspection forms. (1)
3. write descriptions and explanations on forms. For example, assemblers write descriptions of events and tool defects in logbooks. They describe equipment defects and write explanations for delays such as problems with tools or products. (2)

D. Numeracy

The numerical calculation tasks of an Assembler involve:

- Measurement and Calculation Math at complexity levels 1 to 3.
- Numerical Estimation at complexity levels 1 to 2.

Examples of Numerical Calculation Tasks

Assemblers:

1. count materials and hardware to verify what was delivered matches work order or bill of material. (Measurement and Calculation Math), (1)
2. take measurements using measuring tools such as rulers and tapes. For example, they use rulers to confirm dimensions of wood products and hardware and distances between drill holes meet specifications. (Measurement and Calculation Math), (2)
3. take measurements from assembly and scale drawings to verify materials and hardware match specifications. (2)
4. may calculate and verify the dimensions of products using measurements from scale drawings. They calculate depths, heights and widths. For example, they calculate measurements of wooden products to verify specifications are met. (Measurement and Calculation Math), (3)

Numerical Estimation

Assemblers:

1. estimate amounts of glues and adhesives to apply. (1)
2. estimate times needed to perform tasks. For example, they estimate the time to complete an assembly job, consider time to construct product and add fixtures and hardware. (1)

Math Skills Summary

a. Mathematical Foundations Used

Number Concepts

Whole Numbers	Read and write product codes and material quantities, calculate quantities of materials.
Rational Numbers - Fractions	Read, write and calculate dimensions in fractions of inches, calculate distances in fractions of inches and times in fractions of hours.
Rational Numbers - Decimals	Measure dimensions using metres, centimetres and millimetres, calculate dimensions in fractions of inches and weight in fractions of pounds.
Convert between fractions, decimals and percentages	Read and write decimal equivalents for materials sized in fractions of inches and to simplify calculations.

Patterns and Relations

Equations and Formulae	Insert lengths, widths and heights into formulae to calculate overall dimensions.
Use of Rate, Ratio and Proportion	Use scaling ratios to review and interpret elements on drawings, use proportional calculations to determine actual dimensions using measurements on scaled construction drawings.

Shape and Spatial Sense

Measurement Conversions	Convert measurements from inches to metres, centimetres and millimetres, convert square inches to square centimetres and square metres, convert cubic inches to cubic feet and metres.
Geometry	Use geometry. For example, studying lines and shapes in sketches of wood products or calculating angles when fitting

corner pieces at 90 degrees.

Recognize common angles.

Draw, sketch and form common forms and figures.

Summary Calculations

Calculate rates other than percentages. For example, calculating the rate of production in pieces per hour.

Use tables, schedules or other table-like text.

Use graphical presentations.

b. Measurement Instruments Used

- Time. For example, using a watch or clock.
- Distance or dimension. For example, using a ruler or tape measure.
- Liquid volume. For example, using calibrated containers.
- Temperature. For example, using a thermometer.
- Pressure. For example, using a pressure gauge.
- Angles. For example, using a carpenter's square.
- Using the SI (metric) measurement system.
- Using the imperial measurement system.

E. Oral Communication

The typical oral communication tasks of an Assembler are at complexity 1 to 2.

Examples of Oral communication Tasks

Assemblers:

1. inform lead hand/supervisors about broken equipment and tools. (1)
2. communicate with co-workers and with supervisors to clarify schedules and co-ordinate activities. For example, they communicate with co-workers to co-ordinate tasks, such as moving of assembled products. They update co-workers about events from previous shifts such as tasks completed and faulty equipment and tools. (2)
3. speak with supervisors. For example, they inform supervisors about safety concerns such as hazards in the work area. They discuss work assignments, discuss production problems and clarify assembly procedures. (2)
4. participate in safety meetings and training. (2)

Modes of Communication Used

- In person.
- Using a telephone.
- Using specialized communications signals. For example, they may use hand signals to communicate with other assemblers who are in close proximity to noisy equipment.

Environmental Factors Affecting Communication

Assemblers have difficulty communicating with others when working in close proximity to noisy engines and power tools.

F. Thinking

Problem Solving

The typical problem solving tasks of an Assembler are at complexity levels 1 to 2.

Examples of Problem Solving Tasks

Assemblers:

1. encounter faulty hardware and fixtures. They inform their supervisors and discuss solutions. (1)
2. find they do not have enough hardware to finish assembly job. They inform their supervisor and discuss solutions. (1)
3. may encounter errors in assembly pieces, such as misaligned drawer faces. They either repair the item on site or reject it. (2)

Decision Making

The typical decision-making tasks of an Assembler are at complexity levels 1 to 2.

Examples of Decision-Making Tasks

Assemblers:

1. decide not to use worn and faulty tools and equipment. (1)
2. decide whether to accept damaged products. They consider the extent of damage and their ability to fix it. (1)
3. decide which tools are most appropriate for assembling specific products. (1)
4. decide on the sequence of work, based on production schedule and the availability of all parts needed. (2)

5. decide what minor imperfections can be left on a wood product, considering product specifications and company standards. (2)

Critical Thinking

The typical critical thinking tasks of an Assembler are at complexity levels 1 to 2.

Examples of Critical Thinking Tasks

Assemblers:

1. assess the quality of finished products against specifications. (1)
2. assess the safety of work sites and assembly practices. For example, they assess their work area for cleanliness, adequate ventilation, safety barriers, warning signage and availability of safety equipment and supplies. (2)

Job Task Planning and Organizing

Assemblers plan and organize their job tasks at complexity level 2.

Description

Assemblers plan their work in response to the volume of orders. Many tasks are routine; however, there is variety in the work since they may be working on several different product lines at the same time. Priorities may need to be adjusted from time to time to respond to urgent orders. Since their work is dependent on having all the correct materials on hand, job task planning and organizing focuses on planning resource needs carefully. When planning assembly tasks, they must take into account timing considerations, such as drying times for glues and finishes as part of their job task planning and organizing. They co-ordinate their tasks with co-workers to maximize efficiency. (2)

Finding Information

Assemblers complete finding information tasks at complexity levels 1 to 2.

Examples of Tasks Involving Finding Information

Assemblers:

1. refer to sketches and specifications of wood products to clarify assembly instructions. (1)
2. read manuals or procedures to find information on specific assembly problems. (2)
3. consult supervisors or co-workers to get information on how to assemble new or unfamiliar products. (2)

G. Working with Others

Assemblers work with others at complexity level 2.

Description

Assemblers in wood manufacturing may coordinate and integrate job tasks with teams of workers, which includes helpers and other assemblers. (2)

Examples of working with others:

- 1 Participate in formal discussions about work processes or product improvement.
- 2 Have opportunities to make suggestions on improving work processes.
- 3 May monitor the work performance of others.
- 4 May inform other workers or demonstrate to them how tasks are performed.
- 5 May orient new employees.

H. Digital Technology

Examples of Computer Use Tasks

Assemblers:

1. may use databases. For example, they may access their organizations' databases to locate technical drawings, work orders, production schedules and job specifications.
2. use communications software. For example, they may use intranets and email applications to exchange information and electronic files with co-workers and supervisors.

I. Continuous Learning

Description

Continuous learning is required for assemblers in wood manufacturing due to the introduction of new products, ongoing regulatory changes, improvements to assembly processes and advancements in equipment and technology. They participate in training and workshops to enhance safety skills and stay current on regulatory changes. They learn about new products and assembly techniques by talking to suppliers, co-workers, and supervisors. They may take courses and workshops provided by suppliers to learn about equipment and assembly techniques. (2)

How Learning Occurs

Learning may be acquired:

- as part of regular work activity.
- from co-workers.
- through training offered in the workplace.
- through reading or other forms of self-study.
- at work.
- on worker's own time.
- using materials available through work.
- using materials obtained on worker's own initiative.
- through off-site training.

Project Background and Methodology

Project Background

The Wood Manufacturing Council (WMC) is the Human Resources Sector Council for the advanced wood products processing industry in Canada.

The WMC began operation in early 2002. The formation of the Council was the result of a partnership between ESDC, Industry Canada, the National Education Initiative for Furniture and Wood Products Industries (NEI) and other industry leaders.

An independent, non-profit corporation with a Board of Directors drawn from the industry, the WMC serves as a national forum, bringing together employers, workers, educators, governments and other interested parties in a strategic alliance to analyze, identify and address the sector's human resources challenges and to ensure workers have the right mix of skills to compete in the globalized markets that will dominate the 21st century.

In 2007, the WMC undertook the creation of a National Occupational Standard (NOS) for the occupation of Assembler. The objectives of this project were to work with job incumbents and other stakeholders to develop and nationally validate the Assembler occupational profile, including a review of the scope of the occupation. In 2015/16, the WMC reviewed and updated the NOS to reflect the changes in the industry over the past eight years.

Occupational standards can be used as the basis for program development, such as the creation of job descriptions, human resource on-boarding tools, training curriculum and/or competency-based assessment programs. Occupational standards also help inform individuals seeking information for career development or for other labour market information.

Methodology

National Project Advisory Committee

A National Project Advisory Committee (NPAC) comprised of industry experts led by the WMC was assembled to provide vital input and feedback. The NPAC served to provide valuable feedback into updating the standards and ensuring that industry trends and changes to the occupation were accurately reflected in the standards.

The NPAC members were selected to ensure representation from companies of various types and sizes, sub-sector associations and regional representation across Canada.

Subject Matter Experts

WMC staff and stakeholders identified Subject Matter Experts (SMEs) who were invited to participate in the development process of the National Occupational Standards through telephone interviews and site visits. SMEs were selected to ensure representation from companies of various types and sizes, sector associations, and regional representation. Job incumbents and Supervisors/Lead hands were asked for their input in the selection process of the SMEs.

National Occupational Standards

NOS describe the skills and knowledge needed to perform competently in the workplace. To create the Assembler NOS, interviews were conducted on-site with Assemblers and Supervisors/Lead hands to collect detailed information on the assembler occupation. Where possible, tours of the manufacturing facility were also provided.

In preparation for the on-site interviews with industry representatives, the consultant reviewed all relevant documentation related to the occupation (e.g., standards developed by other countries, international and territorial / provincial occupational guidelines). This information was used to develop an in-depth understanding of the duties, challenges and key skills required in the occupation. This information was used to help guide the discussion during the interviews.

Validation Survey

After the initial update of the standards was complete, an on-line validation survey was conducted to validate the frequency, importance and difficulty of each sub-task and identify any sub-tasks that were missing.

Validation of Standards

This document was reviewed and approved by the members of the NPAC. Following the meeting, the consultant updated the Standards with agreed-upon revisions and the document was submitted to the NPAC members for a final review.

About HRSG

Since 1989, Human Resources Systems Group (HRSG) has worked with a range of industries to define talent needs, address skill deficiencies and improve individual and organizational performance. Clients include global corporations and small or mid-sized organizations operating in sectors such as logistics, finance, accounting, technology, HSE, HR, manufacturing, sales and marketing and many more.

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WMC CFB

Wood Manufacturing Council
Conseil des fabricants de bois