

TRADE PROFILE

Sheet Metal Worker



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RED SEAL

TRADE PROFILE

SHEET METAL WORKER



STRUCTURE OF THE TRADE PROFILE

This profile has two sections that provide a snapshot of the trade's description, and all trade activities as they are organized in the Red Seal Occupational Standard:

Description of the Sheet Metal Worker trade: an overview of the trade's duties, work environment, job requirements, similar occupations and career progression

Task Matrix: a chart which outlines graphically the major work activities, tasks and sub-tasks of this trade

Major Work Activity (MWA): the largest division within the standard that is comprised of a distinct set of trade activities

Task: distinct actions that describe the activities within a major work activity

Sub-task: distinct actions that describe the activities within a task

A complete version of the occupational standard, which provides additional detail for the trade activities, skills and knowledge can be found at www.red-seal.ca.

DESCRIPTION OF THE SHEET METAL WORKER TRADE

“Sheet Metal Worker” is this trade’s official Red Seal occupational title approved by the CCDA. This standard covers tasks performed by sheet metal workers whose occupational title has been identified by some provinces and territories of Canada under the following names:

| | NL | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YT | NU |
|--------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Sheet Metal Worker | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Tinsmith | | | | | ■ | | | | | | | | |

Sheet metal workers design, fabricate, assemble, install and repair sheet metal products and systems. In fabrication work, sheet metal workers lay out and measure pieces to specifications. They use tools such as hand tools, portable power tools and shop equipment to cut and shape material. They assemble and join the pieces with various techniques such as welding and using mechanical fasteners.

They work with black iron, galvanized steel, satin-coated steel, stainless steel, aluminum, copper, brass, nickel, tin plate and other alloys. Some may also work with composites, fibreglass, ceramics and plastics.

Pieces may be laid out and cut in the shop and assembled on construction or industrial sites. Sheet metal workers may specialize in on-site installation, heating, ventilation and air conditioning (HVAC) and material handling system design, shop manufacture, and servicing and maintenance of installed equipment and systems. Those who work in installation may specialize in HVAC, boiler lagging/vessel cladding, roofing products, architectural sheet metal, custom metal products, food service products, secondary systems for environmental projects, pneumatic conveyance or signage.

Employers in this trade include sheet metal fabrication shops, manufacturing companies of sheet metal, installation contractors, HVAC contractors, and architectural sheet metal contractors. Sheet metal workers may be involved in residential, industrial, commercial, institutional and construction sectors.

Key attributes for people entering this trade are mechanical and mathematical aptitude, hand-eye coordination, spatial perception and manual dexterity. The work often requires considerable standing, climbing, kneeling, lifting and carrying.

Hazards of the trade include working with sharp metal pieces, at heights, around excessive noise and vibration, as well as exposure to heat and fumes. Sheet metal workers often have to work in adverse weather and environmental conditions.

This standard recognizes some transferable skills between the sheet metal worker trade and other trades such as ironworkers, boilermakers, refrigeration and air conditioning mechanics, plumbers, insulators (heat and frost), gasfitters, oil heat system technicians, electricians, roofers, carpenters and welders.

With experience, sheet metal workers act as mentors and trainers to apprentices in the trade. They may also become specialists in design and layout, and move into other positions such as estimators, supervisors or business owners.

SHEET METAL WORKER

TASK MATRIX

A - PERFORMS COMMON OCCUPATIONAL SKILLS

| | | | |
|---|--|---|---|
| Task A-1 Performs safety-related functions 22% | A-1.01 Uses personal protective equipment (PPE) and safety equipment | A-1.02 Maintains safe work environment | A-1.03 Performs lock-out and tag-out procedures |
| | A-2.01 Uses hand and portable power tools | A-2.02 Uses shop tools and equipment | A-2.03 Uses gas metal arc welding (GMAW) equipment |
| Task A-2 Uses and maintains tools and equipment 39% | A-2.04 Uses resistance spot welding equipment | A-2.05 Uses gas tungsten arc welding (GTAW) equipment | A-2.06 Uses shielded metal arc welding (SMAW) equipment |
| | A-2.07 Uses oxy-fuel and plasma arc cutting equipment | A-2.08 Uses soldering and brazing equipment | A-2.09 Uses measuring and layout equipment |
| | A-2.10 Uses testing and inspection devices | A-2.11 Uses stationary and mobile work platforms | A-2.12 Uses hoisting, rigging and positioning equipment |
| | A-3.01 Uses trade-related documentation | A-3.02 Interprets drawings | A-3.03 Organizes materials and equipment for project |
| | A-3.04 Performs basic design and field modifications | | |
| Task A-3 Organizes work 26% | A-4.01 Uses communication techniques | A-4.02 Uses mentoring techniques | |
| | | | |
| Task A-4 Uses communication and mentoring techniques 13% | | | |
| | | | |

B - PERFORMS FABRICATION

| | | | |
|---|--|---|--|
| Task B-5 Performs pattern development 33% | B-5.01 Develops patterns using simple and straight line layout | B-5.02 Develops patterns using parallel line method | B-5.03 Develops patterns using radial line method |
| | B-5.04 Develops patterns using triangulation method | B-5.05 Uses computer technology for pattern development | |
| Task B-6 Fabricates sheet metal components for air and material handling systems 42% | B-6.01 Cuts ductwork, fittings and components | B-6.02 Forms ductwork, fittings and components | B-6.03 Insulates ductwork, fittings and components |
| | B-6.04 Assembles ductwork, fittings and components | B-6.05 Fabricates dampers | B-6.06 Fabricates hanger systems, supports and bases |
| Task B-7 Fabricates flashing, roofing, sheeting and cladding 9% | B-7.01 Cuts metal for flashing, roofing, sheeting and cladding | B-7.02 Forms flashing, roofing, sheeting and cladding | |
| | | | |
| Task B-8 Fabricates specialty products 16% | B-8.01 Cuts material for specialty products | B-8.02 Forms specialty products | B-8.03 Assembles specialty products |
| | B-8.04 Finishes specialty products | | |

C - INSTALLS AIR AND MATERIAL HANDLING SYSTEMS

| | | | |
|---|---|---|---|
| Task C-9 Prepares installation site 17% | C-9.01 Performs on-site measurements | C-9.02 Performs demolitions for renovations | C-9.03 Installs penetrations and sleeves |
| | C-9.04 Installs supports and bases | C-9.05 Installs hangers, cables, braces and brackets | |
| Task C-10 Installs and connects chimneys, breeching and venting to exhaust appliances and mechanical equipment 15% | C-10.01 Installs chimney | C-10.02 Connects appliances or mechanical equipment to chimney and breeching | C-10.03 Installs high efficiency appliances and mechanical equipment |
| | | | |
| Task C-11 Installs air handling system components 39% | C-11.01 Installs air handling equipment | C-11.02 Installs sheet metal ducts and fittings | C-11.03 Installs dampers |
| | C-11.04 Installs fire and fire/smoke dampers | C-11.05 Installs registers, grilles, diffusers and louvers | C-11.06 Installs terminal boxes |
| | C-11.07 Installs coils | C-11.08 Installs system component accessories | C-11.09 Installs plenums |
| | | | |
| | | | |
| Task C-12 Installs material handling system components 12% | C-12.01 Installs pneumatic and gravity material handling system components | C-12.02 Installs mechanized material handling system components | |
| | | | |
| Task C-13 Applies thermal insulation, lagging, cladding and flashing 8% | C-13.01 Applies thermal insulation to components | C-13.02 Applies lagging and cladding to components | C-13.03 Applies flashing to components |
| | | | |
| Task C-14 Performs leak testing, air balancing and commissioning 9% | C-14.01 Performs leak tests | C-14.02 Performs testing, adjusting and balancing (TAB) | C-14.03 Participates in the commissioning of air and material handling systems |
| | | | |

D - INSTALLS ROOFING AND SPECIALTY PRODUCTS

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|---|---|--|--|
| Task D-15 Installs metal roofing and cladding/siding systems 27% | D-15.01 Lays out roof and walls | D-15.02 Installs insulation, isolation material and building envelope components | D-15.03 Installs roofing and cladding/siding system components |
| | D-15.04 Seals exposed joints | D-15.05 Installs decking | |
| Task D-16 Installs exterior components 21% | D-16.01 Prepares surface | D-16.02 Fastens exterior components | |
| | | | |
| Task D-17 Installs specialty products 52% | D-17.01 Installs stainless steel specialty products | D-17.02 Installs non-stainless steel specialty products | D-17.03 Installs marine products (Not Common Core) |

F - PERFORMS MAINTENANCE AND REPAIR

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|--|--|---|
| Task E-18 Performs scheduled maintenance 38% | E-18.01 Performs maintenance inspections | E-18.02 Services components |
| | | |
| Task E-19 Repairs faulty systems and components 62% | E-19.01 Diagnoses system faults | E-19.02 Repairs worn or faulty components |