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Trade Profile
Sheet Metal Worker

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Sheet Metal Worker

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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 standard

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

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.

Sheet metal workers design, fabricate, assemble, install and repair sheet metal products and systems. In fabrication work, sheet metal workers design, lay out and manufacture pieces to project 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, soldering, seaming and using mechanical fasteners.

They work with mild steel, 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 designed, 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), material handling system design, shop manufacture, using computer aided design (CAD), 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. In some jurisdictions, they may also specialize in testing, adjusting and balancing (TAB).

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, construction, and civil infrastructure 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, carrying and working at heights.

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 must 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.

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Task Matrix and Weightings

Insert task matrix from final RSOS

Task Matrix and Weightings

Major Work Activity A – Performs common occupational skills 21%

Task A-1 Maintains safe and healthy workplace 27%	Sub-task A-1.01 Uses personal protective equipment (PPE) and safety equipment	Sub-task A-1.02 Maintains safe work environment	Sub-task A-1.03 Performs lock-out and tag-out procedures
	Sub-task A-1.04 Participates in healthy and respectful workplace practices		
Task A-2 Uses and maintains tools and equipment 43%	Sub-task A-2.01 Uses hand and portable power tools	Sub-task A-2.02 Uses shop tools and equipment	Sub-task A-2.03 Uses gas metal arc welding (GMAW) and flux core arc welding (FCAW) equipment
	Sub-task A-2.04 Uses resistance spot welding equipment	Sub-task A-2.05 Uses gas tungsten arc welding (GTAW) equipment	Sub-task A-2.06 Uses shielded metal arc welding (SMAW) equipment
	Sub-task A-2.07 Uses oxy-fuel, plasma arc and laser cutting equipment	Sub-task A-2.08 Uses laser welding and cleaning equipment (NOT COMMON CORE)	Sub-task A-2.09 Uses soldering and brazing equipment
	Sub-task A-2.10 Uses measuring and layout equipment	Sub-task A-2.11 Uses testing and inspection devices	Sub-task A-2.12 Uses access equipment

	Sub-task A-2.13 Uses hoisting, rigging and positioning equipment		
Task A-3 Organizes work 30%	Sub-task A-3.01 Uses trade-related documentation	Sub-task A-3.02 Interprets drawings and project specifications	Sub-task A-3.03 Organizes materials and equipment for project
	Sub-task A-3.04 Performs basic design and field modifications		
Task A-4 Maintains continuous learning 0%	Sub-task A-4.01 Upgrades in new trade practices and procedures	Sub-task A-4.02 Upgrades in emerging technologies	
Task A-5 Uses communication and mentoring techniques 0%	Sub-task A-5.01 Uses communication techniques	Sub-task A-5.02 Uses mentoring techniques	

Major Work Activity B – Performs fabrication 28%

Task B-6 Performs pattern development 31%	Sub-task B-6.01 Develops patterns using simple and straight line layout	Sub-task B-6.02 Develops patterns using parallel line method	Sub-task B-6.03 Develops patterns using radial line method
	Sub-task B-6.04 Develops patterns using triangulation method	Sub-task B-6.05 Uses computer technology for pattern development	
Task B-7 Fabricates sheet metal components for air and material handling systems 41%	Sub-task B-7.01 Cuts ductwork, fittings and components	Sub-task B-7.02 Forms ductwork, fittings and components	Sub-task B-7.03 Insulates ductwork, fittings and components
	Sub-task B-7.04 Assembles ductwork, fittings and components	Sub-task B-7.05 Fabricates dampers	Sub-task B-7.06 Fabricates hanger systems, supports and bases
Task B-8 Fabricates flashing, roofing, sheeting and cladding 15%	Sub-task B-8.01 Cuts material for flashing, roofing, sheeting and cladding	Sub-task B-8.02 Forms flashing, roofing, sheeting and cladding	
Task B-9 Fabricates specialty products 13%	Sub-task B-9.01 Cuts material for specialty products	Sub-task B-9.02 Forms specialty products	Sub-task B-9.03 Assembles specialty products
	Sub-task B-9.04 Finishes specialty products		

Major Work Activity C – Installs air and material handling systems 34%

Task C-10 Prepares installation site 16%	Sub-task C-10.01 Performs on-site measurements	Sub-task C-10.02 Performs demolition for renovations	Sub-task C-10.03 Installs penetrations and sleeves
	Sub-task C-10.04 Installs supports and bases	Sub-task C-10.05 Installs hangers, cables, braces, brackets and seismic restraints	
Task C-11 Installs and connects chimneys, breeching and venting to exhaust appliances and mechanical equipment 18%	Sub-task C-11.01 Installs chimneys and stacks	Sub-task C-11.02 Connects appliances or mechanical equipment to chimney and breeching	Sub-task C-11.03 Installs high efficiency appliances and mechanical equipment
Task C-12 Installs air handling system components 31%	Sub-task C-12.01 Installs air handling equipment	Sub-task C-12.02 Installs ductwork and fittings	Sub-task C-12.03 Installs dampers
	Sub-task C-12.04 Installs fire and fire/smoke dampers	Sub-task C-12.05 Installs registers, grilles, diffusers and louvers	Sub-task C-12.06 Installs terminal boxes
	Sub-task C-12.07 Installs coils and duct heaters	Sub-task C-12.08 Installs system component accessories	Sub-task C-12.09 Installs plenums
Task C-13 Installs material handling system components 19%	Sub-task C-13.01 Installs pneumatic and gravity material handling system components	Sub-task C-13.02 Installs mechanized material handling system components	

Task C-14 Applies thermal insulation, lagging, cladding and flashing 8%	Sub-task C-14.01 Applies thermal insulation to components	Sub-task C-14.02 Applies lagging and cladding to components	Sub-task C-14.03 Applies flashing to components
Task C-15 Performs leak testing, air balancing and commissioning 8%	Sub-task C-15.01 Performs leak tests	Sub-task C-15.02 Performs testing, adjusting and balancing (TAB)	Sub-task C-15.03 Participates in the commissioning of air and material handling systems

Major Work Activity D – Installs roofing and specialty products 10%

Task D-16 Installs roofing and cladding systems 36%	Sub-task D-16.01 Lays out roof and walls	Sub-task D-16.02 Installs insulation, isolation material and building envelope components	Sub-task D-16.03 Installs roofing and cladding system components
	Sub-task D-16.04 Seals exposed joints	Sub-task D-16.05 Installs decking	
Task D-17 Installs exterior components 29%	Sub-task D-17.01 Prepares surface	Sub-task D-17.02 Fastens exterior components	
Task D-18 Installs specialty products 35%	Sub-task D-18.01 Installs stainless steel specialty products	Sub-task D-18.02 Installs non-stainless steel specialty products	Sub-task D-18.03 Installs marine products

Major Work Activity E – Performs maintenance and repair 7%

Task E-19 Performs scheduled maintenance 50%	Sub-task E-19.01 Performs maintenance inspections	Sub-task E-19.02 Services components
Task E-20 Repairs faulty systems and components 50%	Sub-task E-20.01 Diagnoses system faults	Sub-task E-20.02 Repairs worn or faulty components