

TRADE PROFILE

Boilermaker

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TRADE PROFILE

BOILERMAKER



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 Boilermaker 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 BOILERMAKER TRADE

“Boilermaker” is this trade’s official Red Seal occupational title approved by the CCDA. This standard covers tasks performed by a boilermaker 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
Boilermaker	✓	✓	✓		✓		✓	✓	✓				
Construction Boilermaker				✓		✓				✓			

Boilermakers construct, fabricate, weld, assemble, install, erect, alter, maintain, repair, dismantle, demolish and test steam generators, boilers, economizers, air heaters, de-aerators, induction draft (ID) and forced draft (FD) fans, tanks, pollution control devices and systems, duct systems, furnaces, reactors, water towers and reservoirs, penstocks, scroll casing, stacks and other related components and parts, as well as their access structures and assemblies, including all types of structural and plate work on dust, air, gas, steam, oil, water and other liquid-tight containers. Boilermakers work from engineer-approved drawings to fabricate components from steel or other materials. They calculate, select and attach rigging and work with cranes and other hoisting devices to lift components into place. The systems must be tested for leaks and other defects and deficiencies to ensure they are operating safely and efficiently.

Boilermakers require a good understanding of welding methods and procedures. However, while welding is a component of this trade, jurisdictions may or may not permit certain welding processes without further certification.

Boilermakers are employed in industries that are governed by various codes and standards in metal fabricating, construction, shipbuilding, petroleum, mining, smelting and power generation (e.g. hydro, nuclear, thermal, solar, tidal). They may be employed in construction and maintenance in a variety of industrial workplaces such as pulp mills, water treatment plants, steel mills, cement, chemical, fertilizer and potash plants, breweries, ship yards, offshore platforms, mines and power generation and co-generation stations, as well as ethanol, oil and gas extraction facilities, upgraders and refineries where the installation, repair, and maintenance, or demolition of the above equipment is required.

Boilermakers use both hot and cold working methods to shape steel components and other materials to form boilers, tanks and vessels. They must use various metal forming machines such as plate shears, punch presses and bending rolls. Tools such as levels, wedges, grinders and cutting torches are used to lay out, fit and smooth edges so the parts fit together. They also use a variety of test equipment and measuring devices.

Their work is performed indoors or outdoors and may be at extreme heights or underground. The work environment of boilermakers can expose them to hazards and conditions such as vibration, excessive noise, fumes, asbestos and other toxic environments, confined spaces, extreme temperatures, and radiation.

Key attributes for people entering this trade are: good hand-eye coordination, mechanical aptitude and manual dexterity. Boilermakers must possess the full range of knowledge, abilities and skills required of the trade including an understanding of mechanical drawings along with mathematical aptitudes. They also require strength and stamina to work with heavy components and equipment. It is common in this

trade to travel for work opportunities; therefore, boilermakers must adapt to frequently changing work environments. It is also common in this trade to work long hours and many consecutive shifts.

This analysis recognizes similarities with the work of metal fabricators, industrial mechanics (millwrights), steamfitters/pipefitters, ironworkers and welders.

With experience, boilermakers may act as mentors and trainers to apprentices in the trade. They may also advance to supervisory positions, quality assurance inspectors and safety personnel.

BOILERMAKER

TASK MATRIX

A - PERFORMS COMMON OCCUPATIONAL SKILLS

26%

Task A-1 Performs safety-related functions 17%	A-1.01 Uses personal protective equipment (PPE) and safety equipment	A-1.02 Maintains safe work environment	A-1.03 Monitors confined spaces
Task A-2 Uses tools, equipment and work platforms 28%	A-2.01 Uses hand tools	A-2.02 Uses power tools	A-2.03 Uses shop equipment
	A-2.04 Uses cutting and welding tools and equipment	A-2.05 Uses work platforms and access equipment	A-2.06 Uses aerial work platforms
Task A-3 Organizes work 20%	A-3.01 Organizes project tasks and procedures	A-3.02 Uses drawings and specifications	3.03 Handles materials and components
	A-3.04 Demobilizes site		
Task A-4 Uses communication and mentoring techniques 8%	A-4.01 Uses communication techniques	A-4.02 Uses mentoring techniques	
Task A-5 Performs cutting and welding activities 27%	A-5.01 Cuts material	A-5.02 Prepares joints for fitting	A-5.03 Fits joints
	A-5.04 Performs tack welds	A-5.05 Performs basic welding	A-5.06 Performs advanced welding

B - PERFORMS RIGGING AND HOISTING

29%

Task B-6 Plans lift 31%	B-6.01 Determines load	B-6.02 Performs pre-lift analysis	B-6.03 Selects rigging and hoisting equipment
	B-6.04 Secures lift area		
Task B-7 Rigs load 29%	B-7.01 Inspects rigging equipment	B-7.02 Fabricates rigging equipment	B-7.03 Attaches rigging equipment to load
Task B-8 Hoists load 27%	B-8.01 Inspects hoisting equipment	B-8.02 Assembles hoisting equipment	B-8.03 Performs hoisting operations
	B-8.04 Secures load before rigging removal		
Task B-9 Performs post-lift activities 13%	B-9.01 Conducts post-lift inspection	B-9.02 Disassembles hoisting equipment	B-9.03 Maintains rigging equipment

C - COMPLETES NEW CONSTRUCTION

23%

Task C-10 Performs fabrication 38%	C-10.01 Lays out components for fabrication	C-10.02 Cuts components for fabrication	C-10.03 Forms components for fabrication
	C-10.04 Constructs components		
Task C-11 Assembles and fits vessels and components 37%	C-11.01 Aligns vessels and components	C-11.02 Fits vessels and components	
Task C-12 Fastens components 25%	C-12.01 Bolts components	C-12.02 Expands tubes	C-12.03 Lays up fibreglass

D - PERFORMS REPAIRS, MAINTENANCE, UPGRADING AND TESTING

22%

Task D-13 Services vessels and components 66%	D-13.01 Inspects vessels and components for defects	D-13.02 Prepares vessels and components for servicing	D-13.03 Repairs vessels and components
	D-13.04 Performs preventative maintenance and upgrades	D-13.05 Tests materials, vessels and components	
Task D-14 Removes vessels and components 34%	D-14.01 Dismantles vessels and components	D-14.02 Removes materials	