

REFRIGERATION PLANT SUPERVISION REQUIREMENTS
CANADIAN JURISDICTIONS

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REFRIGERATION PLANT SUPERVISION CERTIFICATION PROVINCIAL SUMMARY

	ON	MB	NS	QC	BC	NF	PE	SK	NB	AB	NT	YT	NU
Certificate not required									X	X	X	X	X
Certificate required	X	X	X	X	X	X	X	X					
Distinguishing Characteristics of Plants													
• <i>Refrigeration Type</i>	X	X	X	X	X								
• <i>Packaged</i>	X	X	X										
• <i>Guarded</i>	X	X	X			X	X	X					
• <i>Compressor Type</i>	X	X	X	X									
• <i>Low Pressure</i>	X	X		X									
• <i>High Pressure</i>	X	X		X									
• <i>Public Occupancy</i>		X	X			X							
• <i>Plant Rated by kW</i>	X	X	X	X	X	X	X						
• <i>Plant Rated by tonnage</i>								X					
Plant Registry	X	X	X		X	X	X	X		Note			
Maintenance Contractor License Required	X		X										
Note – ABSA has initiated a project to include ammonia ice plants in the plant registry in 2019													

The following provinces have no supervision requirements for refrigeration plants:

Alberta

New Brunswick

Northwest Territories

Yukon

Nunavut

The provinces that do have supervision requirements for refrigeration plants have methods of rating the plants. The methods used to rate the plants and the thresholds for the plant ratings are not consistent.

British Columbia

Regulated plant: all ammonia plants that exceed 5 kW capacity, that are of the indirect system type, and that are installed in a facility that is classified as a public assembly occupancy, which includes ice rinks and curling rinks.

Mandatory testing for presence of ammonia in brine of an indirect cooling system.

Continuous supervision required if the system contains ammonia and exceeds 50 kW.

Supervision of an ammonia refrigeration plant is one that holds at least:

- 4th class Power Engineer or higher
- Refrigeration operator
- Ice facility operator based on the following conditions:
 - o Refrigeration plant used in an ice facility that is used to make artificial ice surface for recreational purposes
 - o The plant does not exceed 1,000 kW prime mover nameplate rating, and
 - o The owner has designated a person that holds a 4th class Power Engineer (or Higher) or a person that holds a Refrigeration Operator Certificate of Qualification, as the Chief Engineer of the plant.

Manitoba

The Act and this regulation do not apply to:

- Refrigeration plant of 175 kW equivalent capacity with pressure exceeding 103 kPa
- A single unit factory assembled plant not exceeding 350 kW or,
- Comprised of centrifugal chillers, if the plant is for air conditioning; utilizes Group 1 refrigerant, and is located in a Class T mechanical room or a rooftop.

Manitoba has specific plant classifications.

- Refrigeration Class Plant: a refrigeration plant used for compressing a refrigerant where the safety valves are set to relieve at a pressure of 103 kPa (15 psi) or more, and a capacity of 875 kW (87.5 boiler horsepower) or less;

Exemption from constant supervision:

- Plant equipped with a full set of automatic safety controls and
- The owner certifies in writing to the plant and each safety control is checked every day of operation by a power engineer of the class required under this regulation and,
- The safety devices are tested by a power engineer of the class required at a frequency set out in the authorization.
- If the plant is not equipped as described above it shall be under constant supervision by a power engineer of the class required.
- If in an occupied building the plant shall be under constant supervision even if it meets the conditions above.

Fourth Class certificate holder:

- Be in charge of a refrigeration class plant

A person holding a Refrigeration Class Certificate may act as engineer in a Refrigeration Class Plant.

No supervision required:

- <175 kW and pressure <103kPa
- A single unit factory assembled not exceeding 350 kW
- Centrifugal chiller if:
 - o Used for air conditioning for the comfort of inhabitants by circulating only chilled water to accomplish cooling
 - o Group 1 refrigerant and,
 - o Is located in a Class T mechanical room or a rooftop.

Manitoba has only one class of certified Refrigeration Class Certificate.

Note: A "Refrigeration Class Plant" is only rated to maximum 875 kW. A person holding a Refrigeration Class Certificate may act as engineer in a Refrigeration Class Plant. If a refrigeration plant has greater than 875 kW, it requires a person holding the equivalent class certificate. i.e. a 10,000kW capacity refrigeration plant would be a First Class Plant and require a person with a First Class Certificate (Power Engineer).

Newfoundland

Act does not apply to a refrigeration plant rating 10.5 kW or less.

Third Class may be employed as a chief power engineer in a registered refrigeration plant of unlimited kW capacity.

Fourth Class may be employed as a chief power engineer in a registered plant not exceeding 450kW or 750 kW when a plant uses only Group A1 refrigerants, or a shift engineer of a registered refrigeration plant of unlimited kW capacity.

Refrigeration Operator Grade "A" may be employed as chief engineer or shift operator to take charge of and to operate a registered refrigeration plant of unlimited capacity.

Refrigeration Operator Grade "B" may be employed as chief operator of a registered refrigeration plant not exceeding 450 kW or 750 kW when a plant uses only Group A1 refrigerants; or a shift operator of a registered plant of unlimited kW capacity

Newfoundland has a plant registration requirement.

Nova Scotia

Plant registry: - refrigeration plant using Group A1 and B1:

- Public assembly, institutional or residential >75kW
- Commercial or industrial >150 kW

Refrigeration plants:

- First Class:
 - o Group A1 or B1 refrigerant >1000kW
 - o Group A2, A3, B2, B3 refrigerant >450kW
- Second Class:
 - o Group A1 or B1 refrigerant <1000kW
 - o Group A2, A3, B2, B3 refrigerant <450 kW

Supervision:

- Periodic supervision: (conditions apply regarding controls, guarded, unoccupied, visit every 12 hours)
 - o First or second class plant that uses Group A2, A3, B2 or B3 refrigerants:
 - Primary occupancy is commercial or industrial:
 - Has capacity control, failure detection and controller systems, and
 - The plant has a TPPR of 1000 kW or lower, or indirect system
 - Public occupancy, institutional or residential
 - TPPR of 450 kW or lower, or
 - Indirect system with a TPPR of 1000 kW or lower
 - o A first or second class refrigeration plant that uses a Group A1 or B1 refrigerant,
- Minimum supervision:
 - o Commercial or industrial occupancy with the following criteria:
 - Is a first or second class refrigeration plant that:
 - Uses a Group A2, A3, B2 or B3 refrigerant,
 - Has a TPPR of 450 kW or lower, or an indirect system with a TPPR of 1000 kW or lower, and
 - Has capacity control, failure detection and controller systems
 - Second class refrigeration plant that:
 - Uses a Group A1 or B1 refrigerant

- Has a TPPR of 1000 kW or lower, and
- Has capacity control, failure detection and controller systems.
- Public occupancy institutional or residential occupancy:
 - Second class refrigeration plant that
 - Uses a Group A2, A3, B2 or B3 refrigerant, and
 - Has a TPPR of 150 kW or lower, or an indirect system with a TPPR of 450 kW or lower
 - Second class refrigeration plant that
 - Uses a Group A1 or B1 refrigerant, and
 - Has a TPPR of 450 kW or lower or an indirect system
- Unsupervised plant:
 - Only a second class refrigeration plant that meets all the following:
 - Self-contained system TPPR of 350 kW or lower
 - Centrifugal chillers that:
 - Used in air conditioning for comfort and cool air by circulating chilled water only and,
 - Use a Group A1 or B1 refrigerant
 - Plant operates at a pressure < 103 kPa
 - Self-contained unit that is located either outside or on a rooftop and uses Group A1 or B1 refrigerant
 - Unsupervised plant must be operated in accordance with all of the following:
 - A maintenance procedure acceptable to the PE chief inspector
 - The manufacturer's specifications
 - The applicable PE standard
 - An owner of a regulated plant that is operated as an unsupervised plant must provide the name of any maintenance contractor for the plant to the PE chief inspector.

Regulation contains conditions for a guarded plant.

Regulations contains Provincial first class refrigeration plant operator license; second class refrigeration plant operator license;

TPPR of a regulated plant means the total plant power rating of the plant measured in kilowatts (kW),

Ontario

Ontario has a plant registration program: a refrigeration plant is the total power rating in kW of its registered refrigeration compressors. The plant registration system contains many conditions and reference to appropriate tables is required. Conditions include: low pressure; positive displacement; self contained; packaged units; built up plants; direct and in-direct systems.

Requirements for a guarded plant. Guarded, in relation to a fail safe device, means the controls and safety devices that safely limit the operation of the equipment that is being guarded to preset parameters, and that will cause an audible or visual alarm, or both, to the operator of the equipment, as the case requires. A guarded refrigeration plant shall be equipped with: an audible, visible alarm or remote pager system that, if any potentially unsafe condition is indicated by a protective device, gives warning to the operating engineer, operator or other person who is located in the plant and is in charge of the installation, and continues to give a warning until the potentially unsafe condition is rectified or the installation is safely shut down.

Failure to provide a plant Certificate of Registration prescribed service program to a standard prescribed by the compressor manufacturer will result in the suspension of non-attended status and the attendance of a certified Operating Engineer/Operator will be required, to the requirements of a guarded plant, until the prescribed maintenance and service requirements are attained.

Classes of operating engineers and operators: fourth, third, second and first class. Operators shall be classified as: refrigeration operator (Class A or B)

Chief operating engineers and Chief operator limitation:

- Fourth class <149 kW
- Third class <597 kW
- Second class: unlimited
- First class: unlimited
- Class B refrigeration Operator: <597 kW
- Class A refrigeration Operator: Unlimited

Prince Edward Island

Plant registration: The kW rating of a refrigeration plant is the total kW ratings of all prime movers used to drive the refrigeration machinery.

Supervision requirements:

- Continuous:
 - o Class A or Second Class: over 895 kW
 - o Class B or Third Class: above 597 kW but not over 895 kW
 - o Class B or Fourth Class: above 74.6 kW but not over 597 kW
- Periodic: (indirect system only)
 - o Class B or Fourth Class: 298 kW but not over 597 kW
- Minimum Supervision (indirect systems only)
 - o Class B or Fourth Class: 74.6 kW but not over 298 kW
 - o Unattended: below 74.6 kW

Certification: fourth class, third class, second class, first class, Power Engineer Refrigeration B, Power Engineer Refrigeration A, low-pressure biomass boiler operator.

Comment from Mr. Steven R. Townsend: *PEI looks correct but I will add that we exempt refrigeration system from operational and plant registration requirements when they contain Group 1 (A1) refrigerants. Basically staffing and plant registration is only required when a refrigerant like Ammonia (or similar) are used. Freon based system are all exempt, regardless of the size. But also note that we do inspect all refrigeration systems over 10.5 tonnes regardless if they are ammonia or freon based, CRN's for vessels, and reports on piping are required for all systems. We also ensure these installation meet all the requirements outlined in the CSA B-52 (ex: ventilation, gas detectors, safety valve discharges, sign-age, e-stop, etc.) also. All maintenance and installations of refrigeration system, that fall under our jurisdiction, are performed by PEI registered mechanical contractors that contain the appropriate scope in their the QC manual.*

Quebec

- High pressure with refrigerants: Gr. A2, A3, B2, B3
 - o Conditional <50 kW
 - o Periodic <300 kW
 - o Non-conditional <600 kW
 - o Continuous 600 kW+
- Hp Positive displacement compressor with refrigerants: A1 or B1
 - o Conditional <300 kW
 - o Periodic <600 kW
 - o Non-continuous <1200 kW
 - o Continuous 1200 kW+
- Hp Centrifugal compressor with refrigerants: A1 or B1
 - o Conditional <400 kW
 - o Periodic <1200 kW
 - o Non-continuous 1200 kW+
- Low-pressure with refrigerants A1 or B1
 - o Conditional <400 kW
 - o Periodic <1200 kW
 - o Non-continuous 1200 kW+

Conditional means no visit

Periodic means one visit per day

For ammonia, no visit if your installation is under 50 kW

For Freon or CO₂, no visit under 300 kW

There is a special rule called “critical distance”. For example, an ammonia system comprising of 2 compressors of 60 HP each. If you install these compressors with a distance of 23 ft from each other, then you have 2 “installations” that require “no visit”.

No supervision required:

- Refrigerating apparatus operating by absorption
- Residential refrigeration apparatus
- Small conditioning units , window types

Supervision limitation:

- Units with refrigerants A2, A3, B2 or B3 Class B operator <250 kW
- Units with refrigerants A1 and B1 Class B operator <900 kW
- No limitation for Class A operators

Saskatchewan

Refrigeration plant supervision requirements:

- No Chief Engineer requirement exists for refrigeration plants
- 45 tonnes or less: Chief not required; operator not required
- 45 tonnes to 100 tonnes: General supervision required by: refrigeration plant operator or, refrigeration engineer or, power engineer with appropriate licence
- Over 100 tonnes: General supervision require by refrigeration plant engineer or power engineer with appropriate licence.

General supervision with respect to a refrigeration plant, means that a person holding a licence of the appropriate class to operate the refrigeration plant:

- manually starts the refrigeration plant whenever the refrigeration plant is not under automatic control and restarting is required; and
- does not leave the premises without ensuring that the refrigeration plant is operating under automatic control.

Tonne rating is rating assigned by the manufacturer. If the manufacturer's standard rating is not available, then the following formula is used: $C = DP/135$ where: C is the capacity of the refrigeration plant in tonnes; and DP is the piston displacement in litres per minute.

Scope of authority of operator licence:

- Refrigeration operator < 100 tonnes
- Refrigeration engineer – any capacity
- 1st class Power Engineer – any capacity
- 2nd class: Power Engineer capacity
- 3rd class: Power Engineer: any capacity

- 4th class Power Engineer:
 - o < 500 tonnes
- 5th class:
 - o

< 200 tonnes

The Refrigeration Engineer qualifies using the SOPEEC exam along with experience or training. The Refrigeration Plant Operator qualifies using a provincial examination.