

## 1. **General Information**

### 1.1 **Summary**

#### .1 Section Contents

.1 Requirements for the identification of piping and air duct systems, valves and control/regulation devices, the modes and identification of the elements used, including their location and the related installation methods.

#### .2 Related sections

.1 Section 21 05 01 - Mechanical general requirements

### 1.2 **References**

.1 Unless otherwise indicated, complete all work in accordance with the current edition of the "*Code de Construction du Québec*"

#### .2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.60, Interior Alkyd Gloss Enamel

.2 CAN/CGSB-24.3, Identification of Piping Systems

#### .3 National Fire Protection Association (NFPA)

.1 NFPA 13, Standard for the Installation of Sprinkler Systems.

.2 NFPA 14, Standard for the Installation of Standpipe and Hose Systems.

## 2. **Products**

### 2.1 **Manufacturer's nameplates**

.1 Nameplates made of metal or laminate, mechanically fastened with the hardware parts from the manufacturer.

.2 The inscriptions (letters and numbers) must be raised or recessed.

.3 The following information, according to the case, must be indicated on the nameplates.

.1 Device: Manufacturer's name, model, dimensions, serial number, power, flow rate.

.2 Engine: Voltage, frequency of the supply current, number of phases, power, type of service, frame dimensions.

## 2.2 Network identification plates

### .1 Colours

- .1 Hazardous materials: red lettering on white background.
- .2 Other materials: black lettering on white background (unless otherwise specified in the relevant code).

### .2 Material and other manufacturing characteristics

- .1 3 mm thick laminate or white anodized aluminum plates with a matte finish, square corners and precisely aligned letters and machine-engraved to the core.

### .3 Formats

- .1 In accordance with the table below.

Number format	Dimensions (mm)	Number lines	of Letter (mm)	height
1	10 x 50	1	3	
2	13 x 75	1	5	
3	13 x 75	2	3	
4	20 x 100	1	8	
5	20 x 100	2	5	
6	20 x 200	1	8	
7	25 x 125	1	12	
8	25 x 125	2	8	
9	35 x 200	1	20	

- .2 Maximum of 25 letters or numbers per line.

### .4 Format according to placement

- .1 Number 5 plates for terminal elements and control panels.
- .2 Number 9 plates for equipment located in mechanical rooms.

- .5 Identification of devices and networks covered by the Preventive Maintenance Support System (PMSS) from the PWGSC
  - .1 Main identification system/from source/to destination
  - .2 Premises of equipment and mechanical installations
    - .1 Number 9 main identification plates.
    - .2 Number 6 identification plates for source and destination.
    - .3 Number 5 identification plates for terminal elements and control panels.
  - .6 Other locations: Relevant formats

### **2.3 Identification according to the existing system**

- .1 Identify the works added or improved according to the existing identification system.
- .2 When the existing identification system does not have a plan for the identification of newly installed works, they will be identified in accordance with the requirements of this section.
- .3 The ministerial Representative and Engineer must approve the identification system in writing before starting work.

### **2.4 Piping governed by codes**

- .1 Identification
  - .1 Natural gas: In accordance with the CSA/CGA B149.1 standard.
  - .2 Propane gas: In accordance with the CSA/CGA B149.1 standard.
  - .3 Automatic sprinkler systems: In accordance with the NFPA 13 standard.
  - .4 Installation of standpipe and hose systems: In accordance with the NFPA 14 standard.
  - .5 Medical gases: In accordance with the NQ 5710-500 standard.

### **2.5 Identification of piping systems**

- .1 The fluid conveyed in the pipes must be identified by background colour markings, pictograms (if necessary) and / or legends; the flow direction must be indicated by arrows. Unless otherwise specified, piping must be identified in accordance with the CAN/CGSB 24.3 standard.

.2 Pictograms

- .1 Where applicable, the pictograms must comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) requirements.

.3 Legends

- .1 Capital letters with the height and colour in accordance with the CAN/CGSB 24.3. standard and with the indications below.

Outer diameter of the pipe or insulation		Letter height	
(mm)		(mm)	
30		13	
50		19	
150		32	
250		63	
More than 250		88	

.4 Arrows indicating the flow direction

- .1 Outer diameter of pipe / insulation less than 75 mm: 100 mm long x 50 mm high;
- .2 Outer diameter of pipe / insulation more than 75 mm: 15 mm long x 50 mm high;
- .3 Arrows with two heads when the flow direction is reversible.

.5 Dimensions of the background colour markings

- .1 Height: Sufficient to cover the circumference of the pipe / insulation.
- .2 Length: Sufficient to allow for the pictogram, legend and arrows to be applied.

.6 Materials for making the background colour markings, lettering (legends) and arrows

- .1 Tubes and pipes 20 mm in diameter or less: Plastic labels,
- .2 Self-adhesive, water-repellent and heat-resistant.
- .3 Other pipes: Laminated, vinyl, self-adhesive, protective-coating, underside coated with waterproof contact adhesive, designed to withstand 100% relative

humidity at a constant heat of 150 degrees Celsius and intermittent heat of 200 degrees Celsius.

.7 Background colours and legends

- .1 Follow the ministerial Representative's instructions when the background colours and legends are not specified.
- .2 Colour of the legends and arrows: According to the chart below.

Background colours	Legends, arrows
Yellow	Black
Green	White
Red	White

- .3 Submit the reference legend and the primary and secondary colour classifications for approval by the ministerial Representative, if they do not appear in the table below.

.4 Background colour markings and piping legends

Content / Fluid conveyed	Background colours	Legend
** Add to the temperature calculation		
++ Add to the temperature and pressure calculation		
Raw water	Green	RAW WATER
City water	Green	CITY WATER
Treated water	Green	TREATED WATER
Supply Condenser water -	Green	SUPPLY CONDENSER WATER -
Return - Condenser water	Green	RETURN COND. WATER
Supply Cold water -	Green	SUPPLY COLD WATER -
Return - Cold Water	Green	RETURN COLD WATER
Supply - Hot water	Yellow	SUPPLY HOT WATER -
Return - Hot water	Yellow	RETURN HOT WATER
Supply Glycol hot water -	Yellow	SUPP. GLYCOL HOT WATER
Return - Glycol hot water	Yellow	RET. GLYCOL HOT WATER
Boiler supply water	Yellow	BOILER SUPP. WATER
Cold drinking water	Green	COLD DRINK. WATER
Return Drinking water -	Green	RETURN COLD DRINK. WATER
Supply Domestic hot water -	Green	SUPPLY DOM. HOT WATER -

Content / Fluid conveyed	Background colours	Legend
** Add to the temperature calculation		
++ Add to the temperature and pressure calculation		
Recirculation Domestic hot water -	Green	RECIRCULATION DOM. HOT WATER -
Supply Domestic cold water -	Green	SUPPLY DOM. COLD WATER -
Mixed water	Green	MIXED WATER
Plumbing supply water	Green	PLUMBING SUPPLY WATER
Ventilation (plumbing)	Green	PLUMBING VENTILATION
Water - Automatic sprinklers	Red	WATER SPRINKLERS AUTO.
Air for instrumentation	Green	AIR INSTRUMENTATION

## 2.6 Air duct identification

- .1 Letters 50 mm in height and arrows indicating the flow direction of the fluid, 150 mm in length x 50 mm in height, stencilled.
- .2 Colour: black, or a colour contrasting with that of the duct.

## 2.7 Faucet and tap identification

- .1 Brass labels, stamped, in 12 mm characters, painted black.
- .2 Provide, for each network, function diagrams in the approved format, with diagrams and lists of labeled elements, indicating the type of valves, the network, the function, the location and the normal operating position of the elements.

## 2.8 Identification of networks and control / regulation devices

- .1 Identify networks, devices, elements, regulators and sensors with nameplates that comply with the requirements in this section.

- .2 Identify the function of each and (if applicable) their safety setting.

## **2.9 Unilingual/bilingual inscriptions**

- .1 The inscriptions used to identify systems and elements must be written in French.

## **3. Execution**

### **3.1 Manufacturer's instructions**

- .1 Compliance: Comply with manufacturer's written requirements, recommendations, and specifications, including any available technical bulletins, instructions for handling, storing, and installing products, and data sheet instructions.

### **3.2 Time of execution**

- .1 Identify networks and devices only after the painting is complete.

### **3.3 Installation**

- .1 CAN/CGSB-24.3.
- .2 Provide the ULC and CSA certification plates required by each respective organization.
- .3 If applicable, identify networks and devices as per the PMSS from PWGSC.
- .4 Materials for making the background colour markings, lettering (legends) and arrows:
  - .1 Apply tape or strips on dry, clean surfaces prepared for this purpose. Wrap the tape around the pipe, overlapping the ends to a width equal to the diameter of the pipe.

### **3.4 Nameplates**

- .1 Placement
  - .1 Plates must clearly identify the fixtures and / or piping systems and must be located where they will be in plain sight and easily readable from the work floor.
- .2 Spacers
  - .1 On hot and / or insulated surfaces, plan for spacers under the nameplates.
- .3 Protection
  - .1 Do not apply paint, insulation or any other coating to the nameplates.

- .4 Verify the plate list before engraving the message.
- .5 The devices to be identified include, among others:
- .6 Pumps;
- .7 Water heater;
- .8 Water conditioning systems;
- .9 Tanks;
- .10 Boilers;
- .11 Coolers;
- .12 Cooling towers;
- .13 Heat exchangers;
- .14 Air conditioning systems;
- .15 Blowers;
- .16 Coils;
- .17 Heat recovery equipment;
- .18 Humidifiers;
- .19 Limit switch boxes

### **3.5 Placement for identification elements for pipes and air ducts**

- .1 Place identification marks for piping and air ducts in the following locations:
  - .1 Along pipes in open areas of boiler rooms, equipment rooms and technical galleries: at intervals not exceeding 17 m, so at least one can be seen from any point of the operating areas or aisles.
  - .2 With the changes in direction.
  - .3 In each small room where piping or air ducts pass through (at least one element).
  - .4 On each side of visual obstacles or where it's difficult to follow the network layout.

- .5 On each side of separations, such as walls, floors or partitions.
  - .6 Where piping or air ducts are concealed in a recess, ceiling void, duct or crawl spaces, or other restricted space, at entry and exit points and near inspection openings.
  - .7 At the start and end points of each pipe or conduit, and near each piece of equipment.
  - .8 Immediately upstream of major manual or automatic valves, otherwise as close as possible, preferably on the upstream side.
  - .9 In a way that the designation is easily readable from the usual areas of operation and from all easily accessible points;
  - .10 Perpendicular to the best possible line of sight, considering the location of the operating staff, lighting conditions, reduced visibility of colours or legends caused by the accumulation of dust and dirt, in addition to the risk of damage.
- .2 Mark the pipes with a stencil on the final finish only.

### **3.6 Faucet and tap identification elements**

- .1 Secure labels with closed non-ferrous metal "S" chains or hooks on valves, except those connected to plumbing fixtures or radiators, and unless they are near and can be seen from the material to which they are connected.
- .2 Place a copy of the functional diagram and list of valves, framed under anti-reflective glass, in the location determined by the engineer. Also insert a copy (in reduced format, if necessary) into each of the operation and maintenance manuals.
- .3 Number the faucets of each network in order.

### **3.7 Cleaning**

- .1 Performing cleaning activities
- .2 Once the installation and performance monitoring work is complete, remove excess materials, waste, tools and equipment from the construction site.

**END OF SECTION**