

Bulletin 18-1-16
Classification of hazardous locations
Rule 18-004

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Scope

- (1) Pre-start health and safety reviews
- (2) How to contact an engineer to perform area classification?
- (3) Class I locations
- (4) Class II locations,
 - (a) Farms

Ontario Electrical Safety Code Rule 18 004 deals with Hazardous Locations classified in accordance with Regulation 851 for Industrial Establishments made under the Occupational Health and Safety Act and those installations exempt from this Regulation.

(1) Pre-start health and safety reviews

Pre-Start Health and Safety Review is required if, in a factory other than a logging operation, a provision from the regulation and the circumstances described exist,

- (a) When a new apparatus, structure or protective element is to be constructed, added or installed or a new process is to be used; or
- (b) When an existing apparatus, structure, protective element or process is to be modified and one of the following steps must be taken to obtain compliance with the applicable provision:
 - (i) New or modified engineering controls are used.
 - (ii) Other than new or modified measures are used.
 - (iii) A combination of new, existing or modified engineering controls and other new or modified measures is used.

For the following circumstances:

- (a) Flammable liquids are located or dispensed in a building, room or area;
- (b) A process involves a risk of ignition or explosion that creates a condition of imminent hazard to a person's health or safety; and
- (c) The use of a dust collector involves a risk of ignition or explosion that creates a condition of imminent hazard to a person's health or safety.

If a Pre-Start Health and Safety Review is required, the owner, lessee or employer shall ensure the following:

- (a) The apparatus, structure, or protective element is not operated or used, unless the review has been conducted, and
- (b) All measures identified in the review as being required for compliance with the relevant provisions of this Regulation listed in Table 1 have been taken, and
- (c) If some or all of the measures specified in (b) are not taken, the owner, lessee or employer shall provide written notice to the joint health and safety committee or the health and safety representative, if any, of what measures have been taken to comply with the relevant provisions of Regulation 851 that are listed in Table 1.

A Pre-Start Health and Safety Review includes the preparation of a written report that is made to the owner, lessee or employer and contains;

The details of the measures to be taken for compliance, and if testing is required before the apparatus or structure can be operated or used or before the process can be used, details of measures to protect the health and safety of workers that are to be taken before the testing is carried out.

A Pre-Start Health and Safety Review shall have the following:

- (a) Date and signature, and
- (b) The report bears a professional engineer seal.

All reports of Pre-Start Health and Safety reviews conducted under this Regulation shall,

- (a) Be kept readily accessible in the workplace together with any supporting documents, and
- (b) Be provided to the joint health and safety committee or the health and safety representative, if any, before the apparatus, structure or protective element is operated or used or the process is used.

Drawings may still be available with classifications done by the Ontario's Ministry of Labour. In lieu of drawings stamped by the Ministry engineers, classifications on drawings stamped by a Professional Engineer, operating under a Certificate of Authorization issued by the Association of Professional Engineers of Ontario and based on having submitted a Certificate of Insurance, or a Professional Engineer employed by the owner, are acceptable in accordance with the above process. These drawings must be available at the job site. Decisions from Ministry engineers will be used where there are disputes about a particular classification.

The electrical inspector concerned reviews the installation drawings for wiring methods in each classified area of the plant and any safety devices such as dust collectors, ventilating equipment, etc., which might impact on the installation methods with reference to the stamped drawings.

The electrical inspector ensures the wiring and equipment installed conforms with the requirements of each area.

(2) How to contact an engineer to perform area classification?

The Consulting Engineers of Ontario (CEO) will provide the necessary service and will refer qualified engineers to perform Area Classifications. They can be reached by calling the:

General telephone number - (416) 620-1400,

Fax number - (416) 620-5803, or

Email – info@ceo.on.ca

Web – www.ceo.on.ca

The CEO's standard approach is to refer consulting engineers (if available) who have the required qualifications and experience and are situated in an appropriate geographic location.

The option to use either the Zone or Division system of classification in Class 1 locations has been removed from Sections 18 and 20. All new installations will be based on the Zone system of classification, and all additions, modifications, and renovations to existing installations may be based on the Division, or Zone system of classification.

(3) Class I

The Classification “Class I” in a Zone system is comprised of the following:

Zone 0, Zone 1 and Zone 2 as defined in Rule 18-006.

Class I hazardous locations are those in which vapours or gases may be present to the extent defined by the Zone descriptions outline above. These locations consist of some areas of garages, service stations, certain dry-cleaning plants, spray-painting establishments, flammable-gas plants, paints and varnish manufacturing plants, distilleries, plants producing industrial alcohol, industries employing processes with flammable volatile liquids, flammable gases, and compounds such as polishing pastes containing flammable ingredients. Electrical equipment for use in Class I hazardous locations must be approved and marked as being suitable for such zones.

Where pressurized equipment or equipment rooms are used as permitted by Rule 18-064, all equipment must be approved and assurance must be received in writing from a qualified person that the installation complies with the National Fire Protection Association Standard 496, Purged and Pressurized Enclosures for Electrical Equipment or other equivalent standard (see Appendix B note to Rule 18-064) .

Where use is made of Rule 18-070, Combustible gas detection, the location of the sensors must be on the stamped drawings.

(4) Class II locations

Class II hazardous locations are those in which dust may be suspended in the air to the extent that explosive concentrations may be present. These locations are found in grain elevators, flour mills, feed grinding and mixing plants, coal pulverizing plants, starch plants, magnesium processing plants, etc.

Electrical equipment for use in Class II hazardous locations must be approved and marked as being suitable for these areas. It is sometimes erroneously referred to as explosion-proof but is simply “dust-tight” in that it excludes dust and is also tested for the safe dissipation of heat when blanketed with dust. Since it excludes dust, no explosive mixture is likely to occur within the enclosure.

For all new electrical installations in both classes of hazardous locations, the electrical equipment must be approved for these locations. The following table may be used as a guide for Class II locations involving grain dusts. Two basic categories of installation are considered in the tabulation.

(a) Farms

Farms - Where the product such as feed, etc., is being produced only for use on the particular farm, Table B1.

Commercial Farms - Where the product for resale or as custom preparation for others and where the amount of material handled is large as compared to what might be processed on the farm, Table B1.

Table B1 – Farm classification

Item No.	Wiring	Switches	Motors	Fixtures
1. Farms Grain Grinders Rollers Hammer Mills Feed Mixing	As required by Section 12 and or Section 22	Dust-tight	Totally-en- closed	Dust-tight
2. Commercial Farms Chopping Mills Feed Mixing Plants Flour Mills Alfalfa Grinding and Processing Mills Terminal Grain Elevators	Rigid Conduit Mineral-Insulated Cable or aluminum sheathed cables as required by Rule 18-202(1)	Class II Group G	Class II Group G	Class II Group G

Note

It is probable that some “farm” installations will be encountered which will be larger than some “commercial farm” installations and should be judged mainly on the amount of material processed and the total time per day that the equipment is used. If necessary, such installations should be treated as “commercial farms”.

Some “commercial farm” installations start on a small scale; and in some cases, it may appear that an easement from the requirements of Item 2 would be in order. However, it is probable that most of such installations will grow into full scale operations in a few years and therefore no easement should be granted.

Rule 18-060(1) has been used as a basis for allowing some easement from these requirements in the case of offices and other similar areas adjoining various types of processing mills, etc. In practice, it has been found that in many cases the requirements given in Rule 18-060 have not been properly adhered to. Therefore, where there is some doubt that no installation will be properly made or maintained, the use of equipment approved for Class II Group G may be required even in such locations.

In many instances, good housekeeping can be the key to safe installations. Frequent and regular removal of dust accumulations from equipment structure, etc., will assist in keeping the fire and explosion hazards at a minimum. The use of suitable dust collecting systems will be found to be of value, particularly where equipment approved for use in the particular hazardous location cannot be obtained.