

Fire Load Calculations

Guide to Determining Group F, Division 3 Occupancies

This document is intended as a general guideline for fire load calculations for determining Group F, Division 3 (Group F3) Occupancies through the Ontario Building Code.

The Ontario Building Code (OBC) Division A, 1.4.1.2.(1) provides three definitions for industrial occupancies;

High hazard industrial occupancy (Group F, Division 1) means an *industrial occupancy* containing sufficient quantities of highly combustible and flammable or explosive materials to constitute a special fire hazard because of their inherent characteristics.

Medium hazard industrial occupancy (Group F, Division 2) means an *industrial occupancy* in which the combustible content is more than 50 kg/m² or 1 200 MJ/m² of *floor area* and that is not classified as a *high hazard industrial occupancy*.

Low hazard industrial occupancy (Group F, Division 3) means an *industrial occupancy* in which the combustible content is not more than 50 kg/m² or 1 200 MJ/m² of *floor area*.

Note: In order to be classified as a Group F3 occupancy the combustible content shall be evaluated for **both** the 50 kg/m² **and** 1 200 MJ/m², and if **either** of these qualifiers exceed the specified value the occupancy cannot be classified as a Group F3.

When considering which Group F 'Division' to classify a proposed occupancy / use as, Appendix note A-3.1.2.1.(1) "Major Occupancy Classifications" as well as the Hazard Index Tables (11.2.1.1.B. to N.) located in Part 11 of the OBC may be helpful resources to use as a guide.

However, some occupancy uses fall under more than one occupancy classification. For example, a Warehouse may be classified as a Group F3, or a Group F2 occupancy depending on the combustible content. In these instances, the Kitchener Building Division considers the occupancy classification as a Group F2. **If a designer, owner, or tenant wishes to have a building or suite classified as a low hazard industrial (Group F3) occupancy, the following information must be submitted with the building permit application:**

1. Report from a Design Professional

The owner or tenant of the proposed building or suite must retain the services of an Architect, or Professional Engineer of Ontario, competent in fire load calculations. This Design Professional must perform an assessment of the proposed combustible content per square metre of the floor area and compare this combustible content to the maximum 50 kg/m² **and** 1200 MJ/m² permitted for a Group F3 occupancy and provide a detailed and sealed report.

Combustible content may include, but is not limited to the following;

- Materials and products to be stored (including packaging)
- Combustible liquids
- Pallets, racking, shelving, furniture, etc.

The report shall include a detailed list or table specifying **all** proposed combustible content with the corresponding weights (kg), **and** specific heat / heat of combustion (KJ) for each. The corresponding combustible content calculations confirming the kg/m² **and** MJ/m² shall also be provided.

2. Letter from the Owner / Tenant

The owner / tenant of the proposed building or suite must certify that the assumptions used in the report prepared by the design professional are accurate and that the combustible content will not exceed 50 kg/m² or 1 200 MJ/m². A letter, similar to the one below, must be submitted along with the report from the design professional described in item 1 above. Please note that the owner(s) are responsible for their building being used or occupied in accordance with the Ontario Building Code and Ontario Fire Code.

Sample Letter

Name of Project: _____
Address of Project: _____
Proposed Use of Building / Suite: _____

I (we) the owner(s) and/or tenant of the above referenced building concur with the assumptions used in the attached report prepared by _____, dated _____.

I (we) also certify that the combustible content of the building / suite will not exceed 50 kg/m² or 1200 MJ/m² of floor area. I (we) understand that if these limits are to be exceeded then an application must be made for a building permit to change the occupancy of this building or suite from low hazard industrial (Group F3) occupancy to a medium hazard industrial (Group F2) occupancy and that building upgrades may be required as a result of this change of major occupancy.

Name(s) of Owner(s) / Tenant Signature Date