

**SPRINKLER-PROTECTED GLAZING IN
FIRE-RESISTANT WALL ASSEMBLIES**

DISCUSSION

Sentence 3.1.7.1.(1) specifies that the fire-resistance rating of a material, assembly or structural component shall be determined by testing to CAN/ULC-S101, "Fire Endurance Tests of Building Construction and Materials."

Recently, designers have wanted to install clear glass in fire separations and exit enclosures to provide greater visibility within the building. Glass block and wired glass panels do not provide a clear area of visibility that designers would like to incorporate into their designs. As such, an alternative to using glass block and wired glass panels has been requested.

"Sprinkler-protected glazing" is a design alternative that has been in use for several years. It varies slightly from the concept of using glass block and wired glass panels in that the glazing that is being protected is not to be considered as a closure in a fire-rated assembly. Instead, the fire-resistance rating assigned to the combination of glazing assembly and sprinkler heads must be able to achieve at least the same fire-resistance rating of the fire separation it is being installed within. Unfortunately, ULC-S101 does not contain requirements that adequately address "sprinkler-protected glazing." Because of this, ULC developed a new standard for these assemblies, titled ULC/ORD C263.1-99, "Sprinkler-Protected Windows Systems."

Also, since the "sprinkler-protected glazing" is being used as an alternative to the traditional fire-rated assembly, the installation of the glazing panels doesn't reduce the number of unprotected openings that would be permitted in a given exterior wall assembly.

Previous versions of this STANDATA cited research done by the National Research Council and imposed restrictions on the designs based on that report. However, recent advances in technology and requirements for sprinkler-protected glazing in other jurisdictions have shown that the previous STANDATA has not kept pace with industry.

When the "sprinkler-protected glazing" STANDATA was originally published under the Alberta Building Code 1985, the information was based on Canadian Building Digest

Unless stated otherwise, all Code references in this STANDATA are to Division B of the Alberta Building Code 2006.



Issue of this STANDATA is authorized by
the Chief Building Administrator

[Original Signed]
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SAFETY CODES COUNCIL

#248 dated April 1988, "Glazing in Fire Resistant Wall Assemblies," published by the National Research Council of Canada. Since that time, Underwriter's Laboratories Canada has published ULC/ORD C263.1-99, "Sprinkler-Protected Windows Systems." The standard is much more flexible than the NRC report was in terms of the designs allowed, based on the fact that it requires physical tests of the actual assemblies that are going to be used, instead of specifying generic design parameters that must be met in all cases.

This STANDATA sets out the conditions upon which a safety codes officer can accept the use of sprinkler-protected glazing assemblies in interior and exterior fire separations.

CODE REFERENCES

1. Sentence 3.1.7.1.(1) states:

3.1.7.1. Determination of Ratings

1) Except as permitted by Sentence (2) and Article 3.1.7.2., the rating of a material, assembly of materials or a structural member that is required to have a fire-resistance rating, shall be determined on the basis of the results of tests conducted in conformance with CAN/ULC-S101, "Fire Endurance Tests of Building Construction and Materials."

2. Article 9.10.3.1. states:

9.10.3.1. Fire-Resistance and Fire-Protection Ratings

1) Where a fire-resistance rating or a fire-protection rating is required in this Section for an element of a building, such rating shall be determined in conformance with the test methods described in Part 3, A-9.10.3.1. in Appendix A, or Appendix D.

VARIANCE

Glazing assemblies are permitted to be installed in fire separations that are required to have a fire-resistance rating without being tested to CAN/ULC-S101, "Fire Endurance Tests of Building Construction and Materials" as required by Sentences 3.1.7.1.(1) and 9.10.3.1.(1) provided they are protected by a fixed, automatic sprinkler system and the following criteria are met:

1. the assembly has been evaluated by a testing agency that has been accredited by the Standards Council of Canada for conformance to ULC/ORD C263.1, "Sprinkler-Protected Windows Systems,"
2. the fire-resistance rating achieved by testing under item (a) shall be not less than the fire-resistance rating required for the wall assembly that it is being installed within,
3. the assembly is not installed in
 - a. a firewall or within a door installed in a firewall,

- b. a building that contains a high hazard industrial occupancy,
- c. a location where there is a risk of explosion,
- d. any part of a required exit serving
 - i. a floor area subject to the requirements of Subsection 3.2.6.,
 - ii. a care and detention occupancy, or
 - iii. a residential occupancy,
- 4. where the assembly is installed in exits not mentioned in item (d) above, the exits shall not comprise more than one half of the required number of exits from any floor area, and
- 5. if the assembly is located in a loadbearing assembly, all loadbearing components shall have a fire-resistance rating not less than that required for the supported assembly.

Notes:

1. As with all fire protection measures, care must be exercised in the design, installation and maintenance of the active fire protection system to ensure its reliability throughout the life of the building.
2. Sprinkler-protected glazing may be used as a protected opening in an exposing building face where sprinkler heads may be provided on the interior side of the glazing only.
3. Sprinkler-protected glazing may be used in an interior fire separation if the sprinkler heads are provided to protect both sides of the glazing.
4. Sprinkler-protected glazing may be used in a sprinklered or an unsprinklered building.
5. The installation of sprinkler-protected glazing will also require the installation of a fire alarm system for the building, as required by Article 3.2.4.1.

This VARIANCE is applicable throughout the province of Alberta.