



## Technical

## BULLETIN

## ► Report on:

Fire Protection

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## Application of UL Fire Resistance Ratings in Canada

The National Building Code of Canada, Part 3 on *Fire Protection, Occupancy Safety and Accessibility*, requires the fire resistance ratings for assemblies to be determined on the basis of tests conducted in accordance with CAN/ULC-S101 "*Fire Endurance Tests of Building Construction and Materials*". S101 is a Canadian test standard used by agencies like Underwriters' Laboratories of Canada (ULC) to conduct fire testing of building components. ULC listings have been used by Canadian design professionals for many years to select fire rated building assemblies, but there is another source for listings that significantly increases the available options: these are the Underwriters Laboratories Inc. (UL) tested assemblies.

It was always possible to use the UL listed assemblies in Canada, but questions were raised about the equivalence of the UL tests to the requirements of CAN/ULC-S101, and in particular the impact of UL loads calculated using Allowable Strength Design instead of Limit States Design as required in Canada. To address this difference in design approach, the UL designs included a "load restricted factor" (LRF) to reduce the design load for Canadian applications.

Working with UL and ULC, representatives of the *Steel Framing Alliance, Canadian Steel Construction Council* and the *American Iron and Steel Institute* were successful in getting adopted a LRF of unity for load-bearing cold-formed steel wall and floor assemblies listed in UL's directory. Having no load restriction is possible because the calculation of the member resistance in Canada and the U.S. is based on the same standard: CSA S136-07 or ANSI/AISI S100-07, "North American Specification for the Design of Cold-Formed Steel Structural Members".

**UL floor and load-bearing wall designs using cold-formed steel joists and studs can now be used for Canadian application without a "load restricted factor" (LRF).**

Prior to this development, only assemblies that were ULC rated were readily accepted, and because very few tested assemblies were listed in their directory, cold-formed steel faced a significant barrier to entry into the mid-rise construction segment. With the removal of any load restriction, about 30 UL fire-rated load-bearing wall assemblies can now be used in the Canadian market. This LRF can only be applied to load-bearing wall assemblies tested with laterally braced steel studs which account for the majority of UL listed assemblies. In comparison, a more conservative factor of 0.82 and 0.65 must be applied to wood framed walls and floors respectively.

**For More Information from UL**

For more detailed information, please refer to UL's website ([www.ul.com](http://www.ul.com)) and open "BXUV7. GuideInfo" (on the bottom of their homepage, click on "Certifications", then enter BXUV7 in the "UL Category Code" box and click search, then click on the "link to file" BXUV7.GuideInfo). For more specific help, contact the Standards and Codes Consultation Services staff at ULC through their website at [www.ulc.ca](http://www.ulc.ca).

**For More Information from CSSBI**

For more information on sheet steel building products, or to obtain other CSSBI publications, contact the CSSBI at the address shown below or visit the website at [www.cssbi.ca](http://www.cssbi.ca).

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