



ULC, and cUL - Fire Resistance Designs for Canada

Both ULC and cUL Designs meet the requirements of CAN/ULC-S101. Both are equally accepted in Canada by all Provincial and Territorial Jurisdictions. The following document provides information to support these statements.

With Canada and the US such close neighbours both countries engage in providing work, products, expertise to each other; there are American architects designing buildings for Canada and Canadian construction firms building in the US. Close but not the same is the key here. Canada's system is to develop National Model Codes which the Provinces and Territories adopt either in whole or as amended according to their needs. As a result, Canada has a different system including different Standards than the US does as the desired outcomes of each country's codes are different. As a result of these differences, products or listings/certifications that are acceptable in the US are often not in conformity for Canadian requirements. These differences are the number one issue we at Underwriters Laboratories (UL)/Underwriters Laboratories of Canada (ULC) and our Listees deal with when it comes to the conformity of Fire Resistance Designs. When can a UL design be used in Canada? When it's a cUL design...but how does one know? Let's explain...

Understanding UL & ULC – a history

Before explaining how cUL designs work, a primer on the relationship between UL and ULC will be of benefit.

- William H. Merrill founded UL in 1894 as an independent product safety certification organization. Worked on developing standards, small scale tests and inspection of hazards. He was Secretary-treasurer of NFPA (1903 – 1908), President of NFPA (1910-1911) and President of UL (1916)
- William H. Merrill submitted an application to establish an affiliate of UL in Canada and a Charter was granted to Merrill on August 15, 1920.
- 1949 – Underwriters' Laboratories of Canada became a completely Canadian organization
- ULC affiliation with UL Inc. – 1995
- 2011 – ULC becomes part of UL's Global Family of Companies.

UL and ULC are accredited by the Standards Council of Canada as Certification Bodies and certification of Fire Resistance Designs are within the Scope of Accreditation of both companies. Certification through UL will provide you with the cUL mark, certification through ULC will provide the ULC mark, as shown below. Both are equally accepted in Canada by all Provincial and Territorial Jurisdictions



Identifies a ULC Listed Product



Identifies a UL Listed Product for Canada



UL Enhanced Mark since 2013 – also indicates Canadian Conformity with "CA" for Canada identifier

All marks bear the SCC mandated and required Canadian Identifier, either a 'c' or a 'ca' – which identifies the product/service/certification as being in conformity with Canadian requirements.



Fire Resistance Design Requirements for Canada

Canadian Model Codes require fire resistance designs to meet the requirements of CAN/ULC-S101; therefore all cUL designs are tested to meet the requirements of this standard. CAN/ULC-S101 also requires loads be applied to test samples to be calculated using the Limit States Design Method specified in the National Building Code of Canada. In the US, the requirement is to meet ANSI/UL 263 – this is not a National Standard of Canada, nor is it referenced in Canadian codes – therefore designs tested to this standard, or UL designs, are not acceptable in Canada. A Fire Resistance Design that is in conformity with Canadian Code requirements will have the Canada specific information on their design page. All UL, cUL and ULC Fire Resistance Designs are available both in hardcopy and online through the UL and ULC Online Directories;

- **For cUL Designs go to**
<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.html>
- **For ULC Designs go to**
<http://database.ul.com/cgi-bin/XYV/template/LISCANADA/1FRAME/index.html>
- **For UL Designs go to**
<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.html>
- **Or for all of the above designs you can go to the new UL Product Spec at**
<http://productspec.ul.com/>

UL Fire Resistance Designs that are listed for conformity with Canadian requirements, and thereby bearing the cUL Mark, are identified as such in our Directories in two ways. First, the UL/ULC both use Category Code Numbers (CCNs) to identify product categories. Each category code in itself will provide full information for the Designs for that specific conformity. These codes are as follows:

- **On the UL Online Directory**
 - BXUV – UL Designs (US Only)
 - BXUV7 – UL Designs (cUL listed)
- **On the ULC Online Directory**
 - BXUVC – ULC Designs (CAN)

By entering these CCNs in the UL or ULC Category Code search field, you will find all the Fire Resistance Designs listed for that specific conformity – either US, Canadian or both.

The second way to identify a Design's conformity is by looking at the information available on the specific Fire Resistance Design Page. The Online Directories are updated on a daily basis. At the bottom of each Design page is a Last Updated date to ensure that any Listed Designs contains the most current information relative to that design.

Each Fire Resistance Design that is in conformity with Canadian requirements will contain the following:

- Reference to CAN/ULC-S101 and a link to the Guide Information for information on fire-test methods and acceptance criteria along with further information on requirements, installation etc.
- Design ratings (1hr, 2hr etc.)
- Whether or not the design was evaluated using Limit States Design Method and the load restriction factors that shall be used, along with links for further information. Includes specific reference to Canada



- Indication of all proprietary materials that are part of the Design and are required to bear a Certification Mark – such as cUL. Again with specific reference to Canadian requirements.

The last point can never be stressed enough – for a cUL Fire Resistance Design to be in conformity for use in Canada, ANY requirements for use of proprietary materials (indicated by an *) in the design must be used. All Listed components must be cUL Listed for cUL designs. This is the same for ULC Designs where all Listed components must bear the ULC Mark. There is no interchanging of cUL with ULC products in these designs. An example of a Design page follows.

| cUL Design, No.N779 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-----------------------------|--------|-------------------------------|--------|-----------------------------|--------|-------------------------------|--|-----------------------------|--|-------------------------------|--|-----------------------------|--|-------------------------------|--|------|------|------|------|------|------|------|------|---|------|------|------|------|------|------|------|------|-------|-----|------|------|------|------|-----|------|-----|---|------|------|-----|------|-----|-----|-----|-----|---|-------|------|--------|-----|-------|-----|--------|-----|---|--------|------|-------|-----|--------|-----|-------|-----|---|
| <p style="text-align: center;">BXUV - Fire Resistance Ratings - ANSI/UL 263</p> <p style="text-align: center;">BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada</p> <p>See General Information for Fire-resistance Ratings - ANSI/UL 263</p> <p>See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada</p> <p style="text-align: center;">Design No. N779</p> <p style="text-align: center;">February 05, 2014</p> <p style="text-align: center;">Restrained Beam Ratings – 1, 1-1/2, 2, 3 & 4 Hr</p> <p style="text-align: center;">Unrestrained Beam Ratings – 1, 1-1/2, 2, 3 & 4 Hr</p> <p>This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used – See Guide BXUV or BXUV7</p> <p>* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.</p> <div style="text-align: center;"> </div> <p>1. Steel Beam – W8x28 or alternate (per Section IV.6 in the front of the Fire Resistance Directory) steel beam.</p> <p>2. Normal Weight or Lightweight Concrete – Compressive strength, 3000 psi. For normal weight concrete either carbonate or siliceous aggregate may be used. Unit weight 148 pcf. For lightweight concrete, unit weight 110 pcf.</p> | <ul style="list-style-type: none"> - Designs appear online as in handbooks - Includes diagrams - List of all components required in the design. This includes both Generic and Proprietary components. - All products required to bear a Certification Mark are identified with an asterisk (*) – this requirements noted both at top and bottom of design. - Includes link to info for Limit States Design Methods - Includes links to Guide Info pages - Clearly states that the Design has been tested and Listed in conformance with Canadian Code requirements. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>4A. Spray-Applied Fire Resistive Materials* – Applied by mixing with water and spraying in more than one coat to beam and in one coat to steel deck to final thicknesses shown below. Crest areas above the beam shall be filled with Spray-Applied Fire Resistive Materials. Steel surfaces must be clean and free of dirt, loose scale, and oil. Min avg and min ind density of 15/14 pcf, respectively. For method of density determination, refer to Design Information Section.</p> <p>The thickness of Spray-Applied Fire Resistive Materials shown in the table below are only applicable when the beams are supporting floor assemblies containing only fluted floor and form units, topped with concrete as specified.</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th rowspan="3">Rating Hr</th> <th colspan="4">Normal Weight Concrete</th> <th colspan="4">Lightweight Concrete</th> </tr> <tr> <th colspan="2">Restrained Min Thkns In.</th> <th colspan="2">Unrestrained Min Thkns In.</th> <th colspan="2">Restrained Min Thkns In.</th> <th colspan="2">Unrestrained Min Thkns In.</th> </tr> <tr> <th>Beam</th> <th>Deck</th> <th>Beam</th> <th>Deck</th> <th>Beam</th> <th>Deck</th> <th>Beam</th> <th>Deck</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>5/16</td> <td>None</td> <td>5/16</td> <td>None</td> <td>5/16</td> <td>None</td> <td>5/16</td> <td>None</td> </tr> <tr> <td>1-1/2</td> <td>3/8</td> <td>None</td> <td>9/16</td> <td>None</td> <td>7/16</td> <td>3/8</td> <td>9/16</td> <td>3/8</td> </tr> <tr> <td>2</td> <td>9/16</td> <td>None</td> <td>3/4</td> <td>None</td> <td>5/8</td> <td>3/8</td> <td>3/4</td> <td>3/8</td> </tr> <tr> <td>3</td> <td>15/16</td> <td>None</td> <td>1-3/16</td> <td>1/2</td> <td>15/16</td> <td>1/2</td> <td>1-3/16</td> <td>1/2</td> </tr> <tr> <td>4</td> <td>1-5/16</td> <td>None</td> <td>1-5/8</td> <td>1/2</td> <td>1-5/16</td> <td>1/2</td> <td>1-5/8</td> <td>1/2</td> </tr> </tbody> </table> <p>ARABIAN VERMICULITE INDUSTRIES – Type MK-6GF, MK-6 GF Extended Set</p> <p>GRACE KOREA INC – Type MK-6 GF, MK-6 GF Extended Set</p> <p>W R GRACE & CO - CONN – Type MK-6 GF, MK-6 GF Extended Set</p> <p>* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.</p> | Rating Hr | Normal Weight Concrete | | | | Lightweight Concrete | | | | Restrained Min Thkns In. | | Unrestrained Min Thkns In. | | Restrained Min Thkns In. | | Unrestrained Min Thkns In. | | Beam | Deck | Beam | Deck | Beam | Deck | Beam | Deck | 1 | 5/16 | None | 5/16 | None | 5/16 | None | 5/16 | None | 1-1/2 | 3/8 | None | 9/16 | None | 7/16 | 3/8 | 9/16 | 3/8 | 2 | 9/16 | None | 3/4 | None | 5/8 | 3/8 | 3/4 | 3/8 | 3 | 15/16 | None | 1-3/16 | 1/2 | 15/16 | 1/2 | 1-3/16 | 1/2 | 4 | 1-5/16 | None | 1-5/8 | 1/2 | 1-5/16 | 1/2 | 1-5/8 | 1/2 | <p>Example of list of materials requiring Certification Mark</p> <p>Any of the Spray Applied Fire Resistive Materials used must bear the cUL Certification Mark – in this case of the 3 listed, only the WR Grace & Co – Conn products bear the cUL Mark. Only this product is listed for use in Canada. A search for the design on the UL Directory using the Keyword N779 and Canada will show what products for this design bear a cUL Certification Mark.</p> <p>Note: this requirement is also reiterated in the Guide Info sheets available through the designs.</p> |
| Rating Hr | | Normal Weight Concrete | | | | Lightweight Concrete | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Restrained Min Thkns In. | | Unrestrained Min Thkns In. | | Restrained Min Thkns In. | | Unrestrained Min Thkns In. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Beam | Deck | Beam | Deck | Beam | Deck | Beam | Deck | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 5/16 | None | 5/16 | None | 5/16 | None | 5/16 | None | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1/2 | 3/8 | None | 9/16 | None | 7/16 | 3/8 | 9/16 | 3/8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 9/16 | None | 3/4 | None | 5/8 | 3/8 | 3/4 | 3/8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 15/16 | None | 1-3/16 | 1/2 | 15/16 | 1/2 | 1-3/16 | 1/2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 1-5/16 | None | 1-5/8 | 1/2 | 1-5/16 | 1/2 | 1-5/8 | 1/2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



To Summarize

UL and ULC strive to bring the most current and accurate information available for Fire Resistance Designs and to confirm with clarity, that the products on the UL and ULC Directories comply with Canadian requirements. The inclusion of “for Canada” statements has been added to enhance that clarity and make it easier for Designers to choose and Authorities to confirm that a proposed design, and specifically a cUL Design. Some points to remember when using a cUL Design.

- The main requirement for a Fire Resistance Design is for the products and assemblies to comply with Canadian requirements – cUL Designs do.
- Don’t confuse UL with cUL – one is for conformity with US requirements, the other Canadian.
- Provide the AHJ/Architect/Designer with the most up to date information on the selected cUL Fire Resistance Design by getting it from the UL the Online Directory.
- All Designs are listed as they were tested – with the components that are required listed with the design
- Individual components that are required to bear a listing or certification Mark are always indicated with an asterisk (*) and must bear a cUL Mark for any cUL designs.

Resources to help

To help with finding, reviewing, verifying or any other help with cUL Designs and their use and acceptance in Canada, the following resources are available:

- UL and ULC Online Directories at the links listed earlier in this article.
- All the designs and reference standards such as CAN/ULC-S101 and our Fire Resistance Handbook are available to the ULC Store:
ULC Online Store – Fire Resistance Handbook, Standards, Publications
<http://canada.ul.com/ulcstandards/aboutus/salesofulcstandardsmaterials/>
- Scopes of Accreditation by the Standards Council of Canada (including Certification Mark info)
ULC: <http://www.scc.ca/en/accreditation/product-process-and-service-certification/underwriters-laboratories-canada>
UL: <http://www.scc.ca/en/accreditation/product-process-and-service-certification/ul-llc>

And finally, ULC supports Canadian Authorities, UL and ULC Listees, designers or any member of the public with technical support and interpretation. Our Regulatory staff are former code officials – they know and understand your concerns and can provide assistance when working with cUL or any of our Fire Resistance Designs. Find out more at <http://canada.ul.com/codeauthorities/> or contact them at the numbers below.

Brian McBain,
ULC Senior Regulatory Representative
Telephone: 613-751-3404
Toll Free: 1-800-595-9844 Press 1, then 4
Email: Brian.McBain@ul.com

Pierre McDonald,
ULC Senior Regulatory Representative
Telephone: 780-419-3202
Toll Free: 1-800-595-9844 Press 1, then 4
Email: Pierre.McDonald@ul.com