research report

Estimation of Sound Transmission Class and Impact Insulation Class Rating for Steel Framed Assemblies

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PREFACE

This National Research Council Canada (NRC) report was prepared for Steel Framing Alliance (SFA) to enhance *A Guide to Fire and Acoustic Data for Steel Floor, Wall and Roof Assemblies* with more acoustic data. The objective of the work was to provide sound transmission class (STC) and impact insulation class (IIC) ratings for a number of walls and floors listed in the SFA guide since not all of the fire rated designs had sound ratings assigned. The work involved a review of published acoustical ratings, some quite old, and provision of estimates where no reliable test ratings were available. The body of the report describes the procedures used to analyze the available laboratory test data (17 pages). The remainder of the report (pages 18 to 48) provides the estimated or measured sound ratings (with acoustic test identifier, i.e., testing agency) for the fire rated assemblies that were included in the October 2005 edition of the SFA guide. The report's acoustic data was subsequently incorporated into the September 2006 edition of the SFA guide.

DISCLAIMER

Estimation of Sound Transmission Class and Impact Insulation Class Rating for Steel Framed Assemblies

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Estimated and published sound ratings for walls and floors using steel framing.

Background

The objective of this work was to provide sound transmission class[1,2] (STC) and impact insulation class[3,4] (IIC) ratings for a number of walls and floors listed in the document "A Guide to Fire and Acoustic Data for Steel Floor and Wall Assemblies" published by the Steel Framing Alliance (SFA). The listed constructions all incorporated cold formed steel framing. Fire resistance ratings were available for many of the constructions but not all had sound ratings assigned. The intent of the project was to review published acoustical test ratings, some quite old, and to provide estimates where no reliable test ratings were available.

After a short introduction, the report describes the procedures used to analyse the available laboratory test data. The estimated or measured sound ratings are given in tables at the end of the report.

Note: This report, revised in 2008, supersedes a pervious version issued in 2005.

Introduction

Flanking sound transmission

The acoustical ratings obtained in laboratory tests are obtained under carefully controlled conditions. The only significant path for sound is through the specimen being tested. This is invariably not the case in a building where sound can travel along many different paths between adjacent spaces. These paths are called *flanking paths*. If they are not controlled by careful consideration of the connections between walls and floors in a building, the sound attenuation attained in the building can be much less than that in the laboratory.

One example of a flanking path is a continuous subfloor passing beneath a wall intended to be a sound barrier. Degradations of 15 dB in STC can easily occur. Continuous sheets of gypsum board could have similar detrimental effects. In vertically separated homes, sound passes down the walls as well as through the floor reducing sound isolation to some degree.

> ***The rule of thumb that suggests allowing a safety factor of 5 dB when selecting components for use in a building is not a reliable guide. It is safer to have professional advice and to design a complete building system.***

If the intent of a building code regulation is to ensure a minimum level of sound isolation between homes, then specifying STC and IIC values is inappropriate. The appropriate ratings are the apparent sound transmission class[5] (ASTC) and the field impact insulation class[6] (FIIC). Both of these ratings are measured in buildings and include all flanking transmission and construction faults if they exist.

Factors affecting sound transmission in steel stud walls and steel joist floors

The most effective approach to attaining high sound transmission in stud or joist construction is to use two layers of material, one on each side of the studs or joists. The layers should not be directly connected by rigid elements such as steel joists or studs formed from thick metal. There are three common methods used to satisfy this requirement:

- The use of resilient metal channels to support one side of the construction—the ceiling in a floor or one face of a wall,
- The use of light gauge steel studs (0.55 mm or thinner metal) in walls, and
- The use of two independent rows of studs with little or no rigid connections between them. (It is possible to use the same approach in floor design but this is not common.)

Once a basic frame design has been selected, the sound insulation provided by the assembly can be increased by

- Increasing the masses of the layers on each side,

- Increasing the depth of the cavity (deeper studs or joists or greater separation between rows of double studs), or
- Adding and increasing the thickness of sound-absorbing material in the cavity of the assembly.

Not following these guidelines invariably leads to lower sound insulation (STC) than could have been obtained. For example,

- Heavy gauge studs with no resilient metal channels attached give low sound insulation.
- Properly isolated walls or floors with no sound-absorbing material in the cavity usually suffer a degradation of around 8 STC points relative to the same design with sound-absorbing material.
- Placing additional layers in the middle of a double stud wall forms two cavities with smaller depths and thus leads to lower sound insulation than could have been achieved with the same materials in a double layer configuration.
- Small cavities in walls or floors usually lead to lowered sound insulation. Thus placing resilient metal channels between two layers of gypsum board is poor acoustical design.

Impact sound transmission—effects of floor finishes

For impact sound, the nature of the floor finish plays an extremely important role in determining what is transmitted through the floor. Soft or resilient surface layers on a floor reduce the force applied to the floor by the standard tapping machine; the reduction depends on the properties of the finishing surface or topping.

Further, the improvement provided by a topping differs with each floor system it is placed on. For example, vinyl flooring placed on a wood subfloor usually does not increase the IIC rating. Laying the vinyl over a concrete subfloor usually provides an increase of around 10 IIC points, depending on the type of vinyl. Table 1 below can be used to estimate changes in IIC when some common toppings are applied to floors. The column for concrete can be used for concrete slab floors with no separate ceiling or for concrete on steel decks supported by joists having a ceiling attached to them. The column for wood subfloors applies to joist construction. These increments are very approximate and should only be used as a guide. Actual improvements and IIC values obtained will depend on the details of the construction and the topping materials.

Table 1: Approximate improvements for toppings on joist floors and concrete slabs.

Topping	Improvement on concrete	Improvement on wood subfloor
Ceramic or marble tiles	0	-8
Vinyl flooring	10	0
Hardwood flooring	4	3
Wood flooring on resilient layer	20	4
Carpet and underlay	50	40

This subject is covered in more detail elsewhere[7]. It is important to note that a high STC rating does not guarantee a high IIC rating and vice versa. For example, a basic joist floor

with a vinyl topping might have an STC of 54 and an IIC of 48. With a carpet and underlay replacing the vinyl, the IIC might be over 80 while the STC might change to only 56. Many common floor toppings have little or no effect on STC but can greatly change IIC. For practical cases, the two ratings are largely independent.

Analysis procedure

Grouping of the data

Inspection of fire test listings in the SFA Guide revealed a difficulty from an acoustical point of view. A single UL identifier (ID) could apply to several different constructions all having widely differing sound ratings. Conversely, a given construction has only one fire rating and one STC or IIC.

To circumvent this, a table was created linking each fire test ID to one or several specific constructions assigned fire resistance ratings by the testing authority. Each construction was coded to simplify searching and extraction of the significant structural parameters. Where a test result from a laboratory was available, the test ID and the STC or IIC were associated with the construction code in the table.

The walls were then separated into different groups:

1. Walls with sound-absorbing material in the cavity and with the gypsum board layers mounted directly on light gauge steel studs — 25 gauge or thinner metal — or with at least one face mounted on resilient metal channels attached to load-bearing steel studs — 20 gauge or thicker metal.
2. Same as group 1 but with no sound-absorbing material in the cavity.
3. Load-bearing studs (20 gauge or thicker metal) with no resilient metal channels to isolate the gypsum board layers on each face.
4. Double rows of steel studs.

Floors were dealt with as a single group.

Unusual constructions

Some constructions were too unusual to deal with; no algorithm for prediction could be developed and no test data were available. An example is floor GA FC4750 which has a 19 mm plywood subfloor, three layers of gypsum board directly attached to the steel joists, resilient metal channels and then a fourth layer of gypsum board. The STC for this floor is probably less than 50 but it is difficult to be certain because of the direct connection of the three layers to the joists and the small cavity formed by the resilient metal channels. It can be safely stated however, that this is not a good acoustical design. No table is given for constructions in this group.

Regression Analysis

There is no analytical model that is sufficiently accurate for estimating sound transmission through walls and floors. (The accuracy of such models is judged by how well the model predictions agree with measurements.) In the absence of such a model, a regression analysis approach is used. For a set of measurements, physical factors known to influence sound transmission through walls and floors — weight per unit area, cavity depth, thickness of sound-absorbing material etc. — are correlated with STC ratings to

find a regression equation that can be used to estimate STC for systems that have not been measured in a laboratory.

Regression analysis has many inadequacies. The form of the dependence of STC on system characteristics has to be guessed, found by trial and error or assumed from some simple theory. For example, STC is assumed to depend on the sum of logarithm of the masses per unit area of the surface layers and linearly on the cavity depth. Despite the inadequacies, predicted STC values are found to be reliable enough for practical use.

Random variations in measurements and materials can be comparable in magnitude to effects due to changing some physical parameter, such as stud spacing, and thus mask the effect. Random variations are even greater when data from several different laboratories are combined. Thus when it is stated later that STC did not depend on a particular quantity, such as the thickness of sound-absorbing material, this means that for that particular set of data there was no statistically significant dependence; the effect of changing thickness is masked by random and other variations. From other well-controlled experiments it is known that increasing the thickness of the sound-absorbing material in a cavity of a wall or floor reduces sound transmission through the assembly.

Source Data

Fire test identifiers were obtained from the SFA Guide dated May 2005. The fire resistance ratings came from tests run at NRC, Underwriter's Laboratories (UL), Underwriter's Laboratories of Canada (ULC), the Gypsum Association (GA), and Factory Mutual Research (FM).

The data for this project included test results from the National Research Council of Canada (NRC), the laboratory of US Gypsum (USG), Riverbank Acoustical Laboratories (RAL) and a few tests from other laboratories. Apart from the NRC acoustical data, almost all of the test results and specimen descriptions were obtained from brochures published by USG although some were available from NRC data files obtained by other means.

The acoustical data used to generate the final table came from the following sources.

National Research Council of Canada

Quirt, J.D.; Warnock, A.C.C.; Birta, J.A. *Summary Report for Consortium on Gypsum Board Walls : Sound Transmission Results*, Internal Report, Institute for Research in Construction, National Research Council Canada, IRC-IR-693, 1995.
URL: http://irc.nrc-cnrc.gc.ca/fulltext/ir693/

Warnock, A.C.C.; Birta, J.A. *Summary Report for Consortium on Fire Resistance and Sound Insulation of Floors: Sound Transmission Class and Impact Insulation Class Results*, Internal Report, Institute for Research in Construction, National Research Council Canada, IRC-IR-766, 1998.
URL: http://irc.nrc-cnrc.gc.ca/fulltext/ir766/

Warnock, A.C.C. *Summary Report for Consortium on Fire Resistance and Sound Insulation of Floors: Sound Transmission and Impact Insulation Data*, Research Report, Institute for Research in Construction, National Research Council Canada, IRC-RR-169, 2005.
URL: http://irc.nrc-cnrc.gc.ca/fulltext/rr169/

Nightingale, T.R.T.; Halliwell, R.E.; Quirt, J.D.; Birta, J.A. *Sound Insulation of Load Bearing Shear Resistant Wood and Steel Stud Walls*, Internal Report, Institute for Research in Construction, National Research Council Canada, IRC-IR-832, 2002.
URL: http://irc.nrc-cnrc.gc.ca/fulltext/ir832/

Unpublished data from tests conducted at the National Research Council of Canada.

Publications from US Gypsum Corporation (available from www.usg.com):
Fire Resistant Assemblies. Publication SA-100.
Acoustical Assemblies. Publication SA-200.
Fire Containment Systems. Publication SA-200.
Plaster Systems. Publication SA-920.
Area Separation Wall Systems. Publication SA-925.
Shaft Wall Systems. Publication SA-926.
Cement Board Systems. Publication SA-932.
Drywall/Steel Framed systems. Publication SA-923 (available from Canadian Gypsum Corporation, www.cgcinc.com)

Acoustical Wall Insulation—Design Guide. Owens Corning.

Catalog of STC and IIC Ratings for Wall and Floor/Ceiling Assemblies, R.B. Dupree, Office of Noise control, California Department of Health Services, Berkeley, California 94704.

In a few cases, test results were rejected because the ratings seemed anomalous. This could be due simply to typographical errors, but there was no way to ascertain this. The original test reports were not available so a typical value of density was assumed for all the gypsum board in the data sets. This would lead to some uncertainty in the analysis but it should be small compared to other effects.

Group 1 Walls: Non-load-bearing steel studs or load-bearing steel studs with resilient metal channels and sound-absorbing material in the cavity.

The seventy test results in this group were enough to allow regression analysis and the determination of prediction algorithms. Three variables were found to be statistically significant:

1. The sum of the logarithms of the masses per unit area on each face,
2. The cavity depth, and
3. The stud separation.

The regression equation is

$$STC = 13.5 + 11.4*(\log_{10} Mass_1 + \log_{10} Mass_2) + 0.0826*CavityDepth + 0.0085 * StudSpace \quad (1)$$

Residual standard error: 2.1. Adjusted R-squared: 0.81.

where

$Mass_1$ and $Mass_2$ are the masses per unit area (kg/m^2) of the boards on each face of the wall, and
CavityDepth and StudSpace are in mm.

Histograms showing the distributions of the data values are shown in Figure 1. Plots showing the results of the regression analysis are shown in Figure 2.

There was no statistically significant dependence on the thickness of the sound-absorbing material in the cavity or on the fraction of the cavity depth filled with sound-absorbing material. The analysis is described above is similar to that done for NRC data to generate algorithms for the program Socrates[8]. In that case the equation found for estimating STC for non-load-bearing steel stud walls is given in the help file as:

$$STC = 16.6*[\log Mass_1 + \log Mass_2] + 0.168*CavityDepth - 0.06*InsDens + 0.020459 * StudSpace + 0.029191 * InsThick -14.1 \quad (2)$$

Residual standard error: 1.6. Adjusted R-squared: 0.91

where

CavityDepth, StudSpace, InsThick are in mm, and
InsDens, the density of the sound-absorbing material, is in kg/m^3.

The dependence on the thickness of sound-absorbing material in equation (2) is to be expected from other studies. There are two reasons for no dependence being found in equation (1). Random variations among laboratory tests mask effects of changing sound-absorbing material thickness and most of the walls in the data set were filled or nearly filled with sound-absorbing material. Equation (1) should therefore be restricted to cases where the cavity of the wall is almost filled with sound-absorbing material. Note that the residual standard error for the Socrates data set is smaller because the data come from a single laboratory where a series of controlled measurements was run.

The Socrates regression equation was derived from data that did not cover the same range of parameters as this collection of tests from several laboratories. The Socrates equation does not predict the measured STC values well for this data set when the stud depth is greater than 90 mm. For stud depths of 90 mm or less, differences between the predictions from the two equations are negligible. Consequently, when estimates had to be made for this group of walls, equation (1) was used.

Most of the data used to derive equation (1) came from three laboratories: NRC, RAL and USG. The mean residual for each laboratory was less than 0.5 dB, which suggests that, within the uncertainty of equation (1), test results from these laboratories are quite consistent – the reproducibility is quite good.

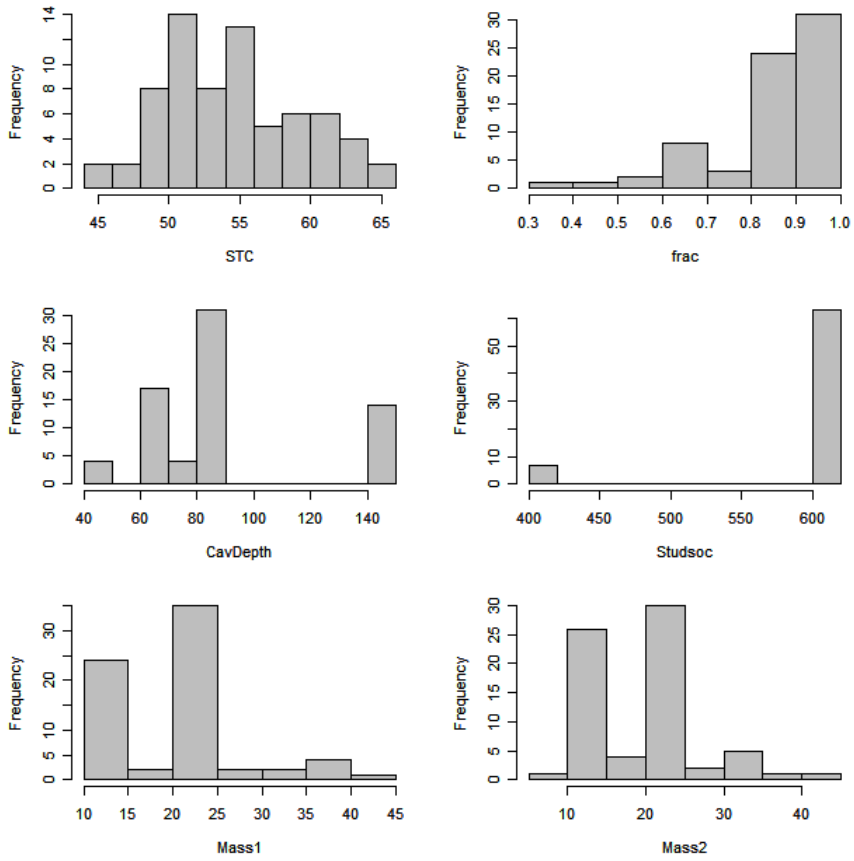

Figure 1: Histograms showing range and distribution of input variables used in regression analysis for group 1 walls. "frac" is the fraction of the cavity filled with sound-absorbing material (Insulation Thickness / Cavity Depth).

Note: Regression equations and associated precision estimates are only valid for assemblies that fall within the range defined by the histograms given above. Regression expressions should not be applied to other assemblies.

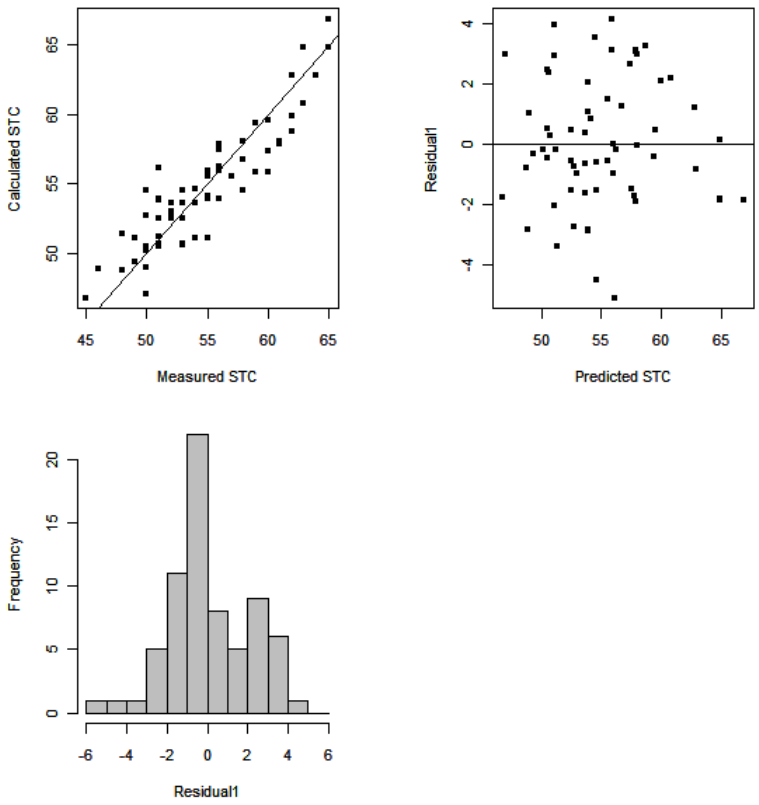

Figure 2: Results of the regression analysis for walls in group 1.

Group 2 Walls: Non-load-bearing steel studs or load-bearing steel studs with resilient metal channels and no sound-absorbing material in the cavity

There were nineteen test results in this category. The regression equation found was

$$STC = -18.8 + 17.55*(\log_{10} Mass_1 + \log_{10} Mass_2) + 0.165*CavityDepth + 0.01 * StudSpace \quad (3)$$

Residual standard error: 2.0. Adjusted R-squared: 0.8

Histograms showing the distributions of the data values are shown in Figure 3. Plots showing the results of the regression analysis are shown in Figure 4.

Note: Regression equations and associated precision estimates are only valid for assemblies that fall within the range defined by the histograms given below. Regression expressions should not be applied to other assemblies.

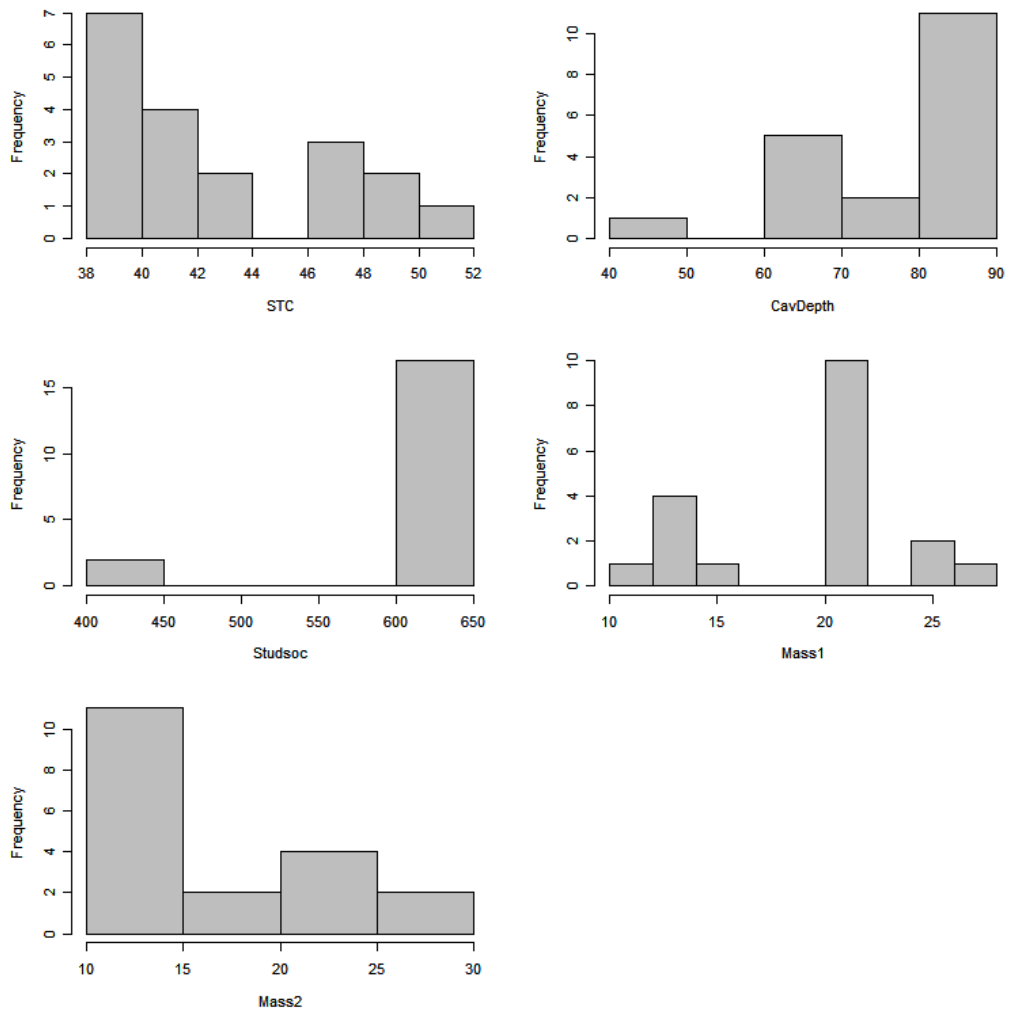

Figure 3: Histograms showing range and distribution of input variables used in regression analysis for group 2 walls.

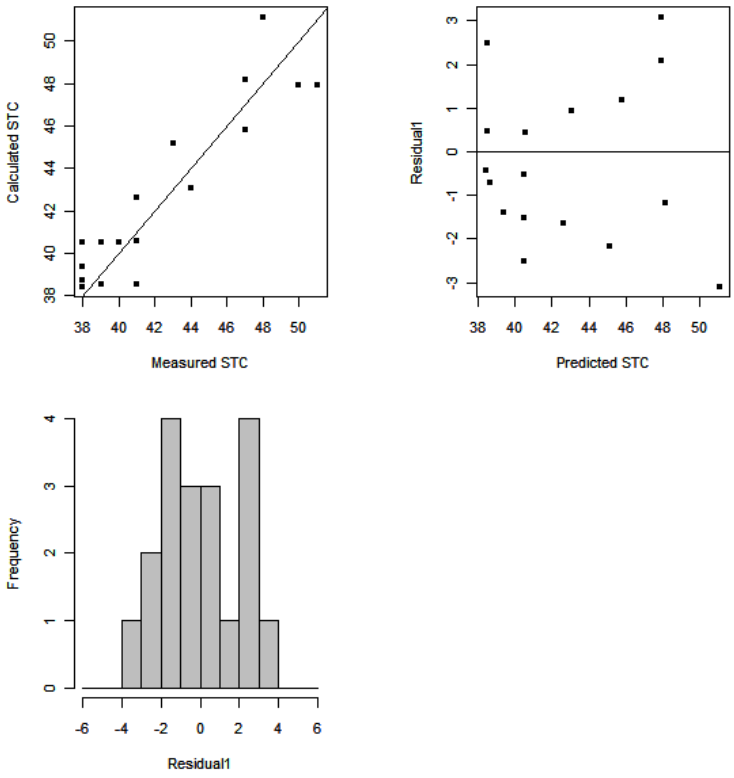

Figure 4: Results of the regression analysis for non-load-bearing stud walls in group 2 (no sound-absorbing material in the cavity).

Group 3 Walls: Load-bearing steel studs with no resilient metal channels.

There were nine test results in this category. A regression analysis was attempted but it was unsatisfactory. Even with two layers of gypsum board on each face of the wall, the STC ratings from laboratory tests were less than 50 (with one exception). Unless three layers of gypsum board are used on each face, walls in this category will have STC less than 50.

Group 4 Walls: Double row of steel studs

There were eight test results available from RAL (2) and USG (6) in this category. These data used on their own did not give good correlations. The two tests from RAL gave anomalously low STC values. The details of the gussets and other structural members inside these double walls are not always available.

There were twenty test results for walls with a double row of steel studs available from NRC records. These together with a few of the tests from USG gave quite good correlation. The regression equation is:

$$\text{STC} = 17.7 + 14.54*(\log_{10}\text{Mass}_1 + \log_{10}\text{Mass}_2) + 0.023*\text{CavityDepth} + 0.027 * \text{InsThick} \quad (4)$$

Residual standard error: 2.4. Adjusted R-squared: 0.79

Histograms showing the distributions of the data values are shown in Figure 5. Plots showing the results of the regression analysis are shown in Figure 6.

The regression equation for double studs used in Socrates was derived from a larger set of NRC data that included wood and steel studs. The equation found for estimating STC was

$$\text{STC} = 16.1*[\log \text{Mass}_1 + \log \text{Mass}_2] + 0.043*\text{CavityDepth} + 0.018 * \text{InsThick} + 0.0051 * \text{StudSpace} + 9.7 \quad (5)$$

Residual standard error: 0.85. Adjusted R-squared: 0.96

Equation (5) gave predicted STC values for the steel stud tests that were not significantly different from those given by equation (4). Thus equation (5) was deemed a more reliable predictor.

Note: Regression equations and associated precision estimates are only valid for assemblies that fall within the range defined by the histograms given below. Regression expressions should not be applied to other assemblies.

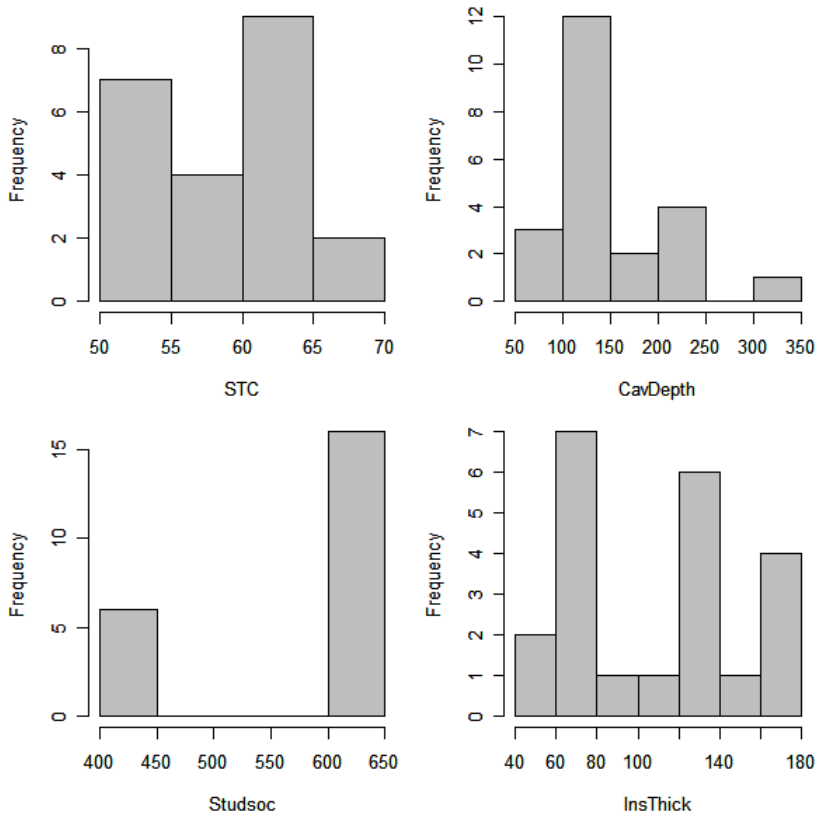

Figure 5: Histograms showing range and distribution of input variables used in regression analysis for group 4 walls (walls with a double row of steel studs).

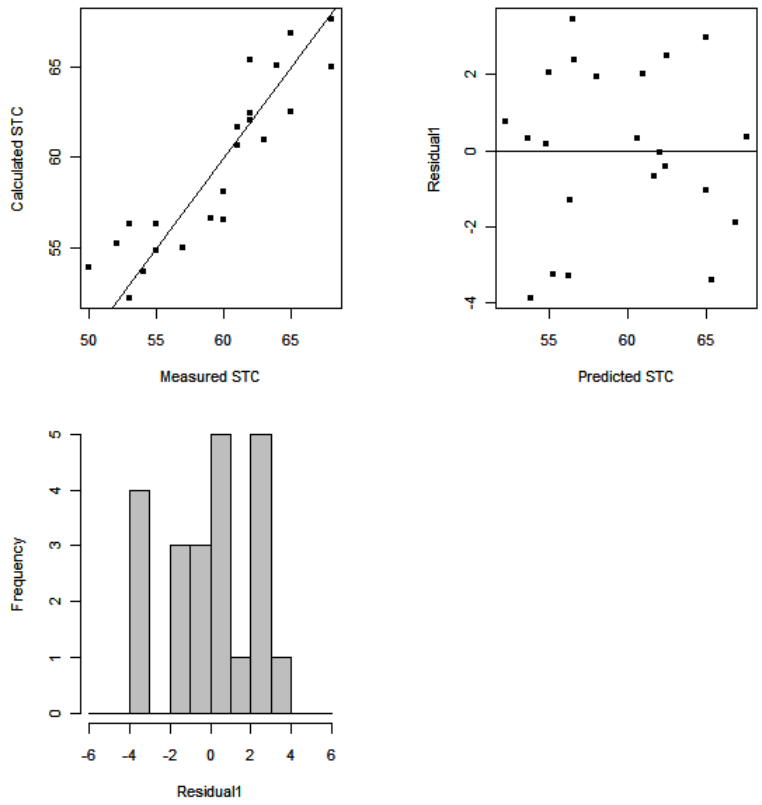

Figure 6: Results of the regression analysis for non-load-bearing stud walls in group 4 (walls with a double row of steel studs).

Floors

Floor test results from laboratories other than NRC were so few that they could not be used for statistical analysis. In practice, this was not important because most of the floors in the guide fell into two categories; they had been tested at NRC or elsewhere or the construction was such that the STC rating was clearly less 50.

Table of constructions and ratings

Explanation of coding system

It is standard practice at IRC to use a coding system to describe efficiently wall and floor systems. This coding system makes searching for particular constructions using software much simpler. With a little familiarity, the essential construction details are also easier to grasp.

Each layer in a floor or wall is coded as follows:

- an integer representing the number of sheets of material
- a sequence of letters to indicate the material in the layer (See Table 2 below)
- a number representing the thickness in mm of each sheet or element in the layer.

If the number of sheets in a layer is one, the leading 1 is omitted. Underscores separate layers. The coding system is also applied to structural elements that do not constitute layers, such as studs, strapping, joists, trusses and resilient metal channels. For such elements, the number following the letters is the depth of each element—the dimension along the axis perpendicular to the plane of the wall or floor—and the number in parentheses following the depth code is the separation between the mid-plane of each element.

Thus the code PLY16_SJ203(406)_GFB150_RC13(610)_2G16 describes the following floor:

- PLY16 = A 16 mm thick plywood subfloor.
- SJ203(406) = Cold-formed steel C-joists 203 mm deep, 406 mm on centres (o.c.)
- GFB150 = 150 mm thick glass fibre batts in the joist cavities.
- RC13(610) = 13 mm deep resilient metal channels screwed to the joists, 610 mm o.c. and perpendicular to the joists
- 2G16 = Two layers of gypsum board, 16 mm thick, attached to the resilient metal channels.

Note that the coding system is a convenience and actual dimensions may not be exactly as coded. For example, nominal 16 mm thick plywood is not always exactly 16 mm thick.

Table 2: Codes used to identify materials and describe constructions.

Code	Material
AIR	A gap in the construction (a layer of air).
CAR	Carpet
CEMBRD	Cement Board
CERT	Ceramic Tiles
CFL	Blown-in cellulose fibre
CFS	Sprayed-on cellulose fibre insulation (to underside of subfloor and sides of joists)
CHSS	C-H steel studs
CON	Concrete
CORSTE	Corrugated steel deck
G	Gypsum board
GCON	Gypsum concrete
GFB	Glass fibre batts
LCON	Lightweight concrete
PLA	Plaster
PLY	Plywood
RC	Resilient metal channels
RFB	Rock fibre batts
SJ	Cold-formed steel C-joists (steel C-joists)
SS	Steel studs, 25 ga.
SSL	Load-bearing steel studs, 20 ga. or thicker.
STY	Expanded polystyrene
UND	Underlay

Tables of ratings

Where “est” appears in the Acoustic Test ID column for the tables for walls, the acoustical ratings have been estimated by regression or by informed extrapolation. In some cases, only an upper limit for an uncertain rating is indicated: for example <50 means the rating is less than 50, <40 means a rating of less than 40, etc. Lower limits are similarly indicated; for example >60 means a rating that is uncertain but greater than 60. A “?” means that the rating is so uncertain that it even upper or lower limits cannot be stated with any confidence.

The tables include acoustical test results from the National Research Council of Canada (ID beginning NRC), the laboratory of US Gypsum (ID beginning USG or SA), Riverbank Acoustical Laboratories (ID beginning RAL), Owens Corning (ID beginning OCF) and a few tests from other laboratories.

Group 1 walls: Non-load-bearing steel studs or load-bearing steel studs with resilient metal channels and sound-absorbing material in the cavity.

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U415	RAL-OT-04-022	2G13_CHSS65(610)_RFB25_G25	2 layers of 13 mm type X gypsum board / 65 mm deep C-H steels studs, 610 mm o.c. / 25 mm rock fibre batts / 1 layer of 25 mm gypsum board	48
ULC W508 UL U415	USG910913	G25_CHSS100(610)_RFB75_G19	1 layer of 25 mm gypsum board / 100 mm deep C-H steels studs, 610 mm o.c. / 75 mm rock fibre batts / 1 layer of 19 mm gypsum board	52
UL U415	RAL-OT-04-019	2G13_CHSS100(610)_RFB75_G25	2 layers of 13 mm type X gypsum board / 100 mm deep C-H steels studs, 610 mm o.c. / 75 mm rock fibre batts / 1 layer of 25 mm gypsum board	50
UL U415	USG040909	2G13_CHSS100(610)_RFB75_ RC13(610)_G25	2 layers of 13 mm type X gypsum board / 100 mm deep C-H steels studs, 610 mm o.c. / 75 mm rock fibre batts / resilient metal channels, 13 mm deep, 610 mm o.c. / 1 layer of 25 mm gypsum board	53

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U415	USG040910	2G13_CHSS100(610)_RFB75_ RC13(610)_G25_G13	2 layers of 13 mm type X gypsum board / 100 mm deep C-H steels studs, 610 mm o.c. / 75 mm rock fibre batts / resilient metal channels, 13 mm deep, 610 mm o.c. / 1 layer of 25 mm gypsum board / 1 layer of 13 mm type X gypsum board	58
UL U419	GA-WP 1548	2G16_SS40(610)_RFB50_2G16	2 layers of 16 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 50 mm rock fibre batts / 2 layers of 16 mm type X gypsum board	51
UL U419 UL U435 ULC W417	SA830112	3G13_SS40(610)_RFB40_3G13	3 layers of 13 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 40 mm rock fibre batts / 3 layers of 13 mm type X gypsum board	59
ULC W417 UL U419 UL U435	SA830113	4G13_SS40(610)_RFB40_4G13	4 layers of 13 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 40 mm rock fibre batts / 4 layers of 13 mm type X gypsum board	62
ULC W408 ULC U406 ULC W412 ULC W433	RAL-TL69-42	G13_SS65(610)_RFB40_G13	1 layer of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 40 mm rock fibre batts / 1 layer of 13 mm type X gypsum board	45
UL V401	est	G13_SS65(610)_RFB50_G13	1 layer of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 50 mm rock fibre batts / 1 layer of 13 mm type X gypsum board	47
ULC W413	est	G13_SS65(610)_GFB70_G13	1 layer of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 70 mm glass fibre batts / 1 layer of 13 mm type X gypsum board	47
ULC W408 ULC W412	USG800506	G16_SS65(610)_RFB40_G16	1 layer of 16 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 40 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	46

Fire ID	Acoustic Test ID	Construction Code	Description	STC
ULC W409	est	G16_SS65(610)_GFB70_G16	1 layer of 16 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 70 mm glass fibre batts / 1 layer of 16 mm type X gypsum board	49
GA WP1090 GA WP1051	CK684-13 / NGC-2318	G13_G6_SS65(610)_RFB40_G6_G13	1 layer of 13 mm type X gypsum board / 1 layer of 6 mm gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 40 mm rock fibre batts / 1 layer of 6 mm gypsum board / 1 layer of 13 mm type X gypsum board	53
UL U419 ULC W408	USG800504	2G13_SS65(610)_RFB40_G13	2 layers of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 40 mm rock fibre batts / 1 layer of 13 mm type X gypsum board	50
UL U468	NRC TL-93-039 / OCF W02984	2G13_SS65(610)_GFB65_G13	2 layers of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 65 mm thick glass fibre batts / 1 layer of 13 mm type X gypsum board	50
ULC W406 UL U419	CK654-40	2G13_SS65(610)_RFB40_2G13	2 layers of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 40 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	54
UL U419 ULC W406	SA860932	2G13_SS65(610)_RFB40_2G13	2 layers of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 40 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	52
ULC W406	USG800502	2G13_SS65(610)_RFB40_2G13	2 layers of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 40 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	53
GA WP1615 ULC W406 ULC W414	NRC TL-93-040	2G13_GFB65_SS65(610)_2G13	2 layers of 13 mm type X gypsum board / 65 mm thick glass fibre batts / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	55

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U468	NRC TL-93-036 / OCF W02884	2G16_SS65(610)_GFB65_G16	2 layers of 16 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 65 mm thick glass fibre batts / 1 layer of 16 mm type X gypsum board	51
UL U411 ULC W406 ULC W414	NRC TL-93-037	2G16_GFB65_SS65(610)_2G16	2 layers of 16 mm type X gypsum board / 65 mm thick glass fibre batts / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	55
ULC W441	SA910507	2G19_SS65(610)_RFB50_2G19	2 layers of 19 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 50 mm rock fibre batts / 2 layers of 19 mm type X gypsum board	56
UL U419 UL U490 ULC W441	USG910907	2G19_SS65(610)_RFB50_2G19	2 layers of 19 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 50 mm rock fibre batts / 2 layers of 19 mm type X gypsum board	56
UL U419	SA800422	G13_SS90(610)_RFB50_G13	1 layer of 13 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 50 mm rock fibre batts / 1 layer of 13 mm type X gypsum board	48
GA WP1022P	NRC TL-93-345	G13_GFB90_SS90(406)_2G13	1 layer of 13 mm type X gypsum board / 90 mm thick glass fibre batts / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	51
GA WP1022P F09	NRC TL-92-411	G13_GFB90_SS90(610)_2G13	1 layer of 13 mm type X gypsum board / 90 mm thick glass fibre batts / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	52
F11	TL-93-027	G13_CFL90_SS90(610)_2G13	1 layer of 13 mm type X gypsum board / 190 mm thick loose fill cellulose fibre / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	53
F10 F10B	est	G13_RFB90_SS90(610)_2G13	1 layer of 13 mm type X gypsum board / 90 mm rock fibre batts / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	52

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U419 UL U465 ULC W407	SA870717	G16_SS90(610)_RFB75_G16	1 layer of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	49
ULC U415	NRC TL-93-325	G16_GFB90_SS90(406)_G16	1 layer of 16 mm type X gypsum board / 90 mm thick glass fibre batts / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 1 layer of 16 mm type X gypsum board	49
UL U419 ULC W407 UL U465 UL U495	SA860620 / RAL-TL90-166	G16_SS90(610)_RFB90_G16	1 layer of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	51
ULC U465	NRC TL-93-298	G16_GFB150_SS150(610)_G16	1 layer of 16 mm type X gypsum board / 150 mm thick glass fibre batts / 150 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	51
ULC W407 ULC W415	NRC TL-92-420	G16_SS90(406)_GFB90_2G16	1 layer of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 90 mm thick glass fibre batts / 2 layers of 16 mm type X gypsum board	52
ULC W407 ULC W415	NRC TL-92-368	G16_GFB90_SS90(610)_2G16	1 layer of 16 mm type X gypsum board / 90 mm thick glass fibre batts / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	54
UL U419 UL U491 ULC W440	USG910617	G19_SS90(610)_RFB75_G19	1 layer of 19 mm gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 1 layer of 19 mm gypsum board	50
UL U495 UL V416	est	G19_SS90(610)_RFB90_G19	1 layer of 19 mm gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 19 mm gypsum board	53
GA-WP-1022P	OCF W02284	2G13_GFB90_SS90(610)_G13	2 layers of 13 mm type X gypsum board / 90 mm thick glass fibre batts / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 13 mm type X gypsum board	52

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U419 ULC W406	SA800421	2G13_SS90(610)_RFB40_2G13	2 layers of 13 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 40 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	55
GA WP1521 ULC W406 ULC W414 ULC U415	NRC TL-92-424	2G13_GFB90_SS90(406)_2G13	2 layers of 13 mm type X gypsum board / 90 mm thick glass fibre batts / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	55
GA WP1521 ULC W406 ULC W414 ULC U415	NRC TL-92-412	2G13_GFB90_SS90(610)_2G13	2 layers of 13 mm type X gypsum board / 90 mm thick glass fibre batts / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	55
UL U403	est	2G16_SS90(610)_RFB90_G16_G13_G6	2 layers of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 16 mm type X gypsum board / 1 layer of 13 mm type X gypsum board / 1 layer of 6 mm gypsum board	58
UL U411 UL U419	USG840819	2G16_SS90(610)_RFB50_2G16	2 layers of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 50 mm rock fibre batts / 2 layers of 16 mm type X gypsum board	56
UL U411 UL U419	USG840818	2G16_SS90(610)_RFB75_2G16	2 layers of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 2 layers of 16 mm type X gypsum board	56
GA WP1771 ULC W406 ULC W414	NRC TL-93-351	2G16_GFB90_SS90(406)_2G16	2 layers of 16 mm type X gypsum board / 90 mm thick glass fibre batts / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 2 layers of 16 mm type X gypsum board	56
GA WP1771 ULC W406 ULC W414	NRC TL-92-369	2G16_GFB90_SS90(610)_2G16	2 layers of 16 mm type X gypsum board / 90 mm thick glass fibre batts / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	58

Fire ID	Acoustic Test ID	Construction Code	Description	STC
GA WP1771 ULC W406 ULC W414	W02584	2G16_GFB90_SS90(610)_2G16	2 layers of 16 mm type X gypsum board / 90 mm thick glass fibre batts / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	58
UL U495	est	2G16_SS90(610)_RFB90_2G16	2 layers of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 2 layers of 16 mm type X gypsum board	58
ULC W438	est	CEMBRD13_SS90(610)_RFB90_ G16	13 mm cement board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	49
ULC W436	est	CEMBRD13_SS90(610)_RFB90_ CEMBRD13_G13	13 mm cement board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 13 mm cement board / 1 layer of 13 mm type X gypsum board	51
ULC W437	est	G13_SS90(610)_RFB90_G13_ CEMBRD13	1 layer of 13 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 13 mm type X gypsum board / 13 mm cement board	52
UL U457	USG840222	G16_SS90(406)_RFB75_STY13_ CEMBRD13	1 layer of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 13 mm expanded polystyrene sheet / 13 mm cement board	50
GA WP1082	est	G16_SS90(406)_RFB75_ CEMBRD13	1 layer of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 13 mm cement board	47
ULC W437	est	G16_SS90(610)_RFB90_G16_ CEMBRD13	1 layer of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 16 mm type X gypsum board / 13 mm cement board	54
ULC W439	est	G13_CEMBRD13_SS90(610)_ RFB90_CEMBRD13_G13	1 layer of 13 mm type X gypsum board / 13 mm cement board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 13 mm cement board / 1 layer of 13 mm type X gypsum board	55

Fire ID	Acoustic Test ID	Construction Code	Description	STC
ULC W423	est	CERT5_CEMBRD13_SS90(406)_ RFB90_G13	5 mm ceramic tile / 13 mm cement board / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 90 mm rock fibre batts / 1 layer of 13 mm type X gypsum board	51
ULC W423	est	CERT5_CEMBRD13_SS90(406)_ RFB90_G16	5 mm ceramic tile / 13 mm cement board / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 90 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	52
ULC W419	est	CERT5_CEMBRD13_SS90(406)_ RFB90_CEMBRD13_CERT5	5 mm ceramic tile / 13 mm cement board / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 90 mm rock fibre batts / 13 mm cement board / 5 mm ceramic tile	54
ULC W439	est	G16_CEMBRD13_SS90(610)_ RFB90_CEMBRD13_G16	1 layer of 16 mm type X gypsum board / 13 mm cement board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 13 mm cement board / 1 layer of 16 mm type X gypsum board	56
UL U454	RAL-TL83-214	2G16_RC13(610)_SS90(610)_ RFB75_2G16	2 layers of 16 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 2 layers of 16 mm type X gypsum board	61
UL U465	est	G16_RC13(610)_SS90(610)_ RFB90_G16	1 layer of 16 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	51
UL U419	SA850415	G16_RC13(610)_SS90(610)_RFB75_ G16	1 layer of 16 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	55
UL U454	USG871207	2G16_RC13(610)_SSL65(610)_ RFB25_2G16	2 layers of 16 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 65 mm load-bearing steel studs, 610 mm o.c. / 25 mm rock fibre batts / 2 layers of 16 mm type X gypsum board	57

Fire ID	Acoustic Test ID	Construction Code	Description	STC
F27 F35 F36	est	2G13_RC13(406)_SSL90(406)_ GFB90_2G13	2 layers of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 406 mm o.c. / 90 mm load-bearing steel studs, 406 mm o.c. / 90 mm thick glass fibre batts / 2 layers of 13 mm type X gypsum board	55
F31	est	2G13_RC13(406)_SSL90(406)_ CFL90_2G13	2 layers of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 406 mm o.c. / 90 mm load-bearing steel studs, 406 mm o.c. / 190 mm thick loose fill cellulose fibre / 2 layers of 13 mm type X gypsum board	54
F38	est	2G13_RC13(406)_SSL90(406)_ RFB90_2G13	2 layers of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 406 mm o.c. / 90 mm load-bearing steel studs, 406 mm o.c. / 90 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	54
UL U419	RAL-TL87-156	G13_RC13(610)_SSL90(610)_ RFB75_G13	1 layer of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 90 mm load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 1 layer of 13 mm type X gypsum board	50
UL U419	RAL-TL83-216	G16_RC13(610)_SSL90(610)_ RFB75_G16	1 layer of 16 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 90 mm load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	54
ULC W444	est	G16_RC13(610)_SSL90(610)_ RFB90_G16	1 layer of 16 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 90 mm load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	51
UL U452	RAL-TL83-215	G13_RC13(610)_SSL90(610)_ RFB75_2G13	1 layer of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 90 mm load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	58
UL U454	RAL-TL87-154	2G13_RC13(610)_SSL90(610)_ RFB75_2G13	2 layers of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 90 mm load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	60

Fire ID	Acoustic Test ID	Construction Code	Description	STC
F28	est	2G13_RC13(406)_SSL90(610)_ GFB90_2G13	2 layers of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 406 mm o.c. / 90 mm load-bearing steel studs, 610 mm o.c. / 90 mm thick glass fibre batts / 2 layers of 13 mm type X gypsum board	56
GA WP1470	est	2G13_SSL90(610)_RC13(610)_ RFB75_2G13	2 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / resilient metal channels, 13 mm deep, 610 mm o.c. / 75 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	56
UL U455	RAL-TL87-153	2G13_RC13(610)_SSL90(610)_ RFB75_3G13	2 layers of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 90 mm load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 3 layers of 13 mm type X gypsum board	61
UL U423	SA830628	2G16_RC13(610)_SSL90(610)_ RFB90_2G16	2 layers of 16 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 90 mm load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 2 layers of 16 mm type X gypsum board	61
UL U455	RAL-TL83-213	3G16_SSL90(610)_RFB75_ RC13(610)_2G16	3 layers of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / resilient metal channels, 13 mm deep, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	62
UL U419	RAL-TL87-139	G13_RC13(610)_SSL150(610)_ RFB125_G13	1 layer of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 150 mm load-bearing steel studs, 610 mm o.c. / 125 mm rock fibre batts / 1 layer of 13 mm type X gypsum board	56
UL U419	RAL-TL84-141	G16_SSL150(610)_RFB125_ RC13(610)_G16	1 layer of 16 mm type X gypsum board / 150 mm load-bearing steel studs, 610 mm o.c. / 125 mm rock fibre batts / resilient metal channels, 13 mm deep, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	56
UL U452	RAL-TL84-140	G16_RC13(610)_SSL150(610)_ RFB125_2G16	1 layer of 16 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 150 mm load-bearing steel studs, 610 mm o.c. / 125 mm rock fibre batts / 2 layers of 16 mm type X gypsum board	59

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U453	RAL-TL87-140	2G13_RC13(610)_SSL150(610)_ RFB125_G13	2 layers of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 150 mm load-bearing steel studs, 610 mm o.c. / 125 mm rock fibre batts / 1 layer of 13 mm type X gypsum board	60
UL U454	RAL-TL87-141	2G13_RC13(610)_SSL150(610)_ RFB125_2G13	2 layers of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 150 mm load-bearing steel studs, 610 mm o.c. / 125 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	63
UL U455	RAL-TL87-142	2G13_RC13(610)_SSL150(610)_ RFB125_3G13	2 layers of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 150 mm load-bearing steel studs, 610 mm o.c. / 125 mm rock fibre batts / 3 layers of 13 mm type X gypsum board	64
UL U453	RAL-TL84-136	2G16_RC13(610)_SSL150(610)_ RFB125_G16	2 layers of 16 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 150 mm load-bearing steel studs, 610 mm o.c. / 125 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	59
NA	RAL-TL89-295	2G16_SSL150(610)_GFB150_ RC13(610)_G16	2 layers of 16 mm type X gypsum board / 150 mm load-bearing steel studs, 610 mm o.c. / 150 mm thick glass fibre batts / resilient metal channels, 13 mm deep, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	60
UL U454	RAL-TL84-139	2G16_RC13(610)_SSL150(610)_ RFB125_2G16	2 layers of 16 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 150 mm load-bearing steel studs, 610 mm o.c. / 125 mm rock fibre batts / 2 layers of 16 mm type X gypsum board	62
UL U455	RAL-TL87-152	3G13_RC13(610)_SSL150(610)_ RFB125_3G13	3 layers of 13 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 150 mm load-bearing steel studs, 610 mm o.c. / 125 mm rock fibre batts / 3 layers of 13 mm type X gypsum board	63
UL U455	RAL-TL84-138	3G16_SSL150(610)_RFB125_ RC13(610)_2G16	3 layers of 16 mm type X gypsum board / 150 mm load-bearing steel studs, 610 mm o.c. / 125 mm rock fibre batts / resilient metal channels, 13 mm deep, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	63

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U455	RAL-TL84-150	3G16_SSL150(610)_RFB125_ RC13(610)_2G16	3 layers of 16 mm type X gypsum board / 150 mm load-bearing steel studs, 610 mm o.c. / 125 mm rock fibre batts / resilient metal channels, 13 mm deep, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	65
UL U455	RAL-TL87-143	3G16_RC13(610)_SSL150(610)_ RFB125_3G16	3 layers of 16 mm type X gypsum board / resilient metal channels, 13 mm deep, 610 mm o.c. / 150 mm load-bearing steel studs, 610 mm o.c. / 125 mm rock fibre batts / 3 layers of 16 mm type X gypsum board	65
ULC W402	est	G13_G9.5_SS65(150)_G9.5_G13	1 layer of 13 mm type X gypsum board /1 layer of 9.5 mm type X gypsum board /65 mm non-load-bearing steel studs, 150 mm o.c. /1 layer of 9.5 mm type X gypsum board /1 layer of 13 mm type X gypsum board /	<45
ULC W404	RAL-TL75-73	2G16_SS65(610)_2G16	2 layers of 16 mm type X gypsum board / 65 mm non-load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	47

Group 2 walls: Non-load-bearing steel studs or load-bearing steel studs with resilient metal channels and no sound-absorbing material in the cavity.

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U415 U467	USG040911	G13_CHSS100(610)_G25_G13	1 layer of 13 mm type X gypsum board / 100 mm deep C-H steels studs, 610 mm o.c. / 1 layer of 25 mm gypsum board / 1 layer of 13 mm type X gypsum board	44
UL U415	USG040917	2G13_CHSS65(610)_G25	2 layers of 13 mm type X gypsum board / 65 mm deep C-H steels studs, 610 mm o.c. / 1 layer of 25 mm gypsum board	38
UL U415	USG040912	2G13_CHSS100(610)_G25	2 layers of 13 mm type X gypsum board / 100 mm deep C-H steels studs, 610 mm o.c. / 1 layer of 25 mm gypsum board	43
ULC W410	est	G13_G10_SS40(610)_G10_G13	1 layer of 13 mm type X gypsum board / 1 layer of 10 mm gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 10 mm gypsum board / 1 layer of 13 mm type X gypsum board	27
ULC W410	est	G16_G10_SS40(610)_G10_G16	1 layer of 16 mm type X gypsum board / 1 layer of 10 mm gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 10 mm gypsum board / 1 layer of 16 mm type X gypsum board	29
ULC W446	est	G25_SS40(610)_2G13	1 layer of 25 mm gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	39
ULC W446	est	G25_SS40(610)_2G16	1 layer of 25 mm gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	41
ULC W418	est	3G13_SS40(610)_3G13	3 layers of 13 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 3 layers of 13 mm type X gypsum board	46

Fire ID	Acoustic Test ID	Construction Code	Description	STC
ULC W418	est	4G13_SS40(610)_4G13	4 layers of 13 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 4 layers of 13 mm type X gypsum board	50
NA	RAL-TL75-74	PLA2_G16_SS65(610)_G16_PLA2	2 mm thick plaster / 1 layer of 16 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 16 mm type X gypsum board / 2 mm thick plaster	38
ULC W415	est	G16_SS90(610)_G16	1 layer of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	36
ULC W411	est	G19_SS65(610)_G19	1 layer of 19 mm gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 19 mm gypsum board	39
GA-WP-1021	OCF W04482	2G13_SS65(610)_G13	2 layers of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 13 mm type X gypsum board	39
ULC W408	RAL-TL69-148	2G13_SS65(610)_G13	2 layers of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 13 mm type X gypsum board	41
UL U419	RAL-TL69-154	2G13_SS65(610)_G13	2 layers of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 13 mm type X gypsum board	41
ULC W414	est	2G13_SS65(610)_2G13	2 layers of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	44
NA	RAL-TL75-73	PLA2_2G16_SS65(610)_2G16_PLA2	2 mm thick plaster / 2 layers of 16 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board / 2 mm thick plaster	47
ULC W414	est	2G16_SS65(610)_2G16	2 layers of 16 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	47

Fire ID	Acoustic Test ID	Construction Code	Description	STC
ULC U415	NRC TL-92-376	G16_SS90(610)_G16	1 layer of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	38
ULC U415	NRC TL-92-418	G16_SS90(406)_G16	1 layer of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 1 layer of 16 mm type X gypsum board	38
ULC W407	RAL-TL92-239	G16_SS90(610)_G16	1 layer of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	39
UL U419 UL V416	USG860808	G16_SS90(610)_G16	1 layer of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	40
UL V416	est	G19_SS90(610)_G19	1 layer of 19 mm gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 19 mm gypsum board	43
GA-WP-1022P	OCF W00682	2G13_SS90(610)_G13	2 layers of 13 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 13 mm type X gypsum board	41
F07	TLA-02-013a	2G13_SS90(406)_G13	2 layers of 13 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 1 layer of 13 mm type X gypsum board	41
UL U419 ULC W406 F03 F05	USG840817	2G13_SS90(610)_2G13	2 layers of 13 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	50
UL U440	SA840715	2G13_SSL90(610)_RC13(610)_2G13	2 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / resilient metal channels, 13 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	51
F37	est	2G13_SSL90(406)_RC13(406)_2G13	2 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	46

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U411 UL U419	OCF W03082	2G16_SS90(610)_G16	2 layers of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	47
UL U411 UL U419	BBN770408	2G16_SS90(610)_2G16	2 layers of 16 mm type X gypsum board / 90 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	48

Group 3 walls: Load-bearing steel studs with no resilient metal channels

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U488	est	PLA11_G9_SSL65(406)_RFB40_PLA11_G9	11 mm thick plaster / 1 layers of 9 mm gypsum board / 65 mm load-bearing steel studs, 406 mm o.c. / 40 mm rock fibre batts / 11 mm thick plaster / 1 layers of 9 mm gypsum board	<50
UL U484	est	PLA19_G9_SSL65(406)_RFB65_G9_PLA19	19 mm thick plaster / 1 layers of 9 mm gypsum board / 65 mm load-bearing steel studs, 406 mm o.c. / 65 mm rock fibre batts / 1 layers of 9 mm gypsum board / 19 mm thick plaster	<50
UL U484	est	PLA19_G9_SSL65(406)_G9_PLA19	19 mm thick plaster / 1 layers of 9 mm gypsum board / 65 mm load-bearing steel studs, 406 mm o.c. / 1 layers of 9 mm gypsum board / 19 mm thick plaster	<50
UL U434	est	G16_SSL90(610)_RFB90_PLA45	1 layer of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 45 mm thick plaster	<50
UL U423	est	G13_SSL90(610)_G13	1 layer of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 1 layer of 13 mm type X gypsum board	<50
GA WP1035	est	CEMBRD13_SSL90(406)_RFB75_G16	13 mm cement board / 90 mm load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	<50
UL U404	est	G16_SSL90(406)_RFB75_CEMBRD13	1 layer of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 13 mm cement board	<50
UL U423	USG810518	G16_SSL90(610)_RFB50_G16	1 layer of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 50 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	41

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U423 FM Wall 1 ULC W424	USG810519	G16_SSL90(610)_G16	1 layer of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	40
UL U432	est	G16_SSL90(406)_RFB75_G16	1 layer of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	<50
UL U432	est	G16_SSL90(406)_RFB90_G16	1 layer of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 90 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	<50
UL U432 UL U423	est	G16_SSL90(406)_G16	1 layer of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 1 layer of 16 mm type X gypsum board	<50
GA WP1041 GA WP8003	est	CEMBRD6_G13_SSL90(610)_G13_CEMBRD6	6 mm cement board / 1 layer of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 1 layer of 13 mm type X gypsum board / 6 mm cement board	<50
UL U473	est	G16_SSL90(406)_RFB75_G13_CEMBRD13	1 layer of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 1 layer of 13 mm type X gypsum board / 13 mm cement board	<50
UL U442	USG840313	CERT5_CEMBRD13_SSL90(406)_RFB75_G16	5 mm ceramic tile / 13 mm cement board / 90 mm load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	50
UL U487	est	2G16_SSL90(610)_RFB75_G13_CEMBRD17	2 layers of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 1 layer of 13 mm type X gypsum board / 17 mm cement board	<50
UL U443	SA851016	G13_CEMBRD13_SSL90(610)_RFB75_2G13	1 layer of 13 mm type X gypsum board / 13 mm cement board / 90 mm load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	56
UL U442 UL U407	USG840321	CERT5_CEMBRD13_SSL90(406)_RFB75_CEMBRD16_CERT5	5 mm ceramic tile / 13 mm cement board / 90 mm load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 16 mm cement board / 5 mm ceramic tile	48

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U425 UL U440	USG811009	2G13_SSL90(610)_RFB50_2G13	2 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 50 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	49
UL U423	est	2G13_SSL90(610)_2G13	2 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	<50
UL U404	est	2G16_SSL90(406)_RFB75_2CEMBRD13	2 layers of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 2 layers of 13 mm cement board	<50
UL U449	est	2G16_SSL90(406)_RFB75_CEMBRD13_CERT5	2 layers of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 13 mm cement board / 5 mm ceramic tile	<50
UL U404	est	2G16_SSL90(406)_RFB75_G16_CEMBRD13	2 layers of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 1 layer of 16 mm type X gypsum board / 13 mm cement board	<50
FM Wall 7 ULC W424	BBN760808	2G16_SSL90(610)_2G16	2 layers of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	48
UL U423 UL U425	USG811006	2G16_SSL90(610)_RFB50_2G16	2 layers of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 50 mm rock fibre batts / 2 layers of 16 mm type X gypsum board	48
F39	est	2G16_SSL90(406)_2G16	2 layers of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 2 layers of 16 mm type X gypsum board	<50
GA WP1716	est	2G16_SSL90(406)_2G16	2 layers of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 2 layers of 16 mm type X gypsum board	<50
UL U423	est	2G19_SSL90(406)_2G19	2 layers of 19 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 2 layers of 19 mm type X gypsum board	<50
UL U490	est	2G19_SSL90(610)_RFB75_2G19	2 layers of 19 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 2 layers of 19 mm type X gypsum board	<50

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U443	SA851028	CERT5_CEMBRD13_G13_SS90(610)_RFB75_ G13_CEMBRD13_CERT5	5 mm ceramic tile / 13 mm cement board / 1 layer of 13 mm type X gypsum board / 90 mm non-load-bearing steel studs, 610 mm o.c. / 75 mm rock fibre batts / 1 layer of 13 mm type X gypsum board / 13 mm cement board / 5 mm ceramic tile	58
UL U423	est	3G13_SSL90(406)_3G13	3 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 3 layers of 13 mm type X gypsum board	<50
UL U462	est	4G13_SSL90(610)_RFB90_4G13	4 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 610mm o.c. / 90 mm rock fibre batts / 4 layers of 13 mm type X gypsum board	?
UL U462	est	4G13_SSL90(610)_4G13	4 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 610mm o.c. / 4 layers of 13 mm type X gypsum board	?
UL U425	USG810940	2G13_SSL150(610)_RFB50_2G13	2 layers of 13 mm type X gypsum board / 150 mm load-bearing steel studs, 610 mm o.c. / 50 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	49
UL U425	USG810937	2G16_SSL150(610)_RFB50_2G16	2 layers of 16 mm type X gypsum board / 150 mm load-bearing steel studs, 610 mm o.c. / 50 mm rock fibre batts / 2 layers of 16 mm type X gypsum board	49
ULC W424	est	2G13_SSL90(610)_2G13	2 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	<50
ULC W424	est	3G13_SSL90(610)_3G13	3 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 3 layers of 13 mm type X gypsum board	50

Group 4 walls: Double row of steel studs

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U420	RAL-TL76-155	G16_SS40(610)_AIR160_RFB90_SS40(610)_G16	1 layer of 16 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 160 mm air gap / 90 mm rock fibre batts / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	52
UL V446 ULC W449	est	G16_SSL90(610)_GFB90_AIR25_SSL90(610)_G16	1 layer of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 90 mm thick glass fibre batts / 25 mm air gap / 90 mm load-bearing steel studs, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	58
UL U420	SA860907	2G13_SS40(610)_RFB50_AIR146_SS40(610)_2G13	2 layers of 13 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 50 mm rock fibre batts / 146 mm air gap / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	55
F26	est	2G13_SSL90(406)_GFB90_AIR25_SSL90(406)_2G13	2 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 90 mm thick glass fibre batts / 25 mm air gap / 90 mm load-bearing steel studs, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	64
F30 F30 R	TLA-01-019a	2G13_SSL90(406)_AIR25_SSL90(406)_2G13	2 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 25 mm air gap / 90 mm load-bearing steel studs, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	55
ULC W445	est	2G13_SSL90(406)_AIR7_SSL90(406)_2G13	2 layers of 13 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 7 mm air gap / 90 mm load-bearing steel studs, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	54

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U420	RAL-TL76-156	2G16_SS40(610)_AIR160_RFB90_SS40(610)_ 2G16	2 layers of 16 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 160 mm air gap / 90 mm rock fibre batts / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	57
UL U420	RAL-TL76-162	2G16_SS40(610)_AIR160_SS40(610)_2G16	2 layers of 16 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 160 mm air gap / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	52
UL V446 ULC W449	est	2G16_SSL90(610)_GFB90_AIR25_SSL90(610)_ 2G16	2 layers of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 90 mm thick glass fibre batts / 25 mm air gap / 90 mm load-bearing steel studs, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	68
UL V446 ULC W449	est	G16_SSL90(610)_GFB90_AIR50_SSL90(610)_ GFB90_G16	1 layer of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 90 mm thick glass fibre batts / 50 mm air gap / 90 mm load-bearing steel studs, 610 mm o.c. / 90 mm thick glass fibre batts / 1 layer of 16 mm type X gypsum board	59
UL V446 ULC W449	est	2G16_SSL90(610)_GFB90_AIR50_SSL90(610)_ GFB90_2G16	2 layers of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 610 mm o.c. / 90 mm thick glass fibre batts / 50 mm air gap / 90 mm load-bearing steel studs, 610 mm o.c. / 90 mm thick glass fibre batts / 2 layers of 16 mm type X gypsum board	69
ULC W438	est	CEMBRD13_SS40(610)_AIR10_SS40(610)_ RFB90_G16	13 mm cement board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 10 mm air gap / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	55
UL U458	SA840505	CEMBRD13_SS90(406)_RFB75_AIR10_ SS90(406)_RFB75_G16	13 mm cement board / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 10 mm air gap / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 75 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	57

Fire ID	Acoustic Test ID	Construction Code	Description	STC
ULC W436	est	CEMBRD13_SS40(610)_AIR10_SS40(610)_ RFB90_CEMBRD13_G16	13 mm cement board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 10 mm air gap / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 13 mm cement board / 1 layer of 16 mm type X gypsum board	54
ULC W437	est	G13_SS40(610)_AIR10_SS40(610)_RFB90_G13_ CEMBRD13	1 layer of 13 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 10 mm air gap / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 13 mm type X gypsum board / 13 mm cement board	55
ULC W437	est	G16_SS40(610)_AIR10_SS40(610)_RFB90_G16_ CEMBRD13	1 layer of 16 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 10 mm air gap / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 16 mm type X gypsum board / 13 mm cement board	57
ULC W439	est	G13_CEMBRD13_SS40(610)_AIR10_SS40(610)_ RFB90_G13	1 layer of 13 mm type X gypsum board / 13 mm cement board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 10 mm air gap / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 13 mm type X gypsum board	55
UL U404	USG840515	CERT5_CEMBRD13_SS40(406)_AIR19_RFB75_ SS40(406)_G16	5 mm ceramic tile / 13 mm cement board / 40 mm deep, non-load-bearing steel studs, 406 mm o.c. / 19 mm air gap / 75 mm rock fibre batts / 40 mm deep, non-load-bearing steel studs, 406 mm o.c. / 1 layer of 16 mm type X gypsum board	60
UL U404	USG840524	CERT5_CEMBRD13_SS90(406)_AIR19_RFB75_ SS90(406)_CEMBRD13_CERT5	5 mm ceramic tile / 13 mm cement board / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 19 mm air gap / 75 mm rock fibre batts / 90 mm deep, non-load-bearing steel studs, 406 mm o.c. / 13 mm cement board / 5 mm ceramic tile	61
ULC W439	est	G16_CEMBRD13_SS40(610)_AIR10_SS40(610)_ RFB90_G16	1 layer of 16 mm type X gypsum board / 13 mm cement board / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 10 mm air gap / 40 mm deep, non-load-bearing steel studs, 610 mm o.c. / 90 mm rock fibre batts / 1 layer of 16 mm type X gypsum board	57

Fire ID	Acoustic Test ID	Construction Code	Description	STC
UL U444	USG841102	CERT5_CEMBRD13_G13_SS40(406)_AIR160_ RFB75_SS40(406)_2G13	5 mm ceramic tile / 13 mm cement board / 1 layer of 13 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 406 mm o.c. / 160 mm air gap / 75 mm rock fibre batts / 40 mm deep, non-load-bearing steel studs, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	62
UL U444	USG841112	CERT5_CEMBRD13_G13_SS40(406)_AIR160_ RFB40_SS40(406)_G13_CEMBRD13_CERT5	5 mm ceramic tile / 13 mm cement board / 1 layer of 13 mm type X gypsum board / 40 mm deep, non-load-bearing steel studs, 406 mm o.c. / 160 mm air gap / 40 mm rock fibre batts / 40 mm deep, non-load-bearing steel studs, 406 mm o.c. / 1 layer of 13 mm type X gypsum board / 13 mm cement board / 5 mm ceramic tile	65
ULC W406	RAL-TL84-290	2G13_SS65(610)_RFB40_G25_SS65(610)_2G13	2 layers of 13 mm type X gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 40 mm rock fibre batts / 1 layer of 25 mm gypsum board / 65 mm deep, non-load-bearing steel studs, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	62
UL U493	est	G16_SSL65(406)_GFB90_AIR25_SSL65(406)_ G16	1 layer of 16 mm type X gypsum board / 65 mm load-bearing steel studs, 406 mm o.c. / 90 mm thick glass fibre batts / 25 mm air gap / 65 mm load-bearing steel studs, 406 mm o.c. / 1 layer of 16 mm type X gypsum board	54
UL U493	est	2G16_SSL90(406)_GFB90_AIR25_SSL90(406)_ 2G16	2 layers of 16 mm type X gypsum board / 90 mm load-bearing steel studs, 406 mm o.c. / 90 mm thick glass fibre batts / 25 mm air gap / 90 mm load-bearing steel studs, 406 mm o.c. / 2 layers of 16 mm type X gypsum board	66

Floors with C-section steel joists

In this table no regression predictions were made. STC and IIC values were either measured or estimated using the judgement of the author.

Fire ID	TL ID	ISPL ID	Construction Code	Description	STC	IIC
UL L524	USG760105	est	PLY19_SJ240(610)_2G13	19 mm plywood / cold-rolled C-section steel joists, 240 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	39	<40
UL L524	USG760310	est	PLY19_SJ240(610)_RFB75_2G13	19 mm plywood / cold-rolled C-section steel joists, 240 mm deep, 610 mm o.c. / 75 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	43	<40
FM FC224	est	est	CON65_CORSTE0.4_SJ203(610)_2G16	65 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	50	<40
GA FC4503	est	est	PLY19_SJ150(610)_2G13	19 mm plywood / cold-rolled C-section steel joists, 150 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	<50	<40
UL L524	est	est	PLY16_SJ180(610)_2G13	16 mm plywood / cold-rolled C-section steel joists, 180 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	<50	<40
UL L543	est	est	PLY18_SJ203(483)_AIR380_GFB90_ SSL90(406)_2G13	18 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 483 mm o.c. / 380 mm air gap / 90 mm thick glass fibre batts / 18 gauge steel studs 406 mm o.c./ 2 layers of 13 mm type X gypsum board	>60	>50
GA FC4502	est	est	PLY16_SJ190(610)_2G13	16 mm plywood / cold-rolled C-section steel joists, 190 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	<50	<40
FM FC184	est	est	PLY19_SJ203(610)_G16	19 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	<50	<40

Fire ID	TL ID	ISPL ID	Construction Code	Description	STC	IIC
FM FC196	est	est	PLY19_SJ203(610)_2G16	19 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / 2 layers of 16 mm type X gypsum board	<50	<40
UL L524	est	est	CAR_UND_PLY19_SJ240(610)_2G13	carpet / underpad / 19 mm plywood / cold-rolled C-section steel joists, 240 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	<50	>60
UL L524	est	est	CAR_UND_PLY19_SJ240(610)_RFB75_2G13	carpet / underpad / 19 mm plywood / cold-rolled C-section steel joists, 240 mm deep, 610 mm o.c. / 75 mm rock fibre batts / 2 layers of 13 mm type X gypsum board	<50	>60
FM FC218	est	est	LCON40_CORSTE0.4_SJ203(610)_G16	40 mm lightweight concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / 1 layer of 16 mm type X gypsum board	<50	<40
ULC M511 UL L568	est	est	2PLY16_SJ203(406)_RFB90_RC13(406)_G16	2 layers of 16 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 90 mm thick rock fibre batts / resilient metal channels, 13 mm deep, 406 mm o.c. / 1 layer of 16 mm type X gypsum board	53	46
ULC M511 UL L568	est	est	PLY19_SJ203(610)_GFB90_RC13(406)_2G13	1 layer of 19 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / 90 mm thick glass fibre batts / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	52	45
ULC M511 UL L568	est	est	PLY19_SJ203(610)_2G13	1 layer of 19 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	<40	<40
ULC M511 UL L568	est	est	PLY16_SJ203(406)_2G13	1 layer of 16 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	<40	<40

Fire ID	TL ID	ISPL ID	Construction Code	Description	STC	IIC
FF-22	est	est	PLY16_SJ203(406)_RC13(406)_2G13	16 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	<50	<40
FF-25	est	est	PLY16_SJ203(406)_RFB90_RC13(406)_G13	16 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 90 mm rock fibre batts / resilient metal channels, 13 mm deep, 406 mm o.c. / 1 layer of 13 mm type X gypsum board	45	39
FF-23	TLF-01-003a	IIF-00-036	PLY16_SJ203(406)_GFB90_RC13(406)_2G13	16 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 90 mm thick glass fibre batts / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	49	39
FF23	TLF-01-005a	IIF-01-001	CAR_UND_PLY16_SJ203(406)_RC13(406)_ 2G13	carpet / underpad / 16 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	52	70
FF-24	est	est	PLY16_SJ203(610)_GFB90_RC13(406)_2G13	16 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / 90 mm thick glass fibre batts / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	49	42
FF-27	est	est	CON40_PLY16_SJ203(406)_GFB90_RC13(406)_ 2G13	40 mm regular concrete / 16 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 90 mm thick glass fibre batts / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	66	36

Fire ID	TL ID	ISPL ID	Construction Code	Description	STC	IIC
FF-50	TLF-04-029a	IIF-04-016	2PLY15_SJ203(406)_CFS90_RC13(406)_G16	2 layers of 15 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 90 mm wet-sprayed cellulose fibre / resilient metal channels, 13 mm deep, 406 mm o.c. / 1 layer of 16 mm type X gypsum board	51	45
FF-65	TLF-04-011a	IIF-04-007	PLY19_SJ203(610)_CFS90_RC13(610)_2G13	19 mm plywood / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / 90 mm wet-sprayed cellulose fibre / resilient metal channels, 13 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	57	51
UL L527	USG771101	est	PLY19_SJ240(610)_RC13(406)_2G16	19 mm plywood / cold-rolled C-section steel joists, 240 mm deep, 610 mm o.c. / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 16 mm type X gypsum board	48	<40
UL L527	SA781110	est	CAR_UND_PLY19_SJ240(610)_RC13(406)_2G16	carpet / underpad / 19 mm plywood / cold-rolled C-section steel joists, 240 mm deep, 610 mm o.c. / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 16 mm type X gypsum board	51	70
FF-40	TLF-03-011a	IIF-03-005	CON40_CORSTE0.4_SJ203(406)_RC13(406)_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	62	32
FF-74	est	est	CON40_CORSTE0.4_SJ203(610)_CFS90_RC13(406)_G16	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / 90 mm wet-sprayed cellulose fibre / resilient metal channels, 13 mm deep, 406 mm o.c. with additional support for non-tapered gypsum board ends / 1 layer of 16 mm type X gypsum board	63	29

Fire ID	TL ID	ISPL ID	Construction Code	Description	STC	IIC
FF-44 ULC I523 UL G549	TLF-02-051a	IIF-02-032	CON40_CORSTE0.4_SJ203(406)_GFB90_ RC13(610)_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 90 mm thick glass fibre batts / resilient metal channels, 13 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	66	34
FF-40b	TLF-03-039a	IIF-03-016	CON40_CORSTE0.4_SJ203(406)_CFS150_ RC13(406)_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 150 mm wet-sprayed cellulose fibre / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	68	39
FF-43	TLF-03-005a	IIF-03-003	CON40_CORSTE0.4_SJ203(406)_GFB90_ RC13(406)_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 90 mm thick glass fibre batts / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	68	36
FF-53	TLF-03-007a	IIF-03-004	CON40_CORSTE0.4_SJ203(406)_RFB90_ RC13(406)_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 90 mm rock fibre batts / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	68	37
FF-40a	TLF-03-031a	IIF-03-010	CON40_CORSTE0.4_SJ203(406)_CFL190_ RC13(406)_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 190 mm thick loose fill cellulose fibre / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	70	38

Fire ID	TL ID	ISPL ID	Construction Code	Description	STC	IIC
FF26	TLF-97-109a	IIF-97-049	CON152_CORSTE0.9_RC13(406)_2G13	152 mm regular concrete / corrugated steel deck, 0.9 mm thick / resilient metal channels, 13 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	57	36
ULC I523 UL G549	est	est	CON40_CORSTE0.4_SJ203(406)_RC13(610)_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / resilient metal channels, 13 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	60	<30
ULC I523 UL G549	est	est	CON40_CORSTE0.4_SJ203(406)_GFB90_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 90 mm thick glass fibre batts / 2 layers of 13 mm type X gypsum board	<50	<30
ULC I523 UL G549	est	est	CON40_CORSTE0.4_SJ203(406)_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 406 mm o.c. / 2 layers of 13 mm type X gypsum board	<50	<30
ULC I523 UL G549	est	est	CON40_CORSTE0.4_SJ203(610)_GFB90_RC13(610)_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / 90 mm thick glass fibre batts / resilient metal channels, 13 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	65	29
ULC I523 UL G549	est	est	CON40_CORSTE0.4_SJ203(610)_RC13(610)_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / resilient metal channels, 13 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	60	30

Fire ID	TL ID	ISPL ID	Construction Code	Description	STC	IIC
ULC I523 UL G549	est	est	CON40_CORSTE0.4_SJ203(610)_GFB90_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / 90 mm thick glass fibre batts / 2 layers of 13 mm type X gypsum board	<50	<30
ULC I523 UL G549	est	est	CON40_CORSTE0.4_SJ203(610)_2G13	40 mm regular concrete / corrugated steel deck, 0.4 mm thick / cold-rolled C-section steel joists, 203 mm deep, 610 mm o.c. / 2 layers of 13 mm type X gypsum board	<50	<30

References

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[2] ASTM E413 Classification for Rating Sound Insulation.
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