



Southwest
New Brunswick
Service Commission

Required insulation

One of the most common questions we receive is about required insulation.

It's important to note that more insulation is always better, however, here are the bare minimums for our climate. For your convenience, we have included both metric (RSI) tables as well as tables converted to the old standard "R" values.

**Required insulation, southern New Brunswick,
small buildings and residences**

	Metric	Imperial
No HRV		
Attics	8.67	49.2
Cathedral ceilings	4.67	26.5
Walls	3.08	17.5
Floors (over unheated)	4.67	26.5
Slabs on grade above frostline *	1.96	9
WITH HRV		
Attics	8.67	49.2
Cathedral Ceilings	4.67	26.5
Walls	2.97	16.9
Floors (over unheated)	4.67	26.5

* For non-engineered slabs on grade, above a frostline. Greater requirements apply with heated floors (R12). Engineered slabs must meet requirements established by the designer.

As of February, 2021, the Province has adopted the National Energy Code for Buildings, 2011 edition. This means that a number of larger non-residential buildings (essentially any non-residential building greater than 300 m² (3230 ft²) need to meet the requirements below. Most notably, the NECB requires significantly greater wall insulation - R23 for our area.

Required insulation for buildings regulated by the National Energy Code, Southwest New Brunswick (NECB 3.2.2.2 and 3.2.3.1)

Above-ground assemblies, u-value/RSI			R-value
Walls	0.247	4.048583	22.98785
Roofs	0.183	5.464481	31.02732
Floors	0.183	5.464481	31.02732
Below-ground assemblies, u-value/RSI			R-value
Walls	0.284	3.521127	19.99296
Roofs	0.284	3.521127	19.99296
Floors*	0.757	1.321004	7.500661

It's important to note that these values are the bare requirement for Code-compliant construction, and it may well be wise to insulate to greater-than-Code requirements to achieve future energy savings.

Note also that these figures are the requirements for the complete assembly. In a standard stud-and-cavity wall, the "thermal bridging" effect of the studs must be taken into account. For example, in a typical 2x6 wall, one can insert R22 insulation in the cavities, but the studs themselves only provide R 5.5 for the 1.5 inches of space each occupies, so the wall itself will be less than R22 overall**.

In 2x4 wall construction, fibreglass cavity insulation is insufficient, as the net will be R10 (for 12" on centre studs) to R11 (for 16" on centre studs). For this reason, many renovations will specify either three inches of commercial spray foam (which runs about R7 per inch) or the addition of exterior solid foam to bolster the overall insulation of the home. It's also the reason most new homes specify 2x6 construction.

(**Math: 16" OC wall, comprised of 14.5" of R 22 and 1.5" of R 5.5. $(14.5/16) \times R\ 22 + (1.5/16) \times R\ 5.5 = R\ 19.9 + R\ 0.51 = R\ 20.4$ effective.)

Insulation and renovations:

Renovations - especially partial renovations - can present something of a challenge when it comes to insulating existing buildings. For example, when tearing out an exterior wall in an existing 2x4 home, there are only three ways to bring that wall up to the required R17 effective value: foam in the existing cavity; add foam to the exterior; or extend the wall to create an effective 5-1/2" cavity and fill with R20 or R22 batts.

Our staff recognize that these options may not be possible from either a practical or a cost perspective. What we do ask is that in such situations, all attempts should be made to improve insulation value as much as possible.