

Update to Appendix A (2012 Building Code Compendium)

Note: Will replace current Appendix Notes A-8.6.2.2. and A-8.6.2.2.(5).

A-8.6.2.2. Other Treatment Units

Article 8.6.2.2. sets out the acceptable solution to achieve Building Code compliance for residential treatment units. Sentences (1) and (2) of Article 8.6.2.2. are the performance requirements that set out the maximum concentrations of suspended solids and CBOD₅ for different classifications of treatment units.

As set out in Sentence (5), treatment units that are certified to CAN/BNQ 3680-600, “Onsite Residential Wastewater Treatment Technologies” using a temperature condition listed under option a) or b) of Clause 8.2.2. of that standard are deemed to comply with the requirements of Sentences (1) and (2).

CAN/BNQ 3680-600 uses slightly different terminology than the Building Code. Note (1) to Table 8.6.2.2., which forms part of Sentences (1) and (2), states that the classifications of treatment units specified in Column 1 correspond to the levels of treatment described in CAN/BNQ 3680-600. A Building Code Level II corresponds to a Class B-II in CAN/BNQ 3680-600, a Level III corresponds to Class B-III, and Level IV corresponds to a Class B-IV.

CAN/BNQ 3680-600 (2009) requires:

- 12 continuous months of testing in a climate representative of Ontario conditions as specified in Annex B.3. of the standard
- A minimum of weekly sampling
- 30-day averages that do not exceed the maximum concentrations set out in Table 8.6.2.2.
- A minimum of 80% of sample results that do not exceed the maximum concentrations set out in Table 8.6.2.2.
- Influent wastewater quality that meets the requirements described in Table 5 of the standard
- Influent wastewater temperature that is:
 - Non-controlled, or
 - Controlled so that the influent wastewater is heated to no more than 11°C ±1°C,
- Hydraulic loading as specified in Clause 8.2.2.1. of NSF/ANSI Standard 40 and Annex B.4.2.2. of the standard
- Stress loading in accordance with the procedures outlined in CAN/BNQ 3680-600, which includes wash-day stress, power/equipment failure stress, and working parent stress.

Installation of a CAN/BNQ 3680-600 certified residential treatment unit provides a clear and direct method of demonstrating compliance with the effluent quality criteria in Sentences (1) and (2). No further information is required by a principal authority to determine compliance with the effluent quality criteria in Sentences (1) and (2) of this provision.

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It is also possible to achieve compliance for residential treatment units which do not have BNQ certification as Sentences (1) and (2) establish performance requirements.

If a residential treatment unit has not been certified to CAN/BNQ 3680-600, the treatment unit must be designed so that the effluent does not exceed, for the level of the treatment unit set out in Column 1 of Table 8.6.2.2., the maximum concentrations set out in Column 2 and 3 of Table 8.6.2.2. The treatment unit would need to be designed so that the effluent will not exceed the maximum concentrations in climatic conditions in the part of Ontario in which the system is to be installed.

The building permit applicant would need to demonstrate to the principal authority that the treatment unit complies with Sentences (1) and (2) for the particular climatic conditions where the unit would be used. It is the responsibility of the principal authority to review and determine compliance to the level of treatment required by Sentences (1) and (2).

Compliance would typically be demonstrated by providing the principal authority with test methods, engineering reports and other relevant documentation similar to that described above for CAN/BNQ 3680-600. Documents that could assist with demonstrating compliance could include:

- name of accredited testing organization,
- trade name of the on-site residential wastewater treatment technology being tested,
- the hydraulic capacity of the treatment unit,
- stress loading in accordance with the procedures outlined in standards such as CAN/BNQ 3680-600,
- the specific model and configuration chosen for the testing, and a comparison to the specific model and configuration being proposed in the permit application and associated scaling factors,
- installation, operation and maintenance manuals,
- the dates of testing and a summary of the results of the tests for all appropriate parameters for the type of treatment for the minimum duration of 12 continuous months, including but not limited to influent and effluent wastewater characteristics such as temperature and pH, number of samples, median, standard deviation, minimum and maximum, and
- an engineering letter, sealed and stamped.

CAN/BNQ 3680-600 only applies to residential systems. For non-residential onsite sewage systems that include treatment units, the applicant would need to demonstrate compliance with Sentences (1) and (2) of Article 8.6.2.2. Non-residential treatment units, therefore, must

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follow the second approach described above because BNQ certification is only available for residential treatment units. Compliance would typically be demonstrated by providing the principal authority with similar information as noted above.

A-8.6.2.2.(5) Temperature Conditions for Testing of Treatment Units

The temperature options that apply to the testing of treatment units which are certified to BNQ 3680-600 standard are referenced in Sentence 8.6.2.2.(5) of the Code and are set out in option (a) and option (b) of Clause 8.2.2. of the BNQ standard as follows:

a) non-controlled temperature

b) controlled temperature so that the influent wastewater is heated to $11^{\circ}\text{C} \pm 1^{\circ}\text{C}$, whenever necessary to assure a minimum temperature of 10°C .

Note - this option is based on a temperature of 10°C , which is a typical temperature at the outlet of the septic tank and, as well, it is required for testing nitrogen reduction treatment technologies.

A-8.6.2.2.(5) Additional Treatment Standards in CAN/BNQ 3680-600

Additional treatment options that are available in this standard, but are not currently required by the Building Code, are as follows:

| Class of Treatment | Fecal Coliforms or E. Coli (CFU/100 mL) ⁽¹⁾ |
|--------------------|--|
| D-I | 50 000 |
| D-II | 200 |
| D-III | ND ⁽²⁾ |

Notes to Table:

(1) Maximum concentration in CFU/100 mL based on 30 day average.

(2) ND means non-detectable (median < 10 CFU/100 mL)

| Class of Treatment | Total Phosphorus ⁽¹⁾ , mg/L | Total Nitrogen Reduction |
|--------------------|--|--------------------------|
| P-I | 1.0 | — |
| P-II | 0.30 | — |
| N-I | — | 50% |
| N-II | — | 75% |

Notes to Table:

(1) Maximum concentration in mg/L based on 30 day average.