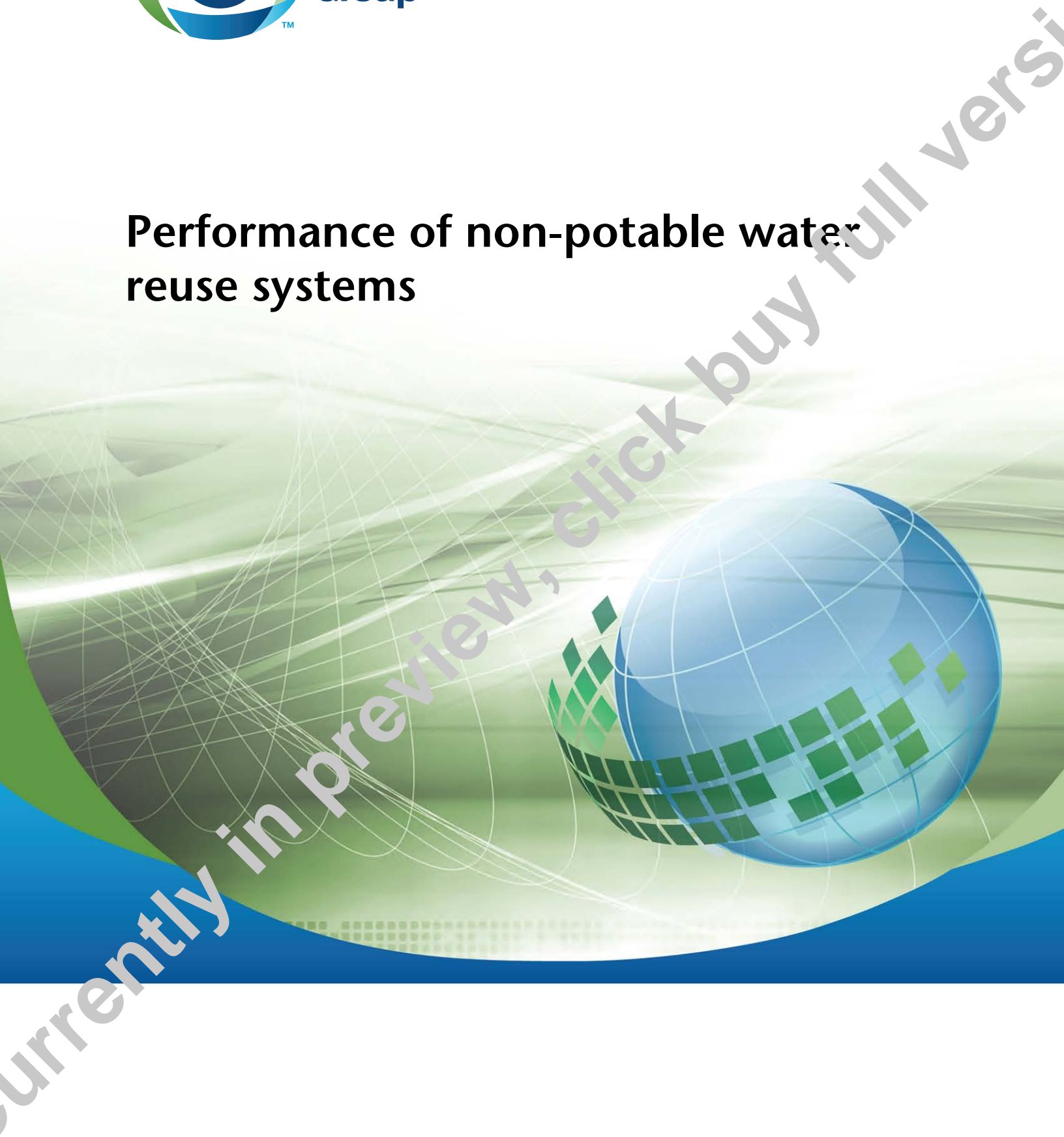




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B128.3-12

Performance of non-potable water reuse systems



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The following revisions have been formally approved and are marked by the symbol delta (Δ) in the margin on the attached replacement pages:

Revised	Table A.1
New	None
Deleted	None

- Update your copy by inserting these revised pages.
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Table 2
Reclaimed water quality requirements
 (See Clauses 5.9.1–5.9.3 and 5.16.1–5.16.3 and Table 3.)

Parameter	Unit	Class A		Class B	
		Median*	Maximum†	Median*	Maximum
BOD ₅	mg/L	≤ 10	≤ 20	≤ 10	≤ 25
TSS	mg/L	≤ 10	≤ 20	≤ 10	≤ 25
Turbidity	NTU	≤ 2	≤ 5	≤ 2	≤ 5
<i>E. coli</i> ‡	CFU/100 ml	Non-detect	≤ 200	100	400
Fecal coliforms‡	CFU/100 ml	Non-detect	≤ 200	100	400
Total chlorine residual‡	mg/L	Between 0.5 and 2		Between 0.5 and 2	
Colour	—	Measured and reported only		Measured and reported only	
Odour	—	Non-offensive		Non-offensive	
Oily film and foam	—	Non-detect		Non-detect	

*The median is calculated as the median of all parameter analyses collected for the sampling program.

†The maximum is the maximum analytical value for any single sample collected during the testing program, including samples collected immediately after any stress event.

‡A maximum total chlorine residual of 2 is specified to address the potential negative effects of excessive chlorine on certain applications (e.g., subsurface irrigation). A minimum total chlorine residual of 0.5 is required to protect against potential regrowth in the distribution and storage system.

Table 3
Test outcomes and actions
 (See Clause 5.16.4.)

Outcome	Action
Pass — test specimen meets reclaimed water quality requirements specified in Table 2	Package plant qualified for a five-year term, subject to conditions
Failure due to errors or missteps in test procedures or analysis	Extend test period
Failure due to component failure	Retest commencing from initial commissioning
Failure to meet reclaimed water quality requirements specified in Table 2	Rejection

Annex A (normative)

Wastewater systems

Note: This Annex is a mandatory part of this Standard.

Δ

Table A.1
Influent characteristics
(See Clause 5.4.)

Parameter	Unit	Influent range	Six-month average
BOD ₅	mg/L	100–300	≥ 200
TSS	mg/L	100–350	≥ 200
P _{total}	mg/L	4–15	—
TKN	mg/L	35–70	—
Temperature	°C	10–30	—
pH	—	6.5–9	—
<i>E. coli</i>	CFU/100 ml	0.8–20 × 10 ⁶	—
Fecal coliforms	CFU/100 ml	0.8–20 × 10 ⁶	—

Table A.2
Test schedule
(See Clauses 5.5.1 and 5.5.1.)

Sequence	Number of weeks	Influent		Effluent		Flow characteristics
		24 h composite samples	Grab samples	24 h composite samples	Grab samples	
Steady state	16	48	3	48	16	Steady state
Wash day stress	2	6	3	6	3	Steady state
Working day parent	3	9	4	9	4	Two dosing periods/day steady state
Underloading	2	6	3	6	3	50% steady state
P/E failure	2	7	4	7	4	None and steady state
Vacation	2	5	3	5	3	None
Overloading	2	6	3	6	3	150% steady state
Peak flow	2	7	4	7	4	None and steady state
Con. waste	2	6	3	6	3	Steady state
Hot waste	2	6	3	6	3	Steady state
Chemical	2	6	3	6	3	Steady state
Total	38	112	49	112	49	

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Preface

This is the first edition of CSA B128.3, *Performance of non-potable water reuse systems*.

The development of this Standard was made possible in part thanks to the leadership and financial support of Alberta Municipal Affairs and Canada Mortgage and Housing Corporation (CMHC). Such support does not indicate endorsement of the contents of this Standard.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Subcommittee on Non-potable Water Treatment Systems, under the jurisdiction of the Technical Committee on Non-potable Water Systems and the Strategic Steering Committee on Water Management Products, Materials, and Systems, and has been formally approved by the Technical Committee.

Notes:

- (1) Use of the singular does not exclude the plural (and vice versa) when the sense allows.
- (2) Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.
- (3) This Standard was developed by consensus, which is defined by CSA Policy governing standardization — Code of good practice for standardization as “substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity”. It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.
- (4) To submit a request for interpretation of this Standard, please send the following information to inquiries@csagroup.org and include “Request for interpretation” in the subject line:
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 - (b) provide an explanation of circumstances surrounding the actual field condition; and
 - (c) where possible, phrase the request in such a way that a specific “yes” or “no” answer will address the issue.Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization and are available on the Current Standards Activities page at standardsactivities.csa.ca.
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 - (b) relevant clause, table, and/or figure number;
 - (c) wording of the proposed change; and
 - (d) rationale for the change.

B128.3-12

Performance of non-potable water reuse systems

1 Scope

1.1

This Standard covers packaged non-potable water reuse systems for wastewater or greywater that are intended for treatment applications and have a capacity of 10 000 L/d (2650 gal/d) or less.

This Standard also covers site-assembled components included in package non-potable water reuse systems.

Notes:

- (1) *In this Standard, package non-potable water reuse systems for wastewater or greywater are referred to as package plants.*
- (2) *This Standard is not intended to limit the use of package reuse systems in combination for applications that require a treatment capacity greater than 10 000 L/d (2650 gal/d).*
- (3) *This Standard does not cover custom-engineered systems. For such systems, the authority having jurisdiction should be consulted.*
- (4) *Greywater diverters are covered in ASME A112.18.2/CSA B125.2.*
- (5) *See [Annex E](#) for information on design, warranty, and service policy.*

1.2

This Standard specifies test methods for evaluating the performance of the package plants and minimum requirements with regard to

- (a) materials;
- (b) design and construction;
- (c) treatment performance;
- (d) markings; and
- (e) instructions and other documentation.

1.3

This Standard specifies two different levels (Class A and Class B) of treated reclaimed water quality. The requirements of Class A are more stringent than those of Class B (see [Clause 5.9.1](#)). The authorities having jurisdiction are responsible for determining the appropriate class of reclaimed water for each non-potable purpose.

1.4

In CSA standards, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (nonmandatory) to define their application.