



Greenhouse and Energy Minimum Standards (Commercial Ice-makers) Determination 2024

I, Josh Wilson, Assistant Minister for Climate Change and Energy, make the following determination.

Dated

Josh Wilson **DRAFT ONLY—NOT FOR SIGNATURE**
Assistant Minister for Climate Change and Energy

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Part 1—Preliminary

1 Name

This is the *Greenhouse and Energy Minimum Standards (Commercial Ice-makers) Determination 2024*.

2 Commencement

- (1) Each provision of this determination specified in column 1 of the table commences, or is taken to have commenced, in accordance with column 2 of the table. Any other statement in column 2 has effect according to its terms.

Commencement information		
Column 1	Column 2	Column 3
Provisions	Commencement	Date/Details
1. The whole of this determination	The day after the end of the period of 12 months beginning on the day this instrument is registered.	

Note: This table relates only to the provisions of this determination as originally made. It will not be amended to deal with any later amendments of this determination.

- (2) Any information in column 3 of the table is not part of this determination. Information may be inserted in this column, or information in it may be edited, in any published version of this determination.

3 Authority

This determination is made under section 23 of the *Greenhouse and Energy Minimum Standards Act 2012*.

4 Definitions

Note: A number of expressions used in this determination are defined in section 5 of the Act, including the following:

- (a) family of models;
- (b) GEMS
- (c) GEMS labelling requirements;
- (d) GEMS level requirements;
- (e) GEMS Register;
- (f) model;
- (g) product classes.

In this determination:

Act means the *Greenhouse and Energy Minimum Standards Act 2012*.

AHRI 810-2016 means AHRI Standard 810 - 2016. Standard for Performance Rating of Automatic Commercial Ice-makers.

AHRI 810-2023 means AHRI Standard 810-2023. Standard for Performance Rating of Automatic Commercial Ice-makers.

ANSI/ASHRAE 29-2009 means ANSI/ASHRAE Standard 29-2009: Method of Testing Automatic Ice Makers.

ANSI/ASHRAE 29-2015 means ANSI/ASHRAE Standard 29-2015: Method of Testing Automatic Ice Makers.

AS/NZS 4865.1:2008 means *Australian/New Zealand Standard AS/NZS 4865.1:2008: Performance of commercial ice makers and ice storage bins, Part 1: Test methods for ice makers—Environmental performance.*

automatic ice-maker means a factory-made assembly (not necessarily shipped in one package) that forms or is intended to form a condensing unit and an ice-making section operating as an integrated unit, with means for making and harvesting ice and which may or may not include means for storing or dispensing ice.

commercial ice-maker means an automatic ice-maker that:

- (a) has a tested capacity of up to and including 1000 kg in 24 hours when tested at a rating point of 32 degrees Celsius (ambient), 21 degrees Celsius (inlet potable) water with electricity supplied at 230V and 50 Hz; and
- (b) has provision for both water supply and drainage connections.

declared capacity is the mass of ice produced by a commercial ice-maker over a 24hr period, stated in kg/24 hrs rounded to the nearest kg, as declared by the registrant at the time of the registration relating to that ice-maker.

declared energy consumption rate is the total energy input rate for the ice-maker, stated in kWh/100kg of ice rounded to the first decimal place, as declared by the registrant at the time of the registration relating to that ice-maker.

declared condenser water use rate is the amount of condenser water used by an ice-maker in making ice, stated in L/100 kg of ice in multiples of 0.1 L, as declared by the registrant at the time of the registration relating to that ice-maker.

declared potable water use rate is the amount of potable water used by an ice-maker in making ice, stated in L/100 kg of ice in multiples of 0.1 L, as declared by the registrant at the time of the registration relating to that ice-maker.

domestic ice-maker means an automatic ice-maker that:

- (a) is integrated into a household refrigerating appliance; or
- (b) is designed to be manually filled and drained and does not otherwise have water supply and drainage connections.

household refrigerating appliance means an insulated cabinet that:

- (c) has one or more compartments that are controlled at specific temperatures; and

- (d) is intended for the storage and preservation of foodstuff that require refrigeration at specified temperature conditions; and
- (e) is cooled by natural convection or a forced convection system whereby the cooling is produced using vapour compression cycle technology; and
- (f) can be connected to mains power; and
- (g) is ordinarily supplied for household use.

ISO 6369:2023 means ISO 6369:2023(E): Ice makers for commercial use — Classification, requirements and test conditions.

maximum energy consumption rate is the amount, stated in kWh/100kg of ice rounded to the second decimal place, calculated in accordance with section 13.

tested capacity is the mass of ice produced by a commercial ice-maker over a 24hr period, stated in kg/24 hrs rounded to the nearest kg, as determined in accordance with an approved test standard.

Note: Tested capacity is referred to as capacity in AS/NZS 4865.1:2008, ice production in ISO 6369:2023 and ice harvest rate in AHRI 810-2016 and AHRI 810:2023.0

tested energy consumption rate is the total energy input rate, stated in kWh/100kg of ice in multiples of 0.1 kWh, as determined in accordance with an approved test standard.

Note: Tested energy consumption rate is referred to as energy consumption rate in AS/NZS 4865.1:2008, ISO 6369:2023, AHRI 810-2016 and AHRI 810:2023. Where a standard measures capacity in lbs of ice this needs to be converted to kg. For split systems, the total energy input rate shall include condensing unit energy.

tested condenser water use rate is the amount of condenser water used by an ice-maker in making ice, stated in L/100 kg of ice in multiples of 0.1 L, as determined in accordance with an approved test standard.

Note: Tested condenser water use rate is referred to as cooling water use rate in ISO 6369:2023. Where a standard measures ice in lbs and water in gals, these need to be converted to kg and L.

tested potable water use rate is the amount of potable water used by an ice-maker in making ice, including purging and harvesting, stated in L/100 kg of ice in multiples of 0.1 L, as determined in accordance with an approved test standard.

Note: Where a standard measures ice in lbs and water in gals, these need to be converted to kg and L.

5 Interpretation

Applicable definitions of terms or phrases

- (1) If there is inconsistency in the definitions of terms or phrases, terms or phrases will be interpreted in the following order of priority to the extent of any inconsistency:

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- (a) the Act;
 - (b) this determination;
 - (c) AS/NZS 4865.1:2008;
 - (d) any other standard referred to in this determination.

Applicable version of documents incorporated into standards

- (2) For the purposes of this determination, the applicable version of any:
- (a) standard; or
 - (b) other document that:
 - (i) is referred to in a standard under the heading “Referenced Documents”, or under an equivalent heading; and
 - (ii) must be applied to give effect to this determination or a standard referred to in this determination;

is the version of the document, including a standard, as in force or existing on the day this determination was made.

6 Families of models

For the purposes of section 28 of the Act, for a particular product class covered by this determination, two or more models are in the same family of models if they:

- (a) have the same tested capacity; and
- (b) have the same tested energy consumption rate; and
- (c) have the same product class; and
- (d) rely on a single test report which was prepared prior to the application for registration for the model being made under section 41 of the Act.

7 Product categories

For the purposes of section 29 of the Act, the products covered by this determination are category A products.

Part 2—Products covered by determination

8 Purpose of Part

For the purposes of subsections 23(1) and (2) of the Act, this Part specifies:

- (a) one or more classes of products that are covered by this determination;
and
- (b) one or more classes of products that are not covered by this determination.

9 Classes of products that are covered by this determination

A numbered **product class** set out in Schedule 1 is a class of products covered by this determination.

Note: The product classes are numbered 1 to 12.

10 Classes of products that are not covered by this determination

This determination does not cover domestic ice-makers.

Part 3—GEMS level requirements

Division 1—Preliminary

11 Purpose of Part

This Part specifies:

- (a) GEMS level requirements in accordance with section 25 of the Act for the product classes covered by this determination, for the purposes of paragraph 24(1)(a) of the Act; and
- (b) testing requirements for the purposes of this Part, for the purposes of paragraph 25(b) of the Act.

Division 2—GEMS level requirements

12 GEMS level requirements

The tested energy consumption rate for a product covered by this determination must be less than or equal to the maximum energy consumption rate for a product of that class and tested capacity.

13 Calculation of *maximum energy consumption rate*

The *maximum energy consumption rate* of a commercial ice-maker that is covered by this determination is calculated in accordance with the following formula:

$$\begin{aligned} \text{maximum energy consumption rate} \left(\frac{kWh}{100kg} \right) \\ = \text{constant} + (\text{variable} * \text{tested capacity}) \end{aligned}$$

where:

constant is the value determined for the particular product class and tested capacity by reference to the table in Schedule 2.

tested capacity—see section 4.

variable is the value determined for the particular product class and tested capacity by reference to the table in Schedule 2.

Division 3—Conducting tests

14 Testing requirements—general

For the purposes of this determination, all testing must be conducted in accordance with an approved test standard subject to any modifications specified in this determination.

15 Approved test standards

For this determination, an *approved test standard* includes:

- (a) AS/NZS 4865.1:2008;
- (b) ISO 6369:2023 (but only in relation to product classes 1-8);
- (c) ANSI/ASHRAE 29-2009 in association with AHRI 810-2023 (but only if the test is conducted at 230V, 50Hz input power);
- (d) ANSI/ASHRAE 29-2015 in association with AHRI 810-2023 (but only if the test is conducted at 230V, 50Hz input power);
- (e) ANSI/ASHRAE 29-2009 in association with AHRI 810-2016 (but only if the test is conducted at 230V, 50Hz input power);
- (f) ANSI/ASHRAE 29-2015 in association with AHRI 810-2016 (but only if the test is conducted at 230V, 50Hz input power).

16 Specified modifications for testing for products with automatic dispenser

- (1) If a product covered by this determination has an automatic dispenser, the following procedures are to be incorporated when testing the product:
 - (a) the procedure in section 7 of AS/NZS 4865.1:2008;
 - (b) the procedure in sections 4.7-4.9 of ISO 6369:2023;
 - (c) the procedure in sections 6 and 7 of ANSI/ASHRAE 29-2009; and
 - (d) the procedure in sections 6 and 7 of ANSI/ASHRAE 29-2015.
- (2) If an automatic commercial ice-maker with an automatic dispenser is not able to continuously produce and dispense ice because of certain mechanisms within the automatic commercial ice maker that prohibit the continuous production and dispensing of ice throughout testing, those mechanisms must be overridden to the minimum extent which allows for the continuous production and dispensing of ice when testing the product.
- (3) An automatic commercial ice-maker with an automatic dispenser is to have an empty internal storage bin at the beginning of the test period with capacity samples collected according to the requirements of the standard, with the following changes:
 - (a) samples are to be collected through continuous use of the dispenser rather than in the internal storage bin; and
 - (b) the intercepted ice samples are to be obtained from a container in an external ice bin that is filled one-half full of ice and is connected to the outlet of the ice dispenser through the minimal length of conduit that can be used.

Part 4—GEMS labelling requirements

17 Purpose of Part

For the purposes of paragraph 24(1)(b) of the Act, this Part specifies GEMS labelling requirements in accordance with section 26 of the Act for the product classes covered by this determination.

18 GEMS registration number

- (1) Whenever a product covered by this determination is advertised for sale or supply, whether in print, in store or online, the current GEMS registration number for the product must be clearly visible in that advertisement.
- (2) Whenever a product covered by this determination is displayed for sale or supply, the GEMS registration number for the product must be clearly visible in that display.
- (3) Whenever a product covered by this determination is supplied or offered for supply, a label which clearly displays the GEMS registration number for the product must be affixed to the product or otherwise immediately and clearly visible on inspection of the product.
- (4) In this section:

current GEMS registration number is a GEMS registration number that belongs to a registration that has a status of approved or superseded.

GEMS registration number is the unique identifier for the registration of the product entered in the GEMS Register in accordance with paragraph 40(1)(d) of the Act.

Part 5—Other GEMS requirements

19 Other GEMS requirements

Product efficiency level

- (1) For the purposes of subsection 24(2) and paragraph 27(1)(a) of the Act, a specified requirement relating to the efficiency level of products covered by this determination is that the declared energy consumption rate must always be greater than or equal to the tested energy consumption rate.

Product performance—capacity

- (2) For the purposes of subsection 24(2) and paragraph 27(1)(b) of the Act, a specified requirement relating to the performance of products covered by this determination is that the declared capacity must always be less than or equal to the tested capacity.

Product performance—potable water use rate

- (3) For the purposes of subsection 24(2) and paragraph 27(1)(b) of the Act, if the potable water use rate for a product covered by this determination is declared at the time of registration, a specified requirement relating to the performance of the product is that the declared potable water use rate must be greater than or equal to the tested potable water user rate.

Product performance—condenser water use rate

- (4) For the purposes of subsection 24(2) and paragraph 27(1)(b) of the Act, if the condenser water use rate for a product covered by this determination is declared at the time of registration, a specified requirement relating to the performance of the product is that the declared condenser water use rate must be greater than or equal to the tested condenser water use rate.

Schedule 1—Product classes

1 Product classes

- (1) For the purposes of section 11 of this determination, a numbered **product class** identified in the following table consists of products that are commercial ice-makers and:

- (a) are the configuration indicated;
- (b) are of the class indicated;
- (c) are of the cooling modes indicated;
- (d) are of the production modes indicated; and
- (e) are not excluded by section 9 of this determination.

Note: The product class is needed in order to identify relevant values set out in the table to Schedule 2 when assessing compliance with the GEMS level requirements set out in Part 3 of this determination.

- (2) In the following table, in relation to the configuration of an ice-maker:

modular means a model of commercial ice-maker that has no means of ice storage.

self-contained means a model of commercial ice-maker in which the ice-making mechanism, storage compartment and condensing unit are integrated within a cabinet.

split system (remote condensing, but no remote compressor) means a model of commercial ice-maker in which the ice-making mechanism and compressor are housed together and the condensing unit is housed in a separate section.

split system (remote condensing and remote compressor) means a model of commercial ice-maker in which the ice-making mechanism and condenser or condensing unit are housed in separate sections.

- (3) A modular model of commercial ice-maker that is also a split system model of commercial ice-maker is to be treated as a split system model for the purposes of
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this determination.

- (4) In the following table, in relation to cooling mode:

air means a model of commercial ice-maker where the condensing unit is cooled by air.

water means a model of commercial ice-maker where the condensing unit is cooled by water.

- (5) In the following table, in relation to production mode:

batch means a model of commercial ice-maker that has alternate freezing and harvesting periods.

continuous means a model of commercial ice-maker that continually and simultaneously freezes and harvests ice.

Configuration	Product class	Cooling mode	Production mode
Modular	1	Air	Batch
	2	Air	Continuous
	3	Water	Batch
	4	Water	Continuous
Self-contained	5	Air	Batch
	6	Air	Continuous
	7	Water	Batch
	8	Water	Continuous
Split system (remote condensing, no remote compressor)	9	Air	Batch
	10	Air	Continuous
Split system (remote condensing, remote compressor)	11	Air	Batch
	12	Air	Continuous

Schedule 2—GEMS level calculations

1 Variables for maximum energy consumption rate calculations

For the purposes of section 13 of this determination, the constant and variable values to be used in GEMS level calculations for a numbered ***product class*** with a particular ***tested capacity*** can be identified in the following table.

Product class	Capacity (kg/24 hrs)	Constant	Variable
1 and 2	Less than 200	20.35	-0.0374
1 and 2	200 or more	13.67	-0.0049
3 and 4	Less than 225	15.48	-0.0238
3 and 4	225 to 645	11.31	-0.0049
3 and 4	More than 645	8.11	0
5 and 6	Less than 80	35.82	-0.2119
5 and 6	80 or more	20.08	0
7 and 8	Less than 90	23.37	-0.0860
7 and 8	90 or more	15.59	0
9 and 10	Less than 450	17.75	-0.0170
9 and 10	450 or more	10.23	0
11 and 12	Less than 420	17.75	-0.0170
11 and 12	420 or more	10.23	0
