

Australian/New Zealand Standard™

**Liquid-chilling packages using the
vapour compression cycle**

**Part 2: Minimum energy performance
standard (MEPS) and compliance
requirements**



AS/NZS 4776.2:2008

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee ME-086, Commercial Airconditioning Equipment. It was approved on behalf of the Council of Standards Australia on 9 September 2008 and on behalf of the Council of Standards New Zealand on 19 September 2008.
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The following are represented on Committee ME-086:

Air Conditioning and Refrigeration Equipment Manufacturers Association of Australia
Australian Building Codes Board
Australian Greenhouse Office, Department of the Environment, Water, Heritage and the Arts
Australian Institute of Refrigeration, Air Conditioning and Heating
Energy Efficiency and Conservation Authority, New Zealand
Engineers Australia

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Australian/New Zealand Standard™

Liquid-chilling packages using the vapour compression cycle

Part 2: Minimum energy performance standard (MEPS) and compliance requirements

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-086, Commercial Airconditioning Equipment. This document is Part 2 of the AS/NZS 4776 series, *Liquid-chilling packages using the vapour compression cycle*.

This Standard is part of a series for liquid-chilling packages, as follows:

AS/NZS

- 4776 Liquid-chilling packages using the vapour compression cycle
- 4776.1.1 Part 1.1: Method of rating and testing for performance—Rating (this Standard)
- 4776.1.2 Part 1.2: Method of rating and testing for performance—Testing
- 4776.2 Part 2: Minimum energy performance standard (MEPS) and compliance requirements

This part of the Standard is published with the express approval of the Australian Greenhouse Office, the State and Territory regulatory authorities and the Energy Efficiency Conservation Authority of New Zealand, and it is structured to be suitable for reference in legislation in Australia.

The objective of this Standard is to provide industry in general, and manufacturers and suppliers of liquid-chilling packages specifically, with MEPS and high-efficiency product performance levels.

The rating and testing methods used to determine compliance with MEPS are based on Parts 1.1 and 1.2 of the AS/NZS 4776 series, *Liquid-chilling packages using the vapour compression cycle*.

Acknowledgment is due to the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) of the USA and the European Committee of Air Handling and Refrigeration Equipment Manufacturers (Eurovent), whose Standards were reviewed during the development of this Standard. This Standard is a Joint Australian/New Zealand Standard and is not an AHRI Standard.

Statements expressed in mandatory terms in notes to figures are deemed to be requirements of this Standard.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Liquid-chilling packages using the vapour compression cycle****Part 2: Minimum energy performance standard (MEPS) and compliance requirements****1 SCOPE**

This Standard specifies the MEPS levels and compliance paths for liquid-chilling packages that fall within the scope of AS/NZS 4776.1.1.

2 OBJECTIVES

The objectives of this Standard are to—

- (a) establish minimum energy performance Standards for the full-load and part-load performance of liquid-chilling packages using the vapour compression cycle; and
- (b) define minimum documentation requirements for registration of liquid-chilling packages that are not certified by either AHRI or Eurovent.

3 NORMATIVE REFERENCES

The following referenced documents are indispensable for the application of this Standard:

AS/NZS

4776 Liquid-chilling packages using the vapour compression cycle

4776.1.1 Part 1.1: Method of rating and testing for performance—Rating

4776.1.2 Part 1.2: Method of rating and testing for performance—Testing

ASHRAE

90.1 Energy Standard for buildings except low-rise residential buildings

4 DEFINITIONS

For the purpose of this Standard, the definitions given in AS/NZS 4776.1.1 and those below apply.

4.1 Minimum energy performance standards (MEPS)

The minimum value of energy efficiency that must be met by each liquid-chilling package model as defined in Table 1.

4.2 Statements of intention**4.2.1 Shall**

Indicates that a statement is mandatory.

4.2.2 Should

Indicates a recommendation.

5 MINIMUM ENERGY PERFORMANCE

When rated and tested in accordance with AS/NZS 4776, Parts 1.1 and 1.2, the efficiency levels of liquid-chilling packages shall be not lower than those defined in Table 1. Proposed future efficiency levels are shown in Table 2.

TABLE 1

**MINIMUM ENERGY PERFORMANCE STANDARDS (MEPS)
MINIMUM REQUIREMENTS FOR LIQUID-CHILLING PACKAGES**

Capacity (kWR)	Minimum COP		Minimum IPLV	
	Air-cooled	Water-cooled	Air-cooled	Water-cooled
<350	N/A	N/A	N/A	N/A
350–499	2.70	5.00	3.70	5.50
500–699	2.70	5.10	3.70	6.00
700–999	2.70	5.50	4.10	6.20
1000–1499	2.70	5.80	4.10	6.50
>1500	2.70	6.00	4.10	6.50

NOTES:

- 1 The above capacities of 499, 699, 999 and 1499 cover all decimal values up to the next whole number.
- 2 For liquid-chilling packages operating under non-standard rating conditions as defined in Part 1.1, the MEPS COP and IPLV levels are adjusted in accordance with Appendix E.

TABLE 2

PROPOSED FUTURE MEPS LEVELS

Capacity (kWR)	Minimum COP				Minimum IPLV			
	Air-cooled		Water-cooled		Air-cooled		Water-cooled	
	Path A	Path B	Path A	Path B	Path A	Path B	Path A	Path B
<350	2.70	N/A	4.50	4.40	3.70	N/A	5.5	5.9
350–499	2.70	N/A	5.00	5.00	3.70	N/A	5.7	6.7
500–699	2.70	N/A	5.10	5.10	3.75	N/A	6.0	7.8
700–999	2.70	N/A	5.50	5.50	4.10	N/A	6.2	7.8
1000–1499	2.70	N/A	6.00	6.00	4.10	N/A	6.5	8.8
>1500	2.70	N/A	6.20	6.20	4.10	N/A	6.5	8.8

NOTES:

- 1 Path A is intended for applications where significant operating time is expected under full-load and design ambient conditions. Path B is an alternative set of efficiency levels for water-cooled liquid-chilling packages intended for applications where significant time is expected at part-load. All Path B liquid-chilling packages are required to be equipped with demand-limiting controls. Compliance with the Standard can be achieved by meeting the requirements of either Path A or Path B. However, both full-load and IPLV levels must be met to fulfil the requirements of Path A or Path B.
- 2 The above capacities of 499, 699, 999 and 1499 cover all decimal values up to the next whole number.

6 REGISTRATION

6.1 General

The manufacturer or importer of liquid-chilling packages that fall within the scope of AS/NZS 4776 and for which MEPS levels are specified in Table 1 shall register these products.

NOTES:

- 1 Australia requires registration for MEPS.
- 2 At the date of publication of this Standard, the requirements of Clause 7.1 are applicable in New Zealand. New Zealand does not operate a registration process for MEPS but does require submission of information for mandatory listing. Therefore, suppliers must ensure either that products are registered in Australia or that the form in Appendix A is submitted to the New Zealand regulatory authority.

6.2 Registration requirements

6.2.1 *Products certified by AHRI or Eurovent*

In the case of liquid-chilling packages using vapour compression cycles that are listed on the AHRI website (www.ari.org) or the Eurovent website (www.eurovent-certification.com), suppliers shall register each model using the form (in accordance with Appendix A) provided on the www.energyrating.gov.au website.

6.2.2 *Products not certified by AHRI or Eurovent*

- (a) *Products from a range part of which is certified by AHRI or Eurovent* In the case of liquid-chilling packages from a range that includes products listed on the AHRI website (www.ari.org) or the Eurovent website (www.eurovent-certification.com) but that are themselves outside of the scope of these programs owing to their capacity range or power supply frequency, suppliers shall register each model using the form (in accordance with Appendix B) provided on the www.energyrating.gov.au website. Products that qualify under this category shall have the same generic model number as the certified products in the range and shall also be manufactured at the same facility as the certified products in the range.
- (b) *Products from a range none of which is certified by AHRI or Eurovent* In the case of liquid-chilling packages other than those specified in Clauses 6.2.1 and 6.2.2(a), suppliers shall register each model using the form (in accordance with Appendix C) provided on the www.energyrating.gov.au website. For such products, a test report prepared in accordance with AS/NZS 4776.1.1 and AS/NZS 4776.1.2 shall be provided. A sample of such a test report is provided in Section C6.

NOTE: For registration, contact the relevant state regulatory authority. Details of the relevant regulatory bodies are available on the www.energyrating.gov.au website.

6.3 MEPS transition

All products within the scope of MEPS that are manufactured or imported for sale in Australia on or after the relevant MEPS date shall meet the relevant MEPS requirements. Such units shall hold a valid registration at the time of sale. Such registration shall indicate compliance with these MEPS requirements.

6.4 Duration of registration

Registrations expire when the registered product no longer complies with the required MEPS levels. It is the applicant's responsibility to ensure that the registration remains current as per Clauses 6.2.1 and 6.2.2.

6.5 Holding of records

6.5.1 General

In New Zealand, where the registration of minimum energy performance standard requirements is not required, Clauses 6.5.2 and 6.5.3 shall apply.

6.5.2 Data

Appendix B gives the information that shall be reported and held by the supplier (manufacturer or importer) to support the performance claims.

6.5.3 Test report

A test report in accordance with AS/NZS 4776.1.1 or AS/NZS 4776.1.2, for each model tested, shall be held by the supplier. The documents required by Clause 6.5 shall be made available to the relevant regulatory authority upon request. Records shall be retained until at least five years after the last date of manufacture or import, whichever is applicable.

7 HOLDING OF RECORDS

7.1 General

Where registration or approval of MEPS is not required, Clauses 6.2 to 6.5 shall apply.

NOTE: At the date of publication of this Standard, the requirements of Clause 6.1 are applicable in New Zealand. New Zealand does not operate a registration process for MEPS but does require submission of information for mandatory listing. Therefore, suppliers must ensure either that products are registered in Australia or that the form in Appendices A or B is submitted to the New Zealand regulatory authority.

7.2 Data

AS/NZS 4776.1.1 and AS/NZS 4776.1.2 set out the information that shall be recorded and held by the appliance supplier (manufacturer or importer) to support the performance claims inherently made for a particular model of commercial liquid-chilling package.

7.3 Test report

A report in the form of Appendix C of AS/NZS 4776.1.2 for each registered model shall also be held by the supplier of the liquid-chilling package.

7.4 Availability

The documents required by this Section shall be made available to the relevant regulatory authority upon request. Records shall be retained until at least five years after the last date of manufacture or import, whichever is applicable. The manufacturer or importer must, if the authority requests, supply a copy of the test report or a sample to the authority within 5 working days of receiving the request.

7.5 Date of manufacture information

The date of manufacture may be non-encrypted, encrypted or able to be determined from a serial number or other markings on the appliance and shall be visible when the appliance is in its position of normal use. Information on how to determine the date of manufacture shall be provided on the registration form (see Appendices A, B and C).

NOTES:

- 1 Regulators will use the date of manufacture as a guide as to when a product may have been available for sale in Australia. It is therefore preferable to be able to determine at least the month and year of manufacture from information on the liquid-chilling package. This does not, however, preclude other markings that indicate the period of time in which certain appliances were manufactured (such as serial numbers) being quoted on the registration form.
- 2 Irrespective of the information marked on the liquid-chilling package, local manufacturers or importers may be required to provide evidence of the actual manufactured or imported date if requested by a regulator.