AS/NZS 4776.1.2:2008

Australian/New Zealand Standard™

Liquid-chilling packages using the vapour compression cycle

Part 1.2: Method of rating and testing for performance – Testing

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:

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

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We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

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Australian/New Zealand Standard

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

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-086, Commercial Air Conditioning. This document is based on ISO PWD 19298-2, *Liquid-chilling packages using the vapour compression cycle*, Part 2: *Method for testing for performance*.

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
4776.1.2	Part 1.2: Method of rating and testing for performance—Testing (this Standard)
4776.2	Part 2: Minimum energy performance standard (MEPS) and compliance requirements

Part 1.2 of the series (this Part) is published with the express approval of the Australian Greenhouse Office, the Australian State and Territory regulatory authorities, and the energy Efficiency and Conservation Authority of New Zealand, and it is structured to be suitable for reference in legislation in Australia and New Zealand.

In order to comply with this Standard, manufacturers are required to conform to both Part 1.1 and Part 1.2. Agencies or companies that offer testing services only may use Part 1.2 of the Standard. The Standard is intended for use as the basis for certification programs in various geographic regions. It may also be used for customer-specific tests conducted in appropriate test facilities; however, it is not intended for field testing.

Acknowledgment is due to the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) of the USA, 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.

CONTENTS

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard
Liquid-chilling packages using the vapour compression cycle

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

1 SCOPE

This Standard covers liquid-chilling packages within the scope of AS/NZS 4776.1.1.

2 OBJECTIVE

The objective of this Standard is to prescribe the method of testing liquid-chilling packages using the vapour compression cycle to determine the capacity, power and efficiency of equipment under a specific set of conditions.

It is not the intent of this Standard to provide for testing in-field installations, where steady-state and uniform conditions are difficult to achieve and provisions for measurements are not made.

3 NORMATIVE REFERENCE

The following referenced document is 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

4 DEFINITIONS

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

5 BASIC PRINCIPLES

5.1 Cooling capacity

The cooling capacity is the heat removed from the chilled liquid and is determined by measuring the volume flow of the chilled liquid and the entering and leaving temperatures at the evaporator side, taking into consideration the specific heat capacity and density of the liquid.

The cooling capacity shall be determined using the following equation:

$$q_{ev} = \frac{Q \times \rho \times c_p \times \Delta t}{1000} \quad \ldots (1)$$

where

q_{ev} = cooling capacity (kW)

Q = volume flow rate (L/sec)

ρ = fluid density (kg/m^3)

c_p = specific heat at constant pressure (kJ/kg.K)

Δt = difference between inlet and outlet temperatures (K)