

Australian/New Zealand Standard™

Performance of household electrical appliances—Refrigerating appliances

Part 2: Energy labelling and minimum energy performance standard requirements



AS/NZS 4474.2:2001

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-015, Quality and Performance of Household Electrical Appliances. It was approved on behalf of the Council of Standards Australia on 12 November 2001 and on behalf of the Council of Standards New Zealand on 3 December 2001. This Standard was published on 17 December 2001.

The following are represented on Committee EL-015:

Australian Association of Certification Bodies
Australian Consumers Association
Australian Electrical and Electronic Manufacturers Association
Australian Industry Group
Australian Retailers Association
Consumer Electronics Suppliers Association, Australia
Consumer Federation of Australia
Department of Mines and Energy, Qld
Electrical Compliance Testing Association
Energy Efficiency and Conservation Authority of New Zealand
Ministry of Energy and Utilities, N.S.W.
National Appliance Electrical Energy Efficiency Coordinating Committee,
Australia
New Zealand Manufacturers Federation
Office of the Chief Electrical Inspector, Vic.
Office of Technical Regulators, SA

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

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.

This Standard was issued in draft form for comment as DR 01086.

Australian/New Zealand Standard™

Performance of household electrical appliances—Refrigerating appliances

Part 2: Energy labelling and minimum energy performance standard requirements

Originated in Australia as AS 2575—1982.
Originated in New Zealand as NZS 6205:1982.
Previous edition AS/NZS 4474.2:2000.
Third edition 2001.
Reissued incorporating Amendment No. 1 (April 2004).
Reissued incorporating Amendment No. 2 (December 2004).
Reissued incorporating Amendment No. 3 (January 2005).
Reissued incorporating Amendment No. 4 (August 2007).

COPYRIGHT

© Standards Australia/Standards New Zealand

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 4240 8

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-015, Quality and Performance of Household Electrical Appliances to supersede AS/NZS 4474.2:2000 on publication.

This Standard incorporates Amendment No. 1 (April 2004), Amendment No. 2 (December 2004), Amendment No. 3 (January 2005) and Amendment No. 4 (August 2007). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

A1 and A2 | This Standard was revised in 2001 to allow for the introduction of requirements for MEPS 2004 that were to apply from 1 October 2004. The changes to the MEPS requirements will now not apply until 1 January 2005. Consequently, references to MEPS 2004 throughout this Standard and AS/NZS 4474.1 have been changed to MEPS 2005. This Standard contains requirements for both MEPS 1999 and MEPS 2005.

A1 | Where requirements differ to assess compliance with either existing or new MEPS levels, these are described in this Standard and in AS/NZS 4474.1 as 'MEPS 1999' and 'MEPS 2005' requirements respectively. For products to comply with the MEPS 2005 requirements of this Standard they shall be tested to the MEPS 2005 requirements of AS/NZS 4474.1 (see Clause 1.2 for exception). Similarly, for products to comply with the MEPS 1999 requirements of this Standard they shall be tested to the MEPS 1999 requirements of AS/NZS 4474.1.

A1 and A2 | The new MEPS 2005 levels were developed and agreed by industry and government representatives during 2000 and are to be introduced on 1 January 2005. Until 31 December 2004, it is anticipated that regulatory authorities will accept testing of appliances to either MEPS 1999 requirements or MEPS 2005 requirements. All appliances within the scope of MEPS, manufactured or imported for sale in Australia or in New Zealand on or after 1 January 2005, shall meet the MEPS 2005 requirements. In addition, at the time of sale in Australia, such appliances shall hold a valid registration which indicates compliance with the relevant MEPS requirements.

Administrative arrangements during the transition period may vary so registration holders should contact their regulator to obtain detailed requirements with respect to labelling and registration requirements (see also Section 4 of this Standard).

A4 | Amendment 4 references the revised AS/NZS 4474.1:2007 rather than AS/NZS 4474.1:1997. Wherever these amendments have occurred in sections of this Standard that reference MEPS 1999, these obsolete references have been deleted. All other references to MEPS 1999 in this Standard will be deleted in the new edition of AS/NZS 4474.2. A new edition of AS/NZS 4474.2 is planned for publication in 2007 to include the new MEPS and energy validity criteria as well as a new star rating algorithm for all refrigerators and freezers which is anticipated for implementation in 2009.

This Standard is intended to apply to self contained factory-produced refrigerators which are used primarily as household products. Changes were made to the scope of this Standard and Part 1 to overcome any potential confusion regarding products that may also be used in the commercial sector. It appears that some suppliers were under the impression that a claim that a product was intended for commercial use meant that it was not within the scope of the Standard. This has now been clarified to state that products that are suitable for general household use are included in the scope, irrespective of their actual application.

The AS/NZS 4474 series is comprised of two Parts, as follows:

AS/NZS

- 4474 Performance of household electrical appliances—Refrigerating appliances
 4474.1 Part 1: Energy consumption and performance
 4474.2 Part 2: Energy labelling and minimum energy performance standard requirements (this Standard)

The overall objective of this series of Standards is to promote high levels of quality, performance and energy efficiency in refrigerating appliances.

The Parts of AS/NZS 4474 are summarized as follows:

- (a) *Part 1* Includes performance test procedures and minimum performance criteria for refrigerating appliances.
- (b) *Part 2* Includes algorithms for the calculation of the energy efficiency star rating and projected energy usage, performance requirements, details of the energy label and requirements for the valid application thereof. It has been structured to be suitable for reference in regulatory legislation and to be used in conjunction with Part 1.

The energy label design and energy labelling algorithms that were introduced in this Standard in 2000 remain unchanged for the time being but it is expected that these may be revised close to the time that the new MEPS levels come into force in 2005. AS/NZS 4474.1 has been amended to reflect changes in the definitions of groups, a change in the test voltage and the definition and application of adaptive defrost controls.

This Standard is published with the approval of the combined state regulatory authorities and is structured to be suitable for reference in energy labelling regulatory legislation. It refers to Part 1 for test procedures.

Check testing, where applicable, will be undertaken to the version of the test Standard or the appropriate MEPS levels which have been used to support the current energy label for that model.

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.

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

CONTENTS

	<i>Page</i>
FOREWORD.....	5
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	6
1.2 APPLICATION	7
1.3 OBJECTIVE.....	7
1.4 REFERENCED DOCUMENTS	7
1.5 DEFINITIONS	7
1.6 MEASURED QUANTITIES	9
1.7 ROUNDING.....	9
SECTION 2 CALCULATIONS FOR THE ENERGY LABEL	
2.1 GENERAL	10
2.2 NUMBER OF TESTS AND PROCESSING OF DATA.....	10
2.3 PROJECTED ANNUAL ENERGY CONSUMPTION (PAEC)	10
2.4 COMPARATIVE ENERGY CONSUMPTION (CEC).....	11
2.5 ADJUSTED VOLUME (V_{adj})	11
2.6 BASE ENERGY CONSUMPTION (BEC).....	12
2.7 STAR RATING INDEX (SRI)	13
2.8 STAR RATING	14
2.9 ENERGY LABEL VALIDITY	14
2.10 ENERGY LABELLING AND MEPS FOR MULTI-GROUP PRODUCTS	14
SECTION 3 PERFORMANCE CRITERIA	
3.1 GENERAL	16
3.2 RATED VOLUME	16
3.3 PULL-DOWN	16
3.4 OPERATING TEMPERATURE PERFORMANCE.....	16
3.5 MINIMUM ENERGY PERFORMANCE STANDARDS	16
SECTION 4 APPLICATION AND TEST RESULT FORMATS	
4.1 APPLICATION FOR REGISTRATION	22
4.2 PRODUCT LISTING	23
SECTION 5 PRINTING AND PLACEMENT OF ENERGY LABELS	
5.1 PLACEMENT	24
5.2 MATERIAL AND SHAPE.....	24
5.3 COLOURS	24
5.4 LABEL REQUIREMENTS	24
5.5 SAMPLE LABEL.....	26
APPENDICES	
A METHODS FOR DETERMINING EQUIVALENT SEAL FACE PERIMETER LENGTHS OF AN EQUIVALENT REGULAR APPLIANCE	27
B EXAMPLE OF ENERGY EFFICIENCY CALCULATIONS	30
C DETERMINATION OF THE MAXIMUM CEC VALUE AT WHICH A MODEL WOULD QUALIFY FOR A DESIRED STAR RATING.....	36
D ENERGY LABEL DIMENSIONS	38
E FORMAT OF APPLICATION FOR REGISTRATION OF A REFRIGERATING APPLIANCE FOR ENERGY LABELLING AND MEPS.....	39

FOREWORD

A1 | The desire of governments to improve the energy efficiency of appliances has led to the development of Minimum Energy Performance Standards (MEPS) and the associated energy labelling scheme. The first MEPS levels (MEPS 1999) for refrigerators and freezers were implemented on 1 October 1999 and revised MEPS levels (MEPS 2005) become applicable on 1 January 2005 (refer also to Clause 1.1). This Standard contains both the MEPS 1999 and MEPS 2005 requirements.

In this Standard MEPS have allowances for special features such as extra doors and through-the-door water/ice dispensers which are excluded from the star rating calculations and associated labelling requirements.

The function for calculating the star rating of an appliance is a geometric progression, with the one star rating generally coinciding with the 1999 MEPS requirements.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Performance of household electrical appliances—Refrigerating appliances****Part 2: Energy labelling and minimum energy performance standard requirements**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

A4

This Standard specifies the energy labelling and minimum energy performance standard requirements for vapour compression refrigerating appliances that can be connected to mains power and which are within the scope of AS/NZS 4474.1:2007. Such refrigerating appliances that are used in the commercial sector are included within the scope. This Standard does not specify safety requirements.

Separate stand alone wine storage cabinets are not specifically within the scope of this Standard. However, such products may be tested to AS/NZS 4474.1 and labelled to this Standard on a voluntary basis. Any supplier, which elects to place an energy label on a wine storage cabinet, shall register the product with the relevant regulator. Before such products can be registered to carry an energy label, they must also meet the relevant MEPS requirements. Any cabinet which has other standard compartments in addition to a wine storage compartment is included within the scope of this Standard and shall meet the requirements for energy labelling and MEPS.

The following products are excluded from energy labelling and MEPS:

- (a) Products that are designed exclusively for use in caravans, vehicles (e.g. mobile homes, campervans and/or rail cars) or boats and which have a total gross volume of less than 60 litres.
- (b) Portable products that have a gross volume of less than 30 litres.
- (c) Products that have a gross volume of less than 30 litres where the refrigeration function is secondary (e.g. boiling or cooled water dispensers).
- (d) Products that have no options for connection to a 230 V or 400 V 50 Hz mains electricity supply.

In particular, this Standard specifies the following:

- (i) Projected annual energy consumption (PAEC).
- (ii) Adjusted volume.
- (iii) Comparative energy consumption (CEC).
- (iv) Star rating.
- (v) Performance criteria for energy label validity.
- (vi) Some of the requirements for energy label validity.
- (vii) Minimum energy performance standards (MEPS) for refrigerating appliances for MEPS 2005 requirements.
- (viii) Test report format and printing requirements for refrigerating appliance energy labels.