

Australian/New Zealand Standard™

**Performance of household electrical
appliances—Refrigerating appliances**

**Part 2: Energy labelling and minimum
energy performance standard
requirements**



S t a n d a r d s Australia



STANDARDS
NEW ZEALAND
Pāhekohe Aotearoa

AS/NZS 4474.2:2000

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL/15, Quality and Performance of Household Electrical Appliances. It was approved on behalf of the Council of Standards Australia on 15 March 2000 and on behalf of the Council of Standards New Zealand on 8 March 2000. It was published on 31 March 2000.

The following interests are represented on Committee EL/15:

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 and Equipment Energy Efficiency Committee
New Zealand Manufacturers Federation
Office of the Chief Electrical Inspector, Vic.
Office of Technical Regulators, S.A.

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 Standards may also be withdrawn.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 Australia web site at www.standards.com.au or Standards New Zealand web site at www.standard.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 International or Standards New Zealand at the address shown on the back cover.

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.

Previous Australian editions AS 2575.1—1989 and part of AS 2575.2—1989.

Originated in New Zealand as NZS 6205:1982.

Previous New Zealand editions NZS 6205.1:1989 and NZS 6205.2:1989.

AS 2575.1—1989 and NZS 6205.1:1989 and parts of AS 2575.1—1989 and

NZS 6205.2:1989 jointly revised, amalgamated and redesignated AS/NZS 4474.2:1997.

Second edition 2000.

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 International Ltd, PO Box 1055, Strathfield, NSW 2135 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 3337 9

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL/15, Quality and Performance of Household Electrical Appliances.

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 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.

This edition contains the new star rating algorithms developed during 1999 which will be introduced together with the new energy label for refrigerators during mid to late 2000. Part 1 of this Standard remains largely unchanged, except for some amendments, which have been passed subsequent to its original publication.

The main changes in this Part 2 Standard are as follows:

- (i) Introduction of new energy labelling algorithms to regrade star ratings;
- (ii) Introduction of redesigned more consumer friendly energy label.

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.

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. The Minimum Energy Performance Standard (MEPS) levels included in this Standard are those proposed by industry to Australian government in April 1994 and subsequently accepted by ANZMEC ministers in March 1995 and took effect on 1 October 1999.

This Standard supersedes AS/NZS 4474.2:1997 on 1 October 2000. From 1 April 2000 until 30 September 2000 it is anticipated that regulatory authorities will approve appliances in accordance with either AS/NZS 4474.2:1997 or this standard. On 1 October 2000, all registrations according to previous Standards will be cancelled. For these appliances to be sold they shall be re-registered in accordance to this Standard prior to 1 October 2000.

It is expected that concessions will apply until 1 October 2001 to allow the sale of products with old labels direct from storage facilities and for which it can be demonstrated that they were manufactured locally or imported before 1 October 2000. However, all products on display for sale will be required to display new labels from 1 October 2000, irrespective of their date of manufacture or importation.

All registrations submitted and records kept from 1 October 2000 will require test reports in accordance with AS/NZS 4474.1.

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

NOTES:

- 1 Given that all products on display have to carry the new label shown in this Standard from 1 October 2000, it is preferred that manufacturers submit the new label in all registration applications from 1 April 2000.
- 2 Models registered prior to 1 April 2000 can be re-registered with the new label shown in this standard at any time during the period from 1 April 2000 to 30 September 2000.
- 3 Some regulators may accept pre-registration applications with the new label shown in this standard prior to 1 April 2000 to facilitate approval soon thereafter.
- 4 It is not necessary to seek re-approval of the label when the when the label is changed from the transition version to the final version with the solid green bar at the base. However, the final label should also be submitted with the energy labelling application.
- 5 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.

CONTENTS

	<i>Page</i>
FOREWORD	5
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	6
1.2 APPLICATION.....	6
1.3 OBJECTIVE	6
1.4 REFERENCED DOCUMENTS	6
1.5 DEFINITIONS	7
1.6 MEASURED QUANTITIES.....	8
1.7 ROUNDING	8
SECTION 2 CALCULATIONS FOR THE ENERGY LABEL	
2.1 GENERAL	9
2.2 NUMBER OF TESTS AND PROCESSING OF DATA.....	9
2.3 PROJECTED ANNUAL ENERGY CONSUMPTION (PAEC)	9
2.4 COMPARATIVE ENERGY CONSUMPTION (CEC)	9
2.5 ADJUSTED VOLUME (V_{adj}).....	10
2.6 BASE ENERGY CONSUMPTION (BEC)	11
2.7 STAR RATING INDEX (SRI).....	11
2.8 STAR RATING.....	12
2.9 ENERGY LABEL VALIDITY	13
SECTION 3 PERFORMANCE CRITERIA	
3.1 GENERAL	14
3.2 RATED GROSS VOLUME	14
3.3 PULL-DOWN	14
3.4 OPERATING TEMPERATURE PERFORMANCE	14
3.5 MINIMUM ENERGY PERFORMANCE STANDARDS	14
SECTION 4 APPLICATION AND TEST RESULT FORMATS	
4.1 APPLICATION FOR REGISTRATION	18
4.2 HOLDING OF RECORDS.....	18
SECTION 5 PRINTING AND PLACEMENT OF ENERGY LABELS	
5.1 PLACEMENT	20
5.2 MATERIAL AND SHAPE	20
5.3 COLOURS	20
5.4 LABEL REQUIREMENTS.....	20
5.5 SAMPLE LABEL	22
APPENDICES	
A METHODS FOR DETERMINING EQUIVALENT SEAL FACE PERIMETER LENGTHS OF AN EQUIVALENT REGULAR APPLIANCE.....	24
B EXAMPLE OF ENERGY EFFICIENCY CALCULATIONS.....	27
C DETERMINATION OF THE MAXIMUM CEC VALUE AT WHICH A MODEL WOULD QUALIFY FOR A DESIRED STAR RATING	33
D ENERGY LABEL DIMENSIONS	35
E FORMAT OF APPLICATION FOR REGISTRATION OF AN ELECTRICAL APPLIANCE FOR ENERGY EFFICIENCY.....	36
F CALCULATION OF STAR RATING ACCORDING TO THE PREVIOUS SCALE.....	43

FOREWORD

The desire of governments to improve the energy efficiency of appliances has led to the development of the Minimum Energy Performance Standard (MEPS) and the associated energy labelling scheme. The presentation of these concepts is specified in this Standard.

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 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

This Standard specifies the energy labelling and minimum energy performance standard requirements for electric mains powered refrigerating appliances of the vapour compression type intended for household and similar use. It does not specify safety requirements.

In particular, this Standard specifies the following:

- (a) Projected annual energy consumption (PAEC).
- (b) Adjusted volume.
- (c) Comparative energy consumption (CEC).
- (d) Star rating.
- (e) Performance criteria for energy label validity.
- (f) Some of the requirements for energy label validity.
- (g) Minimum energy performance standards (MEPS) for refrigerators and freezers.
- (h) Test report format and printing requirements for refrigerating appliance energy labels.

1.2 APPLICATION

This Standard shall be read in conjunction with AS/NZS 4474.1.

1.3 OBJECTIVE

The objective of this Standard is to define performance, energy labelling and MEPS requirements which shall be met such that a refrigerating appliance can carry a valid energy efficiency label.

1.4 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1430	Household refrigerators and freezers
2575	Energy labelling of appliances
2575.2	Part 2: Determination of energy consumption and efficiency rating
2706	Numerical values—Rounding and interpretation of limiting values