Preface and Foreword from AS/NZS2007: Performance of household electrical appliances-Dishwashers Part 1: Energy Consumption and Performance - 2005

The following text has been provided courtesy of Standards Australia.

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 2007.1:2003, *Performance of household electrical appliances - Dishwashers, Part 1: Energy consumption and performance* on publication.

The AS/NZS 2007 series comprises two Parts, as follows:

AS/NZS

2007 Performance of household electrical appliances - Dishwashers

2007.1 Part 1: Methods for measuring performance, energy and water consumption (this Standard)

2007.2 Part 2: Energy efficiency labelling requirements

The Parts of AS/NZS 2007 are summarized as follows:

(a) *Part 1* Includes performance test procedures and minimum performance criteria for dishwashers.

(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 for registration for energy efficiency labelling. It also includes the application form for registration for water efficiency labelling. It has been structured to be suitable for reference in regulatory legislation and to be used in conjunction with Part 1.

The overall objective of the AS/NZS 2007 series is to promote high levels of performance, energy efficiency and water efficiency in electric dishwashers.

This Standard includes a number of requirements from the third edition of IEC 60436, published in February 2004, which will bring this Standard closer to the IEC Standard. It also incorporates the following significant changes in comparison to earlier editions of the Standard.

(i) Test methods have generally been made more repeatable and reproducible.

(ii) It is intended to phase out the AS/NZS test load by December 2007, until that date, the AS/NZS test load (without serving utensils and bowls) is allowed as an alternative to the IEC test load in this Standard.

(iii) A 'test program has been defined and it has been clarified that any program can be tested to this Standard, but the performance requirements in Section 4 only apply to the program recommended for

a normally soiled load. The program for a normally soiled load is the program mandated for energy efficiency labelling in AS/NZS 2007.2.

(iv) Definitions in this Standard are now generally aligned with IEC definitions.

(v) Program time and cycle time have been added to the definitions.

(vi) Power measurements on a number of standby modes are now required. Standby modes have been added to the definitions and examples of the types of standby modes have been added in Appendix M.
NOTE: The impact of communication by appliances over a network is under consideration.

(vii) There are improved instructions regarding the use of the reference machine.

(viii) A recommendation to purchase all test materials from the sources referred to at http://www.energyrating.gov.au has been added to minimize variations in test results. These materials will be used for check testing.

A summary of differences between this edition and the IEC 60436 Ed. 3 is included in the Foreword.

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.

Foreword

For comparative testing, the most reliable results will be obtained from the methods of measurement given in this Standard when the measurements are conducted in the same laboratory, at one time, by the same operators. However, compliance with the performance and test requirements of this Standard should ensure that a dishwasher will give satisfactory performance in service.

For determination of the washing and drying indices, the procedure and timing in Appendices D and E is provided to ensure consistent results. For determination of washing performance in accordance with this Standard, it is essential to use a reference machine.

This Standard is broadly based on IEC 60436:1981, *Methods for measuring the performance of electric dishwashers* and more recently has drawn from work undertaken within the IEC SC59A on a revised international dishwasher test method, which was published in IEC 60436, Edition 3, February 2004. The work within IEC has drawn on both European CENELEC Standard EN 50242 and US industry Standard AHAM DW-1. Acknowledgment is made of the assistance received from all of these Standards.

IEC 60436, Edition 3 uses the Universal 65°C as the reference program, but this is used to determine a relative performance index for declaration by the manufacturer (wash and dry performance is included on the EU energy label). The reference program on the reference machine used in this Standard is Gentle 45°C which is used to set a pass/fail for wash performance, rather than a manufacturer declaration of wash performance as is the case in Europe. IEC 60436, Edition 3 also uses the reference machine to assess drying performance whereas it is not used for assessing drying performance in this Standard.

This Standard has differences from and similarities to IEC 60436, Edition 3 in a number of ways, as follows:

(a) This Standard allows the use of an IEC load (without serving items) or the original AS/NZS load as an alternative. IEC also allow an AHAM (US) load as an alternative to the 'European' load.
NOTE: The AS/NZS load is to be phased out by December 2007.

(b) There are slight differences in the ambient humidity requirements between AS/NZS (60%) and IEC (55% or 65% dependent on the soil drying method).

(c) The food items used for soiling the load in this Standard are slightly different to IEC 60436, Edition 3. AS/NZS more closely resembles the soiling from IEC 60436:1981. AS/NZS still uses tomato juice while the IEC 60436, Edition 3 uses milk treated in a microwave as well as minced meat. Some soil items are slightly different (e.g. tinned spinach versus frozen spinach) and the preparation of some items and the allocation of soils to the load itself are also slightly different.

(d) AS/NZS cold water supply temperature is 20°C while IEC is 15°C.

(e) AS/NZS water hardness is soft (45 ppm) while IEC specify both soft (≤70 ppm) and hard (250 ppm) water alternatives.

(f) AS/NZS water pressure is 320 kPa while IEC is 240 kPa.

(g) AS/NZS reference detergent is based on the old IEC type A (phosphate based with chlorine bleach), while IEC specifies type C detergent (phosphate based with oxygen bleach and enzymes). IEC also have new rinse agent formulations (types III and IV). NOTE: CENELEC still use detergent B and the older rinse aid formulations at the time of publication.

(h) AS/NZS requires the manufacturer to specify the amount of detergent to be used, whereas IEC specifies a default detergent quantity where an amount is not specified by the manufacturer. AS/NZS and IEC both specify maximum detergent quantities, which may be used for testing.

(i) In AS/NZS the reference machine water softener is de-activated while in IEC it is allowed to operate normally (noting that most IEC tests will be done with hard water and tests under AS/NZS use soft water). Most dishwashers in Australia and New Zealand do not have a water softener.

(j) AS/NZS use the reference machine only for assessing the washing performance while IEC use it for assessing washing and drying performance.

(k) IEC allow the use of either oven drying or air drying of the soiled load prior to washing while AS/NZS only allow air drying.

(l) AS/NZS and IEC now specify the lighting conditions for washing and drying evaluations. The viewing cabinet previously mandatory in AS/NZS, has been moved to an informative Appendix L.

(m) AS/NZS and IEC evaluation scoring systems are now aligned.

(n) AS/NZS requires filter cleaning between test runs while IEC specify that filters are not cleaned between runs. IEC classify filters into 3 main categories and require a minimum of 5 tests (but could be as many as 10 tests) on each dishwasher, depending on variability and performance without filter cleaning.

(o) AS/NZS now requires standby power measurements on a number of modes.

(p) IEC requires that the load be pre-conditioned in a dishwasher with IEC rinse aid prior to use in a performance test. AS/NZS does not specify any particular requirements other than the load is clean prior to use.

A copy of the standard can be purchased from http://www.standards.com.au

For further information email energy.rating@greenhouse.gov.au

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Requirements for Clothes Washers - Energy Labelling

Clothes washers are regulated for energy labelling in Australia.

Product Definition: Clothes washers which are intended for household or similar use.

Test Standards: Note that all energy labelling standards for clothes washers are published jointly by Standards Australia and Standards New Zealand.

AS/NZS2040: Performance of household electrical appliances- Clothes washing machines Part 1: Energy Consumption and Performance

AS/NZS2040: Performance of household electrical appliances- Clothes washing machines Part 2: Energy labelling requirements

Part 1 of the standard defines the test procedures for the determination of energy consumption and performance of clothes washers in Australia.

Part 2 of the standard sets out the requirements for energy labelling of clothes washers in Australia. An approved Energy Label for clothes washers must be displayed on all products which are offered for sale in Australia.

These standards can be purchased from Standards Australia.

Find out how to make an application for an energy label.

Details of the new mandatory rinse performance requirements from 2006 are now available.

Overview of the Test Procedure for Clothes Washers

Products are classified into either drum type (generally front loading) or non drum type (all other types eg top loaders with impellers or agitators, twin tub machines). A number of performance requirements must be met by clothes washers during a test for energy consumption. These include:

- Wash performance - soil removal from soiled swatches (swatch type AS9), which are attached to a clothes load of rated capacity, must exceed 80% (there are also limits on the variability of the wash).
- Spin performance - the water extraction index (defined as ratio of the remaining water in the load after the final spin to the bone dry mass) must not exceed 1.1.
- Rinse performance - a maximum concentration of 2.25 mg PBIS per kg of load. This a new mandatory requirement from July 2006 - more details are on the rinse performance page.
- Severity of washing - the severity of washing index must not exceed 0.3 after a single run.
- Water consumption - shall not exceed 110% of the value stated by the manufacturer.
- Water pressure - machine shall be capable of operating at the maximum and minimum water pressure stated by the manufacturer.

Energy consumption is measured on the program recommended for a normally soiled cotton load at

the rated capacity. The minimum wash temperature for energy labelling tests is 35°C.

Note that energy consumption measured to the Australian Standard will be different to values measured under other test procedures, as the bulk of the energy consumption for a clothes washer test is used to heat the water and energy consumption is therefore closely correlated with wash temperature. The Australian Standard allows external hot water connections - energy input in these cases is calculated as the heat energy of the hot water used. Cold water energy corrections are undertaken for those operations where either external hot water is drawn into the machine or where water is heated internally. The base temperature for the calculation of water energy is 20°C under AS/NZS 2040 (note that IEC60456 uses 15°C as the base temperature). Hot water is supplied at 60° C. Dynamic water pressure is 320 kPa. All tests are undertaken with a power supply at 240 Volts and 50 Hz.

The Preface of AS/NZS 2040 of Part 1 describes the recent changes in the clothes washer test procedure in Australia. It also describes the relationship between the Australian Standard and the International Electrotechnical Commission (IEC) standard for clothes washers.

The Preface of AS/NZS 2040 of Part 2 describes the current requirements for energy labelling for MEPS in Australia and New Zealand.

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