

AS 4551 – 2000
AG 101 – 2000

(Reprinted incorporating Amendment No. 3
August 2002)

Australian Standard™

Domestic gas cooking appliances



Standards Australia



The Australian
Gas Association

This Standard was prepared by the Gas Appliance Standards Committee (AG/1) of The Australian Gas Association. As an accredited Standards Development Organisation, The Australian Gas Association develops and publishes Australian Standards. The Standard was approved on behalf of the Gas Technical Standards Council on 10 May 2000, and published in May 2000.

The following interests are represented on AG/1:

ABA (Australian Barbecue Association)
ACA (Australian Consumer Association)
AGA (The Australian Gas Association)
ALPGA (Australian Liquefied Petroleum Gas Association Ltd)
Appliance & Component Testing Bodies
GAEC (Gas Appliance and Equipment Committee)
GAMAA (Gas Appliance Manufacturers Association of Australia)
Gas Distributors
Gas Retailers
GTRC (Gas Technical Regulators Committee)

Review of Australian Standards. To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new additions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications, this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 99102 CP.

© Copyright 2000 - The Australian Gas Association

Except where, and to the extent that the Copyright Act allows, no part of this publication may be reproduced, stored in a retrieval system or transmitted by any means without prior permission in writing from The Australian Gas Association

The process used in preparing this Australian Standard by The Australian Gas Association has been authorised by Standards Australia. Users of the Australian Standard should note that the copyright in this Australian Standard vests exclusively in The Australian Gas Association and that the Association is responsible for its preparation.

AS 4551 – 2000
AG 101 – 2000

(Reprinted incorporating Amendment No. 3
August 2002)

Australian Standard™

Domestic gas cooking appliances

Originated as AG 101 – May 1976
Previous Edition AG 101 – June 1998
Authorised Australian Standard AS 4551 / AG 101 – 2000
Amendments 1 & 2: April 2001
Amendment 3: August 2002

PUBLISHED BY:

The Australian Gas Association
Technical Office
2 Park Way
BRAESIDE VIC 3195

ISBN 0 85852 252 7

PREFACE

This Standard has been prepared by the Gas Appliance Standards Committee (AG/1) of The Australian Gas Association and replaces AG 101 – 1998, *Approval Requirements for Domestic Gas Cooking Appliances*.

The Standard is intended to provide uniform minimum requirements for the safe design, performance and rational use of energy of domestic gas cooking appliances.

This Standard should not be regarded as a design specification or as an instruction manual.

In its preparation, consideration has been given to:

- continuity of satisfactory operation of appliances and equipment;
- the prevention of fire hazards, and explosions;
- the prevention of injury to persons or property;
- rational use of energy;
- gas rules and regulations now in force; and
- relevant International Standards.

The contents of the Standard are subject to periodic review and suggestions for improvement are welcomed. These should be forwarded to:

Manager, Standardisation Policy and Services
The Australian Gas Association
PO Box 122 BRAESIDE VIC 3195
E-mail: standards@melbourne.gas.asn.au

The Australian Gas Association does not accept responsibility for any inadequacies in this Standard. This Standard sets out acceptable standards for type testing of the appliance itself, and does not in any way remove the responsibility from any installation, commissioning or maintenance personnel for ensuring that the appliance remains in a safe condition after installation or maintenance work has been carried out. Acceptable standards for installation are set out in AS 5601 / AG 601 - *Gas installations*.

Matters relating to quality assurance systems, production testing and certificates of conformity, including those for auxiliary devices are not dealt with in this Standard.

Matters of an advisory nature are indicated by the word 'NOTE' followed by a statement.

The Glossary of Terms contains the definitions of terms or words as they apply to this Standard.

This Standard has no legal authority in its own right, but may acquire legal standing in one or more of the following circumstances:

- adoption by a government or other authority having jurisdiction over relevant appliances;
- adoption by a purchaser as the required standard when placing a contract for relevant appliances; or
- adoption where a contractor states that an appliance is in accordance with the Standard.

CONTENTS

	<i>Page</i>
GLOSSARY OF TERMS.....	8
SECTION 1 : SCOPE.....	20
SECTION 2 : DESIGN AND CONSTRUCTION.....	21
2.1 GENERAL	21
2.2 MATERIALS AND STANDARDS	24
2.3 ELECTRICAL SYSTEMS	25
2.4 INSTALLATION REQUIREMENTS	26
2.5 MAINTENANCE REQUIREMENTS.....	27
2.6 PRESSURE REGULATORS.....	28
2.7 GAS CONTROLS AND SAFETY SHUT-OFF SYSTEMS	28
2.8 IGNITION, PILOTS AND MAIN BURNERS.....	29
2.9 FLUEING REQUIREMENTS	30
2.10 MARKINGS.....	31
2.11 INSTRUCTIONS.....	34
SECTION 3 : PRELIMINARY TESTS - LINE CASES	37
3.1 GENERAL REQUIREMENTS	37
3.2 PREPARATION FOR TESTING	37
3.3 GAS LEAKAGE.....	38
3.4 GAS CONSUMPTION.....	39
3.5 GAS PRESSURE REGULATORS.....	39
3.6 IGNITION AND SAFETY SHUT-OFF SYSTEMS	39
3.7 FLAME STABILITY.....	41
SECTION 4 : TESTS USING LIMIT CONDITIONS.....	42
SECTION 5 : PERFORMANCE TESTS	50

5.1	FLUE OPERATION	50
5.2	THERMAL EFFICIENCY	50
5.3	NOISE OF OPERATION	51
5.4	CONDENSATION.....	51
5.5	TEMPERATURE HAZARDS.....	51
5.6	HEAT RESISTANCE	53
5.7	DURABILITY	54
5.8	THERMOSTATIC CONTROL.....	54
5.9	OVEN COOKING TESTS.....	55
5.10	STRENGTH AND STABILITY.....	55
5.11	CAPACITIES.....	56
5.12	EMISSIONS TESTS.....	56
5.13	SPECIFICATIONS	56
SECTION 6 : METHODS OF TEST		57
M.O.T. 2.1.16(A) – 97	SAFETY OF GLASS HOTPLATES AND GLASS FOLD-DOWN LIDS - IMPACT TEST.....	57
M.O.T. 2.1.16(B) – 97	SAFETY OF GLASS FOLD-DOWN LIDS FOR DOMESTIC COOKING APPLIANCES - IMPACT AFTER THERMAL SHOCK.....	58
M.O.T. 2.1.17 – 97	STABILITY TEST FOR GLASS TOP HOTPLATES	60
M.O.T. 2.1.19(A) – 97	PAN STABILITY TEST.....	61
M.O.T. 2.1.19(B) – 97	PAN STABILITY TEST.....	62
M.O.T. 2.7, 2.10 AND 3.4 – 90	MARKINGS AND LABELS.....	63
M.O.T. 3.3.1 – 2001	GAS LEAKAGE.....	64
M.O.T. 3.4.1/2/3/5/6 – 95	GAS CONSUMPTION.....	65
M.O.T. 3.4.4 – 95	TURNDOWN GAS CONSUMPTION.....	68
M.O.T. 3.5.1 – 01	GAS PRESSURE REGULATOR PERFORMANCE.....	69
M.O.T. 3.6.1/3 – 92	IGNITION - AERATED PILOTS	71
M.O.T. 3.6.2/3 – 94	IGNITION OF A BURNER PROTECTED BY A FLAME SAFEGUARD SYSTEM.....	73
M.O.T. 3.6.4 – 94	IGNITION - OPENING OF FLAME SAFEGUARD SYSTEM	75
M.O.T. 3.6.6 – 2002	COOKER HOTPLATE BURNER IGNITION.....	76
M.O.T. 3.6.14 – 01	OPERATION OF SAFETY SHUT-OFF SYSTEM.....	77

M.O.T. 3.6.16 (c) – 94	
START FLAME ESTABLISHMENT PERIOD - DELAYED IGNITION TESTS	79
M.O.T. 3.7.1 – 2002	
FLAME STABILITY TO DRAUGHT	81
M.O.T. 3.7.4 – 2002	
EFFECT OF APPLIANCE DOOR OPERATION ON BURNER STABILITY	83
M.O.T. 4.1.2 – 98	
DETERMINATION OF CO/CO ₂ RATIO OF COMBUSTION PRODUCTS - SURFACE COMBUSTION BURNERS	85
M.O.T. 4.1.3 – 01	
DETERMINATION OF CO/CO ₂ RATIO OF COMBUSTION PRODUCTS	8
M.O.T. 4.1.4 – 95	
DETERMINATION OF CO/ CO ₂ RATIO OF COMBUSTION PRODUCTS - PERMANENT PILOTS	90
M.O.T. 4.1.5 – 01	
FLAME ABNORMALITY	92
M.O.T. 4.1.6 – 01	
IGNITION TESTS	94
M.O.T. 4.1.7/2.8.3 – 01	
DELAYED IGNITION TEST	96
M.O.T. 4.1.8 – 98	
PILOT FLAMES – IGNITION AND STABILITY	98
M.O.T. 4.1.9 – 98	
BURNER OPERATION - UNBURNT GAS SPILLAGE FROM BURNER SYSTEM	100
M.O.T. 4.1.11 – 98	
OVEN BURNER FLAME STABILITY - BLOCKED FLUEWAY TERMINAL	102
M.O.T. 4.1.12 – 98	
CASE PRESSURE TEST	104
M.O.T. 4.1.13 – 98	
COLD START TEST	107
M.O.T. 5.1.1 – 93	
COMBUSTION PRODUCT IMPINGEMENT ON WALLS AND OTHER SURFACES	109
M.O.T. 5.1.2 – 94	
FLUE OPERATION - SPILLAGE TEST	111
M.O.T. 5.1.3 – 88	
FLUE TERMINAL LOCATION	114
M.O.T. 5.1.4 – 95	
DETERMINATION OF CO/CO ₂ RATIO OF COMBUSTION PRODUCTS UNDER CONDITIONS OF FLUEWAY BLOCKAGE, DOWNDRAUGHT OR UPDRAUGHT	116
M.O.T. 5.2.1 – 99	
THERMAL EFFICIENCY OF HOTPLATE BURNERS	118
M.O.T. 5.2.2 – 93	
PERFORMANCE OF GRILLERS – HEAT- FLUX TEST	120
M.O.T. 5.2.3/4 – 93	
PERFORMANCE OF GRILLERS	122
M.O.T. 5.2.5 – 93	
OVEN HEATING - MAINTENANCE RATE	124

M.O.T. 5.5. – 01	
TEMPERATURE HAZARDS	126
M.O.T. 5.5.9 – 01	
TEMPERATURE HAZARDS - ELECTRIC MOTORS	130
M.O.T. 5.6.1/2/4 – 90	
HEAT RESISTANCE	133
M.O.T. 5.6.3 – 88	
HEAT RESISTANCE - LIGHT BACK CONDITION	135
M.O.T. 5.7.1/2.1.21 – 97	
SPILLOVER TEST	136
M.O.T. 5.7.2 – 88	
IGNITION SYSTEMS - VIBRATION TEST	137
M.O.T. 5.7.3 – 88	
IGNITION SYSTEMS - CYCLE TEST	139
M.O.T. 5.7.4 – 88	
OVEN CLEANING TEST	141
M.O.T. 5.7.5 – 91	
GLASS TOP HOTPLATES - CYCLE TEST	143
M.O.T. 5.7.6 – 98	
ZINC ALLOY TEST	145
M.O.T. 5.7.7 – 98	
THERMAL SHOCK TEST - GLASS CERAMIC	146
M.O.T. 5.8.1 – 95	
AUTOMATIC CONTROL - OVEN THERMOSTATS	147
M.O.T. 5.8.2 – 95	
AUTOMATIC CONTROL - OVEN THERMOSTAT VARIATION	149
M.O.T. 5.8.3 – 90	
AUTOMATIC CONTROL - CONTACT THERMOSTATS - COOKING OIL TEST	151
M.O.T. 5.8.4 – 90	
AUTOMATIC CONTROL - CONTACT THERMOSTATS - MILK TEST	153
M.O.T. 5.9.3 – 88	
OVEN COOKING TESTS - SCONES (SINGLE TRAYS)	154
M.O.T. 5.9.4 – 88	
OVEN COOKING TESTS - SPONGE SANDWICHES	156
M.O.T. 5.9.5 – 88	
OVEN COOKING TESTS - FRUIT CAKE	158
M.O.T. 5.9.6 – 88	
OVEN COOKING TESTS - SMALL CAKES (SINGLE TRAYS)	160
M.O.T. 5.9.7 – 88	
OVEN COOKING TESTS - CUSTARD TART	162
M.O.T. 5.9.8 – 88	
OVEN COOKING TESTS - SCONES (MULTIPLE TRAYS)	165
M.O.T. 5.9.9 – 88	
OVEN COOKING TESTS - SMALL CAKES (MULTIPLE TRAYS)	167
M.O.T. 5.10.1(A) – 88	
COOKER STABILITY TEST - 14 kg LOAD	169

M.O.T. 5.10.1(B)/2.4.6 – 88	
COOKER STABILITY TEST - 50 kg LOAD	170
M.O.T. 5.10.2 – 88	
STRENGTH TEST	171
M.O.T. 5.10.6 – 88	
OVEN SHELVES LOAD TEST	172
M.O.T. 5.12.1/2 – 99	
EMISSIONS TESTS	173

FIGURES

FIGURE 1 STANDARD TOOL KIT TO BE USED IN THE EVALUATION OF SERVICEABILITY	176
FIGURE 2 TAP SPINDLE DIMENSIONS	177
FIGURE 3 STANDARD SYMBOLS FOR HOTPLATES	178
FIGURE 4 BUBBLE LEAK DETECTOR	179
FIGURE 5 TABLES FOR VALUES OF FACTOR A AND B	180
FIGURE 6.1 FLUE GAS SAMPLING HOOD	181
FIGURE 6.2 FLUE GAS SAMPLING HOOD - SAMPLING HOOD AND VESSEL FOR HOTPLATE BURNER COMBUSTION TESTS	182
FIGURE 6.3 HOOD FOR BOILING BURNERS FOR VESSEL LARGER THAN 200 MM DIAMETER	183
FIGURE 6.4 FLUE GAS SAMPLING HOOD PROBE	184
FIGURE 7 STANDARD CUPBOARD FOR BUILT-IN HOTPLATES	185
FIGURE 8 SPILLAGE TEST RIG	186
FIGURE 9.1 STANDARD 200 MM ALUMINIUM SAUCEPAN WITH LID	187
FIGURE 9.2 STANDARD 230 MM ALUMINIUM SAUCEPAN WITH LID	188
FIGURE 9.3 RECOMMENDED STOVE DESIGN	189
FIGURE 10 HEAT FLUX METER	190
FIGURE 11.1 OVEN TEMPERATURE SENSING HEAD	191
FIGURE 11.2 OVEN TEMPERATURE SENSING HEAD DETAIL	192
FIGURE 12 CONNECTION DIAGRAM FOR TEMPERATURES OF ELECTRIC MOTOR WINDINGS	193
FIGURE 13 STANDARD ALUMINIUM SAUCEPAN (PAN STABILITY)	194
FIGURE 14 STANDARD ALUMINIUM SAUCEPAN (GLASS TOP HOTPLATE DURABILITY)	195

APPENDICES

APPENDIX A GAS COOKERS - GUIDELINES FOR SERVICING INSTRUCTIONS	196
APPENDIX B MINIMUM INSTALLATION SPECIFICATIONS AND INSTALLATION REQUIREMENTS FOR DOMESTIC GAS APPLIANCES	197
APPENDIX C WRITTEN APPLIANCE SPECIFICATIONS	199
APPENDIX D METER VOLUME CORRECTION FACTORS	205
APPENDIX E THE AUSTRALIAN GAS ASSOCIATION INDIVIDUAL CERTIFICATION CHECK LIST	207

APPLIANCE TEST REPORT SHEETS

GLOSSARY OF TERMS

AGA

The Australian Gas Association.

ALPGA

Australian Liquefied Petroleum Gas Association Ltd.

Appliance flueway

A port or passage conveying flue gases within the appliance.

Appliance flueway terminal

A protective device fitted to the exit of an appliance flueway of a flueless appliance.

Appliance regulator

A device fitted to an appliance to control the gas pressure or gas volume delivered to that appliance.

Approved

Acceptable to, and meeting the prescribed standards of, the authority having jurisdiction.

Authority

Means the authority having jurisdiction or such a authority as delegated.

Automatic ignition

The lighting of gas at a burner without manual operation whenever gas flows from the burner.

Automatic operation

The use of a sequence of operations, which once initiated, does not require any intermediate manual operation.

Automatic shut-off valve

An automatic valve used to shut off gas supply to an appliance.

Available gas (tine gas)

Readily available gas with similar characteristics to the reference test gas.

Bain marie

An appliance that keeps cooked food hot, using water or air.

A wet bain marie may be either:

Open well type

Food containers are placed on a perforated metal plate. The water level in the bain marie just covers the metal plate and the appliance is operated entirely without covers.