

საქართველოს სტანდარტი

ბუნებრივ აირზე მომუშავე გამათბობლები სათბურებისთვის და დამატებითი
არასაცხოვრებელი გამათბობლები

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

საქართველოს სტანდარტებისა და მეტროლოგიის
ეროვნული სააგენტო
თბილისი

სსტ ენ 12669:2000/2019

საინფორმაციო მონაცემები

1 შემუშავებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს სტანდარტების დეპარტამენტის მიერ

2 დამტკიცებულია და შემოღებულია სამოქმედოდ საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს 2019 წლის 27 ივნისის № 32 განკარგულებით

3 მიღებულია გარეკანის თარგმნის მეთოდით სტანდარტიზაციის ევროპული კომიტეტის სტანდარტი ენ 12669:2000 „ ბუნებრივ აირზე მომუშავე გამათბობლები სათბურებისთვის და დამატებითი არასაცხოვრებელი გამათბობლები“

4 პირველად

5 რეგისტრირებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 2019 წლის 27 ივნისი №268-1.3-014864

დაუშვებელია წინამდებარე სტანდარტის სრული ან ნაწილობრივი კვლავწარმოება, ტირაჟირება და გავრცელება სსიპ საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს ნებართვის გარეშე

EUROPEAN STANDARD

EN 12669

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2000

ICS 97.100.20

English version

Direct gas-fired hot air blowers for use in greenhouses and supplementary non-domestic space heating

Générateurs-pulseurs d'air chaud à chauffage direct utilisant les combustibles gazeux pour les applications horticoles et le chauffage d'appoint des locaux à usage non-domestique

Direkt gasbefeuerte Heißluftgebläse für Gewächshäuser und als Zusatzheizung von nicht-häuslichen Räumen

This European Standard was approved by CEN on 3 December 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

CONTENTS

	Page
FOREWORD	5
1 SCOPE	6
2 NORMATIVE REFERENCES	6
3 DEFINITIONS	7
3.1 APPLIANCE AND ITS CONSTITUENT PARTS	7
3.2 ADJUSTING, CONTROL AND SAFETY DEVICES	8
3.3 OPERATION OF THE APPLIANCE.....	9
3.4 GASES	11
3.5 CONDITIONS OF OPERATION AND MEASUREMENT	12
3.6 COUNTRY OF DESTINATION	12
3.7 CLASSIFICATION.....	13
3.7.1 <i>Classification of gases</i>	13
3.7.2 <i>Classification of appliances</i>	13
4 CONSTRUCTION AND DESIGN REQUIREMENTS	15
4.1 GENERAL.....	15
4.1.1 <i>Conversion to different gases</i>	15
4.1.2 <i>Materials and method of construction</i>	16
4.1.3 <i>Accessibility for maintenance and use</i>	16
4.1.4 <i>Thermal insulation</i>	16
4.1.5 <i>Gas connection</i>	17
4.1.6 <i>Soundness of the gas circuit</i>	17
4.1.7 <i>Supply and distribution of air</i>	17
4.1.8 <i>Checking the state of operation</i>	17
4.1.9 <i>Electrical equipment</i>	18
4.1.10 <i>Operational safety in the event of fluctuation, interruption, and restoration of the auxiliary energy</i>	18
4.1.11 <i>Motors and fans</i>	18
4.2 ADJUSTING, CONTROL AND SAFETY DEVICES	18
4.2.1 <i>General</i>	18
4.2.2 <i>Gas rate adjusters and range-rating devices</i>	19
4.2.3 <i>Aeration adjusters</i>	19
4.2.4 <i>Manual controls</i>	19
4.2.5 <i>Governors</i>	20
4.2.6 <i>Multifunctional controls</i>	20
4.2.7 <i>Flame supervision devices</i>	20
4.2.8 <i>Automatic shut-off valves</i>	20
4.2.9 <i>Automatic burner control systems</i>	21
4.2.10 <i>Gas strainers</i>	21
4.2.11 <i>Air strainers and filters</i>	22
4.3 IGNITION DEVICES	22
4.3.1 <i>General</i>	22
4.3.2 <i>Ignition device for the main burner</i>	22
4.3.3 <i>Ignition burners</i>	22
4.4 COMBUSTION AND DILUTION AIR, PRE-PURGE AND POST-PURGE	22
4.5 FLAME SUPERVISION SYSTEM	23
4.5.1 <i>Appliances with non-automatic burner systems</i>	23
4.5.2 <i>Appliances with automatic burner systems</i>	23
4.6 START-GAS FLAME ESTABLISHMENT	24
4.6.1 <i>Appliances with non-automatic burner systems</i>	24
4.6.2 <i>Appliances with automatic burner systems</i>	24
4.7 MAIN FLAME ESTABLISHMENT.....	24
4.7.1 <i>Establishment by means of a start gas flame</i>	24
4.7.2 <i>Direct establishment of the main flame</i>	25
4.8 MAIN BURNER	25
4.9 FACILITY FOR REMOTE CONTROL.....	25

4.10	THERMOSTATS AND CONTROL OF AIR TEMPERATURE	25
4.10.1	General	25
4.10.2	Control of delivered air temperature	25
4.10.3	Overheat cut-off device	25
4.10.4	Sensors	25
4.11	GAS PRESSURE TEST POINTS	26
4.12	FACILITIES FOR COMMISSIONING AND TESTING	26
4.12.1	General	26
4.12.2	Appliances having reduced start gas rates	26
4.13	ADDITIONAL REQUIREMENTS FOR APPLIANCES DESIGNED FOR PERMANENT OUTDOOR INSTALLATION OR WHERE AUTOMATIC IRRIGATION SYSTEMS ARE USED	27
4.13.1	General	27
4.13.2	Air inlets (outdoor appliances)	27
4.13.3	Access panels and doors	27
4.13.4	Dimensions of openings	27
4.13.5	Fixing screws	27
5	OPERATIONAL REQUIREMENTS	27
5.1	SOUNDNESS OF THE GAS CIRCUIT	27
5.2	HEAT INPUTS	27
5.2.1	Nominal heat input	27
5.2.2	Start gas heat input	27
5.2.3	Effectiveness of gas rate adjusters	28
5.2.4	Effectiveness of the gas governor	28
5.2.5	Effectiveness of the range-rating device	28
5.3	LIMITING TEMPERATURES	28
5.3.1	Temperatures of parts that have to be touched during normal use	28
5.3.2	Temperatures of the appliance casing	28
5.3.3	Component temperatures	28
5.3.4	Fan motor winding temperatures	28
5.3.5	Maximum temperature of the delivered air	29
5.4	IGNITION, CROSS-LIGHTING, FLAME STABILITY	29
5.4.1	Ignition and cross-lighting	29
5.4.2	Flame stability	29
5.5	COMBUSTION	29
5.5.1	Appliances designed to be used in greenhouses	29
5.5.2	Other appliances	29
5.5.3	Combustion air proving device(s)	29
5.5.4	CO ₂ safety device	30
5.5.5	Auxiliary energy variations	30
5.6	OVERHEAT CUT-OFF DEVICE	30
5.7	WATER RESISTANCE	30
6	TEST METHODS	30
6.1	GENERAL	30
6.1.1	Characteristics of test gases: reference and limit gases	30
6.1.2	Conditions for preparation of the test gases	30
6.1.3	Practical application of test gases	33
6.1.4	Test pressures	35
6.1.5	Test procedures	36
6.1.6	General test conditions	36
6.2	CONSTRUCTION AND DESIGN	37
6.2.1	Automatic burner control systems (manually operated devices)	37
6.2.2	Ignition opening time	37
6.2.3	Ignition of the ignition burner with the downstream main gas automatic shut-off valve open	37
6.2.4	Combustion air proving device(s)	38
6.3	SAFETY OF OPERATION	38
6.3.1	Soundness of the gas circuit	38
6.3.2	Heat inputs	38
6.3.3	Limiting temperatures	40
6.3.4	Ignition, cross-lighting and flame stability	44

6.3.5	<i>Combustion</i>	45
6.3.6	<i>Overheat cut-off device</i>	46
6.3.7	<i>Water resistance</i>	47
7	MARKING AND INSTRUCTIONS	50
7.1	GENERAL	50
7.2	DESCRIPTION	50
7.3	DATA PLATE AND LABELLING	50
7.4	OTHER MARKING	51
7.5	MARKING ON THE PACKAGING	51
7.6	UTILIZATION OF SYMBOLS ON THE APPLIANCE AND PACKAGING	51
7.6.1	<i>Electrical supply</i>	51
7.6.2	<i>Type of gas</i>	51
7.6.3	<i>Gas supply pressure</i>	52
7.6.4	<i>Country of destination</i>	52
7.6.5	<i>Category</i>	53
7.6.6	<i>Other information</i>	53
7.7	INSTRUCTIONS	54
7.7.1	<i>General</i>	54
7.7.2	<i>Technical instructions for installation and adjustment</i>	55
7.7.3	<i>Instructions for conversion</i>	56
7.7.4	<i>Instructions for servicing</i>	56
7.7.5	<i>Instructions for use and maintenance</i>	56
7.7.6	<i>Presentation</i>	56
	ANNEX A (INFORMATIVE) NATIONAL SITUATIONS	57
A.1	CATEGORIES LISTED IN THE BODY OF THE STANDARD AND MARKETED IN THE DIFFERENT COUNTRIES	58
A.2	APPLIANCE SUPPLY PRESSURES CORRESPONDING TO THE CATEGORIES GIVEN IN A.1	60
A.3	SPECIAL CATEGORIES MARKETED NATIONALLY OR LOCALLY	61
A.4	TEST GASES AND TEST PRESSURES CORRESPONDING TO THE SPECIAL GASES GIVEN IN A.3	65
A.5	GAS CONNECTIONS IN THE VARIOUS COUNTRIES	67
	ANNEX B (INFORMATIVE) GUIDANCE FOR LIMITATIONS OF APPLICATION OF DIRECT-FIRED AIR HEATERS IN BUILDINGS	68
B.1	GENERAL PRINCIPLES	68
B.2	SAFE OPERATING EMISSION LEVELS	68
B.3	ASSESSMENT OF CONCENTRATIONS	68
B.4	CASE STUDIES	69
	ANNEX C (INFORMATIVE) A-DEVIATIONS	72
	ANNEX D (NORMATIVE) SPECIAL NATIONAL CONDITIONS	73
	ANNEX ZA (INFORMATIVE) CLAUSES OF THIS EUROPEAN STANDARD ADDRESSING REQUIREMENTS OR PROVISIONS OF EU DIRECTIVES	74

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 179 "Gas-fired air heaters", the secretariat of which is held by NNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2000, and conflicting national standards shall be withdrawn at the latest by December 2000.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

The Directive makes no specification in respect of the maximum rating of the appliances falling within its scope. However, the scope of this standard has been limited to appliances having heat inputs not exceeding 180 kW.

The reasons for this are:

- due to the intended application for such appliances whereby they will be installed to heat only one room or space, present practice indicates that the limit stated is adequate for the purpose.
- appliances sized up to 180 kW constitute the major market share.

The test gases, test pressures and appliance categories given in this European Standard are in accordance with those specified in EN 437:1993 + A1:1997.

NOTE For countries requesting special categories (specified in EN 437:1993 + A1:1997), the absence of specific information concerning A.3.3 and A.3.4 implies that the general requirements described in the body of the standard (clauses 4.1.1, 4.2.2, 4.2.3 and 4.2.5) also apply to these special categories.

No specific requirements concerning the rational use of energy have been included in this standard since the design of non-domestic direct gas-fired forced convection air heaters is such that all the heat generated by combustion of the gas is transferred directly into the heated space.

Other European Standards covering gas-fired air heaters are as follows.

EN 525	Non-domestic direct gas fired forced convection air heaters for space heating not exceeding a net heat input of 300 kW
EN 621	Non-domestic gas-fired forced convection air heaters for space heating not exceeding a net heat input of 300 kW, without a fan to assist transportation of combustion air and/or combustion products
EN 778	Domestic gas-fired forced convection air heaters for space heating not exceeding a net heat input of 70 kW, without a fan to assist transportation of combustion air and/or combustion products
EN 1020	Non-domestic gas-fired forced convection air heaters for space heating not exceeding a net heat input of 300 kW, incorporating a fan to assist transportation of combustion air and/or combustion products
EN 1196	Domestic and non-domestic gas-fired air heaters - Supplementary requirements for condensing air heaters
EN 1319	Domestic gas-fired forced convection air heaters for space heating, with fan-assisted burners not exceeding a net heat input of 70 kW