



# Product standards

## **Efficiency requirements for hot-water boilers**

**Guidance notes on UK Regulations**

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**dti**

Department of Trade and Industry

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Whilst every effort has been made to ensure that the information in this booklet is accurate, neither the Department of Trade and Industry nor the Department of the Environment can accept liability for any errors, omissions or misleading statements in that information, whether caused by negligence or otherwise.

# Hot water boilers - the new law in brief

From **1 January 1994**, under the Boiler (Efficiency) Regulations 1993 (SI 1993/3083), amended by the Boiler (Efficiency) (Amendment) Regulations 1994 (SI 1994/3083):

- ❑ new hot water boilers within the size range 4 to 400 kW fired by liquid or gaseous fuels sold in the United Kingdom must operate at minimum levels of efficiency whilst running at full load or part load conditions.
- ❑ new appliances, ie boiler bodies and burners, that are normally marketed as separate items, must:
  - meet the relevant efficiency requirements, when they are assembled together to form a complete boiler;
  - carry CE marking and be accompanied by an EC Declaration of Conformity.
- ❑ the manufacturer or the person who places the boiler on the market is required to keep certain information pertaining to the boiler or appliance for a period of 10 years from the last date of manufacture.

From **1 January 1995**:

- ❑ CE marking of appliances and boilers (note: there are no mandatory requirements for boilers to carry CE marking) must be in accordance with the new common standards.

The Regulations allow suppliers time to move towards complying with the requirements for efficiency and CE marking.

- ❑ Until **31 December 1997** those boilers and appliances that do not meet the requirements for efficiency can continue to be supplied providing they comply with those 'national rules and schemes' that were in force on 21 May 1992.
- ❑ Until **1 January 1997** boilers and appliances can still be marked in accordance with the arrangements that were in force between 1 January 1994 and 31 December 1994; providing these marking provisions do not contravene the requirements of any other directive.

**Failure to comply with these requirements will be a criminal offence.**

- ❑ Any person, body corporate or Scottish partnership found guilty of an offence is liable on summary conviction to a fine of up to £5000.

The same rules apply everywhere in the European Economic Area (EEA), so boilers and appliances complying with the Community regime may be supplied in any EEA State.

# Free movement of goods

The free movement of goods lies at the heart of achieving an open market for business in Europe.

To reach this objective European Community Ministers agreed a New Approach to Technical Harmonisation and Standards.

**'New Approach'** Directives (which are Community legislation) set out the **'essential requirements'** (eg for safety or efficiency) which goods must meet before they may be sold in the United Kingdom or elsewhere in the Community. Compliance with European standards, known as **Harmonised Standards**, which specify the technical details, is the most common means by which business can meet the 'essential requirements'. The directives also describe the requirements by which goods shall be marked to indicate compliance with the 'essential requirements'. This is known as **'CE marking'**; see the section dealing with Council Directive 93/68/EEC on page 5. The directives apply equally to all Member States, although they may be slight variations in the way each Member State implements the regulations. Hence, goods complying with the requirements of a relevant directive and bearing CE marking may be supplied anywhere in the Community.

This booklet provides some information on Statutory Instruments **The Boiler (Efficiency) Regulations 1993 (SI 1993/3083)** and **The Boiler (Efficiency) (Amendment) Regulations 1994 (SI 1994/3083)**. These Statutory Instruments transpose into national law the following 'New Approach' Directives: **92/42/EEC** and **93/68/EEC**, relating to the supply and compliance marking requirements of new hot-water boilers. Readers are advised to consult the Instruments themselves to establish all the provisions that are applicable.

## European Economic Area Agreement

This is an 'Agreement of Association' between the European Community and countries of the European Free Trade Association (EFTA). The Agreement came into force on 1 January 1994. Of the EFTA members: Iceland, Liechtenstein and Norway ratified the Agreement, Switzerland rejected the Agreement, and Austria, Finland and Sweden have become full members of the European Community. The Agreement provides for the free movement of goods, persons, services and capital between the European Community and EFTA countries. This means that new hot water boilers, whether imported from these countries into the European Community or exported from the European Community into these countries, are subject to the same rules and conditions as though they were imported or exported between the Member States of the European Community.

# Council Directive 92/42/EEC

This is a 'New Approach' Directive on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels.

The Directive forms part of the European Community's SAVE programme (Specific Actions for Vigorous Energy Efficiency), reference 91/565/EEC No L307/34 dated 8 November 1991, and was adopted by the Council of Ministers on 21 May 1992; Official Journal of the European Communities number L167/17 dated 22 June 1992 refers. The Directive is concerned with improving energy efficiency and the subsequent reduction in the emissions of carbon dioxide from standard, low-temperature and gas condensing boilers that have outputs powers in the range 4 to 400 kW. The Regulations apply to series produced, ie mass produced, boilers. There are a number of exclusions to these Regulations. Boilers fired by alternative fuels and some specialist types of boilers may be exempt.

# Council Directive 93/68/EEC

This Directive deals with CE Marking and sets a common standard for the compliance marking of goods conforming to the essential requirements of 'New Approach' Directives. The Directive describes the detailed amendments needed to harmonise the requirements of each 'New Approach' directive adopted so far. All the changes relevant to Directive 92/42/EEC have been incorporated into the United Kingdom's implementing Regulations.

One alteration applicable to all directives is a change in term: 'CE marking' shall be used in place of 'CE mark'; the actual marking consists of the letters **'CE'**, taken from 'Communautes Europeennes' (European Community). However, it should be noted that other terms may be seen in UK legislation. For example CE mark, CE marking, EC mark and EC marking are commonly seen and are synonymous with each other. 'CE marking' is used throughout this booklet, in keeping with other booklets in the series.

# The Boiler (Efficiency) Regulations 1993 (SI 1993/3083)

**Entry into force:** 1 January 1994 for those requirements relating to boiler efficiency and 1 January 1995 for those requirements relating to the amended criteria for CE marking.

**Primary legislation:** the European Communities Act 1972 and the European Economic Area Act 1993.

**Secondary (implementing) legislation:** Council Directives 92/42/EEC and 93/68/EEC have been transposed into UK law by means of the following Statutory Instruments (SI) - The Boiler (Efficiency) Regulations 1993 (SI 1993/3083), **the 1993 Regulations**, and The Boiler (Efficiency) (Amendment) Regulations 1994 (SI 1994/3083)', **the 1994 Regulations**.

**Unless otherwise stated the Regulation references that follow refer to the 1993 Regulations**

**Efficiency requirements:** (see Regulations 2 & 5 and Schedule 2) standard, low temperature (including liquid fuelled condensing boilers) and gas condensing boilers are required to meet the prescribed minimum levels of efficiency set out in Schedule 2 to the Regulations; the efficiency levels have been reproduced in Annex A of this booklet.

Boilers complying with a relevant harmonised standard, bearing CE marking and accompanied by an EC declaration of conformity are deemed to satisfy the efficiency requirements. Harmonised Standard means any standard relevant to these Regulations drawn up under mandate from the European Commission, published in the Official Journal of the European Communities and published as a national standard.

**Exemptions to the Regulations:** Regulation 4.2 and Schedule 3 lists the exemptions to the prohibition on supply and concessionary arrangements. The following are exempt:

- boilers capable of being fired by different fuels where one or more of the fuels is a solid fuel;
- equipment for the instantaneous preparation of hot water;
- boilers designed to be fired by any other fuel the property of which differs appreciably from commonly marketed liquid or gaseous fuels;
- cookers and appliances designed mainly to heat the room where they are installed and as a subsidiary function supply hot water for central heating and sanitary hot water;

- ❑ appliances with rated outputs of less than 6kW using gravity circulation designed for the production of sanitary hot water, ie circulators;
- ❑ boilers manufactured on a one-off basis;
- ❑ back and living space boilers, but see next section;
- ❑ the non space-heating function of a boiler that has a dual function of heating premises and also providing hot water, eg 'combi' boilers.

**Back boilers or boilers designed to be installed in the living space:** these boilers can continue to be put into service in Member States, such as the United Kingdom, where they were widely installed before the adoption of the Directive providing they are not more than 4 percent below the efficiency requirement of a standard boiler.

For the purposes of these Regulations the term boiler to be installed in the living space means: a boiler with an effective rate of output of less than 37 kW designed to provide heat to that part of the living space in which it is installed by the emission of heat from the casing, having an open expansion chamber and capable of heating water using gravity circulation. In other words a cast iron or steel boiler designed to operate with an open system, able to provide gravity circulation to the hot water cylinder and probably with a poorly insulated casing. The key word is designed, it is still a living space boiler if it is installed with a fully pumped system in an outhouse. However, if it is converted into a boiler which is suitable for a sealed system the necessary modifications will mean that it is no longer designed to work with an open system and it will, therefore, have to meet the efficiency level prescribed for a standard boiler.

The European Commission will monitor and report on the position of back and living space boilers in 1997. In the light of the findings the Commission could recommend leaving the concession (the lower efficiency requirements for back and living space boilers) unchanged, further restrict its application, reduce or remove it altogether. It is expected that the Commission will wish to continue reviewing the workings of the Directive at three yearly intervals for the foreseeable future.

**Prohibition on supply:** (see Regulations 4 & 6) failure to comply with certain requirements of the Regulations may result in legal proceeding being taken against the supplier.

The Regulations make it an offence to supply or put into service a new boiler that does not comply with the efficiency requirements. It is also an offence to supply or put into service a new appliance, ie a boiler body or a burner, unless it bears CE marking and is accompanied by an EC declaration of conformity.

For the purposes of these Regulations the term supply includes offering to supply, agreeing to supply, exposing for supply and possessing for supply.

# Conformity assessment requirements (see Regulations 2, 4, 6 & 7 and Schedule 1)

## CE MARKING

The Regulations provide for the carrying of a system of marking known as 'CE marking' to indicate compliance with the efficiency and other requirements of the Regulations. Schedule 1 of the Regulations describes the type of CE marking that can be affixed, and this has been reproduced at Annex H.

There are different requirements for the CE marking of boilers and appliances, in accordance with the wording of the Directive.

### Appliances:

- appliances marketed separately must carry CE marking and be accompanied by a EC Declaration of Conformity (see Regulations 2(1), 6, the sections on the Prohibition on Supply and the EC Declaration of Conformity on pages 7 and 10 of this booklet).

This requirement applies to the range of boiler bodies and burners around which the 'bespoke' boiler market operates, ie those appliances that are normally marketed separately allowing the individual selection and assembly of a complete made-to-measure boiler. The boiler produced from the combination of these appliances is deemed to meet the efficiency and other requirements of the Directive, provided the appliances themselves carry CE marking and are accompanied by a EC Declaration of Conformity. Consequently, separate type testing and or CE marking of the boiler is not required.

This requirement does not apply to the components, sub-assemblies or spare parts of boilers that are normally marketed as a complete boiler. However, some components may be the subject of other Community Directives in which case they should be marked in accordance with the requirements of those other directives.

### Boilers:

- there are no mandatory 'CE marking' requirements for boilers but they must satisfy the efficiency requirements (see Regulations 4 and 5).

In principle, boilers are not required to carry compliance marking, undergo a type test (a test which ascertains the parameters of the boiler) or be subject to a quality assurance procedure (see the section on Attestation Procedures on page 11). The supplier can 'claim' the boiler conforms to the efficiency requirements. However, because it is an offence to supply a boiler which does not comply with the efficiency requirements, suppliers should be prepared to substantiate any claim they make. Indeed, Member States are required to take all necessary measures to ensure that boilers cannot be put into service unless they satisfy the

efficiency requirements. To avoid unnecessary problems suppliers, in particular those suppliers who intend exporting to other Member States, should consider providing the proof that Member States may be seeking. CE marking of boilers and assessment by a notified body is the most common method of providing that proof. CE marking is accepted across the Community and other Member States may expect or even insist that boilers are CE marked. It is likely that the position will be clarified when the Commission reviews the operation of the Directive in 1997. In which case it is expected that boilers and appliances will be put on an equal footing by making CE marking mandatory for both appliances and boilers.

In reality, domestic consumers and installers will also expect to see boilers carry CE marking and there may be a commercial advantage for those suppliers whose boilers carry such marking. Moreover, enforcement authorities and installers may demand proof that boilers without CE marking meet the efficiency requirements. This should not be the case if boilers are CE marked.

Under the amended requirements for CE marking boilers and appliances may become subject to other Community Directives concerning other aspects which provide for the affixing of CE marking. Therefore, the CE marking also certifies that the boiler or appliance meets all the applicable provisions of these 'other directives'. This requirement applies from 1 January 1995 but see Regulation 16 of the 93 Regulations, Regulation 2(f), (g) and (h) of the 94 Regulations on transitional arrangements and the section on transitional arrangements on page 12 of this booklet.

Where boilers and appliances do not conform in full to the provisions of these 'other directives' and the CE marking requirements allow the manufacturer during a transitional period to choose which arrangements apply, the manufacturer must specify in the accompanying documentation with which directive(s) the marking indicates conformity if the marking is affixed during that transitional period.

**CE marking of back and living space boilers only meeting the lower efficiency requirement:** Directive 92/42/EEC is not clear on the matter of CE marking of these types of boiler. It is clear that these boilers must carry CE marking to indicate compliance with other applicable directives but Directive 92/42/EEC does not explicitly prohibit CE marking to show compliance with it. In general, goods taking advantage of derogations (transitional concessions), like boilers that need only to conform to national standards until 31 December 1997, do not conform to the full requirements of the directive and so must not be CE marked to show compliance with that directive. In the negotiations that formulated Directive 92/42/EEC it was quite clear that the reduced requirements for back and living space boilers were to be treated as a standard derogation and hence CE marking was to be prohibited for this Directive. However, in the final version the derogation was not explicitly time limited but became subject to report by the Commission. Hence, the text became less clear for UK law as to whether or not CE marking was prohibited. It is expected that the position will be clarified in 1997 when the Directive is reviewed and it will be made quite clear that CE marking of these two types of boiler will not be permitted unless they conform to the full efficiency requirements. Therefore, unless the boiler conforms to the full efficiency requirements the accompanying documentation must state which directives are

covered by any CE marking. This is because the implementation of those other directives will treat these boilers as though they are taking advantage of a transitional arrangement.

Hence, manufacturers are recommended to take legal advice if they wish to undertake a policy of CE marking these boilers. The Department of the Environment will advise Local Authorities and anyone else who inquires that our view is CE marking to show compliance with Directive 92/42/EEC is not required, and if one of these boilers is so marked they should investigate with the supplier the certified efficiency. In forwarding information to the Commission on the workings of the Directive the Department of the Environment will report any difficulties that have arisen with this uncertainty.

Additionally, manufacturers should note that Directive 92/42/EEC allows the supply of these boilers to continue only in countries where they were widely installed prior to May 1992. In practice this means that their supply is probably restricted to the UK and possibly Ireland. At the time of writing it is not clear whether supplying to Ireland, or to any other Member State, will be permitted. Each Member State will clarify the position regarding supplying and CE marking in its own legislation. Manufacturers should check with the Member State(s) in question before attempting to export.

**EC Declaration of Conformity** (see Regulations 5 & 6): attests that:

- the boiler or appliance conforms to the requirements of the Regulations; and
- for a series produced boiler certifies that the boiler is of a type that has been tested, i.e. the EC type-examination; or
- for an appliance defines the parameters for assembly and use and certifies that after assembly the resulting boiler will satisfy the efficiency requirements, by compliance with the attestation procedures of Schedule 4 and 5 or otherwise.

For boilers burning gaseous fuels, the procedures for assessing the conformity with the efficiency requirements must be in accordance with the procedures for conformity assessment specified in the Gas Appliance (Safety) Regulations 1992, SI 1992/711.

The 'or otherwise' statement anticipates the slight differences between these procedures and allows for the fact that by separately testing the appliances it is possible to conclude that the sum of the parts, ie the resulting boiler, meets the efficiency requirements. Further, it anticipates that some components of the appliance may be the subject of other Community Directives in which case they should be marked in accordance with the requirements of those other directives.

An EC declaration of conformity must accompany any boiler or appliances that carries CE marking. The declaration need not be on a separate piece of paper but could be included within the technical literature or any other paperwork that accompanies such a boiler or appliance. Annex G contains an outline, using minimalist wording, of the type of declaration that may be considered acceptable.

**EC type-examination** (see Schedule 4): is the method by which a notified body, i.e. a body specifically appointed by a Member State for the purpose of monitoring and assessing quality (see page 12 of this booklet), ascertains and attests that an example is representative of the production envisaged and meets the relevant provisions of the Regulations. The tested boiler, if successful, is deemed to be 'the approved type'. Schedule 4 of the Regulations describes the EC type-examination requirements but further details can be found in Annex B of this booklet.

**Attestation procedures** (see Schedule 5): the manufacturer, or his authorised representative, must choose and conform to one of the three procedures described in parts I, II and III of Schedule 5 of the Regulations. Briefly, they are:

- i) self declaration and random examination of the product by a notified body;
- ii) self declaration and checks by a notified body of the production quality control system;
- iii) self declaration and checks by a notified body of the product quality control system.

The manufacturer, or his authorised representative, may select a notified body approved by the Secretary of State for the Environment or a body approved by any other Member State. Further details of the attestation procedures can be found in Annex C of this booklet.

**Other marking requirements** (see Regulation 10): the Regulations allow a manufacturer, or his authorised representative, to affix a label to a new boiler to signify that a boiler has achieved a level of energy performance greater than that specified in Schedule 2. Schedule 7 describes the marking applicable for that level of performance achieved; these levels have been reproduced in Annex D of this booklet.

The Regulations do not prohibit the carrying of other labels providing they are not of a design that could be confused with the CE marking or the performance mark.

**Other requirements** (see Regulation 11): the Regulations require the manufacturer or his authorised representative to keep a copy of certain information, such as technical documents, EC type-examination certificate, declaration of conformity,

documents, notifications and decisions relating to the quality system, audit reports and visit or test reports, (see the Regulations for full details) for a period of 10 years from the last date of manufacture. Where there is no manufacturer or manufacturer's representative it is the responsibility of the person who places the product on the market to keep the documents and ensure that all the relevant requirements of the Regulations are met.

**Transitional arrangements** - (see Regulation 16 of the 93 Regulations and Regulation 2 of the 94 Regulations): the Regulations provide for a period during which suppliers can clear stock and move towards complying with the new requirements.

Until **31 December 1997** boilers and appliances can continued to be placed on the market and taken into service providing they conform with those 'national rules and schemes' that relate to efficiency. For the purposes of these Regulations the term 'national rules and schemes' means any British Standard or other published Standard relating to the efficiency of boilers and appliances that was in force in the United Kingdom on 21 May 1992. Annex E of this booklet lists some of these standards.

Until **1 January 1997** boilers and appliances that were CE marked in accordance with the arrangements in force before 1 January 1995 can continue to be placed on the market and brought into service, provided this does not contravene the requirements of any other directive.

**Notified bodies - appointments** (see Regulation 8 and Schedule 6): notified bodies are those bodies authorised to undertake those tasks required by the Regulations to verify the conformity with the requirements of the Regulations. The Department of the Environment is dealing with the appointment of notified bodies for these Regulations. Schedule 6 of the Regulations describes the approval requirements. Annex F of this booklet lists those companies that have become notified for the purposes of the Regulations and Directive.

**Notified bodies - powers** (see Regulation 9): if a notified body whilst carrying out such tasks discovers that CE marking has been wrongly affixed the body shall give notice in writing of that fact to the manufacturer, or his authorised representative. The notice requires the person to whom it is addressed to remove the offending boiler or appliance from the market place and to ensure that no other non-complying boiler or appliance is put into service. It may also include a statement that unless steps are taken to rectify the non-compliance within a specified period any EC type-examination, declaration of conformity or approval of a quality system will be suspended.

**Enforcement - bodies** (see Regulation 12 and Regulation 2 of the Amending Regulations): the weights and measures authorities in England, Scotland and Wales, and the Department of Economic Development in Northern Ireland are responsible for the enforcement of the Regulations in their area; in Scotland only the Procurator Fiscal may bring proceedings.

**Enforcement - offences** (see Regulations 13 & 15): in addition to those offences provided for in other legislation such as the Trade Descriptions Act the Regulations make it an offence to:

- supply or put into service a new boiler that does not meet the efficiency requirements;
- issue an EC declaration of conformity for a boiler that does not meet the efficiency requirements;
- supply or put into service a new appliance unless bears CE marking and is accompanied by an EC declaration of conformity; or
- give an EC declaration of conformity to an appliance when, after assembly, the resulting boiler does not meet the efficiency requirements;
- affix or cause to be affixed CE marking where the boiler or appliance does not comply with the efficiency requirements or any applicable provision of any other Community Directive concerning other aspects that provide for the affixing of CE marking to which the boiler or appliance is subjected;
- affix or cause to be affixed CE marking in a manner that is likely to deceive a third party as to the meaning and form of the marking; or
- affix or cause to be affixed any marking that will reduce the visibility or legibility of any CE marking;
- supply a boiler or appliance that is the subject of a notice issued by a notified body and the period of time for compliance in that notice has elapsed, unless compliance with the requirements of the Regulations has been secured;
- affix or cause to be affixed to a boiler a label as provided for in Schedule 7 when the boiler does not comply with the requirements of that Schedule; or
- affix or cause to be affixed to a boiler a label reasonably likely to be confused with the energy performance label provided for in Schedule 7;
- fail to keep for the period specified in respect of those boilers and appliances the relevant documents, certificates and information as required by Regulation 11.

**Enforcement - defences** (see Regulation 14): in relation to the supply of boilers and appliances the Regulations provide for a defence where:

- the person reasonably believed that the product would not be put into service in the Community (the export defence); or
- the person neither knew nor had reasonable grounds for believing that the efficiency requirements were not satisfied; or

- the terms on which the product was supplied or put into service indicated that they were not new (the used products defence);
- the person took all reasonable steps and exercised all due diligence to avoid committing the offence, however, where the person alleges the offence was due to the act or default of another or to reliance on information given by another he may not rely on the defence unless:
  - he has served a notice on the person bringing the proceedings to identify or assist in the identification of the person who is alleged to have committed the offence; and
  - he shows that it was reasonable in all circumstances for him to have relied on the information, having regard to the steps taken to verify the information and whether he had reason to disbelieve the information.

**Enforcement - penalties** (see Regulation 13): any person, body corporate or Scottish partnership (which has a legal personality separate from that of the partners) found guilty of an offence is liable on summary conviction to a fine not exceeding level 3 on the standard scale, for contravention of the offence relating to the retention of documents, certificates and information, or level 5 for the contravention of all other offenses. Currently these levels correspond to fines not exceeding £1,000 and £5,000.

# Further Information

**Availability of text of the Regulations:** the Boiler (Efficiency) Regulations 1993 is available from HMSO bookshops or its agents or from HMSO Books, HMSO Publications Centre, P O Box 276, London SW8 5DT. Tel: 0171 873 9090. Fax: 0171 873 8200

**Availability of texts of British Standards or harmonised standards:** these may be obtained from BSI Sales at Linford Wood, Milton Keynes MK14 6LE. Tel: 01908 221166.

**Availability of texts of OFS Standards:** Oil Firing Technical Association for the Petroleum Industry (OFTEC), Century House, 100 High Street, Banstead, Surrey SM7 2NN. Tel: 01737 373311.

## CONTACT POINTS

### **The Boiler (Efficiency) Directive and the UK Regulations:**

Department of the Environment  
Room C9/04  
2 Marsham Street  
London SW1P 3EB

Tel: 0171 276 0684 (**Naran Patel**)  
or 0171 276 6524 (**Alan Christie**)

### **British and European standards:**

BSI Customer Information  
Milton Keynes

Tel: 01908 226888 (**Customer Information**)

### **OFS standards:**

Oil Firing Technical Association for the  
Petroleum Industry (OFTEC)  
Century House  
100 High Street  
Banstead  
Surrey SM7 2NN

Tel: 01737 373311 (**Mr Colin Sutherland**)

# Essential requirements

(see Schedule 2 of the Regulations)

Boilers must comply with the following useful nett efficiency requirements:

- ❑ at rated output, ie operating at rated output  $P_n$  expressed in kW, at an average boiler-water temperature of 70°C; and
- ❑ at part load, ie operating at 30% part load, at an average boiler-water temperature that varies according to the type of boiler.

Type of boiler	Range of output power kW	Efficiency at rated output		Efficiency at part load	
		Average boiler-water temperature (°C)	Efficiency requirement express in %	Average boiler-water temperature (°C)	Efficiency requirement express in %
Standard	4 to 400	70	$\geq 84 + 2\text{Log}P_n$	$\geq 50$	$\geq 80 + 3\text{Log}P_n$
Low temperature (*)	4 to 400	70	$\geq 87.5 + 1.5\text{Log}P_n$	40	$\geq 87.5 + 1.5\text{Log}P_n$
Gas condensing	4 to 400	70	$\geq 91 + \text{Log}P_n$	30(**)	$\geq 97 + \text{Log}P_n$

(\*) including condensing boilers using liquid fuel

(\*\*) temperature of boiler water-supply

For example the full load and part load efficiency requirements for a standard boiler at the lower and upper ranges of power output, ie  $P_n = 4\text{ kW}$  and  $400\text{ kW}$ , are as follows:

at rated output  $\geq 84 + 2 \times \log P_n$  (%)

where  $P_n \geq 4\text{ kW}$

substituting  $\geq 84 + (2 \times \log 4)$   
 $\geq 84 + (2 \times 0.6021)$   
 $\geq 84 + 1.2041$   
 $\geq 85.2\%$

where  $P_n \geq 400\text{ kW}$

$\geq 84 + (2 \times \log 400)$   
 $\geq 84 + (2 \times 2.6021)$   
 $\geq 84 + 5.2041$   
 $\geq 89.2\%$

similarly at part load  $\geq 80 + 3 \times \log P_n$  (%)

where  $P_n \geq 4\text{ kW}$

$\geq 80 + (3 \times \log 4)$   
 $\geq 80 + (3 \times 0.6021)$   
 $\geq 80 + 1.8063$   
 $\geq 81.8\%$

where  $P_n \geq 400\text{ kW}$

$\geq 80 + (3 \times \log 400)$   
 $\geq 80 + (3 \times 2.6021)$   
 $\geq 80 + 7.8063$   
 $\geq 87.8\%$

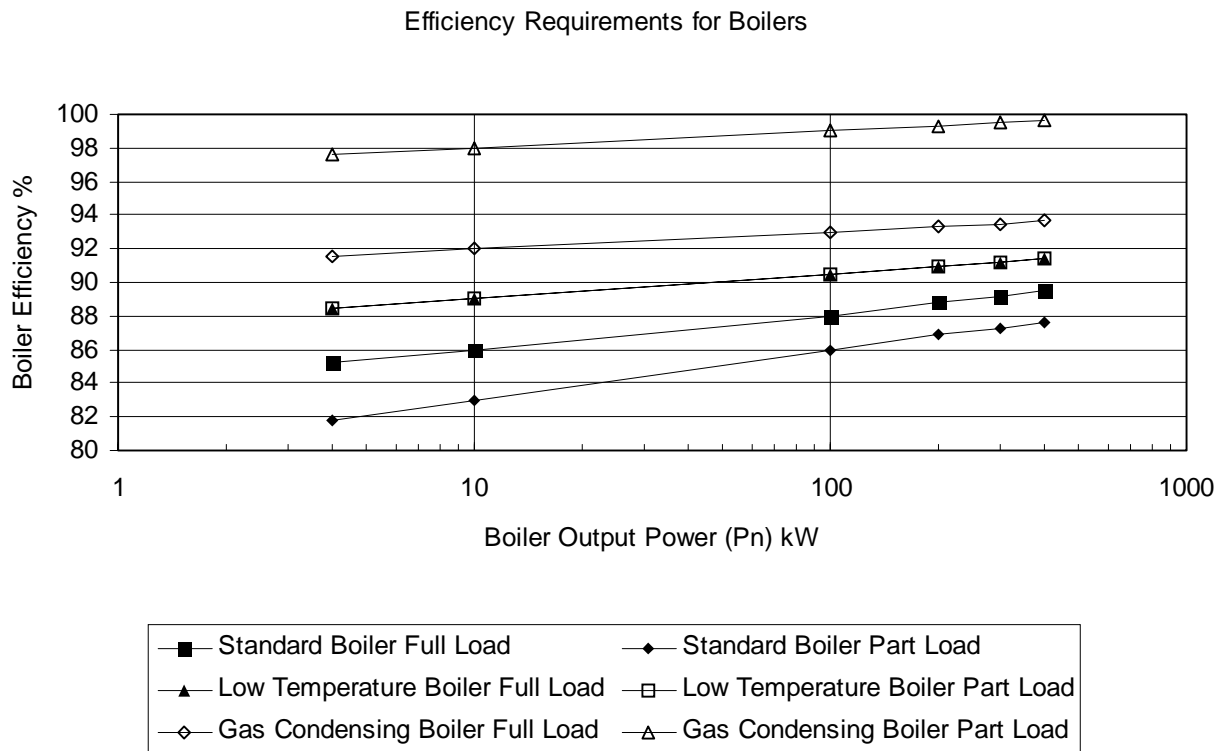
Quick reference points can be found where  $P_n = 10$  and  $100\text{kW}$ . Log  $P_n$  for 10 and  $100\text{kW}$  are 1 and 2 respectively. Hence, at these points the full load and part load efficiencies are:

standard boiler =  $\geq 86\%$  and  $83\%$  respectively when  $P_n = 10\text{kW}$   
 $\geq 88\%$  and  $86\%$  respectively when  $P_n = 100\text{kW}$ ,

low temperature =  $\geq 89\%$  and  $89\%$  respectively when  $P_n = 10\text{kW}$   
boiler  $\geq 90.5\%$  and  $90.5\%$  respectively when  $P_n = 100\text{kW}$ ,

gas condensing =  $\geq 92\%$  and  $98\%$  respectively when  $P_n = 10\text{kW}$   
boiler  $\geq 93\%$  and  $99\%$  respectively when  $P_n = 100\text{kW}$ .

The following graphical representation has been included as a guide. Actual efficiencies should be calculated using the appropriate formula.



## EC type-examination (see Schedule 4 of the Regulations for a full account of the requirements)

Applications for an EC type-examination are made by the manufacturer or his authorised representative established in the Community to a single notified body of his choice. The purpose being to test that an example, representative of the production envisaged, conforms to the relevant provisions of the Regulations. The application shall include:

- the name and address of the manufacturer and, if the application is lodged by the authorised representative, the name and address of that representative;
- a written declaration that the same application has not been lodged with any other notified body (this requirement does not preclude initially approaching more than one notified body for competitive quotations to carry out the work);
- the technical documents describing the boiler;
- a representative of the production envisaged, (further examples may have to be supplied as required).

The notified body will examine the technical documents and verify that the example has been manufactured in accordance with that documentation, agree with the applicant where the examination and/or tests are to be carried out and perform or have performed the appropriate examinations and/or tests to verify that the example conforms with the requirements of the Regulations. Where the example is found to comply the notified body will issue an EC type-examination certificate. Should a person be refused a certificate the reasons for that refusal shall be given and the person shall have recourse to an appeals procedure.

Each notified body shall communicate to other notified bodies the relevant information concerning EC type-examination certificates and additions issued and withdrawn. They may also receive copies of certificates and their additions.

The applicant is to keep the notified body who holds the technical documents informed of any modifications to the approved example. Where such changes influence conformity with the essential requirements or the prescribed conditions for use, additional approval must be obtained. This will be in the form of an addition to the original EC type-examination certificate.

# Declaration of Conformity and quality assurance (see Schedule 5 of the Regulations for a full account of the requirements)

Three methods are available to the manufacturer by which he can declare that his product conforms to the approved type.

## Method I - self declaration random verification

This is where a manufacturer or his authorised representative established in the Community ensures and declares that the **product** conforms with the type as described in the EC type examination certificate and satisfies the requirements of those Regulations that apply to them.

The manufacturer shall take all measures to ensure that the manufacturing process assures conformity.

The manufacturer must choose a notified body and must allow that body to perform examinations of the product at random intervals. Suitable samples, taken on the spot, shall be examined and be subjected to the appropriate tests. Where one or more of the samples are found not to comply the notified body will take appropriate measures, see Notified Body - powers on page 12 of this booklet.

## Method II - self declaration production quality assurance

This is also where a manufacturer or his authorised representative established in the Community ensures and declares that the product conforms with the type as described in the EC type-examination certificate and satisfies the requirements of those Regulations that apply to them.

The difference between this and method I is that in this method the manufacturer is required to operate an approved quality system to monitor the **production** method and shall undertake to fulfil the obligations arising out of such a system and maintain it at an adequate and efficiency level. The system is subject to checks by a notified body.

The manufacturer must choose a notified body and must invite that body to assess his system.

The body shall assess the quality system to determine whether it satisfies the requirements for such schemes. The manufacturer must allow the body access to the manufacturing premises for the purpose of undertaking periodic and unannounced audits of the quality system. The body must be notified of any changes to the quality system and must decide if reassessment is required.

The notified body has the right to withdraw the approval if it finds that the quality system no longer conforms with the requirements for such schemes. Information on the issuing and/or withdrawing of approvals shall be passed to other notified bodies.

### **Method III - self declaration product quality assurance**

This again is where a manufacturer or his authorised representative established in the Community ensures and declares that the product conforms with the type as described in the EC type-examination certificate and satisfies the requirements of those Regulations that apply to them.

The difference between this method and method II is that the manufacturer shall operate an approved quality system to monitor the product and must undertake to fulfil the obligations arising out of such a system and maintain it at an adequate and efficiency level. The system is subject to checks by a notified body.

The manufacturer must choose a notified body and must invite that body to assess his system.

The notified body shall assess the quality system to determine whether it satisfies the requirements for such schemes. The manufacturers must allow the body access to the manufacturing premises for the purpose of undertaking periodic and unannounced audits of the quality system. The body must be notified of any changes to the quality system and must decide if reassessment is required.

The notified body has the right to withdraw approval if it finds that the quality system no longer conforms with the requirements for such schemes. Information on the issuing and/or withdrawing of approvals shall be passed to other notified bodies.

# Requirements for the energy performance marking of boilers (see Schedule 7 of the Regulations for a full account of the requirements)

Nett efficiency requirements to be met at nominal output (P<sub>n</sub> expressed in kW) and at part load of 30% of the nominal output (0.3P<sub>n</sub>).

Label (star)	Efficiency requirement at nominal output P <sub>n</sub> at an average water temperature of 70°C %	Efficiency requirement at part load of 0.3 P <sub>n</sub> at an average water temperature of ≥50°C %
★	≥84 + 2logP <sub>n</sub>	≥80 + 3logP <sub>n</sub>
★ ★	≥87 + 2logP <sub>n</sub>	≥83 + 3logP <sub>n</sub>
★ ★ ★	≥90 + 2logP <sub>n</sub>	≥86 + 3logP <sub>n</sub>
★ ★ ★ ★	≥93 + 2logP <sub>n</sub>	≥89 + 3logP <sub>n</sub>

# Transitional arrangements - applicable standards

Under the transitional arrangements boilers that do not comply fully with the requirements may continue to be marketed until 31 December 1997 provided they comply with those national rules and schemes that were in force on 21 May 1992.

The following standards were in force in the United Kingdom on 21 May 1992:

OFS A50 - oil fired boilers over 45kW (85% net, 80% gross);

BS 4876 - oil fired boilers up to 44kW (80% net, 75% gross);

BS 5978 - gas boilers over 60kW (80.3% net, 73% gross);

BS 6332:1 - gas fired boilers up to 60kW (81% net, 73.6% gross);

BS 6332:3 - gas fired back boilers (80% net, 72.7% gross);

## Notes:

The efficiency figures, in brackets, are provided for guidance only.

The above list is not exhaustive.

# Bodies notified for these Regulations

The following companies have become Notified for the purposes of these Regulations:

British Gas Plc  
Research and Technology  
Gas Research Centre  
Ashby Road  
Loughborough  
Leicestershire LE11 3QU

Contact: Mr B Gosling, Manager, Testing and Certification

**Identification No 0087**  
**Schedule 4 & 5 Part I (modules B & C)**

BSI Quality Assurance  
PO Box 375  
Milton Keynes MK14 6LL

Contact: Mr F R Davies, Manager, HVACR Operations

**Identification No 0086**  
**Schedules 4 & 5 Parts I, II and III (modules B,C D & E)**

The Building Services Research &  
Information Association  
Old Bracknell Lane West  
Bracknell  
Berkshire RG12 4AH

Contact: Mr G H Baker, Director and Chief Executive

**Identification No 0480**  
**Schedule 4 (module B)**

Calor Gas Appliance Testing Laboratory  
Calor Gas Limited  
Appleton Park  
Slough SL3 9JG

Contact: Mr G W Vernon, Manager, Technical Services

**Identification No 0119**  
**Schedules 4 & 5 Part I (modules B & C)**

SGS Yarsley International Certification Services Ltd  
Formal House  
Old Mixon Crescent  
Weston-Super-Mare  
Somerset S24 9AL

Contact: Mr C D Jepson, Product Certification Manager

**Identification No 0120**  
**Schedule 5 Parts II & III (module D & E)**

The module reference, eg module B, corresponds to the nomenclature used in Directive 92/42/EEC to introduce the various facets of the conformity assessment procedure.

# Outline of an EC Declaration of Conformity

The following (illustration) is an indication of the type of wording that may be suitable for inclusion in an EC Declaration of Conformity. Other words to give the same meaning could also be used. It should be noted that the Notified Bodies approved to carry out compliance and quality system checks, will also have a view as to the wording used. Manufacturers, agents or whoever places the goods on the market are advised to agree the actual wording in consultation with the notified body of his choice.

## **Manufacturer/agent identification**

The boiler/appliance listed below meets requirements of Statutory Instrument 'The Boiler (Efficiency) Regulations 1993 NO 3083' and therefore is deemed to meet the requirements of Directive 92/42/EEC on the efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels.

## **Boiler/appliance model or identification number**

Type test for the purposes of Regulation 5 or 6 certified by:  
(notified body identification number/symbol)

Product/production certified by:  
(notified body identification number/symbol)

To comply with the efficiency requirements this burner/boiler body must only be used with boiler bodies/burners meeting the specification in section xxx of the installers instructions<sup>1</sup>.

The CE marking indicates conformity with the following directives<sup>2</sup>:

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1 This line is only needed for 'appliances' that are marketed separately.

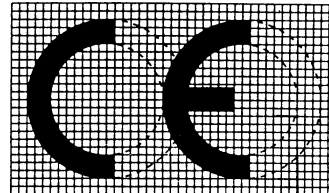
2 This line is only needed if the CE marking does not signify conformity to all the relevant directives because advantage has been taken of a transitional arrangement in a relevant directive.

# The CE Marking

Products meeting the requirements may carry CE marking. The marking is as illustrated in diagram 1, below. It may not be smaller than 5mm in its vertical height, and the proportions in diagram 2, below must be maintained whatever its size. The grid does not form part of the marking and is for information only.



**Diagram 1**



**Diagram 2**

- This mark looks the same as some previous marks, but there are subtle changes, and diagram 2 should be studied closely. It should be noted, for example, that the C and E are not formed by perfect semi-circles, i.e. the top and bottom arms extend one square beyond the semi-circles, and the middle arm of the E stops one square short.