

**ENERGY COMMISSION (ENERGY EFFICIENCY STANDARDS  
AND LABELLING) (WATER HEATERS) REGULATIONS, 2022**

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**ENERGY COMMISSION (ENERGY EFFICIENCY STANDARDS AND LABELLING) (WATER HEATERS) REGULATIONS, 2022**

IN exercise of the power conferred on the Minister responsible for Energy by subparagraph (i) of paragraph (a) of subsection (1) of section 56 of the Energy Commission Act, 1997 (Act 541) and on the advice of the Board, these Regulations are made this 28<sup>th</sup> day of June, 2022.

*Preliminary Provisions***Purpose of Regulations**

1. The purpose of these Regulations is to promote the efficient use and conservation of energy in the country and mitigate related climate change by

- (a) providing for
  - (i) the enforcement of Standards set out in the First Schedule and the minimum energy performance standards set out in Part One of the Second Schedule;
  - (ii) the labelling of electric mains-operated water heaters;
  - (iii) supplementary product information on electric mains-operated water heaters; and
  - (iv) the registration of models of electric water heaters in the Appliance Energy Efficiency Register; and
- (b) prohibiting the manufacture, importation, offer for sale, sale, storage, donation, disposal, installation or use of a water heater that does not meet the minimum energy performance standards set out in Part One of the Second Schedule.

**Application of Regulations**

2. (1) These Regulations apply to

- (a) an electric storage water heater with a storage volume of not more than 500 litres;
- (b) an electric instantaneous water heater; and
- (c) a water heater with rated power not exceeding 70kW

for households manufactured in the country or imported into the country for display, sale or use.

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- (2) These Regulations do not apply to a water heater
- (a) other than electric mains-operated water heater;
  - (b) with more than one heater volume;
  - (c) designed for making hot drinks or food only; and
  - (d) without thermal insulation.

*Duties and Requirements*

**Duty to comply with requirements**

3. (1) A person who manufactures, imports, offers for sale, sells, stores, supplies, distributes, donates or otherwise disposes of a water heater for use in the country shall ensure that each model of the water heater

- (a) is registered with the Commission; and
- (b) meets the
  - (i) Standards set out in the First Schedule;
  - (ii) minimum energy performance standards set out in Part One of the Second Schedule;
  - (iii) labelling requirements set out in the Third Schedule; and
  - (iv) information requirements set out in the Fourth Schedule.

(2) A person who advertises a water heater shall comply with the provisions of Part Five of the Fourth Schedule.

**Prohibition of manufacture, importation, offer for sale, sale, storage, donation, disposal, installation or use of water heater**

4. (1) A person shall not manufacture, import, offer for sale, sell, store, donate, or otherwise dispose of, install or use a water heater in the country unless the water heater meets the

- (a) minimum energy performance standards set out in the Second Schedule; and
  - (b) requirements of the Standards.
- (2) An enforcement authority shall
- (a) detain, cause to be re-exported or seize and destroy a water heater imported for use in the country contrary to subregulation (1); or

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- (b) seize and destroy a water heater manufactured for use in the country contrary to subregulation (1).

**Category of water heater**

5. The category of a water heater shall be determined in accordance with the categories set out in Part Two of the Fourth Schedule.

**Energy efficiency star rating of water heater**

6. The energy efficiency star rating of a water heater shall be determined in accordance with the ratings set out in Part One of the Second Schedule.

**Voltage, input power or wattage of water heater**

7. The manufacturer of a water heater shall ensure that the rated voltage, input power or wattage of a water heater is printed and displayed conspicuously on the base or side of the water heater.

**Measurement methods**

8. The information to be provided pursuant to regulations 10 and 11 shall be obtained by

- (a) a reliable, accurate and reproducible measurement which takes into account recognised state-of-the-art measurements; and  
(b) calculation methods

in accordance with the Standards.

**Use of circumvention device**

9. (1) A manufacturer, an importer or an authorised representative of the manufacturer shall not use a circumvention device during the conduct of a test of a water heater.

(2) A person shall not manufacture, import, offer for sale, sell, store, donate, or otherwise dispose of, install or use a water heater which is designed to

- (a) detect that the water heater is being tested by recognising the test conditions or test cycle; or  
(b) react specifically by automatically altering the performance of the water heater during the test with the aim of reaching a more favourable level for any of the parameters declared

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by the manufacturer, importer or authorised representative of the manufacturer, in the technical documentation or included in any other documentation provided.

(3) The energy consumption of a water heater and any of the other declared parameters shall not deteriorate after a

- (a) software; or
- (b) firmware

update, when measured with the same test standard originally used for the declaration of conformity, except with the consent of the Commission and the Standards Authority, before the update.

(4) A manufacturer, an importer or an authorised representative of the manufacturer shall inform the Commission and the Standards Authority in writing, with reasons, prior to an update of the software or firmware.

**Technical documentation**

10. (1) A person shall not manufacture, import, offer for sale, sell, store, distribute, donate or otherwise dispose of a water heater for use in the country unless that person has provided the Commission with sufficient technical documentation to enable the Commission

- (a) ascertain the accuracy of the information contained
  - (i) in the Product Information Sheet; or
  - (ii) on the label; and

- (b) register each model of the water heater in the Appliance Energy Efficiency Register.

(2) The technical documentation referred to in subregulation (1) shall

- (a) be in the English language;
- (b) include the Product Information Sheet set out in Part One of the Fourth Schedule; and
- (c) contain the information set out in Part Three of the Fourth Schedule marked "Technical Documentation".

(3) The technical documentation shall

- (a) be prepared for each model of a water heater placed on the market; and

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(b) include

- (i) the name and address of the supplier;
- (ii) the description of the water heater, for purposes of identification;
- (iii) the model identifier of the manufacturer;
- (iv) the relevant drawings on the main design features of the model and parameters of the water heater that affect the energy consumption of the water heater;
- (v) reports of relevant measurement tests carried out in compliance with the Standards;
- (vi) details of calculations, extrapolations and tests carried out to verify the accuracy of calculations;
- (vii) the installation and operating instructions; and
- (viii) the period within which the model of the water heater was manufactured.

**Labelling and information requirements**

11. (1) A person shall not manufacture, import, offer for sale, sell, store, supply, distribute, donate or otherwise dispose of a water heater for use in the country unless the water heater and the packaging of the water heater meet the following requirements:

- (a) the water heater shall bear a label
  - (i) in the form set out in the Third Schedule; and
  - (ii) placed on the water heater;
- (b) the information in respect of the water heater indicated on the packaging of the water heater shall be in the English language;
- (c) the Product Information Sheet in respect of the water heater shall be as set out in Part One of the Fourth Schedule;
- (d) the label on the packaging containing a water heater shall
  - (i) contain the information set out in the Third Schedule; and
  - (ii) be printed in colour;



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- (e) the labels on the water heater and the packaging of the water heater shall include the following information:
- (i) the Quick Response Code;
  - (ii) the name or trade mark of the manufacturer;
  - (iii) the model identifier of the manufacturer;
  - (iv) the type of water heater;
  - (v) the energy efficiency star rating of the water heater, determined in accordance with the test procedures set out in the Standards;
  - (vi) the rated input power of the water heater;
  - (vii) the rated capacity of the water heater;
  - (viii) the rated input voltage of the water heater;
  - (ix) for storage water heaters, the standing loss consumption of the storage water heater measured in kWh/24hr /45°C;
  - (x) the year of manufacture of the water heater; and
  - (xi) the country of origin or manufacture of the water heater;
- (f) a one-star to five-star energy efficiency rating in which the ascending number of stars represents a higher energy efficiency as prescribed in Table 2 under Part One of the Second Schedule and determined in accordance with
- (i) the requirements specified in Part Two of the Second Schedule; and
  - (ii) standard test procedures and measurements specified under Part Two of the Second Schedule;
- (g) the label on the water heater shall be printed in colour on a waterproof material and pasted conspicuously on the face or top of the water heater;
- (h) the background of a label printed or pasted on each packaging containing the water heater shall be gold in colour;
- (i) all the stars on the label of the water heater shall be shaded in black; and

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- (j) the text on the label of the water heater shall be black in colour.

(2) Despite regulation 21, an update to the Standards shall take precedence over the requirements specified in paragraph (e) of subregulation (1) and the Second Schedule.

(3) Where

(a) a side of the packaging is not large enough to contain a label and the blank border; or

(b) a label would cover more than fifty per cent of the surface area of the largest side of a packaging

the label and the blank border shall be reduced to not less than forty per cent of the largest side of the packaging and pasted on the largest side of the packaging.

(4) A person shall not remove the label on a water heater or the packaging containing a water heater before the first retail purchase of the water heater.

(5) For the purposes of this regulation, "first retail purchase" means the purchase of a water heater by an end user.

*Registration of Water Heaters*

**Appliance Energy Efficiency Register**

12. (1) The Commission shall establish, keep and maintain an Appliance Energy Efficiency Register.

(2) The Appliance Energy Efficiency Register shall contain the information specified in subregulation (5) of regulation 13.

**Application for registration**

13. (1) A person who

(a) manufactures a water heater in the country; or

(b) imports a water heater into the country

for use in the country shall, prior to the manufacture or importation, ensure that each model of the water heater is registered with the Commission.

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(2) A person who

- (a) manufactures a water heater in the country; or
- (b) imports a water heater into the country

for use in the country shall apply to the Commission for registration of the water heater.

(3) An application for registration under subregulation (2) shall be made in writing or electronically on the website of the Commission and accompanied with the prescribed fee.

(4) An application for registration shall be accompanied with a test report from an accredited test laboratory that demonstrates that

- (a) the water heater meets the minimum energy performance standards set out in the Second Schedule; and
- (b) the test report corresponds to the energy consumption that is provided on the energy efficiency label of the water heater.

(5) The following information shall be provided for each registration of a model of a water heater:

- (a) the brand or trademark, if any, used in connection with a supply of the model;
- (b) the model identifier issued by the manufacturer for each model covered by the registration;
- (c) the Product Information Sheet of the model;
- (d) the date the registration takes effect;
- (e) a unique identifier for the registration issued by the Commission;
- (f) the names and contact details of the applicant and contact person in relation to the registration;
- (g) if the model is to be registered as a replacement model of an earlier registered model, that fact and details to identify the replaced model, including the date the replacement was made;
- (h) if a model to be registered is affected by a replacement, that fact and details to identify the replaced model and the replacement model, including the date the replacement was made;

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- (i) any information specified in these Regulations in relation to that model of water heater; and
- (j) any other information the Commission may consider appropriate.

**Consideration of application**

14. (1) The Commission shall, on receipt of an application for registration of a water heater, consider the application.

(2) The Commission shall, in considering the application, have regard to the requirements specified in subregulation (5) of regulation 13.

**Grant of application**

15. (1) The Commission may, within fourteen days after receipt of an application, grant or refuse an application.

(2) Where the Commission decides to grant an application, the Commission shall

- (a) within three days after the date of the decision, inform the applicant, in writing or electronically as the case may be, of the decision; and
- (b) enter the information specified in subregulation (5) of regulation 13 in the Appliance Energy Efficiency Register.

(3) Where the Commission refuses to grant an application, the Commission shall within three days after the date of the decision communicate to the applicant, in writing or electronically as the case may be,

- (a) the reason for the refusal; and
- (b) the applicable Standards the model of the water heater is required to meet.

*Duties of Dealers and Suppliers of Water Heaters*

**Duty of dealer to keep, maintain and provide technical documentation**

16. (1) A dealer shall keep and maintain technical documentation in respect of a water heater for a period of not less than two years after the date of manufacture or importation.

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(2) A dealer shall, within two days after a request by an enforcement authority, provide the enforcement authority with technical documentation in respect of a water heater for inspection.

(3) Where a dealer fails to provide technical documentation in respect of a water heater within two days after the request, the enforcement authority shall detain the water heater.

(4) A dealer shall ensure that

- (a) each water heater, at the point of sale, including at trade fairs, bears the label provided by a supplier in accordance with regulation 3, with the label being displayed conspicuously;
- (b) in the event of distance selling, the label and Product Information Sheet are provided in accordance with the Third and Fourth Schedules;
- (c) an audio advertisement, including radio and local information broadcast network, on a specific model of a water heater, where the brand, capacity, size, category or price is mentioned, contains information on the energy efficiency class and the range of efficiency classes of the water heater in accordance with Part Five of the Fourth Schedule;
- (d) a visual advertisement for a specific model of water heater, including an advertisement on the internet, contains information on the energy efficiency class and the range of energy efficiency classes of the water heater available on the label, in accordance with the Part Five of the Fourth Schedule; and
- (e) a technical promotional material concerning a specific model of water heater, including technical promotional material on the internet, which describes the specific technical parameters of the water heater includes
  - (i) the energy efficiency class of that model; and
  - (ii) the range of energy efficiency classes available on the labelin accordance with Part Five of the Fourth Schedule.

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**Duty of supplier to keep, maintain and provide technical documentation**

17. (1) A supplier shall keep and maintain technical documentation in respect of each model of water heater for a period of not less than two years after the date of manufacture or importation.

(2) A supplier shall, on request by an enforcement authority, provide the enforcement authority with the technical documentation of the water heater for inspection.

(3) Where a supplier fails to provide technical documentation in respect of a water heater within two days after the request, the enforcement authority shall detain the water heater.

**Duty of supplier to keep, maintain and provide Product Information Sheet**

18. (1) A supplier shall keep and maintain in the possession of the supplier a Product Information Sheet in respect of each water heater in the form set out in Part One of the Fourth Schedule.

(2) A supplier shall, on request by an enforcement authority, provide that enforcement authority with a Product Information Sheet which shall be in the

(a) English language; and

(b) form set out in Part One of the Fourth Schedule.

**Duty of supplier to provide information for statistical purposes**

19. (1) A person who manufactures in the country, imports into the country or exports out of the country a water heater or an assembly of components that incorporates a water heater, shall provide the Commission with the following information not later than four months after the end of each year:

(a) the number of water heaters of each model that the person manufactured, exported or imported into the country in the relevant year;

(b) the number of water heaters of each model that the person sold in the country in the relevant year;

(c) the number of water heaters of each model that the person exported from the country in the relevant year;

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- (d) the name of each model of water heater that the person discontinued
  - (i) manufacturing in the relevant year;
  - (ii) exporting in the relevant year; or
  - (iii) importing in the relevant year; and
- (e) a copy of any existing test report, or other energy performance data specified by the Commission, for each model specified under paragraph (d).

(2) Upon a written request by the Commission, a person who manufactures a water heater for use in the country or imports a water heater into the country shall provide the following information to the Commission not later than forty days after receiving the request:

- (a) the number of water heaters in each product class specified by the Commission that the person sold to a purchaser in the country in each of the preceding three years; and
- (b) the energy performance characteristics of the water heaters as specified in the request.

**Duty of supplier to ensure accuracy of information**

20. (1) A supplier shall ensure that the information indicated on a

- (a) Product Information Sheet; or
- (b) label

in respect a water heater is accurate.

(2) The duty imposed on a supplier under subregulation (1) does not affect any other right of action which a person may have by law against a person with respect to the inaccuracy of information on a Product Information Sheet or on a label.

**Access to information on technical documentation and Product Information Sheet**

21. (1) The information required under regulations 10, 11, 16, 17 and 18 shall be obtained in accordance with the test procedures required by the Standards.

(2) Information obtained in a manner other than in accordance with subregulation (1) shall, for the purposes of these Regulations, be invalid.

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**Product brochure in respect of water heater**

22. Where a supplier provides a product brochure in respect of a water heater, the brochure shall contain a Product Information Sheet which shall be in the

- (a) English language; and
- (b) form set out in Part One of the Fourth Schedule.

*Information*

**Public information**

23. (1) The information provided by a supplier on the Product Information Sheet or on a label of a water heater is deemed public information.

(2) A supplier is deemed to have consented to the publication of the information indicated on a Product Information Sheet or on a label in respect of a water heater.

**Information in respect of mail order and other distance selling**

24. (1) Where a person offers a water heater for sale to another person in the country through a medium of communication including a mail order or any other distance selling medium, that person shall provide information in respect of the water heater.

- (2) The information referred to in subregulation (1) shall
  - (a) be in the English language,
  - (b) include the product registration number assigned by the Commission upon registration in the Appliance Energy Efficiency Register;
  - (c) include the information set out in Part Four of the Fourth Schedule; and
  - (d) be written in a manner that is legible.

**Obligations of audio or audio-visual broadcasting service provider**

25. Where an audio or audio-visual broadcasting service provider advertises a water heater, and the information in the advertisement includes the brand, model, size, price and any other information that is specific to a particular model, that service provider shall ensure that

- (a) the advertisement has been vetted and approved by the Commission; and



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(b) the advertisement includes

- (i) information on the energy efficiency star rating of the water heater;
- (ii) a statement that the advertisement has been vetted and approved by the Commission; and
- (iii) any other information required under Part Five of the Fourth Schedule.

**Obligations of e-commerce platform**

26. (1) A person shall not offer for sale, sell, supply, distribute or otherwise dispose of a water heater through a promotion on the internet unless

- (a) the energy efficiency rating of the water heater is posted next to the price of the water heater; and
- (b) the label of the water heater is made available to consumers in the same medium of communication.

(2) Where an e-commerce service provider allows the direct sale of a water heater through the website of the service provider, the service provider shall

- (a) enable the display of the
  - (i) electronic label; and
  - (ii) electronic Product Information Sheet provided by the dealer on the display mechanism in accordance with Part Six of the Fourth Schedule; and
- (b) inform the dealer of the obligation to display the electronic label and electronic Product Information Sheet.

**Misleading information**

27. (1) A person shall not display a label, mark, symbol or inscription which relates to the energy consumption of a water heater, if the display is likely to be

- (a) deceptive;
- (b) misleading; or
- (c) false.

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(2) A person shall not broadcast an advertisement relating to the energy performance of a water heater if the information in the advertisement is likely to be

- (a) deceptive;
- (b) misleading; or
- (c) false.

(3) Subregulations (1) and (2) do not apply to

- (a) a label;
- (b) a mark;
- (c) a symbol; or
- (d) an inscription

displayed under an environmental labelling scheme or endorsement labelling scheme.

**Restriction on disclosure of information**

28. (1) An enforcement authority shall not disclose information which consists of a

- (a) secret manufacturing process; or
- (b) trade secret

that was obtained by that enforcement authority in the course of the exercise of a power or duty conferred on the enforcement authority by these Regulations.

(2) Despite subregulation (1), an enforcement authority may disclose information if

- (a) the information is public information, or
- (b) the disclosure is made
  - (i) for the purpose of facilitating the exercise of power by an enforcement authority under these Regulations or any other enactment;
  - (ii) in connection with the investigation of an offence; or
  - (iii) for the purpose of a civil or criminal proceeding.

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*Powers of Enforcement*

**Power of enforcement authority to require technical documentation**

29. Where an enforcement authority suspects that the information given

- (a) in a Product Information Sheet; or
- (b) on a label

in respect of a water heater is incorrect, that enforcement authority may, by notice served on the supplier or importer of the water heater, require the supplier or importer to furnish the enforcement authority with the technical documentation referred to in regulation 10 within the period stipulated in the notice.

**Power of enforcement authority to inspect water heater**

30. An enforcement authority may, at any reasonable time, enter any premises to inspect a water heater if the enforcement authority has reason to believe that the premises are being used for a purpose in contravention of these Regulations.

**Power of enforcement authority to detain or seize record or water heater**

31. (1) Subject to these Regulations, where an enforcement authority has reasonable cause to suspect that an offence has been committed or is being committed, that enforcement authority may

- (a) at any reasonable time enter premises other than a dwelling place, and conduct an inspection in accordance with subsection (3) of section 52 of the Act;
- (b) require a person engaged in a business or employed in connection with a business to produce a record in respect of a water heater;
- (c) detain or seize a water heater that is
  - (i) not labelled;
  - (ii) not properly labelled; or
  - (iii) labelled in a deceptive or misleading manner;
- (d) detain or seize a water heater that is imported without technical documentation which justifies the label affixed on the water heater;

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- (e) detain or seize a water heater to enable tests to be carried out;
- (f) detain or seize a record to be used as evidence in proceedings in respect of an offence under these Regulations;
- (g) cause a container to be opened for the purpose of inspection;
- (h) break open a container, where implementation of paragraph (g) is not practicable; or
- (i) detain or seize a water heater if the model is not registered in the Appliance Energy Efficiency Register.

(2) For the purposes of paragraphs (b) and (f) of subregulation (1), the enforcement authority may request for information stored electronically to be made available to the enforcement authority in printed form.

**Power of enforcement authority to test water heater**

32. (1) An enforcement authority may

- (a) obtain, remove and test a water heater; or
- (b) order the testing of a water heater

to ascertain whether a provision of these Regulations has been contravened.

(2) A person who suspects that a water heater offered for sale does not comply with the provisions of these Regulations may lodge a complaint with an enforcement authority.

(3) The enforcement authority may, upon receipt of a complaint under subregulation (2), detain and test the water heater.

(4) The test to be conducted in respect of a water heater purchased, obtained or detained under regulation 31 shall be carried out in accordance with the test procedures required by the Standards.

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**Procedure for market surveillance and verification**

33. (1) Despite regulation 32, the Commission and the Standards Authority shall conduct market surveillance to ascertain whether a water heater on the market conforms to these Regulations.

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(2) The Commission and the Standards Authority shall apply the verification procedure specified in the Fifth Schedule to conduct the market surveillance.

**Order to access premises to inspect, detain or seize water heater or record**

**34. Where**

(a) an enforcement authority is refused entry to premises;  
(b) a notification to enter premises would defeat the purpose of the entry;  
(c) the premises to be entered are unoccupied; or  
(d) the occupier of premises to be entered is temporarily absent  
the enforcement authority may apply to a court for an order to enter the premises to inspect, detain or seize a water heater or record, if the enforcement authority has reasonable grounds to believe that a water heater or record on the premises may assist in the disclosure of evidence of the commission of an offence under these Regulations.

**Procedure for detention of water heater**

35. (1) An enforcement authority that exercises a power of detention under these Regulations shall immediately give a written notice to the person against whom the power has been exercised.

(2) The written notice shall state

- (a) the water heater that has been detained; and  
(b) the reason for the detention.

(3) Where an enforcement authority detains a water heater, that water heater may be kept in a warehouse or other secure location reserved for the purpose.

**Procedure for re-labelling of detained water heater**

36. (1) Subject to these Regulations, where an enforcement authority detains a water heater under paragraph (e) of subregulation (1) of regulation 31, the enforcement authority shall

- (a) within two days after the detention, submit a sample of the water heater for testing; and

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(b) within two days after receipt of the test results, give a notice in writing to the supplier of the water heater to properly label the water heater if the minimum energy performance standards have been complied with.

(2) The notice under paragraph (b) of subregulation (1) shall require a water heater to be re-labelled in the required manner or exported out of the country within twenty-eight days.

(3) Where a supplier is required under subregulation (2) to re-label a water heater, the supplier shall re-label the water heater under the supervision of an officer authorised for the purpose by the Commission or the Standards Authority.

- (4) Where a supplier fails to
- (a) re-label the water heater; or
  - (b) export the water heater

within twenty-eight days after the notice given under paragraph (b) of subregulation (1), the Commission shall, in consultation with the Standards Authority, destroy the water heater in a manner that the Commission may determine.

**Procedure for re-exportation of imported water heater**

37. (1) An enforcement authority that exercises a power of detention or seizure under these Regulations shall, within seven days after the detention or seizure, give an order in writing to the person against whom the power has been exercised to re-export the water heater.

(2) The order referred to in subregulation (1) shall state

- (a) the water heater to be re-exported;
  - (b) the reason for the order;
  - (c) the period within which the water heater is to be re-exported;
- and

(d) the fact that the supplier shall be responsible for the cost associated with the re-export.

(3) Where a water heater is kept within premises that are under the control of the owner of the water heater, the owner shall pay a security deposit against any breach of the re-exportation order.

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(4) A security deposit under subregulation (3) shall be forfeited in the event of a breach of the re-exportation order, including the sale or destruction of a water heater which has been ordered to be re-exported.

(5) Where a person fails to pay a security deposit imposed under subregulation (3), the Commission may recover the amount imposed as a civil debt.

**Procedure for seizure of water heater**

**38.** (1) An enforcement authority that exercises a power of seizure under these Regulations shall, within seven days after the seizure, give a written notice to the person against whom the power has been exercised.

(2) The written notice under subregulation (1) shall state

(a) the water heater that has been seized;

(b) the reason for the seizure; and

(c) the venue and period within which a petition against the seizure may be brought under regulation 39.

(3) Where an enforcement authority seizes a water heater, that water heater may be kept in a warehouse or other secure location reserved for the purpose.

(4) The owner of the water heater may be required to pay a deposit to cover the cost of destruction if the water heater does not meet the minimum energy performance standards.

(5) Where a water heater is kept within premises that are under the control of the owner of the water heater, the owner shall pay a security deposit against any breach of the seizure order.

(6) A security deposit under subregulation (5) shall be forfeited in the event of a breach of the seizure order, including the sale or destruction of a water heater which has been seized.

(7) Where a person fails to pay a security deposit imposed under subregulation (5), the Commission may recover the amount imposed as a civil debt.

*Petition and Compensation*

**Petition against seizure**

**39.** (1) Subject to these Regulations, a person whose water heater is seized may, within seven days after receipt of the written notice specified in subregulation (1) of regulation 38, petition the Executive Secretary for the release of the seized water heater.

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(2) The Executive Secretary shall, within seven days after receipt of a petition under subregulation (1),

(a) confirm the seizure; or

(b) order the release of the seized water heater to the petitioner on a specific day.

(3) A person who is dissatisfied with a decision of the Executive Secretary under subregulation (2) may appeal to the Board within seven days after the receipt of the decision.

(4) The Board shall within thirty days after the receipt of an appeal under subregulation (3)

(a) consult the Standards Authority; and

(b) take a decision on the appeal.

(5) The Board may release the seized water heater to the petitioner only if the Commission and the Standards Authority fail to prove that an offence under these Regulations has been committed.

(6) A person who is dissatisfied with

(a) a decision of the Board under subregulation (4) may, within fourteen days after the decision; or

(b) the failure of the Board to make a decision within thirty days after receipt of the appeal may, within fourteen days after the failure

apply to the court.

**Forfeiture and destruction of seized water heater**

40. (1) Where an appeal to the Board under subregulation (3) of regulation 39 is not successful, the enforcement authority shall, within twenty-eight days after the decision of the Board, notify the owner of the water heater of the forfeiture and date of destruction of the seized water heater.

(2) The Commission may, in consultation with the Standards Authority, destroy a forfeited water heater in a manner that the Commission may determine.

(3) Where under subregulation (6) of regulation 39, the court upholds or affirms the decision of the Board to forfeit and destroy the water heater, the Commission shall destroy the water heater within the period given by the court.



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**Compensation for loss of water heater or record seized**

41. (1) Where an enforcement authority exercises power under these Regulations to seize a water heater or record, that enforcement authority is liable to pay compensation to the owner of the water heater or record for a loss or damage caused by the exercise of the power, if

- (a) these Regulations have not been contravened in relation to the water heater or record; and
- (b) the loss or damage is not attributable to the neglect or the fault of the owner but an official of the Commission.

(2) Paragraph (b) of subregulation (1) does not apply in a case of *force majeure*.

(3) The compensation payable under subregulation (1) for a loss or damage shall not exceed the value of the water heater or record.

(4) A dispute as to the

- (a) right to compensation; or
- (b) amount of compensation payable to a person under subregulation (1),

shall be determined in the first instance by arbitration in accordance with the Alternative Dispute Resolution Act, 2010 (Act 798).

**Recovery of expenses by enforcement authority**

42. (1) Where an enforcement authority

- (a) seizes;
- (b) tests; or
- (c) supervises the re-labelling or destruction of

a water heater, that enforcement authority may surcharge the dealer or supplier of the water heater for the expenses incurred for the seizure, testing or supervision.

(2) Despite subregulation (1) where a court convicts a person of an offence in respect of the contravention of a provision of these Regulations, the court may, in addition to any order the court may make as to costs and expenses, order the person convicted to reimburse the enforcement authority for the expenditure incurred by the enforcement authority in connection with the seizure.

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*Miscellaneous Provisions*

**Offences and penalties**

**43. (1)** A person who

- (a) manufactures, imports, offers for sale, sells, stores, advertises, distributes or otherwise disposes of a water heater that
  - (i) does not meet a requirement in respect of the minimum energy performance standards contrary to regulation 3,
  - (ii) is not accompanied by the required technical documentation contrary to regulation 10;
  - (iii) is not labelled or properly labelled contrary to regulation 11;
  - (iv) is labelled in a deceptive or misleading manner contrary to regulation 27,
- (b) uses a circumvention device contrary to regulation 9;
- (c) fails to comply with a labelling requirement contrary to regulation 11;
- (d) fails to provide technical documentation contrary to regulation 10, 16 or 17;
- (e) fails to register a model of water heater contrary to regulation 13;
- (f) fails to provide a Product Information Sheet contrary to regulation 18;
- (g) fails to provide information on a water heater contrary to regulation 19;
- (h) provides inaccurate information contrary to regulation 20;
- (i) advertises a water heater without providing accurate information on the energy efficiency star rating of the water heater and the range of energy efficiency of the water heater available contrary to regulation 25;
- (j) offers for sale or sells a water heater over the internet or other distance selling medium without providing the information required contrary to regulation 24 or 26;
- (k) provides misleading information contrary to regulation 27;

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(l) obstructs or interferes with an enforcement authority in the exercise of the powers of that enforcement authority contrary to regulation 31;  
(m) fails to comply with the requirements for re-labelling contrary to regulation 36; or  
(n) violates a seizure order or notice contrary to regulation 38  
commits an offence and is liable on summary conviction to a fine of not less than one hundred and twenty-five penalty units and not more than two hundred and fifty penalty units or to a term of imprisonment of not less than six months and not more than twelve months or to both.

(2) A person who commits a second or subsequent offence under subregulation (1) after an earlier conviction under subregulation (1) is liable on summary conviction to a fine of not less than two hundred and fifty penalty units and not more than five hundred penalty units or to a term of imprisonment of not less than twelve months and not more than twenty-four months or to both.

(3) Where an offence under these Regulations is committed by a body corporate or by a member of a partnership or other firm, every director or officer of that body corporate or any member of the partnership or other person concerned with the management of the firm shall be deemed to have committed that offence and is liable, on summary conviction, to a fine of not less than five hundred penalty units and not more than one thousand penalty units and is in addition liable to the payment of compensation for the damage resulting from the breach.

(4) A person shall not be convicted of an offence under subregulation (3) if it is proved that

- (a) the person exercised due diligence to secure compliance with the provisions of these Regulations; and
- (b) the offence was committed without the knowledge, consent or connivance of that person.

**Interpretation**

44. In these Regulations, unless the context otherwise requires, “accredited test laboratory” means a test laboratory that is recognised by the Standards Authority for laboratory testing and product certification;

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- “ambient correction term ( $Q_{cor}$ )” means a term which takes into account the fact that the place where the water heater is installed is not an isothermal place, expressed in kWh;
- “annual electricity consumption (AEC)” means the annual electricity consumption of a water heater under the declared load profile and under given climate conditions, expressed in kWh in terms of final energy;
- “Appliance Energy Efficiency Register” means an official record, kept and maintained by the Commission on energy efficiency information in respect of models of electrical appliances that have been certified by the Commission and the Standards Authority for use in Ghana;
- “audio or audio-visual broadcasting service provider” means a person who provides a service which delivers radio programmes or programmes with hearing and sight components to persons with equipment appropriate for receiving that service, whether the delivery is effected by means of or uses the radio frequency spectrum, cable, optical fibre, satellite, internet radio via streaming media on the internet, or any other means or a combination of those means intended to reach a wide audience;
- “circumvention device” means any control, control device, software, component or part that alters the operating characteristics of a water heater during any test procedure, resulting in measurements that are unrepresentative of the true characteristics of the water heater that may occur during normal use under comparable conditions;
- “climate conditions” means the weather conditions of Ghana;
- “container” means a receptacle or enclosure for holding a product for storage, packaging or shipping;
- “conventional water heater” means a water heater that generates hot water using the Joule effect in electric resistance heating elements;
- “court” means a court of competent jurisdiction;

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- “daily electricity consumption (Qelec)” means consumption of electricity over twenty-four consecutive hours under the declared load profile and under given climate conditions, expressed in kWh in terms of final energy;
- “dealer” means a retailer or other person who displays, offers for sale or sells a water heater to an end user;
- “declared load profile” means the load profile applied when determining water heating energy efficiency;
- “distance selling” means the sale of goods or services without the buyer and seller being physically present simultaneously;
- “dwelling place” means place of residence;
- “electric instantaneous water heater” means a water heating appliance, without a storage tank, that heats water as the water flows through the appliance and provides only the quantity of hot water that is needed;
- “electric mains-operated water heater” means a water heater that operates on electricity supply from the grid of 230 ( $\pm 10\%$ ) volts of alternating current at 50 Hz;
- “electric storage water heater” means a heating appliance that uses a hot water storage tank to maximise water heating capacity and provides instantaneous delivery of hot water;
- “electronic Product Information Sheet” means a document containing the following information in electronic format:
- (a) basic product information;
  - (b) energy label information; and
  - (c) special features and characteristics;
- “end user” means the first user of a water heater;
- “endorsement labelling scheme” includes a voluntary labelling scheme that guarantees the performance standards of a water heater, that are equal to or exceed the minimum threshold established by a recognised advisory body;
- “energy content of hot water” means a product of the specific heat capacity of water, the average temperature difference between the hot water output and cold water input, and the total mass of the hot water delivered;

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“energy efficiency” means the loss performance, including standing loss performance of a water heater;

“enforcement authority” means

- (a) an authorised officer of the Commission;
- (b) an authorised officer of the Standards Authority;
- (c) an authorised officer of the Customs Division of the Ghana Revenue Authority;
- (d) an authorised officer of the Police Service; or
- (e) any other authorised person designated by the Customs Division of the Ghana Revenue Authority, the Commission or the Standards Authority to carry out inspections for the purposes of these Regulations;

“environmental labelling scheme” means a voluntary labelling scheme that provides detailed information on the environment in respect of the performance characteristics of a water heater;

“GS” means Ghana Standards;

“importer” means a person who places a water heater from a foreign country on the Ghanaian market and supplies that water heater for use;

“isothermal” means constant temperature conditions;

“label” means a material attached to a water heater the inscription of which contains information on the energy consumption of the water heater;

“load profile” means the given sequence of water draw-offs, as specified in Part Two of the Second Schedule;

“maximum load profile” means the load profile with the greatest reference energy that a water heater is able to provide while fulfilling the temperature and flow rate conditions of that load profile;

“mixed water quantity at 40°C (V40)” means the quantity of water at 40°C, which has the same heat content or enthalpy as the quantity of water stored at a temperature of 65°C;

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- “model identifier” means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trademark or the same name of the manufacturer, importer or authorised representative;
- “peak temperature (Tp)” means the minimum water temperature, expressed in degrees Celsius, to be achieved during water draw-off, as specified in Part Two of the Second Schedule.
- “point of sale” means the place at which a retail transaction is carried out;
- “premises” means land and any building, store, shop, apartment, or other designated structure on the land used for the storage of a water heater;
- “product brochure” includes a pamphlet or booklet that contains introductory information about a product;
- “Product Information Sheet” means a standard table of information related to a water heater;
- “Quick Response Code” means a matrix barcode included on the energy label of a product model that links to the information of the model in the public part of the product database;
- “rated voltage” means the voltage marked on a water heater in volts (V);
- “rating plate” means a name plate that indicates the measurable performance capability of a water heater;
- “record” includes a book, document, label, mark, symbol, inscription or information in electronic form;
- “reference energy (Qref)” means the sum of the useful energy content of water draw-offs, expressed in kWh, in a particular load profile, as specified in Part Two of the Second Schedule;
- “sale” means the exchange of a product for consideration, including hire purchase, credit sale and purchase by instalment;
- “smart control” means a device that automatically adapts the water heating process to individual usage conditions with the aim of reducing energy consumption;

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- “smart control compliance (smart)” means the measure of whether a water heater equipped with smart controls fulfils the criterion set out in Part Three of the Second Schedule;
- “smart control factor (SCF)” means water heating energy efficiency gain due to smart control under the conditions set out in Part Three of the Second Schedule;
- “standard rating conditions” means the operating conditions of a water heater for establishing the rated heat output, water heating energy efficiency and sound power level, and the operating conditions of an electric storage water heater for establishing the standing loss;
- “Standards” means quality specifications for water heaters as stipulated in the First Schedule;
- “Standards Authority” means the Standards Authority established under the Standards Authority Act, 1973 (N.R.C.D. 173);
- “standing loss” means the measure of the energy consumption of a filled electric storage water heater, after steady state conditions have been reached when connected to the electricity supply, during any twenty-four hours when no water is withdrawn;
- “supplier” means a person or organisation that provides a product and includes
- (a) a manufacturer or the authorised representative of a manufacturer resident in the country; and
  - (b) an importer or the person who introduces a water heater on the Ghanaian market;
- “supply” includes an offer to supply, contract to supply and an advertisement for the supply of a water heater but excludes the exhibition at a trade fair of a water heater that is prohibited by these Regulations;
- “thermal losses (QPR)” means the standing loss per twenty-four hours or the thermal energy necessary to maintain the water contained in the storage at a set temperature of 65°C according to the testing standard during twenty-four hours, expressed in kWh;



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- “trade secret” means a secret device or technique used by a company in manufacturing the products of the company;
- “useful energy content ( $Q_{\text{tap}}$ )” means the energy content of hot water, expressed in kWh, provided at a temperature equal to, or above, the useful water temperature, and at water flow rates equal to, or above, the useful water flow rate, as specified in Part Two of the Second Schedule;
- “useful water temperature ( $T_m$ )” means water temperature, expressed in degrees Celsius, at which hot water starts contributing to the reference energy, as specified in Part Two of the Second Schedule;
- “useful water flow rate ( $f$ )” means the minimum flow rate, expressed in litres per minute, for which hot water is contributing to the reference energy, as specified in Part Two of the Second Schedule;
- “water draw-off” means a given combination of useful water flow rate, useful water temperature, useful energy content and peak temperature, as specified in Part Two of the Second Schedule;
- “water heater” means a device that
- (a) is connected to an external supply of water;
  - (b) generates and transfers heat to deliver hot water at given temperature levels, quantities and flow rates during given intervals;
  - (c) is equipped with one or more heat generators; and
  - (d) is operated by electric mains.
- “water heating energy efficiency ( $\eta_{\text{wh}}$ )” means the ratio between the useful energy provided by an electric water heater and the energy generated by the water heater, expressed in percentage;
- “wattage” means the power marked on the water heater, in watts (W);
- “weekly electricity consumption with smart controls ( $Q_{\text{elec;week;smart}}$ )” means the weekly electricity consumption of

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a water heater with the smart control function enabled, expressed in kWh in terms of final energy;

“weekly electricity consumption without smart controls ( $Q_{\text{elec;week}}$ )” means the weekly electricity consumption of a water heater with the smart control function disabled, expressed in kWh in terms of final energy; and

“year” means the period from 1<sup>st</sup> January to 31<sup>st</sup> December.

**Transitional provision**

45. A person who, before the coming into force of these Regulations, has

(a) manufactured in the country; or

(b) imported into the country

a water heater that does not comply with these Regulations, shall within one year after the coming into force of these Regulations, sell, distribute, donate or otherwise dispose of that water heater.

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SCHEDULES

**FIRST SCHEDULE**

*(regulations 1(a)(i), 3(1)(b)(i) and 44)*

**STANDARDS**

1. GS IEC 60379-:1987 Methods for measuring the performance of electric storage water-heaters for household purposes
2. GS IEC 60335-2-21:2012: Household and similar electrical appliances – Safety – Particular requirements for storage water-heaters
3. GS IEC 60335-2-21:AMD 1:2018 Household and similar electrical appliances – Safety – Particular requirements for storage water heaters
4. GS IEC 60335-2-35: Household and similar electrical appliances – Safety – Particular requirements for instantaneous water heaters
5. EN 50193 – 1 Electric instantaneous water heaters. General requirements
6. EN 50193-2-1 Electric instantaneous water heaters-- Part 2-1: Methods for measuring the performance – Multifunctional electric instantaneous water heaters
7. EN 50193-2-2 Electric instantaneous water heaters - Part 2-2: Performance requirements - Single point of use electric instantaneous showers – Efficiency
8. EN 50440 - Efficiency of domestic electrical storage water heaters and testing method

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**SECOND SCHEDULE**

**MINIMUM ENERGY PERFORMANCE STANDARDS**

*(regulations 1(a)(i), 1(b), 3(1)(b)(ii), 4(1)(a), 6, 11(1)(f), 11(1)(f)(i) and (ii), 11(2), 13(4)(a) and 44)*

**PART ONE**

*(regulations 1(a)(i), 1(b), 3(1)(b)(ii), 6 and 11(1)(f))*

**1. Efficiency specifications**

The energy efficiency performance of a water heater under these Regulations is determined on the basis of the *water heating energy efficiency* ( $h_{wh}$ ) of the water heater, which is the ratio between the useful energy provided by a water heater and the energy generated by the water heater, expressed in percentage. The *water heating energy efficiency*,  $h_{wh}$ , is established based on declared load profiles for the water heater in accordance with standard test methods, measurement procedures and reference ambient conditions set out in the Standards of the First Schedule.

The energy efficiency performance of an electric storage water heater under these Regulations is determined on the basis of the *standing loss per 24 hours* ( $Q_{pr}$ ) of the electric storage water heater, expressed in kWh/24hrs/45°C. The *standing loss per 24 hrs*,  $Q_{pr}$ , also referred to as the '*daily thermal losses*', is a measure of the energy consumption of a filled electric storage water heater, after steady state conditions have been reached when connected to the electricity supply, during any twenty-four hours when no water is withdrawn. The standing loss expressed in Watt is the heating power dissipated. Where the heating power is sustained over a period of twenty-four hours, this translates into the daily thermal loss. The standing loss and the daily thermal loss  $Q_{pr}$ , shall be determined in accordance with standard measurements and calculations specified in the standards of the First Schedule.

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**2. Determination of minimum energy performance**

The minimum energy performance requirements for a water heater is based on the Water Heating Energy Efficiency metric established from the declared maximum load profiles as defined in Tables 5a and 5b in Part Two of this Schedule. In the case of rated capacities or Volume of electric storage water heaters with declared load profiles of 3XS, XXS, XS and S:

- (a) an electric storage water heater with a declared load profile 3XS shall not exceed 7 litres in capacity;
- (b) an electric storage water heater with a declared load profile XXS and XS shall not exceed 15 litres in capacity; and
- (c) an electric storage water heater with a declared load profile S shall not exceed 36 litres in capacity.

The Minimum Energy Performance Standard (MEPS) for a water heater shall not fall below the values prescribed in Table 1.

**Table 1: Minimum Energy Efficiency ( $h_{wh}$ ) of water heaters in %**

Declared load profile è 3XS	2XS	XS	S	M	L	XL	XXL
Water heaters energy efficiency (with or without smart controls) è	53	55	63	63	73	73	79

The Minimum Energy Performance Standard (MEPS) for electric storage water heaters with capacities higher or equal to 25 litres are based on the standing loss per 24 hours or the daily thermal losses,  $Q_{PR}$ . The standing loss per 24-hour period or daily thermal loss is for a temperature difference of 45°C between the temperature of the stored water and ambient temperature measured in kWh in accordance with standard test methods and procedures prescribed in the Standard of the First Schedule. The MEPS values of standing loss per 24 hours,  $Q_{PR}$  for electric storage water heaters shall not exceed the values prescribed or expressed in Table 2, rounded to 2 decimal places.

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**Table 2: Maximum limit of Standing loss per 24h ( $Q_{PR}$ ) of electric storage water heater in kWh**

Maximum value for daily standing losses, ( $Q_{PR}$ ) in kWh for an electric storage water heater with rated capacity, V, in litres	$Q_{pr} \leq \frac{504 + 248 \times V^{0.4}}{1000}$
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**3. Water heating energy efficiency classes of water heaters**

The water heating energy efficiency class of a water heater shall be determined on the basis of its water heating energy efficiency as set out in Table 3. The classification is applicable to both instantaneous and electric storage water heaters.

**Table 3: Water heating energy efficiency classification of water heater**

Energy efficiency classes of electric water heaters – Water heating energy efficiency (%) by Declared Load profile							
Declared Load Profile	1-Star	2-Star	3-Star	4-Star	5-Star	6-Star	7-Star
	$\eta_{wh} \geq$	$\eta_{wh} \geq$	$\eta_{wh} \geq$	$\eta_{wh} \geq$	$\eta_{wh} \geq$	$\eta_{wh} \geq$	$\eta_{wh} \geq$
3XS	53	60	67	74	81	88	95
2XS	55	63	70	78	85	93	100
XS	63	70	77	84	91	98	105
S	63	70	77	84	91	98	105
M	73	78	83	88	93	140	210
L	73	79	84	90	95	160	300
XL	79	84	89	93	98	160	300
XXL	79	87	95	102	110	160	300

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**4. Energy efficiency classes of electric storage water heaters**

The energy efficiency class of an electric storage water heater with rated capacity V, in litres, shall be determined as set out in Table 4.

**Table 4: Energy efficiency classes of electric storage water heaters**

Efficiency Star rating	Standing Loss per day, $Q_{pr}$ , in kWh
5-Star	$Q_{pr} < \frac{132 + 76 \times V^{0.4}}{1000}$
4-Star	$\frac{132 + 76 \times V^{0.4}}{1000} < Q_{pr} \leq \frac{204 + 102 \times V^{0.4}}{1000}$
3-Star	$\frac{204 + 102 \times V^{0.4}}{1000} < Q_{pr} \leq \frac{288 + 122 \times V^{0.4}}{1000}$
2-Star	$\frac{288 + 122 \times V^{0.4}}{1000} < Q_{pr} \leq \frac{384 + 200 \times V^{0.4}}{1000}$
1-Star	$\frac{384 + 200 \times V^{0.4}}{1000} < Q_{pr} \leq \frac{504 + 248 \times V^{0.4}}{1000}$

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**PART TWO**

*(regulations 11(1)(f)(i) and (ii) and 44)*

**MEASUREMENTS AND TEST CONDITIONS FOR TECHNICAL PARAMETERS**

**1. Measurements and test conditions**

For the purpose of compliance with the requirements of these Regulations, measurements of technical parameters shall be made using a reliable, accurate and reproducible measurement procedure, which takes into account the generally recognised state-of-the-art measurement methods, including methods set out in the Standards set out in the First Schedule.

**2. General Conditions for Testing Water Heaters**

Measurements shall be carried out using the load profiles set out in Tables 5a and 5b of this Schedule. Measurements shall be carried out using a 24-hour measurement cycle as follows:

- (a) from 00:00 to 06:59: no water draw-off;
- (b) from 07:00: water draw-offs according to the declared load profile; and
- (c) from end of last water draw-off until 24:00: no water draw-off.

The declared load profile shall be the maximum load profile.

**3. Conditions for Testing the Smart Control Compliance ('Smart') of Water Heaters**

If the manufacturer wants to declare the value of 'smart' as being '1', measurements of the weekly electricity consumption with or without smart controls shall be carried out using a two-week measurement cycle as follows:

- (a) days 1 to 5: random sequence of load profiles chosen from the declared load profile and the load profile one below the declared load profile, and smart control disabled;



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- (b) days 6 and 7: no water draw-offs, and smart control disabled;
- (c) days 8 to 12: repetition of the same sequence applied for days 1 to 5, and smart control enabled;
- (d) days 13 and 14: no water draw-offs, and smart control enabled; and
- (e) the difference between the useful energy content measured during days 1 to 7 and the useful energy content measured during days 8 to 14 shall not exceed two per cent of  $Q_{ref}$  of the declared load profile.

The 'smart' shall be declared equal to 1, if conditions expressed in Paragraph 1.5(b) under Part Three of the Second Schedule are met.

**4. Technical Parameters of Water Heaters**

- (a) The following parameters shall be established for water heaters:
  - (i) the daily electricity consumption  $Q_{elec}$  in kWh, rounded to three decimal places; and
  - (ii) the declared load profile, expressed by the appropriate letter in accordance with Table 5.
- (b) Additionally, water heaters for which the value of 'smart' is declared as being '1':
  - (i) the weekly electricity consumption with smart controls  $Q_{elec,week,smart}$  in kWh, rounded to three decimal places; and
  - (ii) the weekly electricity consumption without smart controls  $Q_{elec,week}$  in kWh, rounded to three decimal places.
- (c) Additionally, storage water heaters with declared load profiles:
  - (i) 3XS, XXS and XS – the storage capacity in litres, rounded to one decimal place; and
  - (ii) M, L, XL, XXL – the mixed water at 40 °C (V40) in litres, rounded to the nearest integer.

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**Table 5a – Load profiles 3XS to S**

h	3XS			2XS			XS			S			
	Q <sub>tap</sub>	f	T <sub>m</sub>	Q <sub>tap</sub>	f	T <sub>m</sub>	Q <sub>tap</sub>	f	T <sub>m</sub>	Q <sub>tap</sub>	f	T <sub>m</sub>	T <sub>p</sub>
	kWh	l/min	°C	kWh	l/min	°C	kWh	l/min	°C	kWh	l/min	°C	°C
7:00	0.015	2	25	0.105	2	25				0.105	3	25	
7:05	0.015	2	25										
7:15	0.015	2	25										
7:26	0.015	2	25										
7:30	0.015	2	25	0.105	2	25	0.525	3	35	0.105	3	25	
7:45	0												
8:01													
8:05													
8:15													
8:25													
8:30				0.105	2	25				0.105	3	25	
8:45													
9:00	0.015	2	25										
9:30	0.015	2	25	0.105	2	25				0.105	3	25	
10:00													
10:30													
11:00	0	2	25										
11:30	0.015	2	25	0.105	2	25				0.105	3	25	
11:45	0.015	2	25	0.105	2	25				0.105	3	25	
12:00	0.015	2	25	0.105	2	25							
12:30	0.015	2	25	0.105	2	25							
12:45	0.015	2	25	0.105	2	25	0.525	3	35	0.315	4	10	55
14:30	0.015	2	25										
15:00	0.015	2	25										
15:30	0.015	2	25										
16:00	0.015	2	25										
16:30													
17:00													
18:00				0.105	2	25				0.105	3	25	
18:15				0.105	2	25				0.105	3	25	
18:30	0.015	2	25	0.105	2	25							
19:00	0.015	2	25	0.105	2	25							
19:30	0.015	2	25	0.105	2	25							
20:00				0.105	2	25							
20:30							1.05	3	35	0.42	4	10	55
20:45				0.105	2	25							
20:46													
21:00				0.105	2	25							
21:15	0.015	2	25	0.105	2	25							
21:30	0.015	2	25							0.525	5	45	
21:35	0.015	2	25	0.105	2	25							
21:45	0.015	2	25	0.105	2	25							
Q <sub>ref</sub>	0.345 kWh h			2.100 kWh			2.100 kWh			2.100 kWh			

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Table 5b – Load profiles M to XXL																
h	M				L				XL				XXL			
	Q <sub>tap</sub>	f	T <sub>m</sub>	T <sub>p</sub>	Q <sub>tap</sub>	f	T <sub>m</sub>	T <sub>p</sub>	Q <sub>tap</sub>	f	T <sub>m</sub>	T <sub>p</sub>	Q <sub>tap</sub>	f	T <sub>m</sub>	T <sub>p</sub>
	kWh	l/min	°C	°C	kWh	l/min	°C	°C	kWh	l/min	°C	°C	kWh	l/min	°C	°C
7:00	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	25	
7:05	1.400	6	40		1.400	6	40									
7:15									1.82	6	40		1.82	6	40	
7:26									0.105	3	25		0.105	3	25	
7:30	0.105	3	25		0.105	3	25									
7:45					0.105	3	25		4.42	10	10	40	6.24	16	10	40
8:01	0.105	3	25						0.105	3	25		0.105	3	25	
8:05					3.605	10	10	40								
8:15	0.105	3	25						0.105	3	25		0.105	3	25	
8:25					0.105	3	25									
8:30	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	25	
8:45	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	25	
9:00	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	25	
9:30	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	25	
10:00									0.105	3	25		0.105	3	25	
10:30	0.105	3	25		0.105	3	25		0.105	3	10	40	0.105	3	10	40
11:00									0.105	3	25		0.105	3	25	
11:30	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	25	
11:45	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	25	
12:00																
12:30																
12:45	0.315	4	10	55	0.315	4	10	55	0.735	4	10	55	0.735	4	10	55
14:30	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	25	
15:00									0.105	3	25		0.105	3	25	
15:30	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	25	
16:00									0.105	3	25		0.105	3	25	
16:30	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	25	
17:00									0.105	3	25		0.105	3	25	
18:00	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	25	
18:15	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	40	
18:30	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	40	
19:00	0.105	3	25		0.105	3	25		0.105	3	25		0.105	3	25	
19:30																
20:00																
20:30	0.735	4	10	55	0.735	4	10	55	0.735	4	10	55	0.735	4	10	55
20:45																
20:46									4.42	10	10	40	6.24	16	10	40
21:00					3.605	10	10	40								
21:15	0.105	3	25						0.105	3	25		0.105	3	25	
21:30	1.4	6	40		0.105	3	25		4.42	10	10	40	6.24	16	10	40
21:35																
21:45																
Q <sub>ref</sub>	5.845 kWh				11.655 kWh				19.07 kWh				24.530 kWh			

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**5. Test Conditions and Technical Parameters for electric storage water heaters**

Measurement and calculations of the following technical parameters are required for the determination of efficiency star rating performance of electric storage water heaters and shall be undertaken in accordance with test methods and procedures specified in the Standards of the First Schedule:

- (a) the rated storage capacity in litres, rounded to one decimal place;
- (b) the energy consumption in 24 hours (kWh/24hr);
- (c) the mean temperature ( $T_m$ ) in  $^{\circ}\text{C}$ ; and
- (d) the standing loss per 24 hours (thermal losses),  $Q_{PR}$  in kWh / 24hr /  $45^{\circ}\text{C}$  rounded to one decimal place.

**6. Tolerances**

The tolerance limits acceptable for tested parameters compared with declared rated values are provided in Table 5 below:

**Table 5: Tolerance limits for tested technical parameters**

<b>Measured/tested Parameter</b>	<b>Minimum Tolerance</b>	<b>Maximum Tolerance</b>
Tested Power	$\geq 0.90 \times \text{rated power}$	$\leq 1.05 \times \text{rated power}$
Tested thermal losses (QPR)	n/a	$\leq 1.05 \text{ rate QPR, rated}$
Tested Standing loss power (S)	n/a	$\leq 1.05 \text{ rated S}$
Tested Capacity (Volume)	$\geq 0.98 \times \text{rated Capacity}$	n/a
Tested mixed quantity of water (V40)	$\geq 0.97 \times \text{rated V40}$	n/a
Tested Energy consumption	n/a	$\leq 1.05 \times \text{rated energy}$

*ENERGY COMMISSION (ENERGY EFFICIENCY STANDARDS AND LABELLING) (WATER HEATERS) REGULATIONS, 2022*

**PART THREE**

*(regulation 44)*

**1. Calculations for water heater technical parameters**

Technical parameters used for the calculations shall be measured in accordance with the guidelines provided in paragraphs 1, 2 and 3 of this Part based on the test methods and procedures set out in the Standards of the First Schedule.

**2. Technical parameters of water heaters**

The following parameters shall be calculated for water heaters under average climate conditions:

- (a) the water heating energy efficiency  $\eta_{wh}$  in %, rounded to one decimal place; and
- (b) the annual electricity consumption AEC in kWh in terms of final energy, rounded to the nearest integer.

**3. Calculation of the water heating energy efficiency,  $\eta_{wh}$**

The water heating energy efficiency,  $\zeta_{wh}$ , is calculated using Equation (1):

$$\eta_{wh} = \frac{Q_{ref}}{CC \times Q_{elec} (1 - SCF \times smart) + Q_{cor}} \dots\dots\dots \text{Eq (1)}$$

where

$Q_{ref}$  = reference energy for the declared load profile for the model as provided in Table 5 under the specified climate conditions

CC = 'Warmer' Climate Conditions for testing as prescribed in Table 7

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$Q_{elec}$  = daily electricity consumption in kWh measured over 24 consecutive hours under the declared load profile and under the prescribed climate conditions specified in Table 7

SCF = the Smart Control Factor for a smart-compliant appliance calculated using Eq (3)

smart = a factor dependent on the value of SCF as shown in Table 6

$Q_{cor}$  = the ambient correction term as calculated in Equation (4)

#### 4. Calculation of the annual electricity consumption AEC

The annual energy is based on the energy efficiency ratio,  $\eta_{wh}$ , used for classification and therefore influenced by the reference energy  $Q_{ref}$  which is dependent on the specified climate conditions and used to characterise the water heaters. The annual electricity consumption, AEC, in kWh is calculated using Eq (2):

$$AEC = 0.6 \times 366 \times \left( Q_{elec} \times (1 - SCF \times smart) + \frac{Q_{cor}}{CC} \right) \dots\dots\dots Eq (2)$$

#### 5. Determination of the smart control factor SCF and of smart control compliance smart

(a) The smart control factor (SCF) is calculated using Equation (3):

$$SCF = 1 - \frac{CC \times Q_{elec,week,smart}}{CC \times Q_{elec,week}} \dots\dots\dots Eq (3)$$

where

$Q_{elec,week,smart}$  = weekly electricity consumption of a water heater with the smart control function enabled, expressed in kWh



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Table 8: Standardised Daytime temperature (°C) for testing

Month	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Standardised Climate Conditions	9.5	10.1	11.6	15.3	21.4	26.5	28.8	27.9	23.6	19.0	14.5	10.4

Calculations for electric storage water heaters

- The standing loss per 24 hours,  $Q_{pr}$ , shall be calculated using Equation (5)

$$Q_{pr} = \frac{45}{T_m - T_{amb}} \times E \dots\dots\dots Eq (5)$$

Where

- $T_{amb}$  : is the ambient temperature as specified in the Standard
- $T_m$  : is the mean water temperature as determined from measurements and using equation (6)
- $E$  : is the energy consumption per 24 hours as determined from measurements and using equation (7)

- The mean water temperature,  $T_m$ , is calculated using equation (6)

$$T_m = \frac{T_a + T_e}{2} \dots\dots\dots Eq (6)$$

where

- $T_a$  : is the average value of water temperature after thermostat cut-in from measurements
- $T_e$  : is the average value of water temperature after thermostat cut-out from measurements



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3. The energy consumption per 24 hours, E, is calculated using equation (7) :

$$E = \frac{E_1 \times 24}{t_1} \dots\dots\dots \text{Eq (7)}$$

where

$E_1$  : is electrical energy consumed as measured in accordance with the standard to the nearest 0.01kWh; and

$t_1$  : is the time period in hours during which energy consumption is measured.

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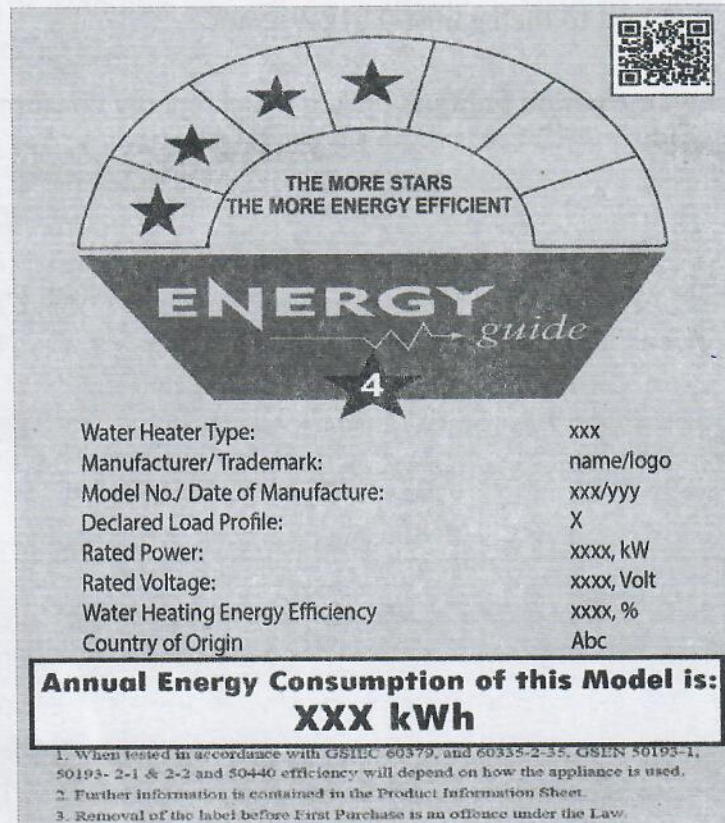
**THIRD SCHEDULE**

**THE LABEL**

*(regulations 3(1)(b)(iii), 11(1)(a)(i), 11(1)(d)(i) and 16(4)(b))*

**1. Label design for Water Heater**

The design of the label for instantaneous water heaters shall be in accordance in Figure 1 and shall include the information required by the notes.



**Figure 1: The Label for Water Heater**

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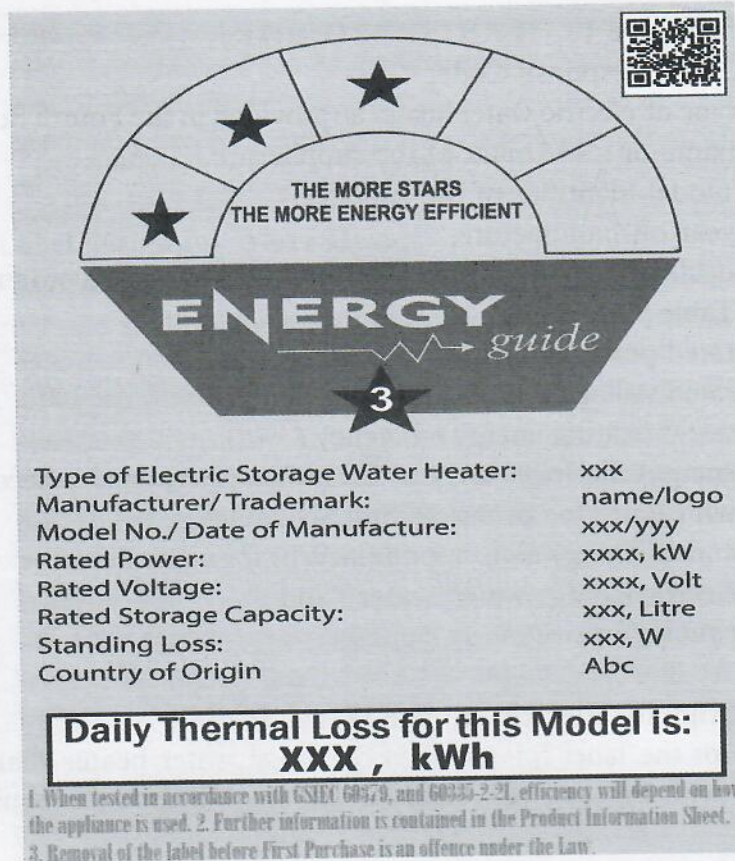
**2. Notes to Figure 1**

- (a) Quick Response Code;
- (b) type of electric water heater as provided in the Fourth Schedule;
- (c) name or trade mark of the supplier;
- (d) model identifier of the supplier;
- (e) year of manufacture;
- (f) declared load profile marked appropriately in accordance with Table 5;
- (g) rated power ("kW")
- (h) rated voltage ("volts");
- (i) water heating energy efficiency ("%");
- (j) energy efficiency class and star rating, determined in accordance with Part One of the Second Schedule;
- (k) annual energy consumption (kWh) for water heater (excluding electric storage water heater); and
- (l) country of origin.

**3. Label Design for Electric Storage Water Heater**

The design of the label for an electric storage water heater shall be in accordance with Figure 2 and shall include the information required by the notes.

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**Figure 2: Label for Electric Storage Water Heater**

**4. Notes to label of electric storage water heater**

The following information shall be included in the label:

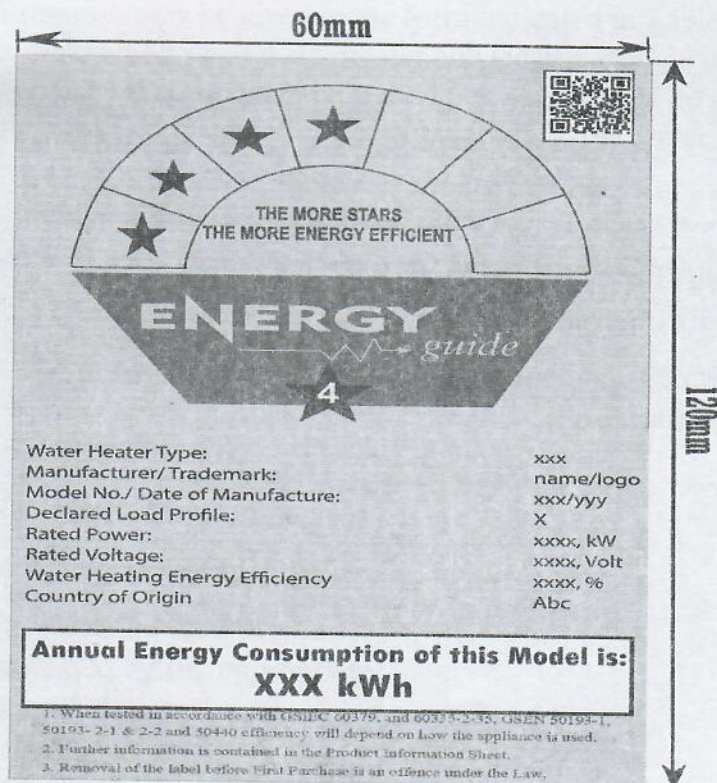
- (a) Quick Response Code;
- (b) type of water heater (storage tank) as provided in the Fourth Schedule;
- (c) name or trademark of supplier;
- (d) model identifier of the supplier;
- (e) year of manufacture;

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- (f) rated power (“kW”);
- (g) rated voltage (“volts”);
- (h) rated capacity (Volume in litres) for an electric storage water heater rounded to the nearest integer;
- (i) standing loss (“W”), rounded to the nearest integer (for electric storage and storage tank);
- (j) daily thermal losses for storage tank (kWh); and
- (k) country of origin.

### 5. Label dimensions

The dimensions of the labels shall be in accordance with Figure 3.



**Figure 3: Dimensions of the Labels**

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**6. Printing**

The dimensions of the label and aspects are as shown in Figure 3. The label shall be placed on the container or packaging.

Colours are to be used on the label in accordance with the following:

- (a) all text shall be in black or gold as illustrated;
- (b) the background shall be in gold;
- (c) all stars shall be in black; and
- (d) the border line shall be in black.

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**FOURTH SCHEDULE**

**PRODUCT INFORMATION SHEET**

*(regulations 3(1)(b)(iv), 3(2), 5, 10(2)(b) and (c), 11(1)(c), 16(4)(b),(c),(d) and (e), 18(1), 18(2)(b), 22(b), 24(2)(c), 25(b)(iii), 26(2)(a))*

**PART ONE**

*(regulations 10(2)(b), 11(1)(c), 18(1) and 18(2)(b), 22(b))*

1. The Product Information Sheet for each model of water heater shall contain the technical and other information specified below. The information may be given in the form indicated in Table 1 covering a number and type of water heater and electric storage water heater supplied by the same supplier, in which case it shall be given in the order specified or given in the description of the water heater.

**Table 1: Sample Product Information Sheet**

Item No.	Description of information	Applicable to Type of water heater (Tick)		
		Instantaneous	Electric storage	Hot water tank
1	Name or trademark of supplier	✓	✓	✓
2	Model identifier of supplier	✓	✓	✓
3	The declared load profile, expressed by the appropriate letter and typical usage in accordance with Part Two of Second schedule	✓	✓	

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4	The energy efficiency class of the model, determined in accordance with Part One of the Second Schedule	✓	✓	✓
5	The water heating energy efficiency in %, rounded to the nearest integer and calculated in accordance with Part Three of the Second schedule	✓	✓	
6	The annual electricity consumption in kWh under average climate conditions for Ghana	✓	✓	
7	If applicable, other load profiles for which the water heater is suitable to use and the corresponding water heating energy efficiency and annual electricity consumption as set out in paragraphs 5 and 6	✓	✓	
8	The thermostat temperature settings of the water heater, as placed on the market by the supplier	✓	✓	
9	Any specific precautions that shall be taken when the water heater is assembled, installed or maintained	✓	✓	
10	Where Smart Control Compliance is declared as being enabled ( <i>that is, 'smart = 1'</i> ), an indication that the information on water heating energy efficiency, annual electricity and fuel consumption, as applicable, relate to enabled smart control settings only	✓	✓	



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11	The annual electricity consumption in kWh, rounded to the nearest integer and calculated in accordance with Part Three of Second Schedule	✓	✓	
12	The storage capacity in litres, rounded to the nearest integer	✓	✓	✓
13	Standing loss in kWh/24hrs/45°C, Q <sub>pr</sub> , rounded to the nearest integer		✓	✓

In addition to the information required in the table, the following shall also be provided for all the product types as listed above:

- (a) the references to the harmonised standards and other technical specifications applied, where appropriate;
- (b) the technical parameters, standards and test methods used for determining standing losses and other ratings of the water heater; and
- (c) user instructions including disposal instructions.

## PART TWO

*(regulation 5)*

### **Types and categories of water heaters and electric storage water heaters**

The type and categories of water heaters covered under these Regulations are as set out in Table 2.

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Table 2: Types and categories of water heater

Type of water heater	Category	Description in Information sheet						Smart-control compliant
		Horizontal Installation	Vertical Installation	Wall-mounted	Floor-mounted	Designed conditions of operation (working pressure etc)	Load profile (Indicate by appropriate letter in Part 2 of Sch 2)	
Instantaneous	Joule element heater							
	Closed water heaters							
	Cistern-fed water heater							
Electric storage	Cistern-type water heater							
	Open-outlet water heater					0 kPa		
	Vented water heaters							
Voltage (No. of phases)		1-phase			3-phase			
	Electric storage water heater						N/A	N/A

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**PART THREE**  
*(regulation 10(2)(c))*

**Technical documentation**

1. The technical documentation referred to in regulation 10 shall include all the information set out under Parts One and Two of this Schedule in addition to the following:
  - (a) the name and address of the supplier;
  - (b) a description of the water heater or electric storage water heater model sufficient for unambiguous identification;
  - (c) where appropriate, the references of the harmonised standards applied;
  - (d) where appropriate, the other technical standards and specifications used;
  - (e) the identification and signature of the person empowered to bind the supplier;
  - (f) the results of the measurements and calculations for the technical parameters specified in Part Two of the Second Schedule; and
  - (g) any specific precautions to be taken when the electric storage water heater is assembled, installed or maintained.

**PART FOUR**  
*(regulation 24(2)(c))*

**Mail Order and other Distance Selling**

Mail order catalogues and other communication shall contain the following information, given in the order specified below:

1. (a) For a water heater,
  - (i) the declared load profile of the model, expressed by the appropriate letter and typical usage in accordance with Table 5 under Part Two of the Second Schedule;

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- (ii) the water heating energy efficiency class of the model, under average climate conditions, in accordance with Part One of the Second Schedule;
  - (iii) the water heating energy efficiency in %, under average climate conditions, rounded to the nearest integer and calculated in accordance with Part Three of the Second Schedule; and
  - (iv) the annual electricity consumption in kWh in terms of final energy, under average climate conditions, rounded to the nearest integer and calculated in accordance with Part Two of the Second Schedule.
- (b) For a water storage tank,
- (i) the energy efficiency class of the electric storage water heater model, determined in accordance with the Part One of the Second Schedule;
  - (ii) the standing loss per twenty-four hours in kWh/45°C, Q<sub>pr</sub>, rounded to the nearest integer; and
  - (iii) the storage capacity in litres, rounded to the nearest integer.
2. Information in Parts One, Two and Three of this Schedule.
3. The size and font in which all the information referred to in paragraphs 1 and 2 is printed shall be legible.

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**PART FIVE**

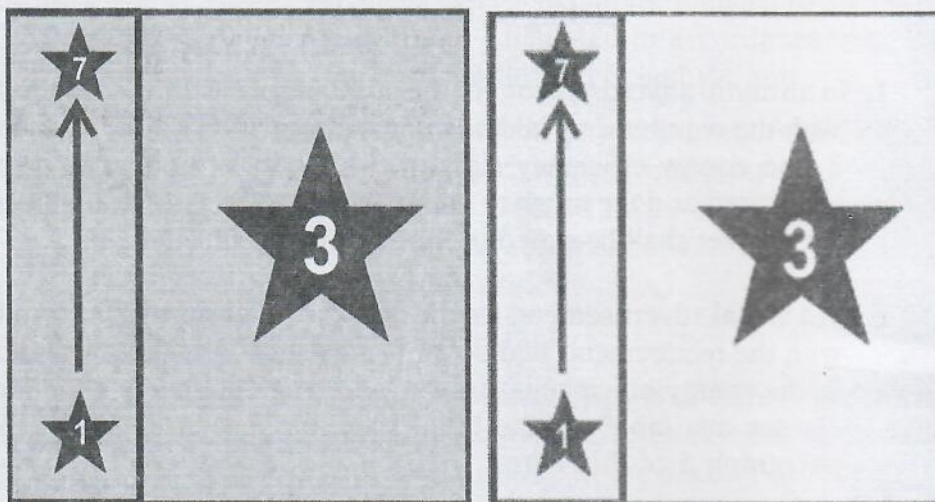
*(regulations 3(2), 16(4)(c),(d) and (e), and 25 (b)(iii))*

**Information to be provided in audio advertisements, visual advertisements, in technical promotional material, in distance selling, except distance selling on the internet**

1. In an audio advertisement, for the purposes of ensuring conformity with the requirements laid down in subregulation (2) of regulation 3, the energy efficiency class of the model of appliance being advertised and the range of energy efficiency classes available on the market shall be stated in the advertisement.
2. In a visual advertisement, for the purposes of ensuring conformity with the requirements laid down in subregulation (2) of regulation 3, the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in paragraph 5 of this Part.
3. In technical promotional material, for the purposes of ensuring conformity with the requirements laid down in subregulation (2) of regulation 3 the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in paragraph 5 of this Part.
4. Any paper-based distance selling must show the energy efficiency class and the range of energy efficiency classes available on the label as set out in paragraph 5 of this Part.
5. The energy efficiency class and the range of energy efficiency classes shall be shown, as indicated in Figure 1, with
  - (a) an arrow, containing the letter of the energy efficiency class in hundred per cent white, Calibri Bold and in a font size at least equivalent to that of the price, when the price is shown;

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- (b) the colour of the box shall be gold;
- (c) the range of available energy efficiency classes in hundred percent black; and
- (d) the size shall be such that the box is clearly visible and legible.



**Figure 1: Coloured/monochrome Star Rating with range of energy efficiency classes indicated**

1. The number embedded in the black star corresponding with the energy efficiency class of the appliance star shall be in hundred per cent white and positioned in the center of the black star in the box, with a border of 0.5pt in hundred per cent black placed around the box and the star showing the energy efficiency star rating class.
2. By way of derogation, if the visual advertisement, technical promotional material or paper-based distance selling material is printed in monochrome, the box shall be in monochrome in that visual advertisement, technical promotional material or paper-based distance selling.

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3. Telemarketing-based distance selling shall specifically inform the customer of the energy efficiency class of the product and the range of energy efficiency classes available on the label, and that the customer can access the full label and the Product Information Sheet through a free access website, the public part of the Appliance Energy Efficiency Register of the Commission or by requesting a printed copy.
4. For all the situations mentioned in paragraphs 2 to 4 and paragraph 8, it shall be possible for the customer to obtain, on request, a printed copy of the label and the Product Information Sheet.

**PART SIX**

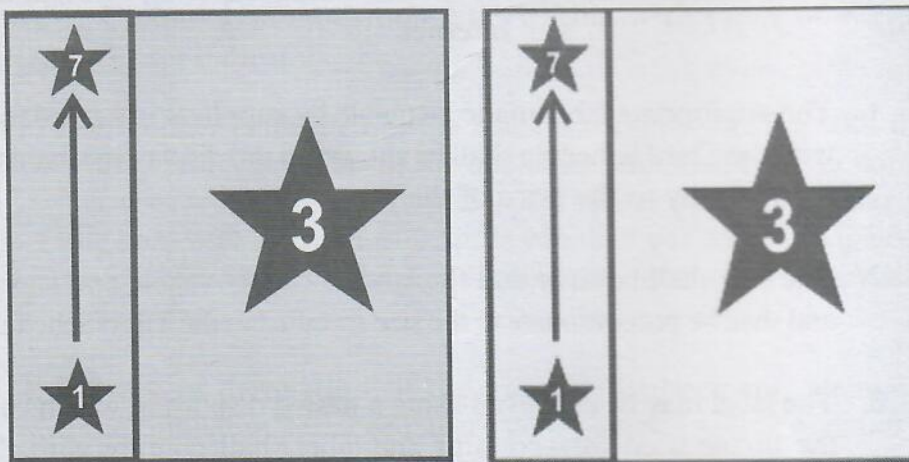
*(regulation 26(2) (a))*

**Information to be provided in the case of distance selling through the Internet**

1. The appropriate label made available by suppliers in accordance with the Third Schedule shall be shown on the display mechanism in proximity to the price of the product.
2. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified in the Third Schedule.
3. The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in paragraph 5 of this Part.

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4. If nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.
5. The image used for accessing the label in the case of nested display, as indicated in Figure 2, shall
  - (a) be a box in gold colour with a black star and an embedded number corresponding to the energy efficiency star rating of the product on the label;
  - (b) indicate the energy efficiency star rating of the product in the box in hundred per cent black, Calibri Bold and in a font size equivalent to that of the price;
  - (c) have the range of available energy efficiency classes in hundred per cent black; and
  - (d) have one of the following two formats, and its size shall be such that the box is clearly visible and legible. The number showing the energy efficiency star rating shall be positioned in the centre of the box, with a visible border in hundred per cent black placed around the box and the number of the energy efficiency star rating.



**Figure 2: Coloured/monochrome Star Rating with range of energy efficiency classes indicated**



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6. In the case of a nested display, the sequence of display of the label shall be as follows:
  - (a) the image referred to in paragraph 5 of this Part shall be shown on the display mechanism in proximity to the price of the product;
  - (b) the image shall link to the label set out in the Third Schedule;
  - (c) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;
  - (d) the label shall be displayed by pop up, new tab, new page or inset screen display;
  - (e) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;
  - (f) the label shall cease to be displayed by means of a close option or other standard closing mechanism;
  - (g) the alternative text for the graphic, to be displayed on failure to display the label, shall be the energy efficiency class of the product in a font size equivalent to that of the price.
  
7. The electronic Product Information Sheet made available by suppliers in accordance with subsection (2) of regulation 26 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the Product Information Sheet is clearly visible and legible. The Product Information Sheet may be displayed using a nested display or by referring to the product database, in which case the link used for accessing the Product Information Sheet shall clearly and legibly indicate 'Product Information Sheet'. If a nested display is used, the Product Information Sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

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**FIFTH SCHEDULE**

*(regulation 33(2))*

**VERIFICATION PROCEDURE FOR MARKET SURVEILLANCE**

1. The verification tolerances set out in this Schedule relate only to the verification of the declared parameters by the Commission and the Standards Authority and shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation.
2. The values and classes on the label or in the Product Information Sheet shall not be more favourable for the supplier than the values reported in the technical documentation.
3. Where a model has been designed to be able to detect that the model is being tested by recognising the test conditions or test cycle, and to react specifically by automatically altering the performance during the test with the objective of reaching a more favourable level for any of the parameters specified in these Regulations or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.
4. When performing the market surveillance checks referred to in subregulation (2) of regulation 33, the Commission and the Standards Authority shall apply the following verification procedure for the requirements set out in the Second Schedule:
  - (a) the Commission and the Standards Authority shall test one single unit;
  - (b) the model of the water heater or electric storage water heater shall be considered to comply with the provisions set out in these Regulations, if energy efficiency is not less than the declared value minus five per cent;

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- (c) the model of the water heater or electric storage water heater shall be considered to comply with the provisions set out in these Regulations if the measured value of the rated capacity or the storage volume, where applicable, is not more than two per cent lower than the rated value declared by supplier;
- (d) the model of the electric water heater shall be considered to comply with the provisions set out in these Regulations if the maximum sound power does not exceed more than 2 dB(A) of the declared value;
- (e) if the results referred to in paragraph (b) or (c) is not achieved, the Standards Authority and Commission shall randomly select three additional units of the same model for testing;
- (f) the model of the electric water heater or electric storage water heater shall be considered to comply with the provisions set out in these Regulations if the average of the three units for the energy efficiency is not less than the declared value minus five percent;
- (g) the model of the electric water heater or electric storage water heater shall be considered to comply with the provisions of these Regulations, if the average of the three units for the rated capacity or storage volume, is not more than two percent lower than the declared value;
- (h) the energy efficiency values shall be established in accordance with the Second Schedule; and
- (i) if the results referred to in paragraph (f) or paragraph (g) are not achieved, the model shall be considered not to comply with these Regulations.

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**HON. DR. MATTHEW OPOKU PREMPEH**  
*Minister responsible for Energy*

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