

**SLOVENSKI  
STANDARD**

**SIST HD 500 S1:2001**

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Methods to be used for measuring energy consumption of thermal storage water heaters and for the purpose of informing consumers of it

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KEY WORDS: Storage water heater; consumers' information; measurement;  
energy consumption

METHODS TO BE USED FOR MEASURING ENERGY  
CONSUMPTION OF THERMAL STORAGE WATER HEATERS AND  
FOR THE PURPOSE OF INFORMING CONSUMERS OF IT

Méthodes à utiliser pour mesurer  
la consommation d'énergie des  
chauffe-eau électriques à  
accumulation isolés  
thermiquement et la porter à la  
connaissance des consommateurs

Verfahren zum Messen des  
Energieverbrauches von  
Warmwasserspeichern mit  
Wärmedämmung und Angaben zur  
Information des Verbrauchers  
über den Energieverbrauch

BODY OF THE HD

The Harmonization Document consists of:

- IEC 379 (1987) ed 3; IEC/SC 59C, not appended
- with CENELEC common modifications prepared by CLC/TC 59X

This Harmonization Document was approved by CENELEC on 1987-12-04.

The English and French versions of this Harmonization Document are provided by the text of the IEC publication and the German version is the official translation of the IEC text. The German translation is not yet available. All texts prepared by CENELEC exist in three official versions (English, French and German).

According to the CENELEC Internal Regulations the CENELEC member National Committees are bound:

to announce the existence of this Harmonization Document at national level by or before 1988-01-01

to publish their new harmonized national standard by or before 1988-07-01

to withdraw all conflicting national standards by or before 1990-01-01.

Harmonized national standards are listed on the HD information sheet, which is available from the CENELEC National Committees or from the CENELEC Central Secretariat.

The CENELEC National Committees are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

1. Object

The purpose of this document is to define the methods to be used for measuring energy consumption of thermally insulated storage water heaters and for informing consumers of it.

2. Scope

This document applies to thermally insulated storage water heaters from one of the classes mentioned in Clause 4 of IEC Publication 379 (3rd edition), without limitation of their rated capacity.

3. Measurement of the capacity

3.1 Method of measurement

The capacity is measured as specified in Clause 13 of Publication 379 (3rd edition).

The value of the capacity is given in litres.

3.2 Required conditions

The value obtained as specified in 3.1 shall not be less than the rated capacity declared by the manufacturer.

4. Measurement of the standing loss

4.1 Method of measurement

The standing loss ( $Q_{pr}$ ) is measured as specified in clause 14 of Publication 379 (3rd edition).

The value  $Q_{pr}$  is expressed in kWh per 24 h.

This characteristic shall be given with two decimals for values below 1 kWh per 24 h and with one decimal for values equal to or exceeding 1 kWh per 24 h.

4.2 Required conditions and check procedures

The results of the measurements carried out on an appliance conforming to the manufacturing specifications and chosen at random amongst appliances of the same type shall not deviate by more than 15 % from value declared by the manufacturer.

If they do, a further check shall be carried out on three appliances conforming to the manufacturing specifications and chosen at random amongst appliances of the same type.

If the mean of the checks carried out on the three appliances reveals a deviation of more than 10 % above the value declared by the manufacturer, it is considered that the requirements of this standard have not been met unless further measurements made on three additional samples result in a mean which does not deviate by more than 10 % from the value declared by the manufacturer.

5. Measurement of the hot water output

5.1 Method of measurement

The hot water output is measured as specified in Clause 15 of Publication 379 (3rd edition).

The hot water output is the rated capacity at  $x^{\circ}\text{C}$ .

5.2 Required conditions

The value of  $x$  obtained as indicated in 5.1 shall not be lower than the value declared.

6. Declaration to provide

Information concerning the energy consumption of the appliances mentioned in clause 2 shall contain the following :

- Type of the appliance : Thermally insulated storage water heater.
- Class of the appliance as specified in Clause 4 of Publication 379 (3rd edition).
- Rated capacity given in litres as defined in Clause 3 above and the corresponding hot water temperature given in  $^{\circ}\text{C}$ , as defined in Clause 5 above.
- The standing loss given in kWh per 24 h as defined in Clause 4 above.

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IEC**

**60379**

Troisième édition  
Third edition  
1987-09

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**Méthodes de mesure de l'aptitude à la fonction  
des chauffe-eau électriques à accumulation  
pour usages domestiques**

**Methods for measuring the performance of  
electric storage water-heaters for household  
purposes**

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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**METHODS FOR MEASURING  
THE PERFORMANCE OF ELECTRIC STORAGE WATER-HEATERS  
FOR HOUSEHOLD PURPOSES**

## FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

## PREFACE

This standard has been prepared by Sub-Committee 59C: Heating appliances, of IEC Technical Committee No. 59: Performance of household electrical appliances.

It forms the third edition of IEC Publication 379 and replaces the second edition (1982).

The text of this third edition is based on the second edition and the following documents:

Six Months' Rule	Report on Voting	Two Months' Rule	Report on Voting
59C(CO)31 59C(CO)33	59C(CO)34 59C(CO)37	59C(CO)35	59C(CO)36

Full information on the voting for approval of this standard can be found in the Reports on Voting indicated in the table above.

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# METHODS FOR MEASURING THE PERFORMANCE OF ELECTRIC STORAGE WATER-HEATERS FOR HOUSEHOLD PURPOSES

## SECTION ONE — GENERAL

### 1. Scope

This standard applies to electric storage water-heaters for household purposes.

This standard does not apply to:

- water-heaters using other sources of energy (e.g. solar energy);
- water-heaters with more than one heated volume;
- water-heaters without thermal insulation.

### 2. Object

The purpose of this standard is to state and define the principal performance characteristics of electric storage water-heaters which are of interest to the user and to describe the standard methods for measuring these characteristics.

This standard is concerned neither with safety nor with performance requirements.

## SECTION TWO — DEFINITIONS AND LETTER SYMBOLS

For the purpose of this standard, the following definitions and letter symbols apply.

### 3. Terms used to designate appliances

#### 3.1 *Storage water-heater*

An appliance intended for heating water in a thermally well-insulated container, for the long-term storage of the heated water, and provided with a device to control the water temperature.

### 4. Terms used to classify appliances\*

#### 4.1 *Unvented water-heater*

A water-heater designed to work under the pressure of the water supply mains, the flow of water being controlled by one or more valves in the outlet system.

\* See Figure 1, page 20.

#### 4.2 *Cistern-fed water-heater*

A water-heater supplied from a cistern in which the flow of water is controlled by one or more valves in the outlet system and which is provided with a vent open to the atmosphere and so arranged that the expanded water can return to the feed cistern.

#### 4.3 *Open outlet water-heater*

A water-heater in which the flow of water is controlled by a valve in the inlet pipe and so arranged that the expanded water can overflow through the outlet pipe.

#### 4.4 *Vented water-heater*

A water-heater open to the atmosphere, so that under no condition of use can the pressure at the surface of the water be other than atmospheric.

#### 4.5 *Cistern-type water-heater*

A cistern-fed water-heater which has a feed cistern as an integral part of the appliance.

### 5. Terms relating to characteristics of appliances

#### 5.1 *Rated capacity*

The water capacity assigned to the water-heater by the manufacturer and marked on it.

#### 5.2 *Rated input*

The electrical input assigned to the water-heater by the manufacturer and marked on it.

#### 5.3 *Standing loss per 24 h*

The energy-consumption of a filled water-heater, after steady-state conditions have been reached, when connected to the electrical supply, during any 24 h when no water is withdrawn.

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#### 5.4 *Rated voltage*

The voltage (for three phase-supply, the voltage between phases) assigned to the appliance by the manufacturer.