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**Ice makers for commercial use — Classification, requirements  
and test conditions**

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*Machines à glaçons à usage commercial — Classification, exigences et conditions d'essai*

ISO/FDIS 6369

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 86, *Refrigeration and air-conditioning*, Subcommittee SC 7, *Testing and rating of commercial refrigerated display cabinets* and, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 44, *Commercial refrigerated cabinets, catering and professional refrigerating appliances and industrial refrigeration in collaboration systems, performance and energy consumption, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement)*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

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# Ice makers for commercial use — Classification, requirements and test conditions

## 1 Scope

This document specifies methods for the measurement of energy consumption, water consumption, ice production capacity and the harvested ice characteristics of ice makers with built-in condensing units for commercial use.

This document does not apply to:

- ice makers intended to be incorporated in appliances for household use;
- ice makers with remote condensing units.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1 Types of appliances

#### 3.1.1 ice maker

factory-made appliance consisting of a condensing unit and ice-making section operating as an integrated unit, with means for making and harvesting ice, also including means for storing or dispensing ice, or both

Note 1 to entry: Ice makers are intended to produce ice in irregular shapes or flakes or ribbons or wafers as well as uniformly shaped ice cubes.

Note 2 to entry: A modular-type ice maker is an ice maker without storage means.

Note 3 to entry: A self-contained ice maker is an ice-maker in which the ice-making mechanism, storage compartment and condensing unit are integrated within a cabinet.

#### 3.1.1.1 ice maker with built-in condensing unit

appliance in which the refrigeration unit is an integral part of the cabinet

#### 3.1.1.2 ice maker with remote condensing unit

appliance in which the compressors, condensers and liquid receivers (when required) are not supplied with the cabinet

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### 3.1.1.3

#### **split ice maker**

appliance in which the condenser is not integrated in the main ice making unit and the condenser and piping are made in accordance with manufacturers indications using dedicated condensers

### 3.1.1.4

#### ~~modular-type ice maker~~

~~ice maker without storage means~~

### 3.1.1.5

#### ~~self-contained ice maker~~

~~ice maker in which the ice making mechanism, storage compartment and condensing unit are integrated within a cabinet~~

## 3.2 Type of condenser cooling

### 3.2.1

#### ~~water-cooled ice maker~~

appliance in which the condenser is cooled by use of water

### 3.2.2

#### ~~air-cooled ice maker~~

appliance in which the condenser is cooled by use of air

## 3.3 Type of ice

### 3.3.1

#### **ice cube**

single piece of ice that can have different shapes (e.g. dice, cylinder, ball, etc.) and is produced by a batch-type ice maker

### 3.3.2

#### **ice flakes**

ice which contains at least 70 % flaked ice (and no more than 30 % water) which is produced by a continuous-type ice maker

## 3.4 Type of production

### 3.4.1

#### **batch-type ice maker**

ice maker that has alternate freezing and harvesting periods

#### 3.4.1.1

##### **batch-type single cubes ice maker**

ice maker that produces single ice cubes

#### 3.4.1.2

##### **batch-type multiple cubes ice maker**

ice maker that produces multiple ice cubes

### 3.4.2

#### **continuous-type ice maker**

ice maker that continually freezes and harvests ice flakes at the same time

### 3.5

#### **ice storage bin**

factory-made container (not necessarily shipped in one package with the ice-maker) that forms or is intended to form a non-refrigerated compartment for the storage of ice

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Note 1 to entry: The container is equipped with additional devices (e.g. container support, carts, etc.).

### 3.6

#### separate storage compartment

non-refrigerated compartment for the storage of ice that is separate from the ice-making mechanism

### 3.7

#### purge

#### blow-down

dissipation of a certain percentage of water to control the clarity of ice or to prevent scaling

### 3.8

#### ice production

amount of ice harvested, stated in kg/24 h in multiples of 1 kg

### 3.9

#### energy consumption rate

total energy input stated in kWh/100 kg of ice in multiples of 0,1 kWh

### 3.10

#### potable water use rate

amount of potable water used in making ice, including purging and harvesting, stated in l/100 kg of ice in multiples of 0,1 l

### 3.11

#### cooling water use rate

amount of cooling water used in making ice, stated in l/100 kg of ice in multiples of 0,1 l

### 3.12

#### standard rating

ratings based on tests performed at standard rating conditions

### 3.13

#### standard rating conditions

standard set of conditions under which the performance characteristics of ice makers are rated for comparative purposes

## 4 Measurement of energy consumption, water consumption and ice production capacity

### 4.1 General

Unless otherwise specified, measurements shall be made under test conditions and with equipment set-up as specified in [4.2 to 4.5](#) and [Clause 5.4.2 to 4.5 and Clause 5](#).

### 4.2 Test room

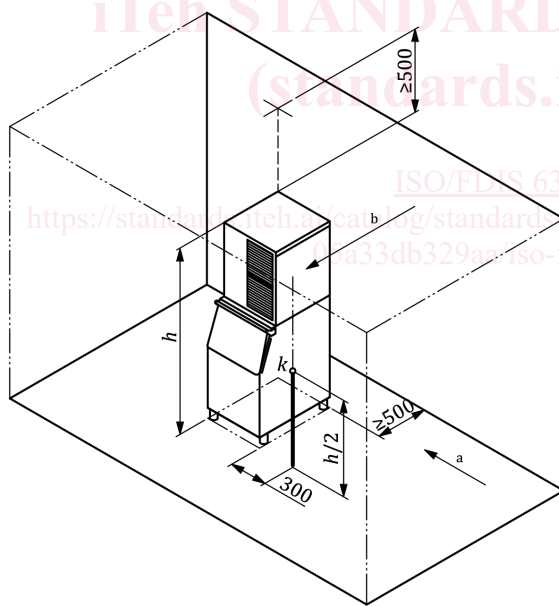
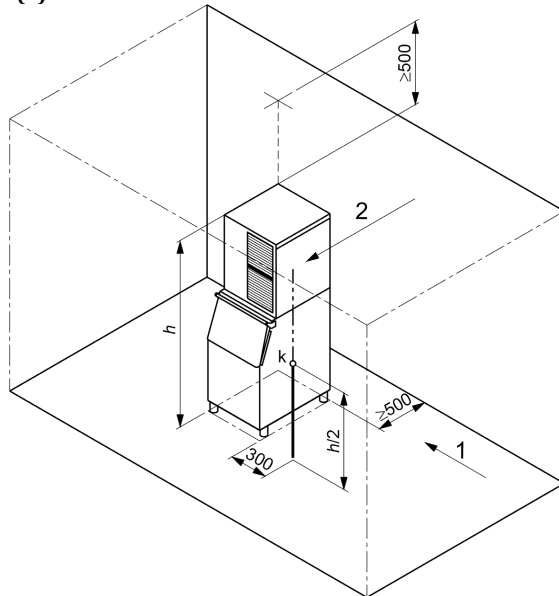
The test room walls and ceilings shall be insulated to ensure that the temperature of both the inside walls and the ceiling surface is within 2 °C of the ambient temperature.

Fluorescent or LED lighting shall be used owing to its high light output, low surface temperature and low heat load on the test room.

The air flow shall be horizontal with a speed  $\leq 0,25$  m/s.

The measuring point of air speed shall be located, 300 mm upstream of the ice maker, in line with the front of the ice maker at a vertical height that is half the ice maker height (including ice maker feet and fixings) see [Figure 1](#).

Dimensions in millimetres



- Key**
- 1 air flow
  - 2 climate measuring point
  - $h$  overall height of the cabinet including feet
  - $k$  climate measuring point detecting temperature

**Figure 1.— Test room temperature measuring point and positioning of the cabinet**