Semi-hard cheeses

Descriptors: food products, dairy products, cheeses, microbiological analysis.

Decimal classification: 637.37

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Chapter A – General

1.1 Applicability of the Standard

This Standard applies to semi-hard to hard cheeses produced from cows’ milk (hereinafter: The Product).
This Standard does not apply to processed cheeses.
This Standard does not apply to hard cheeses, including the following types of cheeses:

- Pasta Filata
- Cheddar
- Colby
- Parmesan (Grana: Hard Grating Cheese)
- Emmental
- Danbo
- Mould cured or mould ripened cheeses.

1.2 References

Standards and documents mentioned in this Standard:

Israeli Standards:

SI 55 – Raw cows’ milk
SI 115 – Soft white cheeses
SI 411 – Edible salt: Sodium chloride
SI 550 – Microbiological analysis of milk and dairy products: Coliform bacterial count.
SI 627 – Testing of milk and dairy products: Fat content in cheese according to the Butyrometer method (Van Gulik).

1 See definition 1.3.2.
2 See the Codex Alimentarius description of the hard cheese types in the following: International Individual Cheeses Standards C-1 to C-35 (1993 Review).
SI 885 Part 6 – Microbiological analysis methods for foodstuffs: Count of coagulase positive Staphylococcus Aureus bacteria.

SI 885 Part 7 – Microbiological analysis methods for foodstuffs: Isolating and identifying Salmonellae.

SI 1059 – Tolerances for weight and volume of pre-packaged food products.

SI 1145 – Labelling of pre-packaged food

SI 1242 – Microbiological analysis of milk and dairy products: Yeast and mould count.

SI 1361 – Salty cheeses

**Israeli documents:**


**Foreign documents:**

**Codex Alimentarius Standards:**

- International Individual Cheeses Standards C-1 to C-35 (1993 Review);
  - C-4 Edam
  - C-5 Gouda
  - C-28 Amsterdam
International IDF Standards

- Provisional International IDF Standard 4A: 1982 – Cheese and processed cheese – Determination of the total solids content (Reference Method).


1.3 Definitions

The definitions in force in this Standard are as follows:

1.3.1 Cheese

A solid or semi-solid, ripened product, in which the ratio between the whey and casein proteins does not exceed that of cows’ milk, and which is produced by curdling the original materials (entirely or in part) from those detailed as follows: Cows’ milk, low-fat or skimmed milk, cream, whey cream and buttermilk\(^3\), as well as other materials originating from cows’ milk.

The production is done by the action of rennet\(^3\) or other coagulating enzymes and suitable bacterial cultures, and by partially extracting the whey produced during the curdling process.

1.3.2 Semi-hard to hard cheeses

Cheeses whose dry material content is more than 44% and less than 60%.

1.3.3 Marketing

All of the product’s transportation and storage stages from the diary until it is taken by the retail consumer.

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\(^3\) See the list of definitions at the end of the Standard.
1.3.4 Absolute requirement.
A requirement for which non-compliance, even of one sampling only, means that the entire batch does not comply with the Standard.

1.3.5 Batch
All the package units found together in one place, all of which are the same size, contain the same type of product and are produced by the same manufacturer on the same day.

1.3.6 Spices
Plants or natural plants extracts (such as oleoresins) which are added to food in small quantities to improve the flavour. The plants may undergo physical processing (such as drying), but not a chemical breakdown process (such as hydrolysis or caramelization).

1.4 Ingredients
The ingredients used for manufacturing the product should from the material listed as follows:

1.4.1 Cows’ milk and its components
1.4.1.1 Raw cows’ milk, which complies with Israeli Standard SI 55;
1.4.1.2 Skimmed or low-fat milk;
1.4.1.3 Whey proteins;
1.4.1.4 Butter and all types of dairy fat;
1.4.1.5 Buttermilk;
1.4.1.6 Powdered milk; powdered buttermilk;
1.4.1.7 Caseinates.

1.4.2 Curdling agents and materials which facilitate curdling
1.4.2.1 Sourcing cultures.
Cultures of suitable bacteria (sourcing bacteria).

1.4.2.2 Milk-coagulating enzymes.
1.4.2.3 Calcium chloride

1.4.3 Additives

The following materials can be added to the product:

1.4.3.1 Premium or regular table salt and kitchen salt which comply with Israeli Standard SI 411; salt for the food industry can also be used, either premium or regular (see Israeli Standard SI 411) after it has been dissolved and filtered.

1.4.3.2 Natural food colouring\(^4\): Annatto, carotenoids;

1.4.3.3 Preservatives: as detailed regarding cheese in Public Health Regulations (Food) (Preservative in food products) 5725 – 1965\(^5\), or any other law which replaces it.

1.4.3.4 Natural flavour enhancers.

1.4.4 General requirements for ingredients.

The milk and its components (sub-paragraph 1.4.1) must be pasteurized. The quality of the ingredients must be suitable for use in food; they must be clean and not harmful to health; they should be clear of any signs of spoilage and foreign materials.

The ingredients must comply with up-to-date Israeli standards and regulations, and in their absence, they should comply with the latest Food Chemical Codex (FCC) of the National Academy of Sciences in the U.S.A.

1.5 Classification

The product is classified according to the fat content and form as follows (the expressions in inverted commas are for product naming purposes):

1.5.1 Classification according to fat content.

\(^4\) Natural food colouring: See Public Health Regulations (Food) (Food Colouring) 5744 – 1984 as published in Regulations Code 4593 of February 12, 1984, or any other law which replaces it.

1.5.1.1 “22% fat”;
1.5.1.2 “28% fat”;

1.5.2 Classification according to the product form.
1.5.2.1 “Block” or “Slab”;
1.5.2.2 “Sliced” (or “slices”);
1.5.2.3 “Pulverized” (or “grated”).

1.6 Packaging
The product must be packed in closed packaging which protects it from contamination. Food grade CO2 and nitrogen gasses\(^6\) may be added in order to extend the shelf life\(^3\).

The packaging\(^7\) must preserve the product’s characteristic organoleptic and textural properties. The packaging must in no way whatsoever affect the flavour, colour and smell of the product, and must not contaminate it. The packaging must be clean on the inside and outside, and it must have no noticeable signs of dirt. The product must not be marketed in a used package. The packing material must comply with the standards and regulations in force in Israel, and in their absence, them must comply with the FDA requirements as published in the Code of Federal Regulations.

1.7 Labelling
The labelling requirements in Israeli Standard SI 1145 apply to the product with the changes and additions specified as follows:

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\(^6\) Food grade – quality suitable for using in food.
\(^7\) Including the paper layer or another layer used to separate the slices of the product.
1.7.1 The product name must be marked with the words “semi-hard cheese” together with the fat content (as detailed in sub-paragraph 1.5.1\(^8\)) and the form (as detailed in sub-paragraph 1.5.2\(^9\)).

Hard cheese or semi-hard cheeses must not be called Processed Cheese\(^{10}\).

1.7.2 A product which matches the definition detailed in the Codex Alimentarius standards for Edam\(^{11}\), Gouda\(^{12}\) or Amsterdam\(^{13}\) cheeses may be marked with the words “Dutch type” as a secondary name, or alternatively, one of the following names (as applicable): Edam-type, Gouda-type or Amsterdam-type.

The letter size of this secondary marking must not be larger than those indicating the product name and it must not be more prominent than the product name.

1.7.3 The word Cheese may not be included in the name of products which are not mentioned in this Standard, Israeli Standards SI 115 and SI 1361, Supervision order for consumer products and services (dairy products) 5722 – 1962\(^{14}\) or any other law which replaces them. This prohibition does not apply to products manufactured wholly or partially\(^{15}\) from cheese, and which other Israeli standards, regulations, orders or provisions on behalf of the approving authority permit including the word Cheese in their names.

1.7.4 List of ingredients to be marked are as follows:

1.7.4.1 Ingredients detailed in sub-paragraph 1.4.1 can be marked with the following collective names:

- Milk – for the ingredients detailed in sub-paragraphs 1.4.1.1 and 1.4.1.2.
- Milk components – for the ingredients detailed in sub-paragraphs 1.4.1.3 to 1.4.1.7.

1.7.4.2 It is not mandatory to indicate the ingredients detailed in sub-paragraph 1.4.2.

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\(^8\) This method of labeling the fat content will enter into effect on January 1, 1997.

\(^9\) It is not mandatory to include the word block or slab on the label.

\(^{10}\) Processed cheese: Cheese whose manufacturing process includes melting and emulsification\(^{3}\) as described in paragraph 2 of the Codex Alimentarius Standard: General Standard No. A -8 (1993 Review) – Processed Cheese.

\(^{11}\) International Individual Cheese Standards (1993 Review) :C -4 Edam.


\(^{13}\) International Individual Cheese Standards (1993 Review) :C -28 Amsterdam.

\(^{14}\) As published in Regulations Code 1327 of June 28, 1962.

\(^{15}\) For example: Cheese cakes.
1.7.4.3 Ingredients detailed in sub-paragraph 1.4.3 must be specified as detailed in the Ingredients paragraph of Israeli Standard SI 1145.

1.7.5 The date will be marked as follows:\[16\]

1.7.5.1 The production date must be marked either explicitly or in code.

1.7.5.2 The latest selling date must be marked explicitly (day and month, or day, month and year). The significance of the date must be marked in the words “latest selling date” or “sell by”.

1.7.6 A sub-paragraph 1.5.2.1 type product (block or slab) which is pre-packed and sold by net weight which is different from the uniform values specified in paragraph 2.2\[17\] may be marked with a range of weights instead of the exact net weight, subject to the following:

- The exact net weight of the product is within the weight range marked.
- The width of the weight range must not exceed ±20% of the product’s exact net weight.

1.7.7 The words “Store in refrigerator” or “Store in refrigeration” must be marked in letters which are at least the same size as those indicating the manufacturer’s name. Indicating the desired storage temperature is also recommended.

1.7.8 The nutritional labelling must be as detailed in Public Health Regulations (Food) (Nutritional Labelling), 5753-1993 as published in Regulations Code 5524 of May 25, 1993, and as amended in Regulations Code 5600 of May 25, 1994, or any other law which replaces them.

1.8 Compliance of one packaging unit to the Standard

In order to determine whether a single packaging unit of product complies with the Standard, compliance with all of the Standard’s requirements must be tested. A packaging unit complies with the Standard if it complies with all its requirements.

\[16\] The date marking issue will be raised again if changes are applied in this regard in Israeli Standard SI 1145 or in the framework of regulation.

\[17\] Marketing which is conditional to indicating the price per weight unit as detailed in paragraph 2.2.
A packaging unit does not comply with the Standard if it does not comply with any one of its requirements.

Chapter B – Requirements

2.1 General requirements

During the production process, the cheese must undergo artificial ripening.

The cheese must not be soft or sticky, and its texture must be uniform and semi-hard to hard, allowing the cheese to be cut without crumbling.

The slices of the sliced product must be easily separated from each other.

The flavour, smell and colour must be characteristic of the cheese. Its flavour or smell should not be strange or indicate spoilage.

There must be no visible mouldy patches or colonies of other microorganisms on or under the surface of the cheese.

There must be no dirt or other foreign material in the cheese.

2.2 Contents

The product will be sold pre-packed in packages stipulating its contents as follows: 50 g, 200 g, 250 g, 400 g, 500 g, or multiples of 500 g.

These requirements do not apply to products which, in addition to the contents, also stipulate the price per weight unit, or where the price per weight unit is marked in a noticeable place beside the product in a way which allows the consumer to receive this information clearly.

In testing according to paragraph 3.1, the deviation of actual contents from that which is stipulated must not be greater than the deviation specified in Israeli Standard SI 1059 for products which are difficult to fill.

2.3 Product temperature

In testing according to paragraph 3.2, the temperature of the product must not exceed those stipulated below:
- At the dairy gate: 7°C;
- When marketed: 10°C.

2.4 Pasteurization efficiency
In Phosphatase testing according to paragraph 3.3, the phenol content must not exceed 1 microgram per gram of product.
This requirement is an absolute requirement (see definition 1.3.4).

2.5 Composition
2.5.1 In analysis according to 3.4, the dry ingredients and fat content must be as stipulated in Table 1.

<table>
<thead>
<tr>
<th>Stipulated fat content</th>
<th>Dry ingredient content % in weight – minimum</th>
<th>Actual fat content % in weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>22%</td>
<td>50.0</td>
<td>22.0±2</td>
</tr>
<tr>
<td>28%</td>
<td>54.0</td>
<td>28.0±2</td>
</tr>
</tbody>
</table>

2.5.2 In analysis according to paragraph 3.4, the salt (expressed as sodium chloride) content must not exceed 2.4% (in weight).

2.6 pH
In testing according to paragraph 3.5, the pH must be within the 5.0 – 6.0 range.

2.7 Microbiological requirements
In analysis according to paragraph 3.6, the microbiological count must be as follows:

2.7.1 Coliform count
No more than 1000 per gram.

2.7.2 Mould count
No more than the following:
- In products excluding product type 1.5.2.3: 10 per gram.
- In 1.5.2.3 products: 100 per gram.
2.7.3 **Yeast count**

No more than the following:
- In products excluding product type 1.5.2.3: 500 per gram.
- In 1.5.2.3 products: 1000 per gram.

2.7.4 **Coagulase positive Staphylococcus Aureus bacteria count**

Less than 100 per gram.

2.7.5 **Salmonella count**

Negative in 20 gram of product.

Salmonella testing must be performed in case of suspicion or according to a specific demand.

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**Chapter C – Test Methods**

3.1 **Content analysis**

The product must be analyzed as specified in Israeli Standard I 1059.

3.2 **Temperature testing**

A thermometer, which allows a reading accuracy of 1/2 °C, is inserted into the product and a temperature reading is taken after approx. 3 minutes.

3.3 **Pasteurization efficiency testing**

The pasteurization efficiency is tested in one of the following two methods:
- The Phosphatase test as described in Israeli Standard SI 563;
- Fluorimetric testing as detailed in the Fluorophos Alkaline Phosphatase Assay (Class A2), which is detailed in the latest edition of Standard Methods for The Examination of Diary Products (American Public Health Association, Washington DC).

3.4 **Composition analysis**

The composition is analyzed as follows:

3.4.1 The fat content is tested as detailed in Israeli Standard SI 627.
3.4.2 The dry ingredient content is analyzed as detailed in Provisional International IDF\textsuperscript{18} Standard 4A: 1982.

3.4.3 The salt (expressed as sodium chloride) content is analyzed as detailed in International IDF Standard 88: 1979.

3.5 pH testing
The pH of the product is tested with an electrometric pH meter with an accuracy of 0.05 pH units.
The test is performed by inserting the electrode into the product.

3.6 Microbiological analysis
3.6.1 The bacteria Coliform colonies are counted according to Israeli Standard SI 550.

3.6.2 The mould and yeast are counted according to Israeli Standard SI 1242.

3.6.3 The coagulase positive Staphylococcus Aureus bacteria colonies are counted according to Israeli Standard SI 885 part 6.

3.6.4 The Salmonella is counted according to Israeli Standard SI 885 part 7.

Terminology List

Buttermilk
Rennet
Shelf Life
Emulsification

\textsuperscript{18} IDF – International Dairy Federation.
This Standard was prepared by the following panel of experts:
Committee coordinator - A. Sirlin

The following panel of Technical Committee 503 – Milk and Dairy Products members approved this Standard:

- Israeli Consumer Association - independent – Y. Hitron
- Association of Chain Stores – M. Meiri
- Organization of Religious Consumers (Etzad) – L. Mankin
- Israeli Consumer Council – S. Weissman
- Israel Dairy Board (Production and Marketing) – A. Even-Tzur, Y. Maron, Z. Feikovsky
- The Israel Cattle Breeder’s Association – Y. Zeliger
- Health Ministry – Z. Sidelman
- Agriculture Ministry – A. Sharan (chairperson)
- Ministry of Trade and Industry – P. Kutcher
- IDF – A. Orbuch

Committee coordinator - A. Sirlin

Anyone manufacturing a commodity which complies with the requirements of the Israeli Standard that applies to it, is entitled, under permit from the Standards Institute of Israel, to mark it with the Israeli Safety Mark:

[Symbol]
The Israel Standards are reviewed from time to time, at least once every fire years, in order to adapt them to scientific, technological and industrial developments.

Those using the Standards must ensure that they have the updated version including it’s amendment sheets.

Recommendations for changes should be sent to the Standards Institution of Israel’s address.

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Chapter A – General

1.2 References

**Israeli Standards:**
The following has been added to the list:

– SI 5113 – Plastic materials, products and their components, which come into contact with food and beverages.

**Israeli Documents:**


– Regulation Code 4593 of February 12, 1984 – Public Health Regulations (Food) (Food Colouring) 5744 – 1984 will be deleted.

The following will be added to the list:


**Foreign Documents:**
The following have been added to the list:

1.3 Definitions

1.3.1 Cheese

The cheese definition must be deleted and replaced by the following:

A dairy product – ripened or unripened, soft, semi-hard, hard or very hard, coated or not coated – in which the ratio between the whey and casein does not exceed that of cows’ milk, and which is obtained in one or both of the following ways:

a. Full or partial curdling of milk or a milk component (or both), by the action of rennet or other curdling agents, and partially draining the whey obtained from this process;

b. Production techniques which integrate curdling milk or milk components (or both) and result in a final product with similar physical, chemical and organoleptic properties to those of the product obtained according to clause a above.

The following definitions must be added to paragraph 1.3:

1.3.7 Reconstituted milk

Milk prepared from milk powder to which water, milk or water and milk have been added. Milk fat may also be added in any of its forms, on condition that the total of all the non-fat solids is at least as in raw cows’ milk which complies with Israeli Standard SI 55.

1.3.8 Suitable quantity

The minimal quantity required to achieve the desired technological results.

Paragraph 1.4 Components

The entire paragraph, including its headings and sub-paragraphs, must be deleted and replaced by the following:

* Including other curdling enzymes, lactic bacterial cultures and edible acids.
1.4 Component and production facilitating materials

The milk or mixture of milk and its derivatives (see paragraph 1.4.1), or both, including the water used for reconstitution, must undergo pasteurization (as a complete mixture or as separate flows), at least before starting the curdling process, as part of the product manufacturing process.

The grade of the ingredients used for manufacturing the product and that of the production facilitating materials must be suitable for use in food; they must be clean and not harmful to health; they must be free of signs of spoilage, insects and insect parts, foreign materials and any other contaminations. The ingredients and materials above must comply with the provisions of the laws and regulations applying to them in Israel, and in their absence, with the requirements of the latest edition of the Food Chemicals Codex (FCC) (including its amendments) of the National Academy of Sciences in the U.S.A. or alternatively, the updated requirements of the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) Compendium.

The ingredients for manufacturing the product and the production facilitating materials must be from those detailed as follows:

1.4.1 Cows’ milk and its derivatives

1.4.1.1 Raw cows’ milk, which complies with Israeli Standard SI 55;

1.4.1.2 Skimmed milk, or low-fat milk;

1.4.1.3 Concentrated milk;

1.4.1.4 Reconstituted milk.

1.4.1.5 Buttermilk, buttermilk powder;

1.4.1.6 Cream and all forms of dairy fat;

The water used to reconstitute the milk must comply with the requirements of drinking water whose properties and ingredients comply with the requirements specified in second addition of the regulations regarding the hygienic quality of the drinking water, in the Maximum Permitted Concentration column. See Public Health Regulations (Sanitary Quality of Drinking Water), or any other law replacing them.
1.4.1.7 Milk powder;

1.4.1.8 Protein derived from milk.

1.4.2 Production facilitating materials (in the curdling process).

1.4.2.1 Lactic acid bacterial cultures;

1.4.2.2 Milk coagulating enzymes;

1.4.2.3 Edible acids;

1.4.2.4 Calcium chloride in suitable quantities.

1.4.3 Additives.

The following ingredients may be added to the product:

1.4.3.1 Edible salt

Sodium chloride, which complies with Israeli Standard SI 411 that applies to table salt (premium or regular), or kitchen salt (premium or regular); coarse industrial salt may be used (premium or regular) after it has been melted and filtered.

1.4.3.2 Food additives

Any food additive which may be added to a product which this Standard applies to, in accordance with Public Health Regulations (Food) (Food Additives), 5761 – 2001.

1.4.3.3 Flavour enhancers

As defined in Public Health Regulations (Food) (Food Additives), 5761 – 2001.

Footnotes (4) and (5):

The footnotes must be deleted, and each must be replaced by the following:

The footnote has been deleted.

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For information only, see: The List of Flavor Enhancers Approved for Use in Food Products, Dr. Anna Shapira (author), Health Ministry, Public Health Services, The National Food Service, January 2001, including its amendments and any document which replaces it.
1.6 Packaging

The text in the paragraph, except for footnotes (3), (6) and (7) must be deleted and replaced by the following:

1.6.1 The product must be packed in closed packaging which protects it from contamination.

Adding carbon dioxide or/and also nitrogen gas whose grade is suitable for use in food\(^6\) is permitted, in order to extend the shelf life \(^3\).

The packaging must preserve the characteristic organoleptic and texture properties of the product.

The packaging must not affect flavour, colour or smell whatsoever and must not contaminate the product. The packaging must be clean inside and out, and should have no noticeable signs of dirt.

The product must not be marketed in used packaging.

1.6.2 The packing material must comply with the laws and regulations in force in Israel. In their absence, it must comply with the provision concerning food packing materials of the U.S. Federal Food and Drug Administration (FDA), as published in regulation in CFR 21 or the authorizations in the FDA website \(^d\) or, alternatively, must comply with the requirements for food packing materials detailed in the European Union directives and regulations.

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\(^3\) See the list of definitions at the end of the Standard.

\(^6\) Food grade – quality suitable for using in food.

\(^7\) Including the paper layer or another layer used to separate the slices of the product

\(^d\) Website address: [http://www.cfsan.fda.gov/~dms/opq-fcn.html](http://www.cfsan.fda.gov/~dms/opq-fcn.html)

Document address: Inventory of Effective Premarket Notifications for Mood Contact Substances.