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Packaging Solutions

Casings iCel

iCel

Process Operating Manual

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1. APPLICATION

The **iCel** casing is designed for production, packaging, storage and sale of cooked sausages, cooked hams, semidry and dry sausages, and processed sausage cheeses.
See a detailed description of the **iCel** casing types in Table 1 of this Process Operating Manual.

2. ADVANTAGES

2.1. Advantages of the casing

2.1.1. The **iCel smoke-permeable** casing makes it possible to roast and smoke the products to impart to them the traditional pleasant taste and flavor of smoke, and to form the coagulated protein crust and glossy surface of the product under the casing.
2.1.2. The **high mechanical strength** of the **iCel** casing makes it possible to use high-capacity automatic and semi-automatic clippers to ensure a high production speed and stability of the shape.
2.1.3. The **high elasticity** of the casing makes it possible to fill the **iCel** casing with a 14% degree of overstuffing (except for **iCel Beef Bung Mko U**).
2.1.4. The **high oxygen barrier properties** compared with collagen and viscose-reinforced casings provide for the following advantages:
- reduction of oxidation processes, in particular, rancidification of speck;
- preservation of the individual flavor of spices in the finished products throughout the shelf life.

2.1.5. The **high heat resistance** of the polymers used in the formula of the **iCel** casing significantly extends the temperature range of utilization of this casing in comparison with cellulose casings. The casing is not only stable at high smoking temperatures (up to 75-85 °C), but also resistant to a prolonged effect of such temperatures.
2.1.6. **Microbiological resistance.** The materials used in the formula of the **iCel** casing are inert to the action of bacteria and mold fungi. This improves the hygienic characteristics of both the casing itself, and of the finished products.

3. ASSORTMENT OF PRODUCTS

The basic characteristics of the **iCel** casing types are shown in Table 1.

Table 1

Name and type of casing	Caliber of casing, mm	Description
iCel M* (EU)	30-90	Matt casing with a good permeability for molding of sausage products
iCel Mko (EU)	30-80	For ring-shaped sausage chubs, all other properties being similar to those of iCel M
iCel S* (EU)	30-90	Glossy casing with a good permeability for molding of sausage chubs
iCel Cko (EU)	30-80	For ring-shaped sausage chubs, all other properties being similar to those of iCel S
iCel Beef Bung-Mko-E	60-80	Matt casing with a good permeability for molding of sausage products and hams in a ring form, with imitation marking similar to natural beef bung

*bespoke calibers can be supplied

The **iCel** casing is produced with different degrees of adhesion, depending on the target product groups:

- casing for sliced products - 'Easy-peel';

-casing for dry sausages; the following types are recommended, depending on the sausage grade and type: 'Standard adhesion' or 'Enhanced adhesion';

-casing for cooked sausages, cooked hams and semidry sausages - 'Enhanced adhesion';

-casing for sausages produced from fatty batter - 'Super high adhesion'.

Colors of the **iCel** casing: white, clear, claret, cherry, smoke, brown, red orange, salmon, mahogany, orange, light brown, dark brown.

The color range of the casing is subject to change.

The **iCel** casing can be used for single- or double-sided printing. The number of colors varies from 1 to 6. CMYK printing is optional.

The ring-shaped **iCel** casing can be printed on the inner, the outer, or the lateral surface of the ring. The customer must specify the location of the printing in the order.

The **iCel Beef Bung Mko-E** casing is supplied with double-sided full-color printing with permeable inks, imitating beef bung pattern. The order of the pattern printing on the casing is free.

The **iCel** casing can be supplied shirred in sticks, each containing 38m, 50m, 62m of strand (25m or 31m for ring-shaped casings).

The following options can be ordered:

- printing: edge-to-edge printing;
- shirring: shirred sticks with a loop under the rear clip; bespoke length of the stick or strand.

4. CASING USE TECHNOLOGY

4.1. Storage and transportation of the casing

4.1.1. The casing must be stored in the original packing in closed dry and clean rooms conforming to the sanitary-hygienic standards for the relevant food industry sector, at a distance of no less than 1m from heaters, in the absence of strong-smelling or corrosive substances, at a temperature of no more than 35°C and relative humidity of the air no more 60%.

4.1.2. It is recommended to protect the casing at storage and during transportation against exposure to direct sunshine or high temperature.

4.1.3. Open the manufacturer's packing just before use of the casing. If the manufacturer's packing is damaged during storage, use the casing immediately, because further storage may result in drying-up and adhesion of the casing, and its rupture in the production process.

4.1.4. If the casing was stored at a temperature below 0°C, then prior to use hold it in its original packing at room temperature for no less than 24 hours.

4.1.5. Never drop the boxes with casings or subject them to impacts.

4.2. Preparation of the casing for use

The procedure for preparation of the **iCel** casing for stuffing consists in the following:

Bring the original packing to the production shop from the store, put it on a dry surface (floor, table), then open the packing immediately before processing of the casing.

The casing must be pre-soaked in potable water. Never soak the casing in hot water, otherwise the casing may shrink during the soaking.

The casing in rolls must be first cut into sections, then soaked. When the shirred sticks of the **iCel** casing are used, take care to keep the shirred stick fully submerged underwater. Water must freely penetrate inside the stick, driving out the air.

Soaking time is 1-3 minutes immediately before stuffing and moulding. Recommended water temperature is 20-25 °C.

After soaking, remove the residual water from the tube, and put the casing over the stuffer horn.

The casing has a high elasticity, which substantially facilitates the process of stuffing and provides for uniform filling of the chub along its entire length.

4.3. Preparation of the emulsion

In the production of cooked sausages, hams and semidry sausages in the **iCel** casing, the amount of moisture added to the better should be calculated individually.

For the development of new recipes according to the regulatory documentation (specifications), the amount of the added water should be determined with regard to the moisture-retaining properties of the gelling agents used (such as carrageenans, plant proteins, animal proteins, etc.), and the relevant instructions on use must be followed to avoid formation of water and fat pockets.

4.4. Molding of sausages

Molding of the **iCel** casing starts with inspection of the equipment and of the work table.

To prevent any damage to the casing, make sure that there are no burrs on the equipment parts, or sharp objects, indentations, or rough areas on the working surface of the table.

Exclude any friction of the end parts of the reel against all kinds of uneven surfaces in the process of use of the casing.

Never puncture the chubs (perforate the casing). The casing will rupture, if punctured.

An important factor is the ratio between the stuffed caliber and the nominal caliber of the casing.

The **iCel** casings should be filled with 10-12% of overstuffing. The iCel Beef Bung Mko-E should be filled with 35-45% of overstuffing.

Compliance with the recommended stuffed caliber ensures a good appearance of the finished products, increases the stuffing capacity, and reduces the risk of water and fat pockets.

To get more organic appearance of sausages in **iCel Beef Bung Mko-E** one may use coloring of either a casing or a product with natural colorants, such as: annatto, annatto + caramel color, etc.

When sausages are manually tied, the quality of the string is important. If it has solid inclusions, it's necessary to soak the string to make it softer in order to avoid rapture of the casing. When using **iCel Beef Bung Mko-E** casing, it is recommended to tie string in the way as with natural beef bung, that is with throwing upon and pulling loops in certain intervals.

The ring-shaped **iCel** casings of the types **Mko** and **Cko** can be processed on automatic and semi-automatic clippers. Such clippers must be equipped with a string feeder and a special receiver tray for the sausage rings. The string length between the sausage ends is adjusted on the string feeder.

If no string feeder is supplied with the equipment, this should not be an obstacle to the use of the ring-shaped casings. The string can be fed manually. When manual clippers are used, the string is fed into the clipper working zone from the side of the shirred stick and clipped together with the casing. When the casing is put over the stuffing horn, it must be positioned in such a way as to prevent the resulting rings twisting into the working parts of the clipper, and to guide them into the receiver tray.

The clip used must securely hold the ends of the chub, without damaging the casing (see Table 2).

Recommended clip types

Table 2

Caliber	POLY-CLIP		TECHNOPACK		COMPO	ALPINA
	Clip interval 15 interval 18	Clip series S	Clip series E	Clip series G	Clip series B	Clip interval 15 interval 18
30-65	15-7-4×1.25 15-7-5×1.5 15-7-5×1.75 18-7-5×1.5 18-7-5×1.75	524 528 625 628	210 410	175 370	B1 BP1	15-7-5×1.5 15-7-5×1.75 18-7-5×1.5 18-7-5×1.75
66-90	15-8-5×1.5 15-7-5×1.5 18-7-5×1.5 18-7-5×1.75	632	212 220 222 410	175 200 370	B2 BP2	15-8-5×1.5 15-7-5×1.75 18-7-5×1.5 18-7-5×1.75

4.5. Thermal processing

Thermal processing of all types of semidry sausages in the **iCel** casing made with the use of technologies involving smoking (smoke roasting) is performed in universal heat chambers

The manufacturers should choose their individual thermal processing modes, because the equipment capacity is all important in this process.

We recommend the classical thermal processing, which includes the stages of curing (4-12 hrs), reddening (heating of the product), drying (color formation), smoking, and cooking.

Drying should start at a temperature of 50 - 55 °C. As the drying cycle progresses, the temperature is gradually raised to 60-65 °C. At this stage coagulation of the emulsion proteins is achieved, and the 'protein crust' is formed.

The next stage is smoking at a temperature of about 70 - 75 °C. At this stage further consolidation of the crust occurs and the crust becomes colored by the smoke components.

Then the product is cooked at the air humidity of 100% and temperature of 75 - 80 °C until ready for consumption.

After completion of the cooking process, it is recommended to carry out a short drying during 5-10 minutes at the temperature of 65°C.

The process of drying and smoking significantly influences the quality of the finished product. By adjusting the temperature, the moisture content, and the duration of these stages, the thermal processing losses, the crust thickness, the color and the taste of the product can be varied.

The best thermal processing conditions are achieved when the drying, smoking, cooking, and cooling are carried out in programmable units. By way of example, let us compare the thermal processing conditions for cellulose, fibrous, and collagen casings with those for the **iCel** casing.

4.6. Cooling

Upon completion of the thermal processing, the products in the **iCel** casing must be immediately cooled. Cooling can be carried out under running water or shower, or by means of sprayers with timing devices, until the chub core temperature is down to 25 - 35 °C.

Cold air cooling is not allowed. Exclude any exposure of the finished products to air drafts until completely cooled, otherwise wrinkles on the surface may appear.

5. MANUFACTURER'S GUARANTEES

The Manufacturer guarantees conformity of the casing with the requirements of the Specifications subject to compliance with the required conditions of transportation and storage at the user's warehouse.

The shelf life of the casing is 2 years from manufacture, subject to integrity of the manufacturer's packing.

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