



ATLANTIS-PAK

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Packaging Solutions



iCel Premium Casing

Process Operating Manual



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1. APPLICATION

The **iCel Premium** casing is designed for production, packing, storage and sale of cooked sausages, cooked & smoked, semi-smoked and raw-smoked sausages, wieners, speckwurst, mini-sausages, and processed sausage cheeses.

See a detailed description of the types of **iCel Premium** casing in Table 1 of this Process Operating Manual.

2. ADVANTAGES

2.1. Casing advantages

2.1.1. The **iCel Premium 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 Premium** casing makes it possible to use high-capacity automatic and semi-automatic clippers to ensure a high production rate and stability of the shape.

2.1.3. The **high elasticity** of the casing makes it possible to fill the **iCel Premium** casing with 12% overstuffing (up to 70% overstuffing for **iCel Premium Bung**).

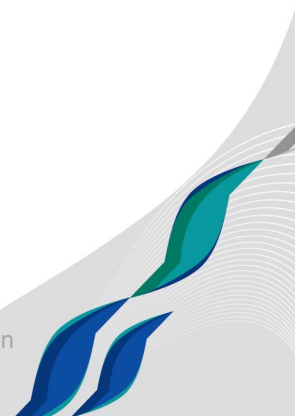
2.1.4. The **high oxygen barrier properties** compared with collagen and viscose-reinforced casings provide for the following advantages:

- reduction of oxidation processes, in particular, rancidification of speck;
- preservation of the individual flavor of spices in the finished product throughout the shelf life.

2.1.5. The **high heat resistance** of the polymers used for production of the **iCel Premium** 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 75-80 °C), but also resistant to a prolonged effect of such temperatures.

2.1.6. **Microbiological resistance.** The materials used for production of the **iCel Premium** 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.

2.1.7. **Spiral peeling** makes it easy to remove the casing from the product.



3. ASSORTMENT OF PRODUCTS

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

Table 1

Casing description and type	Casing caliber, mm	Description
iCel Premium	35,37,38,40,42,45,47,48,50,52,55,57,60,62,65,67,70,80,85,90	Glossy casing with a good permeability for molding of sausage chubs
iCel Premium-Ko	32,35,40,42	For ring-shaped sausages, all other properties being similar to those of iCel Premium
iCel Premium-Beef Bung	50,55,60,70	For moulded smoked products, overstuffing up to 70%
iCel Premium-Light	35,37,38,40,42,45,47,48,50,52,55,57,60,62,65,67,70,80,85,90	iCel Premium casing version with a lower adhesion
iCel Premium-Light-Ko	32,35,40,42	For ring-shaped sausages, all other properties being similar to those of iCel Premium-Light

*casing of bespoke calibers can be supplied

Colors of the **iCel Premium** casing: clear, smoke, light smoke, mahogany.

The color range of the casing is subject to change.

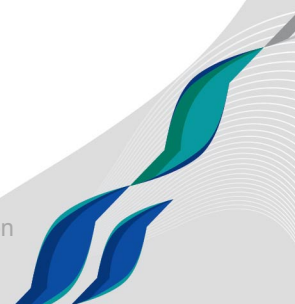
The **iCel Premium** casing can be used for single- or double-side printing. The number of the colors is from 1 to 6.

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

The **iCel Premium** casing can be supplied shirred in sticks each containing 38m or 31m (for ring-shaped casings).

Orders for the following options can be satisfied:

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



4. CASING USE TECHNOLOGY

4.1. Storage and transportation of 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 not less than 800mm from heaters, in the absence of strong-smelling or corrosive substances, at a temperature from 5 °C to 35 °C and relative humidity of not more than 80%.

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.

4.1.4. If the casing was stored at a temperature below zero, then prior to use hold it in its original packing at room temperature for not 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 Premium** casing for stuffing consists in the following:

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

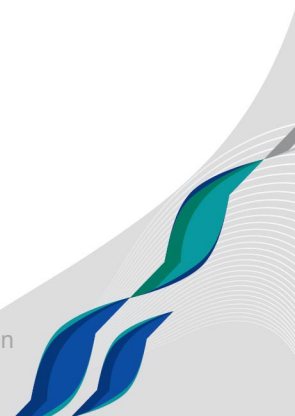
The casing must be pre-soaked in potable water. Never soak the casing in hot water, otherwise the casing may shrink during the soaking.

The casing in rolls must be first cut into sections, then soaked. When the shirred sticks of the **iCel Premium** 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 stuffing

In the production of cooked sausages and hams, semi-smoked and cooked & smoked sausages in the **iCel Premium** casing, the amount of moisture added to the stuffing is the same as that used in the case of cellulose, collagen or viscose-reinforced casings.

In 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 sausage products

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

To prevent any damage of 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 roll against various 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 stuffing caliber and the nominal caliber of the casing.

The **iCel Premium** casings should be filled with the following degree of overstuffing:

- 5-7% at the emulsion temperatures below 0 °C,

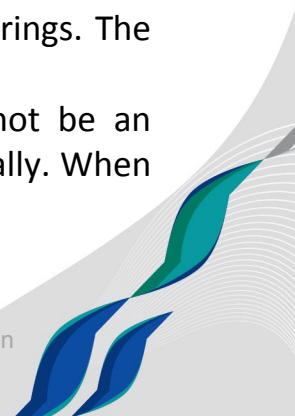
- 10-12% at the emulsion temperatures above 0 °C.

The **iCel Premium-Beef Bung** casing should be stuffed with 40-70 % overstuffing.

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

The ring-shaped **iCel Premium-Ko** and **iCel Premium-Light-Ko** casings 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 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	524	210	175	B1	15-7-5×1.5
	15-7-5×1.5	528	410	370	BP1	15-7-5×1.75
	15-7-5×1.75	625				18-7-5×1.5
	18-7-5×1.5	628				18-7-5×1.75
	18-7-5×1.75					
66-90	15-8-5×1.5	632	212	175	B2	15-8-5×1.5
	15-7-5×1.5		220	200	BP2	15-7-5×1.75
	18-7-5×1.5		222	370		18-7-5×1.5
	18-7-5×1.75		410			18-7-5×1.75

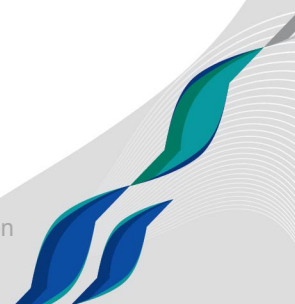
4.5. Thermal processing

Thermal processing of all types of semi-smoked and cooked-and-smoked sausages in the **iCel Premium** casing made to 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 hours), reddening (heating of the product), drying (color formation), smoking, and cooking.

Heating 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 under the effect of 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 also 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, moisture content, and duration of these stages, the heat 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.

4.6. Maturing of sausages

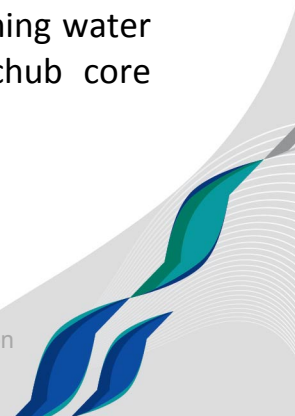
In the production of raw smoked and cured sausages, the stuffed products are subjected to smoking and maturing in accordance with the applicable production specifications.

During the production of this type of sausages, the heavier fractions of smoke may accumulate on the sausage surface. The peculiar casing structure prevents penetration of these through the casing, and they remain on the surface. When condensate is formed on the sausage surface, these substances interact with moisture to bring about the so-called sticking effect. This effect completely disappears as the drying process continues and the sausages mature.

This effect is partially due to dwelling of substances containing polycyclic aromatic hydrocarbons (PAHs) of the surface of iCel Premium casings. This phenomenon has been examined in detail in the study of The Gorbatov's All-Russian Meat Research Institute (VNIIMP) concerned with comparative analysis of quality of sausages packaged in different types of casing (including comparative carcinogenicity of sausages in different types of casing).

4.7 Cooling

Upon completion of the thermal processing, the products in the **iCel Premium** 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 guaranteed term of storage of the casing is 2 years from manufacture, subject to integrity of the manufacturer's packing.

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