



ATLANTIS-PAK

Leader In Innovative
Packaging Solutions

CASINGS 

AMISMOK

Process Operating Manual



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1. APPLICATION

The **AMISMOK** casing is designed for production of all kinds of semi-smoked sausages, cooked-and-smoked sausages, wieners, hot dogs, and processed cheeses made by technological processes that involve smoking (smoke roasting).

The **AMISMOK** casing has a medium permeability to water vapor, gases and process smoke.

The **AMISMOK®** casing is made from blends of high-quality synthetic and natural materials.

The **AMISMOK®** casing is supplied straight or curved, which makes it possible to expand the assortment of the products by diversification of the appearance of the sausages: rings, half-rings, links.

See Table 1 below for a detailed description of the AMISMOK casing types.

* the data relating to the curved versions refer to the outer ring side

2. ADVANTAGES OF PRODUCTS

2.1.1. The **smoke-permeable AMISMOK** casing makes it possible to roast and smoke products to impart to them the characteristic pleasant taste and flavor, and to create the coagulated protein crust and glossy surface of the products under the casing.

2.1.2. The **high mechanical strength** of the **AMISMOK** casing makes it possible to use not only manual tying, but also high-capacity automatic and semi-automatic clippers, which provides for a high rate of production, and stability of the shape.

2.1.3. The **high elasticity** of the casing makes it possible to overfill the **AMISMOK** casing by 10-12%.

2.1.4. The **high oxygen barrier capacity** compared to collagen and viscose-reinforced casings ensures the following advantageous properties:

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



2.1.5. With its **low permeability to water vapor** the **AMISMOK** casing is an economic alternative to collagen and viscose-reinforced casings, because moisture losses are reduced during the thermal processing and storage (it has been proven in practice that the thermal processing losses for products in the **AMISMOK** casing are 1.5 times lower). The water vapor transmission rate of the **AMISMOK** casing is 1.5 times less than that of collagen and viscose-reinforced casings, which makes it possible to

- achieve the desired degree of smoking of sausage products with characteristic taste and flavor, and the coagulated protein crust on the surface;
- reduce the moisture losses during the thermal processing and storage of sausage products in the **AMISMOK** casing.

2.1.6. High heat resistance of the polymers is the composition of the **AMISMOK** casing significantly extends the temperature range of use of this casing in comparison with collagen and viscose-reinforced casings. The casing is resistant not only to high temperatures of smoking (up to 75-80 °C), but also to prolonged exposure to heat.

2.1.7. Microbiological resistance. The polymers used for production of the **AMISMOK** casing are impervious to bacteria and mold fungi. This improves the hygienic characteristics of both the casing itself, and of the finished product.

3. ASSORTMENT OF PRODUCTS

Table 1 contains the basic characteristics of the **AMISMOK** casing.

Table 1

Casing name and type	Length in reel, m	Casing caliber, mm	Characteristics
AMISMOK A	1000	29-90	Casing with good permeability, intended for molding of sausage products
AMISMOK Ako	300-1500	29-51	Intended for production of curved sausage chubs; in other respects



			similar to Amismok A
AMISMOK C	1000	29-90	Minimum adhesion to emulsion, improved permeability
AMISMOK Cko	300-1500	29-51	For production of curved sausage chubs; in other respects similar to Amismok C
AMISMOK Sm	1000	29-90	Matte casing with improved permeability
AMISMOK Smko	300-1500	29-51	For production of curved sausage chubs; in other respects similar to Amismok Cm
AMISMOK KS*	1000	29-90	Intended for smoked processed cheeses

* Recommendations on the use of the Amismok type KC permeable casing for cheese-making are presented separately.

Colors of the **AMISMOK** casings:

Table 2

Amismok A, Ako	Amismok C, Cko	Amismok Cm, Cmko	Amismok KC
White	Clear	Clear	Clear
Clear	Claret	Claret	Claret
Claret	Cherry	Cherry	Smoke
Cherry	Smoke	Smoke	Brown
Smoke	Brown	Brown	Cream
Brown	Red	Red orange	Salmon
Red orange	Red orange	Salmon	Orange
Red	Salmon	Mahogany	Light smoke
Salmon	Mahogany	Orange	Light brown
Mahogany	Orange	Light smoke	Light brown 1
Orange	Light smoke	Light brown	Dark brown
Light brown 1	Light brown	Dark brown	
Light smoke	Light brown 1		
Dark brown	Dark brown		

The color range is subject to change.

Single- or double-side printing is possible on the **AMISMOK** casing. The number of print colors varies from 1 to 6. CMYK printing is optional.

In the case of the curved casings, printing can be applied on the outer surface of the ring. Bespoke markings, such as printing on the lateral or the inner surface of the ring, and the exact location must be specified in the purchase order.

The inner ring diameter **d** of sausage chubs may be as shown below, depending on the degree of overfilling of the casing relative to the nominal caliber (Table 3):

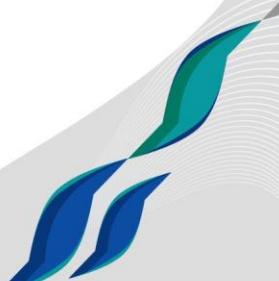


Table 3

Casing type	Casing caliber, mm	Sausage chub ring diameter, mm
Ako, Smko	29- 40	75-95 (90-120)
	41-51	90-120
Cko	29-51	90-120

The **AMISMOK** casing is supplied in reels or shirred, each stick containing 38m or 50m of casing.

Special services can be ordered:

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

4. HOW TO USE THE CASING

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 sector of the food industry, at a distance of not less than 1m from heating devices, and in the absence of any strong-smelling or corrosive substances, at a temperature not exceeding 25 °C.

4.1.2 During storage and transportation, the casing should not be exposed to direct sunlight or high temperature.

4.1.3 Open the manufacturer's packing just before processing of the casing. Open only so many packings as will be fully consumed during the operating cycle. If the integrity of the manufacturer's packing is compromised during storage, exclude any possibility of premature humidification (wetting) of the casing during the subsequent storage, since it may cause adhesion of the casing in the process of drying and rupture during the processing.

4.1.4 If the casing was transported or stored at a temperature below zero, then prior to use hold it at room temperature for not less than 24 hours .

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

4.1.6 Never stack casing reels without cardboard spacers between the reel ends.



4.2. Preparation of the casing for processing

Preparation of the **AMISMOK** casing for processing consists in the following:

Bring the casing to the production shop from the store room, put it on a dry surface (floor, table), then open the manufacturer's packing immediately before use of the casing.

Soak in potable water. Do not soak the casing in hot water, otherwise it will shrink during the soaking process.

Reel casing must be first cut into lengths, then soaked. When sticks of shirred **AMISMOK** casing are used, keep the stick fully submerged in water. Water must freely penetrate inside the stick, driving out the air.

Requirement for pre-soaking depends on the casing type:

- opaque casing (**AMISMOK Sm, AMISMOK Smko**) is used without pre-soaking;
- non-opaque casing (**AMISMOK A, AMISMOK Ako, AMISMOK** type C, **AMISMOK Cko**) requires pre-soaking.

Soak for not more than 1-2 minutes ***immediately before stuffing and forming.***

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

Do not soak more casing than is required. If too much casing was soaked, take the leftover casing out, drain the excess water, and leave until the eventual processing in a cold room (shop) away from any sources of heat and air draughts. Wet the casing prior to reuse.

If these requirements are observed, the casing will acquire a high elasticity, which significantly facilitates the stuffing process, and provides for uniform filling through the entire length of the chub.

4.3. forcemeat composition

For production of semi-smoked sausages, cooked-and-smoked sausages, wieners and hot dogs in the **AMISMOK** casing, the quantity of the moisture added to the emulsion should be the same as in the case of cellulose, collagen or viscose-reinforced casings.

When new recipes are developed according to the standard 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. Forming of sausages

Forming of the **AMISMOK** casing starts with inspection of the equipment and of the work table.

Make sure there are no burrs on the equipment parts, or sharp objects, indentations, or rough places on the working surface of the table, in order to avoid damages to the casing.

Avoid any rubbing of the casing reel end against rough surfaces during the processing.

Never prick (puncture) the casing of frankfurters and wieners. The casing will burst, if punctured.

The ratio between the stuffed caliber and the nominal caliber of the casing is an important factor. In the process of forming of the sausage products, take care to fill the casing as tight as possible, without air trapped inside. It is recommended to stuff the **AMISMOK** casing with 10 – 12 % overfilling (when the 45mm nominal caliber casing is used, the recommended stuffed caliber should be 49.5 – 50.5mm, depending on the emulsion consistency and temperature, and the stuffing pressure). The lower the emulsion temperature and the denser the consistency, the less should be the stuffed caliber.

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

In case of manual tying of sausage chubs, pay special attention to the quality of the tying material, and pre-soak the string, whenever necessary, to soften the hard inclusions and prevent damage to the casing.

Automatic or semiautomatic clippers can be used for processing of the curved casing (**AMISMOK** type **Ako**, **AMISMOK** type **Cko** and **AMISMOK** type **Smko**). These must be fitted with string feeders and special receiver trays for the sausage rings. The string length between the ends of the sausages is adjusted by means of the string feeder.

However, if no string feeder is supplied with the equipment, this should not be an obstacle to the use of the curved 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 must securely hold the ends of the chub, without damaging the casing. (see Table 4).

Table 4

Recommended clip types	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
29-65	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 semi-smoked or cooked-and-smoked sausages in the **AMISMOK** casing made by technological processes that involve smoking (smoke roasting) is performed in shaft-type and universal heat chambers.

Manufacturers should choose their own individual thermal processing modes, because the capacity of the equipment is all-important in this process.

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

Drying should start at a temperature of 55 – 60 °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 a 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 processes of drying and smoking have a significant impact on the quality of the finished product. By adjusting the temperature and 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.

The universal heat chambers provide for easy control of all process parameters: humidity, smoke intensity, and temperature, with standard-quality smoke.

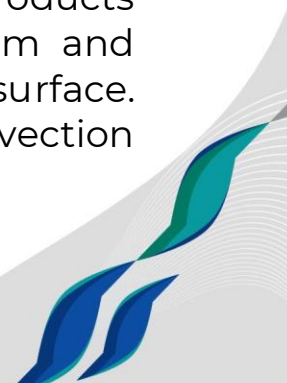
Smoking in the universal heat chambers can be achieved by means of:

- smoke and air mixture (convection smoking);
- steam and smoke mixture, when the steam is heated to the desired temperature and passed through wet sawdust;
- spraying with liquid smoke.

All these methods can yield good results. However, the latest studies have shown that the smoke produced by smoldering sawdust greatly varies in its qualitative composition, depending on the smoke generation temperature and the stack draft, which in its turn depends on the atmospheric conditions, and on the temperature and humidity of the inlet air.

At present it is believed that steam smoking or spraying with liquid smoke is better than convection smoking, for a number of reasons:

- first, such smoking ensures a stable composition of the smoke, and reduced content of harmful substances, such as benzpyrenes;
- second, the way that the smoking substances penetrate the surface of the casing (dissolved) is more effective than during convection smoking. Meat products have a lower temperature than the mixture of steam and smoke, which rapidly condensates on the product surface. The speed of smoking is higher than in the case of convection



smoking. The required flavor and surface color can be achieved faster.

The following examples describe the thermal processing conditions for the **AMISMOK** casing:

Example 1 (see Table 5). Two-frame Vemag chamber (combined convection and steam smoking), beech chips.

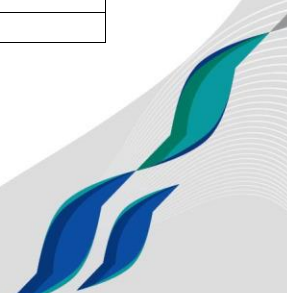
Table 5

Process stage	Thermal processing mode		
	1	2	3
Heating	50 °C – 20 min.	Fresh air supply damper and exhaust damper are open, ventilation exhaust is on, fan speed is low	
Drying	60 °C – 30 min.	Fresh air supply damper and exhaust damper are open, ventilation exhaust is on, fan speed is low, smoke generator is glowing	
Smoking	70 °C – 30 min.	Exhaust damper is open, fan speed is low, smoke intensity is maximal	
Cooking	80 °C to 72 °C in the chub core	Smoke supply continues, fan speed is low, smoke intensity is maximal	
Drying	75 °C – 10 min.	Fresh air supply damper and exhaust damper are open, fan speed is high	
Thermal processing losses	5 - 8%		
Total time	1 hr 55 min.		

Example 2 (see Table 6). Four-frame Kerres chamber. Red Arrow atomizer.

Table 6

Process stage	Thermal processing mode	
	Temperature, °C	Time, min.
Heating	55	15
Drying	65	20
Smoking	65	Smoke supply 13 Mixing 2
Drying	65	10
Smoking	70	Smoke supply 13 Mixing 2
Drying	70	10
Cooking	78	to 72 °C in the chub core
Drying	70	10
Smoking	70	Smoke supply 13 Mixing 2
Drying	50	5
Thermal processing losses	6-7 %	
Total time	2 hrs 05 min.	



4.6. Cooling

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

Avoid any cold air cooling. Exclude any exposure of the finished products to air draughts until completely cooled, because this may cause wrinkles on the surface.

4.7. Transportation and storage of products

Transportation and storage of products made with the use of the **AMISMOK** casing shall be in accordance with the relevant regulatory documents.

5. MANUFACTURER'S GUARANTEES

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

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



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