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Casings



AMITEX KOMPLEKT

Process Operating Manual



1. APPLICATION

The present Process Operating Manual describes the process of production of cooked sausage and ham products, and also spreads and liver sausages with the use of the **AMITEX Komplekt** casings.

AMITEX Komplekt is a multilayer casing made of polyamide, polyolefin, and an adhesive (modified polyethylene) permitted for use in the food industry.

The **AMITEX Komplekt** casing is intended for production, transportation, storage and sale of:

- traditional cooked sausage and ham products;
- blood and liver sausages, and spreads;
- souse, aspic, and jellied products;
- processed cheeses;
- animal cooking fats, margarines, sour milk products (cream, country cheese);
- frozen products (sausage and meat batter, ice-cream, dough);
- other food products.

The **AMITEX Komplekt** casing is intended for retail sale of products in the form of chubs.

The recommended shelf life of cooked sausages in the **AMIFLEX T**, **AMIFLEX Ts** and **AMIFLEX M** casings is up to 60 days at a storage temperature from 0 to 6 °C and air relative humidity not more than 75%.

2. ADVANTAGES

2.1. Casing advantages

2.1. Mechanical strength of the casing makes it possible to mold the chubs with the use of high-capacity automatic or semi-automatic clippers to ensure stability of the shape and fixed weight of the chubs at high rates of molding.

2.2. Elasticity of the casing in combination with its heat shrinkage capacity provides for a smooth surface of the chubs.

2.3. Low permeability to oxygen and water vapor is ensured by a carefully selected combination of polymers, which provides for the following advantageous properties of the **AMITEX Komplekt** casing:

- zero losses during the thermal processing and storage of meat and sausage products;



- microbiological stability of the products during storage;
- retardation of the oxidation processes leading to rancidification of fats and changes in the natural color of the meat product;
- excellent selling appearance (no wrinkles) of the finished products throughout the shelf life.

2.4. Physiological safety: the **AMITEX Komplekt** casing is impervious to microbiological degradation, because the materials used for their production are inert to the action of bacteria and mold fungi. This facilitates storage of the casing and improves the hygienic characteristics of both the casing itself, and of the sausage production.

3. ASSORTMENT OF PRODUCTS

Casing calibers, mm: 40 – 90 mm

Colors of the **AMITEX Komplekt** casing: according to the Color Catalogue.

The **AMITEX Komplekt** casing can be used for single- or double-sided printing in a single color, multicolor or full color, with the use of UV-hardened inks or volatile solvents-based inks.

The casing can be supplied in:

- rolls;
- shirred sticks;
- R2U shirred sticks (ready-to-use casing).

4. CASING USE TECHNOLOGY

4.1. Storage and transportation of casing

4.1.1. The casing must be stored in the original packing in dry, clean, and cool rooms (at a temperature from 5 to 35°C and air relative humidity not more than 80%) conforming to the sanitary-hygienic standards for the meat processing industry.

4.1.2. It is recommended to open the manufacturer's packing just immediately before use of the casing.

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

4.1.4. If the casing was stored at a temperature below 0°C, 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. The casing must not be damaged throughout the technological cycle.

4.1.7. The casing must be transported at temperatures no higher than 40°C and not be subjected to direct sunlight.

4.2. Preparation of the casing for use

To impart elasticity to the casing and provide for uniform stuffing of **AMITEX Komplekt** the casing must be soaked in potable water at a temperature of 20 – 25 °C.

Water must penetrate the tube and wet both the outer and the inner surface of the casing.

Unshirred casings must be cut into sections of required length before soaking. Keep the spool vertical throughout the unwinding to avoid damaging the ends.

Soak shirred casings without removing the net.

Casing soaking time is not less than 60 minutes for shirred casings.

If too much casing was soaked, remove it from water, drain the excessive water and leave the wet casing away from any sources of heat or air draft. On the next day, soak the casing again before processing.

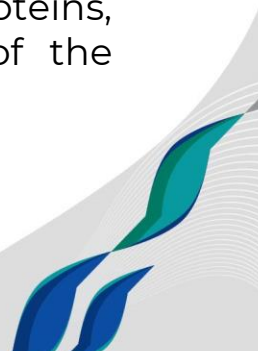
Never soak the casing in hot water, because this may start a process of uncontrolled longitudinal and transverse shrinkage leading to reduction of the length and caliber of the casing.

The R2U (ready-to-use) casing does not require pre-soaking and may be processed immediately. The opened manufacturer's packing must be tightly closed to preserve the properties of the casing.

4.3. Preparation of the stuffing

During thermal processing the sausage batter inside the **AMITEX Komplekt** casing does not lose moisture, therefore the calculation of the amount of water added to the batter at the stage of cutting shall be made on the basis of the moisture resistance properties of the casing.

In the development of new recipes, determine the quantity of the added moisture with regard to the moisture-retaining properties of the additives (emulsifiers, stabilizers, gelling agents, plant proteins, etc.), the raw meat quality, and the technical condition of the



equipment, paying special attention to optimal binding of proteins, fats, and water.

All technological measures aimed at increased binding of water (raising of the yield) lead to raising of the pressure in the batter during the thermal processing. Batter with an elevated percentage of meat substitutes tends to swell more. In order to preserve the ability of the batter to bind significant amounts of water and to prevent rupture of the casing during the thermal processing, it is recommended to introduce all water-binding additives into the cutter not in a dry form, but in the form of jellies or emulsions.

The batter for hams, spreads, and liver sausages must be prepared in accordance with the regulatory documentation applicable to these products.

4.4. Molding of sausage products

The **AMITEX Komplekt** casing is designed for stuffing and clipping on automatic or semi-automatic equipment, but they can also be manually tied.

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

To provide for a good appearance of the finished products, increased holding capacity of the casing, and reduction of the risk of water and fat pockets, the **AMITEX Komplekt** casing should be filled with sausage emulsion with 10% overstuffing.

During the molding it should be borne in mind that the difference between the nominal caliber of the casing and the stuffed caliber depends not only on the properties of the casing, but also on the emulsion consistence and temperature, the stuffing pressure, and the conditions of cooling after thermal processing. Thus, if the emulsion has a good binding or swelling capacity, it is recommended to reduce the casing overstuffing relative to the nominal caliber to avoid rupture of the casing during thermal processing.

If spreads are made by the hot method, when the emulsion is liquid and its temperature exceeds 40°C, the overstuffing relative to the nominal caliber should be increased to 15 – 18%.

When using shirred casings, make sure that the stuffing horn diameter is appropriate for the inner diameter of the shirred stick: the stick must freely fit the stuffing horn, and the difference between the inner diameter of the stick and the outer diameter of the horn

must be as small as possible to mitigate any structural changes in the batter matrix.

Table 1

Diameter of the casing	Diameter of the shirring tube, mm	Recommended outer diameter of the stuffing horn, mm
40 - 44	28	22, 24
45 - 53	32	24, 28
54 - 69	40	28, 36
70 - 79	52	36, 48
80 - 87	61	48
88 - 90	71	60

The clip must securely hold the ends of the chub, without damaging the casing. Observe the recommendations of the clipping equipment manufacturer to ensure tightness of clipping. See the recommendations on selection of the clips for the **AMITEX Komplekt** casing in Table 2.

Recommended clip types

Table 2

Gauge	POLY-CLIP		ALPINA	TECHNOPACK		COMPO	CORUND
	Clip interval 12 interval 15 interval 18	Clip series S	Clip interval 12 interval 15 interval 18	Clip series E	Clip series G	Clip series B, BP	Clip
40-50	15-7-5×1.5 18-7-5×1.75	625 628 735	15/7-5×1.5 18/7-5×1.75	210 410	175	B 1, BP 2	XE210 2,5×13,6×14
55 – 60	15-7-5×1.5 15-8-5×1.75 18-7-5×1.75	628 632 735	15/7-5×1.5 15/8-5×1.75 18/7-5×1.75	210 410	175 370	B 2, BP 2	XE 210 XE 220 2,5×13,6×14
65-70	15-8-5×1.5 18-7-5×1.5 18-9-5×2.0	628 632 735	15/8-5×1.5 18/7-5×1.5 18/9-5×2.0	210 220 410	175 370	B 2, BP 2	XE 220 2,5×13,6×14 2,5×13,6×15
75-80	15-8-5×1.5 15-9-5×1.5 18-9-5×2.0	632 638 735 844	15/8-5×1.5 15/9-5×1.5 18/9-5×2.0	220 410 420	175 200 370	B 2, BP 2 B 3, BP 3	XE 220 2,5×13,6×15 2,5×13,6×16
85-90	15-9-5×1.5 15-10-5×2.0 18-9-5×2.0 18-10-5×2.5	740 844	15/9-5×1.5 15/10-5×2.0 18/9-5×2.0 18/10-5×2.5	220 420	200 370 390	-	XE 220 2,5×13,6×15 2,5×13,6×16



Note: The Poly-Clip FCA 3430, 3430-18, 3441, 3461, 3462, 3463, ICA 8700, and ALPINA Swipper 15/18, 12/15 clippers use blocks, each of which corresponds to a certain clip type indicated in the Table. In order to determine whether the clip matches the block, see recommendations of the manufacturer and the technical description of the clipper.

4.5. Thermal processing

Thermal processing of sausages in the **AMITEX Komplekt** casing consists in cooking and cooling. The stages of drying and roasting can be excluded from the technological process.

Thermal processing of sausages can be made in heat chambers of different types, and in stationary cauldrons.

4.5.1. Cooking

For the purposes of thermal processing in heat chambers, it is recommended to use either staged cooking, or delta cooking. In either case, cooking should start at a temperature of 50-55°C to trigger the coloring reactions. Higher starting temperatures may cause separation of the emulsion and color defects (grey rings).

Staged cooking consists in step-by-step raising of the temperature in the heat chamber, as the temperature in the center of the product reaches the temperature of the heating medium. The number of 'stages' is determined by the product diameter– the greater the caliber, the greater is the number of the stages. The first stages consist in heating at moderate temperatures – 50, 60, 70 °C to ensure slow coagulation of proteins and redistribution of heat throughout the volume. The last stage is bringing of the product to consumption readiness (72 °C in the chub core, during 10 - 15 minutes).

Delta cooking creates more favorable conditions for uniform heating of sausages. The difference between the chamber temperature and the product temperature at the beginning of the process is 15 – 20 °C, reducing to 5 - 8 °C by the end of the process. Delta cooking in production conditions requires a longer heating, but yields higher quality products. The duration of cooking depends on the consumption readiness point of the product (72 °C in the chub core, during 10 - 15 minutes).



The following is an example of thermal processing for 60mm caliber sausage chubs:

- 55°C in heat chamber at 100% humidity - 15 minutes.
- 65°C in heat chamber at 100% humidity - 15 minutes.
- 75°C in heat chamber at 100% humidity - 25 minutes, or until 60°C in chub core is reached.
- 80°C in heat chamber at 100% humidity, until 72°C in chub core is reached.

For cooking in cauldrons it is recommended to:

- load the chubs in the water at a temperature of 55 – 60 °C, in order to prevent the uncontrollable shrinkage and deformation of the chubs;
- keep the sausages underwater, and move them for uniform cooking;
- before loading of each new batch of sausages, reduce the water temperature in the cauldron to 60°C.

4.5.2. Cooling

Upon completion of the cooking process, the sausages must be immediately cooled. The first stage of cooling is spraying with cold water (time-delayed sprayers may be used) to bring the chub center temperature down to 25 - 35° C. After spraying, the sausage must be air-dried before putting it into a cold store.

Cold air cooling is undesirable. Exclude any exposure of the finished products to air drafts until complete cooling of sausages, because this may cause wrinkles on the surface.

4.6. Maturing of sausages

Transportation and storage of sausage products manufactured with the use of the **AMITEX Komplekt** casing shall be in accordance with the regulatory documentation for these products.

5. MANUFACTURER'S GUARANTEES

5.1. 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, and preservation of the integrity of the original packing.

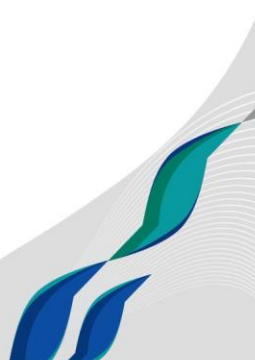


5.2. The shelf life of the casing without UV-printing is 3 years from manufacture subject to compliance with the required conditions of transportation and storage at the user's warehouse, and preservation of the integrity of the original packing.

5.3. The shelf life of the R2U casing is 6 months from manufacture, subject to compliance with these specifications.

6. APPENDICES

6.1. No appendices in this document.





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