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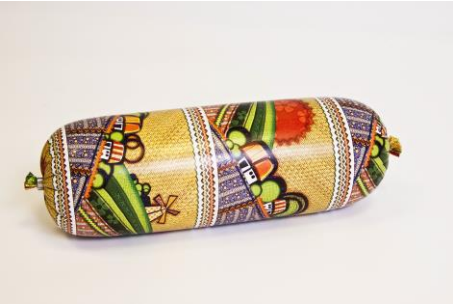
Casings AMITEX

AMITEX Express

Process Operating Manual



1. APPLICATION

The present Process Operating Manual describes the process of production of cooked sausages with the use of the **AMITEX Express** casing**.**

The distinctive feature of the **AMITEX Express** casing is that ***it can be processed without overstuffing or soaking.***

AMITEX Express is a glossy multilayer casing made of polyamide, polyolefin, and an adhesive (modified polyethylene) permitted for use in the food industry. The quality of the raw materials used to manufacture the casing is confirmed by Russian and international quality certificates.

The **AMITEX Express** can be used for production, transportation, storage and sale of:

- cooked sausage and ham products;
- blood and liver sausages, and spreads;
- souse, aspic, and jellied products;
- animal cooking fats;
- frozen products (minced sausage and meat);
- other food products.

The recommended shelf life for cooked sausages made in the **AMITEX Express** casing is 60 days at a storage temperature from 0 to 6°C, and relative humidity of the air not more than 75%.

The recommended shelf life for liver sausages made in the **AMITEX Express** casing is 15 days from the end of the technological process at a storage temperature of 4±2°C.

The recommended shelf life for spreads made in the **AMITEX Express** casing is 30 days at a storage temperature from 2 to 6°C, and relative humidity of the air 75-80%.

2. PROPERTIES AND ADVANTAGES

AMITEX Express is a multilayer barrier casing and, therefore, has all properties of such casings, the most important of which are the following:

- mechanical strength, which makes it possible to mold chubs with the use of high-capacity automatic and semi-automatic clippers to ensure stability of the shape and fixed weight of the chubs at high rates of molding.

- heat-shrinkage, which provides for no wrinkles on the finished sausage products.
- low permeability to oxygen and water vapor, which is ensured by a carefully selected combination of polymers, and provides for the following advantageous properties of the **AMITEX Express** 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.
- physiological safety due to the fact that the **AMITEX Express** casing is impervious to microbiological degradation, because the materials used for its production are inert to the action of bacteria and mold fungi.
Besides, in contrast to other barrier casings, **AMITEX Express** can be used:
- ***in dry condition***, that is, without soaking (or pre-wetting);
- ***without overstuffing***, that is, molding is made 'caliber-to-caliber'.
Use of **AMITEX Express** without soaking or pre-wetting:
- has a positive effect on storage of the casing, because it excludes overdrying or formation of molds on the casing;
- saves time for preparation of the casing (no need to monitor the water temperature or wet the inside of the tube, etc.);
- reduces the production area requirements;
- facilitates the storage of the casing left over after the end of the day;
- makes **AMITEX Express** virtually sterile.

Molding of **AMITEX Express** without overstuffing:

- provides for a stable quality of marking, because the marking will not stretch or distort, and looks brighter than on the other casings;
- provides for a stable size and weight of sausage chubs;
- reduces the risk of ruptures and runs when the chub is sliced;
- makes it possible to mold sausages with the use of any molding equipment;
- reduces the load on the molding equipment and its wear, because the caliber-to-caliber molding eliminates the need for high pressure on the casing using a single brake ring, or the use of two brake rings, or a high clipping force.

At the same time, **AMITEX Express** can be processed by the traditional method: with pre-soaking and overstuffing relative to the nominal caliber.

3. ASSORTMENT OF THE PRODUCTS

AMITEX Express is supplied in the following calibers: 45 – 120mm.

Casing colors: according to the Color Catalogue.

AMITEX Express can be used for single- or double-sided marking in a single color, multicolor or CMYK printing with the use of UV-hardened inks or volatile solvents-based inks.

Printing is made by the flexographic method; the inks are resistant to boiling, fats, and mechanical damage.

The casing can be supplied in:

- rolls;
- shirred sticks.

4. CASING USE TECHNOLOGY

4.1. Storage and transportation of the casing

4.1.1 The casing must be stored in its original packing in dry and clean rooms (at a temperature 5-35 °C, and air relative humidity no more than 80%) complying with the sanitary and hygienic standards applicable to the meat processing industry.

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

4.1.3 During storage and transportation, the casing should not be exposed to high temperatures (above 40 °C) or direct sunlight.

4.1.4 If the casing was stored at a temperature below 0°C, then prior to use keep it at room temperature during at least 24 hours in the manufacturer's packing.

4.1.5 Never drop the cases containing the casing or subject them to impacts.

4.1.6 The casing must not be damaged throughout the technological cycle. Especially dangerous is friction against burrs, uneven or rough surfaces, etc.

4.1.7 Transportation of the shell should be carried out at temperatures not exceeding +40 ° C, direct sunlight is not allowed.

4.2. Preparation of the casing for use

The preparation method depends on the desired overstuffing relative to the nominal caliber, and on the casing supply form (see Table 1).

Table 1

Type of AMITEX Express casing used	**Desired overstuffing at molding**	
	Stuffed caliber 1 – 2mm greater than the nominal caliber	5 – 8% overstuffing relative to the nominal caliber
Shirred sticks	***No soaking is needed***	***Soaking with wetting of the tube inside***
Rolls (25 – 30m length of casing)	***Wetting of casing surface***	***Soaking with wetting of the tube inside***
Lengths with fixed end	***No soaking is needed***	***Soaking with wetting of the tube inside***

AMITEX Express must be soaked in potable water with a temperature of 20-25 °C.

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 (with wetting of the tube inside):

- not less than 40 minutes for casings cut into lengths;
- not less than 60 minutes for shirred casings.

The casing surface is wetted by either submerging the casing in water for a few seconds, or by spraying the casing on the stuffing horn with water.

4.3. Composition of the emulsion

In the process of thermal processing, the sausage batter inside the **AMITEX Express** 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.

When sausages are made, it is recommended to reduce the added moisture by 10% of the batter weight, on the average, as compared with the recipes for the natural, collagen, and viscose-reinforced casings.

For 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. This must be taken into account. In order to preserve the batter's ability to bind significant amounts of water and to prevent rupture of the casing during the thermal processing, it is recommended to introduce all additives into the cutter not in a dry form, but in the form of jellies or emulsions.

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

4.4. Molding of sausages

AMITEX Express is intended for use on automatic or semi-automatic filling and clipping equipment.

Sausage products should be molded in compliance with the following rules:

1. Caliber-to-caliber molding, or molding with 1 – 2mm greater than the nominal caliber is possible when the brake ring pressure on the casing is reduced.

Under such conditions of stuffing, the molded sausage chubs will be soft, and the chub ends will be wrinkled. However, after the thermal processing the shrunk casing will be tight on the product, and the chubs will acquire the correct cylindrical shape.

2. In order to raise the stuffing capacity, the **AMITEX Express** casing can be overstuffed by 5–8% relative to the nominal caliber, after soaking of the casing. The stuffed caliber can be varied by adjustment of the brake ring pressure force. 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.

3. Never puncture the chubs (perforate the casing).

4. 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 4 - 5 %.

5. 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 **AMITEX Express** in Table 1.

Table 1

Recommended clip types for **AMITEX Express** casings

Caliber	POLY-CLIP		TIPPER TIR	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 Clippers KH21-K2, KH24, KH31, KH32	Clip series B, BP, C Clippers KH26	
45-50	12-6-4×1.25 15-7-5×1.5 18-7-5×1.75 15-8-5×1.75	625 628 735	12/6-4×1.25 15/7-5×1.5 18/7-5×1.75 15/8-5×1.75	210 410	175	B 1, BP 2 B 2, BP 2	C1 B 1, BP 2 B 2, BP 2	XE210 2.5x13.6x14 2.5x13.6x15
55 - 60	15-7-5×1.5 15-8-5×1.75 18-7-5×1.75 18-9-5×2.0	628 632 735	15/7-5×1.5 15/8-5×1.75 18/7-5×1.75 18/9-5×2.0	210 410	175 200 370	B 2, BP 2	C1, C2 B 2, BP 2	XE 210 XE 220 2.5x13.6x14 2.5x13.6x15
65-75	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	175 200 370	B 2, BP 2	C1, C2 B 2, BP 2	XE 220 2.5x13.6x14 2.5x13.6x15
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	-	C2 B 2, BP 2 B 3, BP 3	XE 220 2.5x13.6x14 2.5x13.6x15
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	220 220 420	200 370 390	-	C2 B 2, BP 2 B 3, BP 3	XE 220 2.5x13.6x14 2.5x13.6x15
95-105	15-10-5×2.0 15-11-5×2.0 18-10-5×2.5 18-11-5×2.0	740 744 844	15/10-5×2.0 15/11-5×2.0 18/10-5×2.5 18/11-5×2.0	220 230 420	200 225 370 390	-	C2, C3 B 3, BP 3	-
110-120	15-11-5×2.0 18-10-5×2.5 18-11-5×2.0	844 848	15 /11-5×2.0 18/10-5×2.5 18/11-5×2.0	420 430	390 400	-	C3 B 3, BP 3	-

For all types of clippers, blocks are used, 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 all types of the **AMITEX Express** 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 carried out in heat chambers of various types, and in stationary cauldrons.

4.5.1. Cooking

When processing in heat chambers, it is recommended to use either staged cooking, or delta cooking. In either case, start cooking at a temperature of 50 – 55 °C to trigger the coloring reactions. Higher starting temperatures may lead to stratification of the stuffed 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 'steps' is determined by the product diameter– the greater the caliber, the greater is the number of the steps. The first stages consist in heating at moderate temperatures – 50, 60, 70 °C to ensure slow coagulation of proteins and distribution of heat throughout the volume. The last stage is bringing of the product to consumption readiness (72 °C in the chub center 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 in 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 time required to achieve the consumption readiness of the product (72 °C in the chub center during 10 - 15 minutes).

When processing in cauldrons, it is recommended to:

- load the chubs in water at a temperature of 55 - 60 °C to avoid uncontrollable shrinkage and deformation of the chubs;
- keep the sausages permanently submerged under water, and stir for uniform cooking;
- prior to 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 going into a cold store.

AMITEX Express is unaffected by cold air. Air drafts in the process of cooling of the finished products do not cause any wrinkles on the sausage surface.

4.6. Transportation and storage of sausages

Transportation and storage of sausage products manufactured with the use of the **AMITEX Express** 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 is 1 year from manufacture subject to compliance with these Specifications.

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