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INSTRUCTIONS FOR USE Synthetic Polyamide Casing PENTAFLEX® MINI for packaging frankfurters and sausages

Purpose

The synthetic polyamide casing PENTAFLEX MINI is intended for packaging frankfurters and sausages and complies with the requirements of TU U-20620489-011:2009.

The casing is manufactured from polyamide and polyamide-based colorants approved for contact with food products and provides a range of important technical characteristics:

High mechanical strength, allowing product forming both by manual tying and on various types of equipment, ensuring high production speed and the possibility of overfilling relative to the nominal caliber;

High barrier properties. Oxygen and water vapor permeability of the casing is significantly lower than that of protein and cellulose casings, which provides the following advantages:

minimal losses during thermal processing (0–1.5%) and storage of frankfurters and sausages;

excellent commercial appearance of finished products (absence of wrinkles) throughout the entire shelf life (recommended shelf life up to 15 days when stored at temperatures from 0°C to +6°C and relative air humidity not exceeding 75%. The manufacturer determines the shelf life based on sanitary production conditions, technology, and storage conditions);

High thermal resistance of the polymers used in casing production, significantly expanding the temperature range of use compared to cellulose and protein casings;

Microbiological resistance. The polymers used are inert to bacteria and mold fungi, improving hygienic characteristics of both the casing itself and the finished product.

Product Range

Pentaflex Mini casing (barrier type)

Diameter range: 16, 17, 18, 19, 20, 21, 22, 23, 24, 25(P), 26, 26(P), 27, 28, 30, 31, 32, 34**

Supply formats:

shirred sticks: 25 m × 245 mm; 33.3 m × 245 mm; rigid shirring

reels: 2000 m

* Diameters 16, 17 — supplied in shirred sticks 25 m × 245 mm

* Diameters 25(P), 26(P) — special customer orders

Pentaflex Mini casing for sausages and mini sausages

Diameter: 34 mm*

*34 mm — soft shirring in netting, shirred sticks 40 m × 350–400 mm

Diameters: 36, 38 mm

Supply: shirred sticks 50 m × 350–400 mm, soft shirring in netting reels: 2000 m

Shirring Types According to Filling Equipment

Type A — closed end of shirred stick opening, for automatic lines

Type P — open end of shirred stick opening, for fillers with twisting device

Type U — end of shirred stick opening with knot, for automatic lines

Colors: according to catalog

Printing: single-side or double-side alcohol-based printing is possible

Printing is applied by flexographic method in accordance with the artwork approved by the customer.

INSTRUCTIONS FOR USE**Storage at the Facility**

Store in a dry and cool place, avoiding heat sources and direct sunlight, at a distance of at least 1 m from heating devices, away from aggressive and strong-smelling substances, at a temperature up to 25°C and relative humidity not exceeding 80%. Casings transported and stored at temperatures below 0°C must be kept at room temperature for at least 24 hours before opening the packaging and use. During storage, avoid sharp temperature fluctuations. Do not subject the casing to mechanical friction. Throwing or striking boxes with casing is strictly prohibited. Storage requirements also apply during transportation. Direct sunlight exposure is not allowed.

Guaranteed shelf life of the casing is up to 24 months from the date of manufacture.

Preparation of the Casing for Use

The casing is delivered to the production area in factory packaging. Boxes should be opened immediately before stuffing. Shirred sticks must be removed carefully to preserve stirring integrity. When using Pentaflex Mini Type A, avoid moisture contact to maintain the integrity of the shirred stick. Pentaflex Mini Type A does not require soaking before stuffing when used on frankfurter lines. When using Pentaflex Mini Type P on fillers with twisting devices, the casing must be soaked in potable water at 25–30°C for 30–60 minutes. Short-term wetting of the casing stick is also allowed (the stick is immersed in water and then mounted on the stuffing horn). This preparation method may be used provided there are no casing ruptures and the recommended filling percentage on the twisting device is achieved.

Soaking in water **above 30°C** is not permitted, as premature casing shrinkage may occur.

Unused casing should be removed from water, allowed to drain, and stored in a cold room until next use. Re-soaking is required before reuse.

Proper preparation ensures the necessary elasticity and uniform stuffing of links.

Casing Forming

When producing frankfurters and sausages in PENTAFLEX® MINI casing, its impermeability must be considered and the amount of added water must be controlled to prevent broth-fat pockets in finished products. Before forming, inspect equipment and work surfaces for burrs or roughness that may damage the casing. Piercing frankfurters or sausages in PENTAFLEX MINI casing is strictly prohibited. When placing the shirred stick on the stuffing horn, follow the "herringbone" direction inward, with the tip facing the filler. Stuffing speed on twisting devices must be set according to equipment condition.

Note: the diameter indicated on the packaging is the minimum filling caliber, not the nominal diameter. The nominal caliber is not regulated.

Adhering to the recommended filling caliber (see Table 1) ensures good product appearance, increased meat batter capacity, and reduced risk of broth-fat pockets and wrinkling.

Recommendations for Stuffing Pentaflex Mini for sausages and mini sausages (Recommended filling calibers, horn diameters, and cartridge numbers according to tables.)

Minimum Filling Caliber	Type	Recommended Filling Caliber, mm	Recommended Stuffing Horn Diameter, mm	Recommended Cartridge Number
16	A, P, U	17,0-17,5	8	16/17/18
17	A, P, U	18,0-18,5	8	17/18/19
18	A, P, U	19,0-19,5	8	18/19
19	A, P, U	20,0-20,5	10,0	19/20
20	A, P, U	21,0-21,5	10,0	20/21
21	A, P, U	22,0-22,5	10,0	20/21/22
22	A, P, U	23,0-23,5	11,0-12	21/22/23
23	A, P, U	24,0-24,5	11-12	21/22/23
24	A, P, U	25,0-25,5	11-12	22/23/24
25P	A, P, U	27,0-27,5	11-12	25/26

26	A, P,U	27,0-27,5	11-12	25/26
26(P)	A, P,U	28,0-28,5	11-12	25/26/27
27	A, P,U	28,0-28,5	11-12	25/26/27
28	A, P,U	29,0-29,5	12-14	26/27/28
30	A, P,U	31,0-31,5	12-14	29
31	A, P,U	32,0-32,5	14-16	29
32	A, P,U	33,0-33,5	17	29
34	A, P,U	35,0-36,5	17	29

Recommendation for Stuffing Pentaflex Mini

Minimum Filling Diameter	Type	Recommended Filling Caliber, mm	Recommended Stuffing Horn Diameter, mm	Recommended Cartridge Number
Ø 34	Soft stirring in netting	35,0-36,0	17	29
Ø 36	Soft stirring in netting	37,0-38,0	16-18	29
Ø 38	Soft stirring in netting	39,0-40,0	16-18	29

Portion Forming

Tying machines may also be used for sausages and mini sausages, providing:
 tying speed control;
 twine rotation control;
 portion length control;
 required distance between portions.

Thermal Processing

Thermal processing is carried out in chambers of all types. The manufacturer selects processing regimes independently depending on equipment features. Thermal processing includes stepwise cooking and cooling. Stepwise cooking involves gradual temperature increase in the thermal chamber as the internal product temperature reaches the heating medium temperature.

Example of a thermal processing regime:

Gradual temperature increase at 100% humidity

55°C — 10 min
 65°C — 15 min
 75°C — 15 min

Cooking at 100% humidity

75–80°C until internal product temperature reaches 72°C

Cooking stages and duration depend on casing diameter, meat batter, and equipment. Gradual temperature increase is necessary for color formation and fixation.

Cooling

After thermal processing, products must be immediately cooled with water to an internal temperature of 25–30°C. Cooling with cold air is not permitted. Draft exposure must be avoided until complete cooling, as it may cause casing wrinkling.

Transportation and Storage of the Casing

Transportation and storage of PENTAFLEX® MINI frankfurter casing shall be carried out in accordance with applicable regulatory documentation for this product.

The manufacturer bears no responsibility for casing damage during transportation, storage, or use.