

Revision dated 09.01.2025

B-M.1-00:2025
In accordance I-
02:2017

**Instructions for Use
Synthetic Polyamide Casing
PENTAFLEX® MINI
For packaging sausages (sardelki) and mini sausages**

Intended Use

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

Product Description and Properties

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

- High mechanical strength, allowing product formation 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. The permeability of the casing to oxygen and water vapor 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 sausages and sardelki products;
 - excellent commercial appearance of finished products (no wrinkling) throughout the entire shelf life (recommended shelf life up to 15 days when storing finished products at temperatures from 0°C to +6°C and relative humidity not exceeding 75%).

The manufacturer determines the shelf life depending on sanitary production conditions, technology, and storage conditions;

- High thermal resistance of the polymers used in casing production, which significantly expands the operating temperature range compared to cellulose and protein casings;
- Microbiological resistance. The polymers used are inert to bacteria and molds, improving the hygienic characteristics of both the casing itself and the finished product.

Product Range

Calibers and Shirring

Caliber	Shirring type
30, 32, 34 mm	Rigid shirring
34, 36, 38 mm	Soft shirring in net

Supply Options

- Diameter **34 mm**
Soft shirring in net possible; shirred sticks 40 m × 350–400 mm
- Diameters **36, 38 mm**
Shirred sticks 50 m × 350–400 mm, soft shirring in net
Spools (2000 m)

Single-sided or double-sided alcohol-based printing may be applied to the casing.

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

STORAGE AND HANDLING INSTRUCTIONS

Storage at the Facility

Store the casing in a dry, cool place, away from heat sources and direct sunlight, at a distance of at least 1 m from heating devices, and away from aggressive or strong-smelling substances, at a temperature not exceeding +25°C and relative humidity not exceeding 80%.

Casing that has been transported or 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, it is not recommended to expose casing boxes to sudden temperature fluctuations. Do not subject the casing to mechanical friction.

Dropping or impacting casing boxes is strictly prohibited. The same storage requirements apply during transportation. Exposure to direct sunlight is not allowed.

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

Preparation of the Casing for Use

When using Pentaflex Mini casing for sardelki on stuffers with twisting devices, the casing must be soaked in potable water at 25–30°C for 30–60 minutes. Short-term moistening of the shirred stick is also permitted (the shirred stick is immersed in water and then placed onto the stuffing horn). This preparation method may be used provided that there is no casing rupture and the recommended filling percentage is achieved on the twisting device. Soaking the casing in water above 30°C is not allowed, as this may cause premature casing shrinkage. Unused casing must be removed from the water, allowed to drain, and stored in a cool room until the next use. Before reuse, the soaking process must be repeated. Proper preparation ensures the required elasticity of the casing and uniform filling of the sausage links.

Casing Formation

When producing sardelki in PENTAFLEX® MINI casing, its impermeability must be considered, and the amount of added water must be controlled to prevent broth-fat pockets in the finished product.

Before forming, inspect the equipment and work surfaces to ensure the absence of burrs or roughness that could damage the casing. **Piercing sausages in PENTAFLEX MINI casing is strictly prohibited.**

The stuffing speed on twisting devices must be selected based on the technical condition of the equipment.

Please note that the diameter indicated on the packaging is the minimum filling caliber, not the nominal diameter. The nominal caliber is not regulated. During product formation, it is important to follow the recommended filling caliber (see Table 1).

Compliance ensures good product appearance, increased filling capacity, and reduced risk of broth-fat pockets and wrinkling.

Recommendations for Filling

PENTAFLEX MINI casing for sausages and mini sausages

Min. filling diameter	Type of shirring	Recommended filling caliber	Recommended horn diameter
Recommended cartridge diameter			
Ø 30	Rigid	31.0–31.5	12–14 29
Ø 32	Rigid	33.0–33.5	17 29
Ø 34	Rigid	35.0–36.5	17 29
Ø 34	Soft in net	35.0–36.0	17 29
Ø 36	Soft in net	37.0–38.0	16–18 29
Ø 38	Soft in net	39.0–40.0	

For portioning sausages and mini sausages, tying machines may also be used, providing:

- high tying speed;
- control of twine rotations;
- portion length control;
- correct spacing between portions.



Thermal Processing

Thermal processing of products is carried out in chambers of all types. The thermal processing regime for sardelki is selected by the manufacturer depending on equipment characteristics. Thermal processing consists of stepwise cooking and cooling. Stepwise cooking involves gradual temperature increase in the thermal chamber as the internal product temperature reaches the temperature of the heating medium.

Example of a thermal processing regime

No.	Process	Temperature	Time
1	Temperature increase every 10–15 min at 100% humidity	55°C → 65°C → 75°C	10 min / 15 min / 15 min
2	Cooking at 100% humidity	75–80°	

The number and duration of cooking stages depend on casing diameter, stuffing composition, and equipment. Gradual temperature increase is required for proper color formation and fixation in the product.

Cooling

After thermal processing, products must be immediately cooled with water until the internal temperature reaches 25–30°C. Cooling with cold air is not permitted. Drafts must be avoided until the product is fully cooled, as they may cause casing wrinkling.

Transportation and Storage of the Casing

Transportation and storage of PENTAFLEX® MINI casing for sardelki must comply with the applicable regulatory and technical documentation for this product.

The manufacturer is not responsible for any casing damage resulting from transportation, storage, or improper use.