PENTOPAK
ТОВ "ПЕНТОПАК УКРАЇНА"

Revision dated 05.10.2023	B-T.0:2023 In accordance with I-02:2017

Instructions for Us Heat-Shrink Bags PentaTherm®

Purpose

PentaTherm® heat-shrink bags are manufactured in accordance with TU U 25.2-20620489-008-2004 and are intended for packaging:
boneless meat of all animal species (chilled);
boneless sausage products;
fish products;
unripened cheeses.
Guaranteed shelf life of the bags: 24 months from the date of manufacture.

Storage at the Plant

Bags must be stored in dry, clean premises that comply with sanitary and hygienic standards.
Storage temperature must not exceed 25°C; relative air humidity — not more than 80%.
Keep boxes at least 1 m away from heating devices.
During storage, avoid exposing boxes to sharp temperature fluctuations.
Dropping, impacts, and exposure to direct sunlight are strictly prohibited.
Bags stored at temperatures below 0°C must be conditioned at room temperature for at least 24 hours before use.
Opened packaging with bags must be used within 24 hours.

Transportation

During transportation, boxes with bags must not be exposed to temperatures above 25°C or to direct sunlight.

Preparation of Bags for Use

When opening transport packaging, avoid cuts, nicks, or any damage to the bags.
Select the correct bag size according to the dimensions of the packaged product to ensure the tightest possible shrink fit.
It is recommended to open only the required number of packages 1 hour before use.

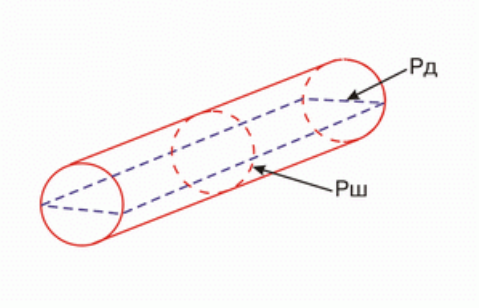
Bag Size Calculation

Bag size is calculated using a formula, taking into account the 5 mm sealing increment used in bag production.
For example, if the calculated bag width is 163 mm, the bag can be manufactured with widths of 160, 165, 170 mm, etc.
Based on the product's shape and characteristics, the customer determines the optimal bag size experimentally to ensure:
free sliding of the product during packaging;
tight conformity to the product after shrinking.

Bag Size Formula

W + L (Width + Length)

To select the required bag size, determine the width and length based on the dimensions of the packaged product.



1. Bag Width (W)
Measure the perimeter of the product at its widest point (Pw).
Width calculation:
W = Pw × 0.55 (mm)
W = 360 × 0.55 ≈ 200 mm
2. Bag Length (L)
Measure the perimeter of the product at its longest point (Pl).
Length calculation:
L = Pl / 2 + 80 (mm)
L = 400 / 2 + 80 = 280 mm
Resulting bag size: 200 × 280 mm

Packaging and Vacuum Sealing
The packaging process must be carried out in accordance with:
technical specifications (TS);
technological instructions (TI);
technological schemes for vacuum packaging of sausage products, meat of all animal species, and poultry in heat-shrink bags.
Product Requirements
Products intended for packaging must be visually inspected.
Packaging is not permitted for products with abnormal color changes, gray spots, bone fragments, or products previously stored at subzero temperatures.
Products with sharp edges, decorative coatings, and poultry products (with bones) are recommended to be packaged in PentaVac® bags.
Before packaging, sausage products must be freed from:
twine;
metal clips;
artificial casings (cellophane).
Other artificial casings may remain on the product.
Packaging of both standard and non-standard portions is permitted, as well as whole products with net weight from 100 g to 2000 g.
Group packaging in one bag is not allowed.
Temperature Before Packaging
Meat products must have an internal temperature between 0°C and +6°C before packaging.
The product must be placed into the bag so that the free end of the bag is at least 4 cm **and extends beyond the sealing area.**
Equipment Settings and Control
When operating packaging equipment, monitor the following parameters:
condition of the protective coating of the heating (sealing) element; clean or replace the Teflon coating in time;
vacuum level (depending on the product type);
sealing time of the main seam and perforation (separation of excess bag material);
correct product positioning (adjust removable plates/inserts to half the product height relative to the sealing bars);
quality of the sealing seam.
Vacuum and sealing modes are selected experimentally.
The product in the bag should be positioned as close as possible to the sealing bar to ensure tight shrink fit after heat shrinking.
The sealing area must be kept clean.
Not allowed:
product entering the sealing zone;
wrinkles or folds in the sealing seam;
overlapping sealing (“lap sealing”) or stacking bags on top of each other during sealing.

The sealing seam must be continuous with uniform imprint of the sealing element, ensuring airtightness and preventing vacuum loss.
Heat Shrinking
Heat shrinking of bags with products is performed by:
immersion in hot water, or
hot water spraying
at a temperature of 90–93°C for 2–3 seconds.
The shrink temperature is selected experimentally depending on the packaged product and bag grade (see technological scheme).
Heat shrinking:
smooths folds and irregularities after vacuuming;
ensures tight conformity to the product contour;
enhances bag transparency and product color.
After shrinking and drying, packaged products are placed into containers.
Maximum net weight per container: 20 kg.

Storage of Packaged Products

Storage of vacuum-packaged and shrink-processed products is carried out in accordance with the technological instructions for the specific product type.
Shelf life of vacuum-packaged products (with subsequent shrinking), from completion of the technological process (including at the manufacturing plant), is defined in the technical specifications and depends on assortment and portion size, ranging from 6 to 40 days.
Product assortment, packaging conditions, and storage periods for products packed in bags must be agreed with the territorial regulatory authorities at the location of the manufacturing facility.