



Jiffy Packaging Sp. z o.o.
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SAFETY DECLARATION

Jiffy Packaging Sp. z o.o. is a company that pays special attention to environmental protection. It is important for us to design, manufacture, and deliver products which are friendly to the environment. According to the European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste, our products made from polyethylene – Polylam, Nopaplank, Nopa Smart and polyethylene foams in rolls (not excluding their own packaging) are 100% recyclable. At the same time, within the scope of product groups and observing the technical parameters, we strive to limit the resources utilised. Our products also conform to the requirements concerning content of heavy metals, as well as of substances listed as hazardous or undesirable. Technological waste resulting from production process is transformed into granulate and re-used in the production process. As packaging manufacturer, Jiffy Packaging Sp. z o.o. ensures conformance of the whole scope of products to the requirements of 94/62/WE Directive and PN-EN 13427:2007 standard. All products delivered by Jiffy Packaging Sp. z o.o. conform to the aforementioned Directive from the start of its becoming effective in our country.

Low-density non cross-linked polyethylene is a material particularly safe for the environment. No chemicals classified as hazardous substances are required for the foaming process, as this is done in mechanical way. The material composition is very simple, providing for easy waste recycling and ensuring high quality of the products based on material reclaimed in the recycling process.

I. Composition:

- 1) low-density polyethylene LDPE
- 2) liquid isobutane
- 3) GMS as processing additive
- 4) talcum as processing additive

**We hereby declare that all components origin within the European Community.
No other substances are used except for the ones mentioned above.**

II. Technological process:

1) Manufacturing of polyethylene foam in the process of extrusion foaming

The foam is manufactured from low-density polyethylene granulate. The granulate is mixed with the processing additives using a metering system. The processing additives are talcum and glycerol monostearate (GMS). Isobutane is the last component required in the production process. The mix of granulates is fed by the metering system to extruder feeding hopper. Extruder cylinder is heated to

ISO 9001
ISO 14001
BUREAU VERITAS
Certification



Jiffy Packaging Sp. z o.o. is registered with the business register held by the District Court in Gliwice, X Economic Department of National Court Register under no. KRS 0000074987.
Initial capital: 22 150 000,00 PLN



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temperature ranges exceeding 200 degrees Celsius, depending on the type and construction of the machine, as well as on the kind of material used. The material fed into the extruder is moved through the cylinder with an auger feeder.

The material moving along the cylinder is first heated above the softening point. Then, around the middle of the cylinder length (depending on the type and construction of the machine), liquid isobutane is injected into the material. The remaining part of cylinder serves the purpose of thorough mixing of the material and isobutane, as well as that of lowering mixture temperature to the level slightly above polymer crystallisation temperature. The material is mixed in the cylinder from its input to the output, the goal being not only to mix the material with isobutane, but also to achieve the highest dispersion of talcum and GMS. Talcum serves the role to diminish isobutane droplets into even more minute fractions. GMS is to lower friction within the machine, to eliminate static charges, and to increase cell barriers. Isobutane softens the polymer. When isobutane droplets mix with the material and meet talcum particles, they become smaller, while polymer film forms around them. Material-filtering module is placed at the cylinder outlet. The sieve additionally diminishes the cells and makes them more uniform. Finally, the material is extruded through the head nozzle. Dynamic extrusion of the material occurs then, as well as conversion of isobutane from liquid to gaseous form. The material increases its volume by a dozen or so, or even by several tens, depending on the proportion of isobutane and polymer used. Parts of material are then formed into rolls or sheets, and cooled.

2) Seasoning

The manufactured product is stored in a warehouse where gaseous exchange occurs. Isobutane gas present in the cells is replaced by atmospheric air by diffusion. Fully seasoned product does not contain isobutane, an indicator of this process is reduced weight of the product. This results from the difference in volumetric mass density between isobutane ($\pm 2.7 \text{ kg/m}^3$) and air ($\pm 1.3 \text{ kg/m}^3$).



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