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## X. Polyamides

As of 01.06.2013

There are no objections to the use of polyamides in the manufacture of commodities in the sense of § 2, Para. 6, No 1 of the Food and Feed Code (Lebensmittel- und Futtermittelgesetzbuch), provided they are suitable for their intended purpose and the following conditions are met:

1. The use of starting materials for polyamides with predominantly polyamide in the total mixture is subject to the Commission Regulation (EU) No 10/2011.

*The evaluation presented in the following refers to polymers from the following monomeric starting substances:*

*Straight chain  $\omega$ -aminocarboxylic acids of chain length  $C_6$ - $C_{12}$  and lactames thereof, as far as covered by the positive list of the Commission Regulation (EU) No 10/2011*

*Isophthalic acid*

*Bis-(4-aminocyclohexyl)-methane*

*3,3'-Dimethyl-4,4'-diaminodicyclohexyl-methane*

*Terephthalic acid and its dimethyl ester*

*1,6-Diamino-2,2,4-trimethylhexane*

*1,6-Diamino-2,4,4-trimethylhexane*

*1-Amino-3-aminomethyl-3,5,5-trimethylcyclohexane*

*Hexamethylenediamine*

*Adipic acid*

*Copolymers from ethylene, propylene, butylene and unsaturated aliphatic acids as well as their salts and esters, as far as complying with the amended version of the BgVV Recommendation XXXV. However, not cross-linked copolymers according to section A of the Recommendation XXXV as well as cross-linked copolymers according to section B of the Recommendation XXXV with the substances listed in No 4 b) of this section are excluded if the commodities are intended to come into contact with fats, oils or fatty foodstuffs in which fat forms the external phase.*

*Polyethylene, as far as complying with the amended version of the BfR Recommendation III*

*Polyvinylpyrrolidone (mean molecular weight 700,000), max. 1 %.*

*The proportion of polyamides must predominate in the overall mixture.*

2. Additives permitted by the Commission Regulation (EU) No 10/2011 may be used in accordance with the restrictions laid down therein. In addition to these, the finished products may only contain the following substances, used during manufacture and processing, in the maximum amounts given (based on polyamide):
  - a) Residues of catalysts or reaction regulators and their conversion products:
    - Phosphorous acid, as well as its sodium and calcium salts
    - Sodium compounds of caprolactam<sup>1</sup> and of C-alkyl( $C_1$ - $C_3$ )-substituted caprolactam max. 1.0 %
    - Stearyl isocyanate<sup>1</sup>
    - Cyclohexyl isocyanate<sup>1</sup>

<sup>1</sup> Restrictions on the use of these substances, laid down in the Commission Regulation (EU) No 10/2011, must be complied with.

Hexamethylene diisocyanate<sup>1</sup>

Toluylene diisocyanate<sup>1</sup>

Diphenylmethane-4,4'-diisocyanate<sup>1</sup>

The total content of catalysts and/or their conversion products must not exceed 1.5 %.

b) Cross-linking and/or chain-lengthening substances:

Methylene biscaprolactam

Di-tert-butyl peroxide, max. 0.5 %

The surface of the commodity must not react positively for peroxides<sup>2</sup>.

3. The finished products must not affect smell or taste of their contents. This is particularly important when foodstuffs, in which water forms the external phase, are subjected to extended periods of heating in commodities made from polyamides.

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<sup>2</sup> See 58th Communication on the testing of plastics in Bundesgesundheitsblatt 40 (1997) 412