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VII. Polypropylene

As of 01.01.2012

There are no objections to the use of polypropylene 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 polypropylene 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:

- a) Monomer: Propylene
- b) Comonomers:

Ethylene	}	<i>in total max. 10 %</i>
Butylene		
4-Methylpentene		
3-Methylbutene		

If butylene is used exclusively as comonomer it may be used up to 12 %, if ethylene is used exclusively as comonomer it may be used up to 15 %.

The melt flow index (see DIN EN ISO 1133) of the polypropylene must not exceed 100 (2.15 kp, 230 °C) and the melting point of cristallites must not be below 155 °C.

2. Additives permitted by the Commission Regulation (EU) No 10/2011 may be used in accordance with the restrictions stipulated therein. In addition to these, the raw polymer or finished products may contain only the following production aids¹, used during manufacture and processing of the polymer, in the maximum amounts given:

- a) Catalyst residues²:

Oxides³ of calcium, aluminium, silicon, titanium, chromium, vanadium, zirconium and hafnium, in total max. 0.1 %. The finished products must contain no more than 10 ppm chromium, no more than 20 ppm vanadium, no more than 100 ppm zirconium and no more than 100 ppm hafnium.

p-Ethoxybenzoic acid ethyl ester, max. 0.032 %⁴

Ethylene-bis-(4,5,6,7-tetrahydroindenyl)zirconium dichloride, supported on silica/methylalumoxane support, max. 250 mg/kg polymer

Bis(C₁₆-C₁₈-alkyl)methylamine, residue in polymer max. 30 mg/kg.

¹ Such production aids include molecular weight regulators which are occasionally used, e.g. Bis(tert-butylperoxyisopropyl)-benzene, max. 0.1 %, 2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane, max. 0.1 %, Di-tert-butyl peroxide, max. 0.1 %, 3,6,9-Triethyl-3,6,9-trimethyl-1,4,7-triperoxonane, max. 0.1 %, tert-Butyl peroxyisopropyl carbonate, max. 0.5 %. The surface of commodities made using the above substances must not test positively for peroxides. (see 58th Communication on the testing of plastics, Bundesgesundheitsblatt 40 (1997) 412).

² Catalysts, as such or in the form of their decomposition products, not contained in the finished product are not considered.

³ Aluminium oxide, calcium oxide, silicon dioxide and titanium dioxide are permitted as additives in accordance with the Commission Regulation (EU) No 10/2011.

⁴ The residual content of diethyl sulfate in this catalyst must not exceed 10 mg/kg.

Dichlor(*rel*-(1*R*, 1'*R*)-(dimethylsilylene)-bis-(1,2,3,3*a*,7*a*-*h*)-2-methyl-4-pentyl-1*H*-indene-1-ylidene))zirconium, supported on silica/methyl-alumoxane support, max. 250 mg/kg polymer.

Isopropyl myristate, max. 0.012 %⁵

5-*tert*-butyl-3-methyl-1,2-benzenediol dibenzoate, the migration of this substance must not exceed 0.05 mg/kg foodstuff or simulant

b) Residues of emulsifying agents:

Addition products of ethylene oxide to natural fatty acids, max. 0.2 %

or

Nonylphenoxypoly-(ethylenoxy)-ethanol (degree of ethoxylation, 3-14), max. 0.01 %

⁵ During the polymerisation with a catalyst containing Isopropyl myristate, the by-product 3-Hexadecanol can be formed. Only up to 0.05 mg/kg of this substance may migrate into the foodstuff or food simulant, respectively. For the verification of compliance with this recommended migration limit it is feasible to use the fat reduction factor following the conditions defined in annex V of Commission Regulation (EU) No 10/2011.