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## XXII. Polymers Based on Esters of Acrylic and Methacrylic Acids, their Copolymers, and Mixtures of these with other Polymers

As of 01.01.2010

There are no objections to the use of polymers based on esters of acrylic and methacrylic acids, their copolymers, and mixtures of these with other polymers 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 polymers based on esters of acrylic and methacrylic acids and their copolymers 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:*

*Esters of methacrylic and acrylic acid with monohydric and polyhydric, aliphatic, saturated alcohols C<sub>1</sub>-C<sub>8</sub> as far as covered by the positive list of the Commission Regulation (EU) No 10/2011*

*Benzyl alcohol*

*Dimethylaminoethyl methacrylate*

a) *Styrene and  $\alpha$ -methyl styrene*

b) *Acrylic acid*

*Methacrylic acid*

*Maleic acid*

*Itaconic acid*

*Amides of acrylic and methacrylic acid*

*N-methylolamides of acrylic and methacrylic acid*

*Of the named monomers in total max. 8 % may be used. If cross-linking is assured through subsequent treatment, the proportion may be increased to max. 25 %.*

*The proportion of acid amides which cause an improvement of the water solubility and emulsion efficiency must not exceed 12 % based on the overall polymer.*

c) *Acrylonitrile and methacrylonitrile*

d) *Butadiene*

e) *Vinylidene chloride*

f) *Allylester of methacrylic acid*

*The proportion of esters of acrylic and methacrylic acid must predominate.*

2. Additives permitted by the Commission Regulation (EU) No 10/2011 may be used in compliance with the restrictions laid down therein. In addition to these only the following production aids may be used in manufacture and processing of the polymers. Residues or conversion products of these additives in the raw polymer or finished products must not exceed the maximum amounts given:

- a) Residues of conversion products of the following catalysts:
- Azobisisobutyronitrile
  - Benzoyl peroxide
  - Peroxides of even-numbered, saturated, aliphatic monocarboxylic acids of chain length C<sub>8</sub>-C<sub>18</sub>
  - Diisopropyl percarbonate
  - Acetyl cyclohexane sulfonyl peroxide
  - Alkyl(C<sub>1</sub>-C<sub>4</sub>)esters of azodiisobutyric acid
  - tert-Butyl perbenzoate
  - tert-Butyl perpivalate
  - tert-Butylperoxy-(2-ethylhexanoate)
  - Cumyl hydroperoxide
  - tert-Butyl-per-3,5,5-trimethyl hexanoate
  - tert-Butyl peroxyneodecanoate
  - mono-tert-Butyl peroxy maleinate
  - 2,2-Bis-(tert-butyl peroxy)butane, max. 0.3 %
- } in total  
max. 0.2 %
- b) Residues of the following emulsifying agents:
- Dinonyl phosphate, max. 0.1 %
  - Alkyl sulfonates C<sub>12</sub>-C<sub>20</sub>
  - Polyvinyl alcohol (viscosity of 4 % aqueous solution at 20 °C min. 20 cP)
  - Disodium dodecyl diphenylether disulfonate, max. 1.5 %, but only for polymers used to make copolymers according to No 2 e of Recommendation II for plasticizer-free max. polyvinyl chloride and its copolymers. The proportion of polymers according to this Recommendation in the copolymers according to Recommendation II must not exceed 5 %.
- } in total  
max. 0.5 %
- c) Polymerisation regulators<sup>1</sup>:
- Mercaptoethanol
  - Mercaptoacetic acid, as well as its esters with mono and polyhydric aliphatic alcohols
  - Normal and tertiary mercaptanes of chain length C<sub>10</sub>-C<sub>14</sub>
  - Methyl-3-mercaptopropionate
3. The content of volatile organic components in the unprocessed raw material and in finished products must not exceed 0.5 %<sup>2</sup>.
4. Finished products must not test positively for peroxides<sup>3</sup>.

<sup>1</sup> These substances are completely incorporated into the polymer during polymerisation.

<sup>2</sup> Determination is conducted in accordance with method described in 19th Communication on the testing of plastics, Bundesgesundheitsblatt 14 (1971) 265.

<sup>3</sup> See 58th Communication on the testing of plastics, Bundesgesundheitsblatt 40 (1997) 412