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## XLI. Linear Polyurethanes for Paper Coatings

### As of 01.01.1975

There are no objections to the use of linear polyurethanes for coating paper and paperboard used in packaging foodstuffs after Recommendation XXXVI<sup>1</sup>, provided the coated materials are suitable for their intended purpose and comply with the following conditions:

1. The following starting materials<sup>2</sup> may be used:
  - a) Polyhydroxy compounds:
    - Polyesters of adipic acid with terminal hydroxy groups
    - Phthalic acid
    - 1,2-Ethanediol
    - Diethyleneglycol
    - 1,4-Butanediol
    - 1,2-Propanediol
    - 2,2-Dimethylpropanediol
    - 1,6-Hexanediol
    - Polyethers, based on ethylene oxide and propylene oxide, with free hydroxy groups.
  - b) Diisocyanates:
    - 2,4-Toluene diisocyanate
    - 2,6-Toluene diisocyanate
    - Hexamethylene-1,6-diisocyanate
    - Diphenylmethane-4,4'-diisocyanate
  
2. Chain extenders<sup>2</sup>:
  - Diethyleneglycol
  - 1,4-Butanediol
  - 1,6-Hexanediol
  - 2,2-Dimethylpropanediol
  - Trimethylolpropane
  - 1,4-Bis-hydroxymethyl-cyclohexane

} in total  
max. 25 %
  
3. Emulsifiers:
  - Sodium and potassium salts of glycine, lysine and taurine, in total, max. 8.0 %<sup>2,3</sup>
  - N-(2-aminoethyl)-3-aminopropane sulfonate and/or N-(2-aminoethyl)-2-aminoethane sulfonate, in total max. 5.0 %<sup>3</sup>
  
4. Slip and mould release agents:
  - Ester of montanic acids with ethanediol and/or 1,3-butanediol mixed with montanic acids, as well as calcium salts of montanic acids<sup>4</sup>

<sup>1</sup> Recommendation XXXVI. "Paper and paperboard (including cardboard) as food-contact materials".

<sup>2</sup> The named substances are included as monomers in the Commission Regulation (EU) No 10/2011 and must comply with the limits stipulated therein.

<sup>3</sup> These emulsifiers are incorporated into the macromolecules, so that only minute, technically unavoidable amounts, which are harmless to health and have no effect on smell or taste, remain in the finished product.

<sup>4</sup> Permitted in compliance with the Commission Regulation (EU) No 10/2011 as an additive in the manufacture of food-contact commodities.

5. Isocyanate groups and aromatic amines must not be detectable in the finished products.
6. Plastics dispersions, provided they comply with amended Recommendation XIV<sup>5</sup>, Part A, may be mixed with linear polyurethanes for coating paper, whereby in the total mixture the linear polyurethanes must predominate.

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<sup>5</sup> Recommendation XIV. "Plastics Dispersions".