

MERCOSUR/GMC/RES. No. 42/15

**MERCOSUR TECHNICAL REGULATION ON CELLULOSIC MATERIALS,
PACKAGING AND EQUIPMENT INTENDED TO BE IN CONTACT WITH FOOD
DURING COOKING OR BAKING**

HAVING REGARD TO: The Treaty of Asunción, the Protocol of Ouro Preto, and Resolution Nos. 38/98 and 56/02 of the Common Market Group (GMC).

WHEREAS:

The harmonization of Technical Regulations tends to eliminate the trade barriers created by the various national regulations in force, pursuant to the provisions in the Treaty of Asunción.

The State Parties, owing to the advances on this subject, consider it necessary to draft a MERCOSUR Technical Regulation on Paper and Cardboard Packaging and Equipment Intended to Be in Contact with Food during Cooking or Baking.

**THE COMMON MARKET
GROUP RESOLVES:**

Art. 1. To approve the “MERCOSUR Technical Regulations on Cellulosic Packaging and Equipment intended to be in Contact with Food during Cooking or Baking,” which is included as an Appendix and is part of this Resolution.

Art. 2. The State Parties shall indicate national entities capable of implementing this Resolution within the purview of the SGT [Sub Working Group] No. 3.

Art. 3. This Resolution shall be applied in the territory of the State Parties, to the trade among them, and to the imports from outside the zone.

Art. 4. This Resolution must be included in the State Parties’ legal systems by March 31, 2016.

**XCIX GMC - Asunción,
September 23, 2015.**

APPENDIX

MERCOSUR TECHNICAL REGULATION ON CELLULOSIC MATERIALS, PACKAGING AND EQUIPMENT INTENDED TO COME INTO CONTACT WITH FOODS DURING COOKING OR BAKING

1. SCOPE

1.1. This Technical Regulation applies to cellulosic materials, packaging, and equipment that come into contact with food during cooking or baking, including those treated or coated by substances permitted in this Regulation.

1.2. Substances used for the manufacture of raw materials or for the formulation of active ingredients, listed in items 3, 4, 5, and 6 of this Regulation, must be used according to the principles defined in item 2.2 of the General Provisions of this Regulation.

1.2.1. Only the substances listed in point 4.7 of this Regulation may be used as antimicrobial substances.

2. GENERAL PROVISIONS

2.1. Cellulosic materials, packaging, and equipment covered under this Technical Regulation must be manufactured according to Good Manufacturing Practices and be compatible with use for direct contact with food.

2.2. Cellulosic materials, packaging, and equipment, in conditions prescribed for use, must not transfer substances that pose a risk to human health to the foods. If there is any migration of substances, these substances must not bring about any unacceptable changes in the composition or the sensory characteristics of foods.

2.3. Only the substances established in items 3, 4, and 5 of this Regulation may be used for the manufacture of paper and board for contact with food during cooking or baking. The indicated restrictions must be observed under all circumstances.

2.3.1. The substances listed in point 6 may be used for the manufacture of paper and board for use in microwave ovens.

2.4. The use of food additives authorized by the MERCOSUR Technical Regulations for foods, not mentioned in this list, is permitted, provided that the following are observed:

- a) The set restrictions for their use in foods;
- b) The amount of the additive present in the food in addition to the amount that may potentially migrate from the packaging must not exceed the limits established for each food.

2.5. The limits of composition and specific migration defined in this Technical Regulation refers to cellulosic materials intended for contact with food during cooking or baking, hereinafter called the finished product.

2.5.1. If not specified otherwise, the limits expressed in percentage (%) refer to the mass-to-mass ratio (m/m) in the dry finished product.

2.5.2. If the indicated values reference the finished product, it is considered the dry finished product.

2.5.3. When the restriction references the extract of the finished product, it must be understood to be the extract prepared according to the procedure mentioned in item 2.12 of this Technical Regulation.

2.6. The paper and board material, packaging, and equipment manufactured according to this Regulation must not be used at temperatures above 220°C.

2.6.1. For use in microwave ovens, 150°C must not be exceeded.

2.7. The finished product must contain information regarding item 2.6 and instructions for proper use on its label.

2.8. When the processing aids used in the production of cellulosic materials, packaging, and equipment for cooking or baking have different limits depending on the function they perform, these limits are not cumulative, and, if the aids are used for multiple functions, the greater of the established limits must be considered the maximum allowable value.

2.9. Cellulosic materials, packaging, and equipment for cooking or baking must not transfer antimicrobial agents to the foods with which they come into contact. Determination method: *BS EN 1104: Paper and board intended to come into contact with foodstuffs - Determination of transfer of antimicrobial constituents*.

2.10. The value established in the “MERCOSUR Technical Regulation on Food-Contact Cellulosic Materials, Packaging, and Equipment” must be applied as the overall migration limit for cellulosic packaging and equipment for cooking or baking.

2.11. The hot water extract to verify compliance with the restrictions established in this Regulation must be obtained by following the procedure described in the standard *BS EN 647: Paper and board intended to come into contact with food stuffs - Preparation of hot water extract*.

2.12. The Positive List of this Technical Regulation may be modified in the MERCOSUR market in order to include or exclude substances and to modify limits and other restrictions. To that end, the following references are taken into account: Food and Drug Administration (FDA) of the United States, recommendations of the *Bundesinstitut für Risikobewertung* [Federal Institute for Risk Assessment] (BfR) and of the Council of Europe, European Union legislation, and the *Codex Alimentarius*.

3. POSITIVE LIST OF COMPONENTS

3.1. Fibrous Raw Materials

3.1.1. Cellulose fibers obtained by chemical processes.

3.1.2. Cellulose fibers obtained by mechanical processes.

3.1.3. Artificial fibers produced from cellulose.

3.2. Raw Material Additives

3.2.1. Anthraquinone [CAS 84-65-1] (minimum purity 98%) as an accelerator for the separation of lignin and cellulose, maximum 0.10% of the lignocellulosic material weight.

3.2.1.1. In food-contact cellulosic materials, packaging, and equipment, the SML of 0.01 mg/kg of food must not be exceeded.

3.3. Fillers

3.3.1. Silicon dioxide [CAS 7631-86-9].

3.3.2. Silicates or mixtures of aluminum silicate [CAS 1327-36-2], calcium [CAS 1344-95-2], and magnesium [CAS 1343-88-0], including kaolin [CAS 1322-58-7], and talcum, excluding asbestos.

3.3.3. Calcium sulfate [CAS 10101-41-4].

3.3.4. Barium sulfate [CAS 7727-43-7], free of soluble barium compounds. Purity requirements: The amount of soluble barium in 0.1 N HCl determined according to the DIN 53770 test method must not exceed 0.01%; the soluble components in water, determined according to the DIN-ISO 787 test method must not exceed 0.4%.

3.3.5. Calcium carbonate [CAS 471-34-1] and magnesium carbonate [CAS 546-93-0].

3.3.6. Titanium dioxide [CAS 1317-80-2] or [CAS 13463-67-7].

Note 1: The contaminants of the fillers listed in items 3.3.1 to 3.3.6. must not exceed the following values, determined according to the DIN 53770 test method:

Lead: 0.01% in 0.1 N HCl;

Arsenic: 0.01% in 0.1 N HCl;

Mercury: 0.0005% in 0.1 N HCl;

Cadmium: 0.01% in 0.1 N HCl;

Antimony: 0.005% in 0.1 N HCl;

Note 2: Additives must not be used for fillers, except polyacrylic acid sodium salt, which may be used as a dispersing agent for calcium carbonate. Maximum 0.5% based on that filler.

3.4. Processing Aids

The following processing aid substances may be used:

3.4.1. Binders and Sizing Agents

3.4.1.1. Tall-oil pitch [CAS 8016-81-7] and its derivatives from adding maleic acid and/or fumaric acid and/or formaldehyde [CAS 50-00-0]. More than 1.0 mg/dm² of formaldehyde must not be detected in the hot water extract of the finished product.

3.4.1.2. Starch [CAS 9005-25-8] and modified starch, esterified with phosphoric acid. Sodium tetraborate [CAS 1330-43-4], maximum 1 mg/dm² (calculated as boron), may be used to cure starch. Maximum limits of

contaminants in starch: arsenic: 3 mg/kg; lead: 10 mg/kg; mercury: 2 mg/kg; cadmium: 2 mg/kg; zinc: 25 mg/kg; zinc and copper combined: 50 mg/kg.

3.4.1.3. Starch treated with 3-chloro-2-hydroxypropyl-trimethylammonium chloride [CAS 3327-22-8] or glycidyltrimethylammonium chloride [CAS 3033-77-0] (starch specification: epichlorohydrin, maximum 1 mg/kg; nitrogen, maximum 4.0%). Maximum limits of contaminants in starch: arsenic: 3 mg/kg; lead: 10 mg/kg; mercury: 2 mg/kg; cadmium: 2 mg/kg; zinc: 25 mg/kg; zinc and copper combined: 50 mg/kg.

3.4.1.4. Carboxymethylcellulose sodium salt, technically pure [CAS 9004-32-4]. The content of sodium glycolate [CAS 2836-32-0] must not exceed 12%.

3.4.1.5. Alginates, xanthan gum [CAS 11138-66-2], and mannogalactans must comply with the contaminant limits established for these substances in the "MERCOSUR Technical Regulation on Food-Contact Cellulosic Materials, Packaging, and Equipment."

3.4.1.6. Galactomannan Ethers:

a) Carboxymethyl galactomannan, maximum residual content of sodium glycolate 0.5%.

b) Galactomannan treated with 3-chloro-2-hydroxypropyl-trimethylammonium chloride [CAS 3327-22-8] or glycidyltrimethylammonium chloride [CAS 3033-77-0] (specification: epichlorohydrin, maximum 1 mg/kg; nitrogen, maximum 4.0%).

3.4.1.7. Di-alkyl(C10-C18)diketenes, maximum 0.5%.

3.4.1.8. Copolymers of acrylamide [CAS 79-06-1] and acrylic acid [CAS 79-10-7], cross-linked with N-methylene-bis(acrylamide) [CAS 110-26-9], maximum 1.0%.

3.4.1.9. Copolymer of acrylamide [CAS 79-06-1], 2-[(methacryloyloxy)ethyl]trimethylammonium chloride [CAS 5039-78-1], N,N'-methylene-bis-acrylamide [CAS 110-26-9], and itaconic acid [CAS 97-65-4], maximum 1.0%.

3.4.1.10. Copolymer of acrylamide [CAS 79-06-1], 2-[(methacryloyloxy)ethyl]trimethylammonium chloride [CAS 5039-78-1], N,N'-methylene-bis-acrylamide [CAS 110-26-9], itaconic acid [CAS 97-65-4], and glyoxal [CAS 107-22-2], maximum 1.0%.

3.4.2. Agglutinating, Fixing and Parchmentizing Agents

3.4.2.1. Aluminum sulfate [CAS 10043-01-3].

3.4.2.2. Sodium sulfate [CAS 7757-82-6].

3.4.2.3. Sodium aluminate [CAS 1302-42-7].

3.4.2.4. Aluminum formate [CAS 7360-53-4].

3.4.2.5. Sulfuric acid [CAS 7664-93-9].

3.4.2.6. Ammonia [CAS 7664-41-7].

3.4.2.7. Sodium carbonate [CAS 497-19-8].

3.4.2.8. Sodium bicarbonate [CAS 144-55-8].

3.4.2.9. Sodium hydroxide [CAS 1310-73-2].

3.4.2.10. Aluminum chlorohydrate [CAS 1327-41-9], maximum 0.09%.

3.4.3. Retention Agents

3.4.3.1. Polyacrylamide [CAS 9003-05-8] and/or polyacrylic acid [CAS 9003-01-4], (with a maximum monomer content of 0.2%), maximum 0.3% of the total.

3.4.3.2. Polyethyleneimine [CAS 9002-98-6], maximum 0.5%. Ethyleneimine [CAS 151-56-4] must not be detectable in the finished product (detection limit: 0.1 mg/kg). 1,3-Dichloro-2-propanol [CAS 96-23-1] must not be detectable in the water extract of the finished product (detection limit: 2 µg/l). Transference of 3-monochloro-1,2-propanediol [CAS 96-24-2] to the water extract of the final product must be as low as technically possible, and it must not exceed the limit of 12 µg/l.

3.4.3.3. Cross-linked polyalkylenamines, cationic, maximum 4.0% in total:

a) Polyamine-epichlorohydrin resin, produced from epichlorohydrin [CAS 106-89-8] and diaminopropyl-methylamine [CAS 105-83-9], maximum 0.5%.

b) Polyamide-epichlorohydrin resin, produced from epichlorohydrin [CAS 106-89-8], adipic acid [CAS 124-04-9], caprolactam [CAS 105-60-2], diethylenetriamine [CAS 111-40-0], and/or ethylenediamine [CAS 107-15-3].

c) Polyamide-epichlorohydrin resin, produced from adipic acid [CAS 124-04-9], diethylenetriamine [CAS 111-40-0] and epichlorohydrin [CAS 106-89-8], or a mixture of epichlorohydrin and ammonia.

d) Polyamide-polyamine-epichlorohydrin resin, produced from epichlorohydrin [CAS 106-89-8], adipic acid amide and diaminopropyl-methylamine [CAS 105-83-9].

e) Polyamide-epichlorohydrin resin, produced from epichlorohydrin [CAS 106-89-8], diethylenetriamine [CAS 111-40-0], adipic acid [CAS 124-04-9], ethyleneimine [CAS 151-56-4], maximum 0.5%.

f) Polyamide-epichlorohydrin resin, produced from epichlorohydrin [CAS 106-89-8], diethylenetriamine [CAS 111-40-0], adipic acid [CAS 124-04-9], ethyleneimine [CAS 151-56-4] and polyethylene glycol [CAS 25322-68-3], maximum 0.2%

g) Polyamide-polyamine-dichloroethane, produced from dichloroethane and adipic acid amide, caprolactam [CAS 105-60-2], and diethylenetriamine [CAS 111-40-0], maximum 0.5%.

Note: The compounds listed in subitems a) to g) must also comply with the following restrictions:

a) Ethyleneimine [CAS 151-56-4] must not be detectable in the resin (detection limit: 0.1 mg/kg).

b) Epichlorohydrin (detection limit: 1 mg/kg) and 1,3-dichloro-2-propanol [CAS 96-23-1] (detection limit: 2 µg/l) must not be detected in the water extract of the finished product.

c) Transference of 3-monochloro-1,2-propanediol [CAS 96-24-2] to the water extract of the finished product must be as low as technically possible, and it must not exceed the limit of 12 µg/l.

3.4.3.4. Copolymer of acrylamide and 2-(N,N,N-trimethylammonium)ethylmethacrylate chloride, maximum 0.1%. The polymer must not contain more than 0.1% of the acrylamide monomer and not more than 0.5% of 2-(N,N,N-trimethylammonium)ethylmethacrylate chloride.

3.4.3.5. Copolymer of acrylamide and 2-(N,N,N-trimethylammonium)ethyl acrylate, chloride, maximum 0.1%. The polymer must not contain more than 0.1% of the acrylamide monomer and not more than 0.5% of 2-(N,N,N-trimethylammonium)ethylmethacrylate chloride.

3.4.3.6. Copolymer of acrylamide and acrylic acid, maximum 0.1%. The polymer must not contain more than 0.1% of the acrylamide monomer or more than 0.5% of acrylic acid.

Note: The compounds listed in items 4.3.4., 4.3.5., and 4.3.6. must comply with the following:

The migration of the paraffinic and naphthenic solvents (C10 to C16) used in the production of these retention and drainage agents must not exceed 12 mg/kg of the food in the finished product. The migration of the paraffinic and naphthenic solvents (C16 to C20) used in the production of these retention and drainage agents must not exceed 4 mg/kg of the food in the finished product.

3.4.3.7. Polydiallyldimethylammonium chloride. Maximum limit 0.15% based on the dry fiber.

3.4.3.8. Copolymer of acrylamide [CAS 79-06-1] and diallyldimethylammonium chloride [CAS 7398-69-8]. Maximum limit 0.02% in the formulation based on the dry fiber.

3.4.4. Drainage Aids

3.4.4.1. Polyethyleneimine [CAS 9002-98-6], maximum 0.5%. Ethyleneimine [CAS 151-56-4] must not be detectable in the finished product (detection limit: 0.1 mg/kg). 1,3-Dichloro-2-propanol [CAS 96-23-1] must not be detectable in the water extract of the finished product (detection limit: 2 µg/l). The transference of 3-monochloro-1,2-propanediol [CAS 96-24-2] to the water extract of the final product must be as low as technically possible, and it must not exceed the limit of 12 µg/l.

3.4.4.2. Paraffin dispersions that contain silicone: maximum 0.5% based on the dry dispersion. Paraffins must comply with the "MERCOSUR Technical Regulation on Food-Contact Waxes and Paraffins." Organopolysiloxanes with methyl and/or phenyl groups (silicone oils): maximum 0.1% with a viscosity of at least 100 mm²·s⁻¹ at 20°C (DIN 51562 method).

3.4.5. Dispersants and Flotation Agents

3.4.5.1. Polyvinylpyrrolidone [CAS 9003-39-8] (minimum molecular weight 11000 Da).

3.4.5.2. Alkyl (C10-C20) sulfonates.

3.4.5.3. Alkali metal salts, primarily of linear condensed polyphosphates. The content of cyclic condensed metaphosphates must not exceed 8.0%.

3.4.5.4. Alkyl polyglycol ethers and/or alkylphenol polyglycol ether with 6-12 ethylene oxide groups.

3.4.5.5. Polyethylene glycol ethers (EO = 1–20) made of linear-chain or primary branch (C8–C26) alcohols, maximum 0.3 mg/dm² and polyethylene glycol ethers (EO > 20) made of linear-chain or primary branch (C8–C26) alcohols, maximum 5 mg/dm².

3.4.5.6. Sulfonated castor oil.

Note: Each one of the agents listed in items 3.4.5.1 to 3.4.5.6 may be used up to 1%. The total of the amounts used must not exceed 3%.

3.4.5.7. Condensation products of aromatic sulfonic acid with formaldehyde. The formaldehyde content in the hot water extract of the finished product must not exceed 1.0 mg/dm^2 .

3.4.5.8. Polyethyleneimine [CAS 9002-98-6], maximum 0.5%. Ethyleneimine [CAS 151-56-4] must not be detectable in the finished product (detection limit: 0.1 mg/kg). 1,3-Dichloro-2-propanol [CAS 96-23-1] must not be detectable in the water extract of the finished product (detection limit: $2 \text{ } \mu\text{g/l}$). Transference of 3-monochloro-1,2-propanediol [CAS 96-24-2] to the water extract of the finished product must be as low as technically possible, and it must not exceed the limit of $12 \text{ } \mu\text{g/l}$.

3.4.5.9. Polyacrylic acid sodium salt [CAS 9003-04-7], maximum 0.5%.

3.4.6. Defoamers

3.4.6.1. Organopolysiloxanes with methyl and/or phenyl groups. Kinematic viscosity of the silicone oils, minimum $100 \text{ mm}^2 \cdot \text{s}^{-1}$ at 20°C (DIN N 51562).

3.4.6.2. Aliphatic alcohols (C8-C26), in esterified form. Up to 2% paraffin and up to 2% alkylaryl oxyethylates and their esters with sulfuric acid (as emulsifiers) may be added in an aqueous solution to 20-25% of the defoamer. The liquid paraffin must comply with the requirements established in the MERCOSUR Technical Regulation on Food-Contact Paraffins. Maximum limit 0.1% based on the dry fiber.

3.4.6.3. Polyhydric and monohydric alcohol (C1-C18) fatty acid esters and fatty acid esters with polyethylene glycol and polypropylene glycol.

3.4.6.4. Alkyl sulfonamides (C10-C20).

Note: Each one of the agents listed in items 3.4.6.1 to 3.4.6.4 must not exceed 0.1%.

3.4.6.5. N,N'-Ethylenebis(stearamide) [CAS 110-30-5].

3.4.6.6. 2,4,7,9-tetramethyl-5-decyne-4,7-diol.

3.4.6.7. 3,6-dimethyl-4-octyne-3,6-diol.

3.4.6.8. 2,5,8,11-tetramethyl-6-dodecyne-5,8-diol.

Note: The specific migration limit for the sum of the substances listed in items 3.4.6.6, 3.4.6.7, and 3.4.6.8 is 0.05 mg/kg of food.

3.4.7. Antimicrobial Agents

3.4.7.1. Enzymatic agents.

Fructose polysaccharide (levan) hydrolase, maximum 12.5 mg of dry substance per kg of paper. There must not be more than one unit of levanase activity per gram of paper detected.

3.4.7.2. Active antimicrobial constituents.

3.4.7.2.1. Sodium chlorite [CAS 7758-19-2], sodium peroxide [CAS 1313-60-6], sodium hydrogen sulfite [CAS 7631-90-5], hydrogen peroxide [CAS 7722-84-1].

3.4.7.2.2. 1,4-Bis(bromoacetate) butene [CAS 20679-58-7]. This substance must not be detected in the hot water extract of the finished product (detection limit: 0.01 mg of bromine per dm²).

3.4.7.2.3. 2-Bromo-4-hydroxyacetophenone [CAS 2491-38-5]. This substance must not be detected in the hot water extract of the finished product.

3.4.7.2.4. 3,5-Dimethyltetrahydro-1,3,5-thiadiazine-2-thione [CAS 533-74-4]. This substance must not be detected in the hot water extract of the finished product.

3.4.7.2.5. Methylene bithiocyanate [CAS 6317-18-6]. This substance must not be detected in the hot water extract of the finished product.

3.4.7.2.6. Potassium N-hydroxymethyl-N'-methyl-dithiocarbamate [CAS 51026-28-9] and sodium-2-mercaptobenzothiazole [CAS 2492-26-4]. The substances and their conversion products (primarily methylthiourea, N,N'-dimethyl-thiourea and dithiocarbamates) must not be detected in the hot water extract of the finished product.

3.4.7.2.7. 2-Oxo-2-(4-hydroxyphenyl)-acetohydroxamic acid chloride. This substance must not be detected in the hot water extract of the finished product.

3.4.7.2.8. Glutaraldehyde [CAS 111-30-8], maximum 2.5%. More than 2 mg of glutaraldehyde per kg of finished product must not be detected.

3.4.7.2.9. Chlorine dioxide [CAS 10049-04-4].

3.4.7.2.10. Mixture of 5-chloro-2-methyl-4-isothiazolin-3-one [CAS 26172-55-4] and 2-methyl-4-isothiazolin-3-one [CAS 2682-20-4], in an approximate 3:1 ratio, respectively, during the manufacturing process. The sum of the substances mentioned must not exceed 0.5 µg/dm² in the hot water extract of the finished product.

3.4.7.2.11. 1,2-Benzoisothiazolin-3-one [CAS 2634-33-5]. This substance must not exceed 10 µg/dm² of formaldehyde in the hot water extract of the finished product.

3.4.7.2.12. N,N'-dihydroxymethyl urea [CAS 140-95-4], maximum 0.0125%. Maximum limit 1.0 mg/dm² of formaldehyde in the hot water extract of the finished product.

3.4.7.2.13. 1,6-Dihydroxy-2,5-dioxihexane [CAS 3586-55-8], maximum 0.029%. Maximum limit 1.0 mg/dm² of formaldehyde in the hot water extract of the finished product.

3.4.7.2.14. 2-Bromo-2-nitropropane-1,3-diol, maximum 0.003%. This substance must not be detected in the hot water extract of the finished product.

3.4.7.2.15. 2-Methyl-4-isothiazolin-3-one [CAS 2682-20-4]. There must not be more than 1 µg/dm² of this substance detected in the hot water extract of the finished product.

3.4.8. Preservatives

3.4.8.1. Benzoic acid [CAS 65-85-0] and sodium benzoate [CAS 532-32-1].

3.4.8.2. Sorbic acid [CAS 110-44-1] and its sodium, potassium, calcium, and magnesium salts.

3.4.8.3. Ethyl esters [CAS 120-47-8] and/or propyl esters [CAS 94-13-3] of p-hydroxybenzoic acid.

Note: The preservatives must only be used in the amounts necessary to protect the raw materials, the processing aids, and the packaging finishing agents from deterioration. The addition of these products must not exert a preservative action on the food.

3.5. Special Agents

3.5.1. Moisture Resistance Agents

3.5.1.1. Urea formaldehyde [CAS 9011-05-6] resin. There must not be more than 1.0 mg of formaldehyde per dm² detected in the hot water extract of the finished product.

3.5.1.2. Melamine-formaldehyde resin. There must not be more than 1.0 mg of formaldehyde per dm² detected in the hot water extract of the finished product.

3.5.1.3. Cross-linked cationic polyalkylenamines, maximum 4.0% total.

a) Polyamine-epichlorohydrin resin, synthesized from epichlorohydrin [CAS 106-89-8] and diaminopropyl-methylamine [CAS 105-83-9], maximum 0.5%;

b) Polyamide-epichlorohydrin resin, synthesized from epichlorohydrin [CAS 106-89-8], adipic acid [CAS 124-04-9], caprolactam [CAS 105-60-2], diethylenetriamine [CAS 111-40-0], and/or ethylenediamine [CAS 107-15-3];

c) Polyamide-epichlorohydrin resin, synthesized from adipic acid [CAS 124-04-9], diethylenetriamine [CAS 111-40-0] and epichlorohydrin [CAS 106-89-8], or a mixture of epichlorohydrin and ammonia;

d) Polyamide-polyamine-dichloroethane, synthesized from dichloroethane and an adipic acid amide, caprolactam [CAS 105-60-2], and diethylenetriamine [CAS 111-40-0];

e) Polyamide-polyamine-epichlorohydrin resin, synthesized from epichlorohydrin [CAS 106-89-8], an adipic acid amide and diaminopropyl-methylamine [CAS 105-83-9];

f) Polyamide-epichlorohydrin resin, synthesized from diethylenetriamine [CAS 111-40-0], adipic acid [CAS 124-04-9], glutaric acid [CAS 110-94-1], succinic acid [CAS 110-5-6], and epichlorohydrin [CAS 106-89-8];

g) Polyamide-epichlorohydrin resin, synthesized from diethylenetriamine [CAS 111-40-0], triethylenetetramine [CAS 112-24-3], adipic acid [CAS 124-04-9], and epichlorohydrin [CAS 106-89-8].

Note: The compounds listed in subitems a), b), c), e), f), and g) must also comply with the following restrictions: ethyleneimine [CAS 151-56-4] must not be detectable in the resin (detection limit: 0.1 mg/kg); epichlorohydrin (detection limit: 1 mg/kg) and 1,3-dichloro-2-propanol [CAS 96-23-1] (detection limit: 2 µg/l) must not be detected in the water extract of the finished product. Transference of 3-monochloro-1,2-propanediol [CAS 96-24-2] to the water extract of the finished product must be as low as technically possible, and it must not exceed the limit of 12 µg/l.

3.5.1.4. Copolymer of hexamethylenediamine [CAS 124-09-4] and epichlorohydrin [CAS 106-89-8], maximum 2.0%.

Epichlorohydrin (detection limit: 1 mg/kg) and 1,3-dichloro-2-propanol (detection limit: 2 µg/l) must not be detected in the water extract of the finished product. Ethyleneimine must not be detected in the resin (detection limit: 0.1 mg/kg). Transference of 3-chloro-1,2-propanediol to the water extract of the finished product must be as low as technically possible, and it must not exceed the limit of 12 µg/l.

3.5.1.5. Copolymer of diethylenetriamine [CAS 111-40-0], adipic acid [CAS 124-04-9], 2-aminoethanol [CAS 141-43-5] and epichlorohydrin [CAS 106-89-8], maximum 0.1%. Epichlorohydrin (detection limit: 1 mg/kg) and 1,3-dichloro-2-propanol (detection limit: 2 µg/l) must not be detected in the water extract of the finished product. Ethyleneimine must not be detected in the resin (detection limit: 0.1 mg/kg). Transference of 3-chloro-1,2-propanediol to the water extract of the finished product must be as low as technically possible, and it must not exceed the limit of 12 µg/l.

3.5.2 Moistening Agents

3.5.2.1. Sorbitol [CAS 50-70-4].

3.5.2.2. Sucrose [CAS 57-50-1], glucose [CAS 50-99-7], and glucose syrup.

3.5.2.3. Sodium chloride [CAS 7647-14-5] and calcium chloride [CAS 10043-52-4].

Note: The substances listed in items 3.5.2.1. to 3.5.2.3 may be used up to 7% total. The compounds used as moistening agents must meet the purity requirements established for food additives, except for sodium chloride.

3.5.3. Colorants and Optical Brighteners

3.5.3.1. Iron(III) oxide [CAS 1309-37-1] and iron hydroxide [CAS 11113-66-9] that meet the specifications for food additives.

3.5.3.2. Use of optical brighteners allowed by the "MERCOSUR Technical Regulation on Food-Contact Cellulosic Materials, Packaging, and Equipment" is permitted in multi-layer cellulosic materials for baking, provided that they are applied on the outer surface, that they are not in contact with the foods, and it is certain that there will be no migration to the foods in the established conditions for use.

3.5.4. Surface Finishing Agents in Direct Contact with Foods

3.5.4.1. Polyvinyl alcohol [CAS 9002-89-5] (viscosity of the water solution 4% minimum 5 mPa·s at 20°C).

3.5.4.2. Sodium alginate [CAS 9005-38-3]. This must comply with the contaminant limits established for this substance in the "MERCOSUR Technical Regulation on Food-Contact Cellulosic Materials, Packaging, and Equipment."

3.5.4.3. Carboxymethylcellulose sodium salt, technically pure [CAS 9004-32-4]. The content of sodium glycolate [CAS 2836-32-0] must not exceed 12%.

3.5.4.4. Resins and silicone elastomers, provided that they comply with the MERCOSUR Technical Regulations on Resins and Elastomers. Di-n-octyltin dimaleate and di-n-octyltin dilaurate must not be used as hardeners.

3.5.4.5. Chromium(III) chloride with linear-chain fatty acids C14 or higher saturated fatty acids, maximum 0.4 mg of chromium per dm². The hot water extract of the finished products must not contain more than 4.0 µg/l of chromium(III) per dm², and chromium(VI) must not be detected.

3.5.4.6. Terephthalic acid polyesters and diols, as well as polyamides, according to the MERCOSUR Technical Regulation on Food-Contact Plastic Materials. Copolymers of ethylene, propylene, and polyethylene must not be used.

3.5.4.7. Aluminum sheets, provided that they are suitable for use and comply with the MERCOSUR Technical Regulation on Food-Contact Metal Packaging and Equipment.

3.5.4.8. Copolymer of vinyl alcohol and isopropyl alcohol (aqueous solution viscosity 4% minimum 5 mPa·s at 20°C) [CAS 30475-32-2 (polymer)].

3.5.4.9. Copolymer of perfluoroalkylethyl acrylate, vinyl acetate [CAS 108-05-4], and N,N'-dimethylaminoethyl methacrylate [CAS 2867-47-2], maximum 0.6%.

3.5.4.10. Phosphoric acid and perfluoropolyether-diol ethoxylated esters [CAS 200013-65-6], maximum 1.5%.

3.5.4.11. Copolymer of 2-diethylaminoethyl methacrylate [CAS 105-16-8], 2,2'-ethylenedioxydiethyl dimethacrylate [CAS 77302-65-9], and 2-hydroxyethyl methacrylate [CAS 868-77-9], and 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl methacrylate [CAS 2144-53-8], acetic and/or malic acid salt, maximum 1.2%.

3.5.4.12. Copolymer of methacrylic acid [CAS 79-41-4], 2-hydroxyethyl methacrylate [CAS 868-77-9], polyethylene glycol monoacrylate [CAS 26403-58-7], and sodium salt of 3,3,4,4,5,5,6,6,7,7,8,8,8-Tridecafluorooctyl acrylate [CAS 17527-29-6], with a fluorine content of 45.1%, maximum 0.8%.

3.5.4.13. Polyvinyl acetate [CAS 90003-20-7].

3.6. Cellulosic Materials for Use in Microwave Ovens

In addition to the substances listed above, the following substances may be used:

3.6.1. Retention Agents

3.6.1.1. Copolymer of dimethylamine and epichlorohydrin, maximum 0.25%.

3.6.1.2. Copolymer of dimethylamine, ethylenediamine, and epichlorohydrin, maximum 3%.

Note: The cellulosic material produced with these retention agents must also comply with the following restrictions: Ethyleneimine [CAS 151-56-4] must not be detectable in the finished product (detection limit: 0.1 mg/kg). Epichlorohydrin (detection limit: 1 mg/kg) and 1,3-dichloro-2-propanol [CAS 96-23-1] (detection limit: 2 µg/l) must not be detected in the water extract of the finished product; Transference of 3-chloro-1,2-propanediol [CAS 96-24-2] to the water extract of the finished product must be as low as technically possible, and it must not exceed the limit of 12 µg/l.

3.6.2. Surface Finishing Agents in Direct Contact with Foods

3.6.2.1. Copolymer of dimethyl terephthalate, ethylene glycol, propane-1,2-diol, pentaerythritol, polyethylene glycol, and polyethylene glycol monomethyl ether with a terephthalic acid content of 24%, maximum 0.05 mg/dm².

4. SPECIFIC CONDITIONS FOR MIGRATION TESTING

4.1. The migration testing must be performed in accordance with the procedure described in Standard EN 14338:2003 - Paper and board intended to come into contact with foodstuffs. Conditions for determination of migration from paper and board using modified polyphenylene oxide (MPPO) as a simulant.

4.2. Migration testing must be performed at the maximum temperature of use and the longest cooking time expected for the packaging or equipment, keeping in mind the requirement from item 2.6 of the General Provisions.

5. SPECIFIC CONDITIONS FOR EXTRACTION TESTING

When the extraction testing is performed to determine compliance with the requirements, the sample must be previously prepared in a closed chamber in the time and temperature conditions specified in the table, according to the expected use.

Contact Time	Sample Preparation Duration
$t \leq 30 \text{ min}$	30 min + 1 min
$30 \text{ min} < t \leq 1 \text{ hour}$	1 hour + 2 min
$1 \text{ hour} < t \leq 2 \text{ hours}$	2 hours + 5 min
$2 \text{ hours} < t \leq 24 \text{ hours}$	24 hours + 30 min
$t > 24 \text{ hours}$	10 days
Contact Temperature	Sample Preparation Temperature
$T \leq 5^{\circ}\text{C}$	$5^{\circ}\text{C} \pm 1^{\circ}\text{C}$
$5^{\circ}\text{C} < T \leq 20^{\circ}\text{C}$	$20^{\circ}\text{C} \pm 1^{\circ}\text{C}$
$20^{\circ}\text{C} < T \leq 40^{\circ}\text{C}$	$40^{\circ}\text{C} \pm 1^{\circ}\text{C}$
$40^{\circ}\text{C} < T \leq 70^{\circ}\text{C}$	$70^{\circ}\text{C} \pm 2^{\circ}\text{C}$
$70^{\circ}\text{C} < T \leq 100^{\circ}\text{C}$	$100^{\circ}\text{C} \pm 3^{\circ}\text{C}$
$100^{\circ}\text{C} < T \leq 121^{\circ}\text{C}$	$121^{\circ}\text{C} \pm 3^{\circ}\text{C}$
$121^{\circ}\text{C} < T \leq 130^{\circ}\text{C}$	$130^{\circ}\text{C} \pm 3^{\circ}\text{C}$
$130^{\circ}\text{C} < T \leq 150^{\circ}\text{C}$	$150^{\circ}\text{C} \pm 3^{\circ}\text{C}$
$T \leq 150^{\circ}\text{C}$	$175^{\circ}\text{C} \pm 3^{\circ}\text{C}$