

Draft Decree for Packaging and Utensils(Commodities Act)

The draft Decree for Packaging and Utensils(Commodities Act) together with 6 appendixes and the explanation given by the advisory committee for the Commodities Act follow below.

Interested parties may file written comments with the Department of Social Affairs and Public Health within twelve months from the date of this publication.

Draft Decree for Packaging and Utensils(Commodities Act)

In this decree is understood under

a) packaging: the inedible material, intended or used for the total or partial wrapping of foods and beverages, as well as chewing preparations, with the exclusion of those of tobacco, inasfar as the material is or may come in contact with the aforesaid products, as well as, when it is not or may not come in direct contact with the aforesaid products, if it may pass off compounds to those products under normal conditions;

b)utensils: utensils which are used for the preparation, the manufacture, the composition or the storage of foods or beverages.

Packaging has to comply with the following requirements:

- a) it must be separable in a simple manner from the food or beverage without leaving parts of the packaging on or in the food or beverage;
- b) they should not pass off or be capable of passing off components to the food or beverage in an amount, which may be harmful for health;
- c) it must be in a tidy condition;
- d) it should not change or be capable to change in an unacceptable manner the composition, taste, color, flavor or consistency of the food or beverage present therein under normal conditions;

e) from the packaging not more substance shall pass into or shall be able to pass into the food or beverage than ...% of the weight of the food or beverage present in the packaging.

Paragraph 3.

Utensils have to comply with the following requirements:

- a) those, put in paragraph 2, under b and d;
- b) from eating or drinking utensils not more substance is allowed to pass into or be able to pass into the food or beverage than

Paragraph 4.

Articles intended for or used for the feeding of infants and toddlers have to comply with the following requirements:

- a) those, put in paragraph 2, under b) and d).
- b) from said articles not more substance is allowed to pass into or be able to pass into the food or beverage than

Paragraph 5.

Eating and drinking utensils have to comply with the following requirements:

- a) those, put in paragraph 2, under b) and d);
- b) from eating and drinking utensils not more substance is allowed to pass into or be able to pass into the food or beverage than

Paragraph 6.

1. Our Minister of Social Affairs and Public Health and Our Ministers, who are also concerned, is granted the power to make further requirements with respect to specifically mentioned packaging, utensils, articles intended for or used for feeding of infants and toddlers, and eating and drinking utensils.

2. The further requirements intended in the first section may comprise:

- a) directions with respect to the presence of substances which, with exclusion of other substances, are allowed to be present in commodities meant in section 1;
- b) directions with respect to the purity requirements of the substances meant under a).
- c) directions with respect to methods of investigation for establishing whether the commodities meant in the first section comply with the requirements set by or under this decree.

3. The further requirements meant in the first section may also

comprise the permission of the presence of other substances in a commodity as meant in said section, than those meant in the second section under a), if the composition and the intended use of said commodity are clearly described and if it has been shown, that the substance does not pass into or may pass into the food or beverage for which the commodity is intended in a harmful amount; this permission can be linked up with directions.

Paragraph 7

1. If certain substances are not permitted to be present in a food or beverage on the basis of or under any other general decree for enforcement of the commodities Act (Official Gazette 1935, 793) these substances are, in departure thereof, allowed to be present in said food or beverage in as far as they stem in type and amount from the packaging or from a utensil.

2. If certain substances are permitted to be present in a food or beverage up to a certain amount on the basis of or under any other general decree for enforcement of the commodities Act (Official Gazette 1935, 793), the amount of such a substance stemming from the packaging or the utensil should not cause that the amount permitted in said general decree is exceeded.

Paragraph 8

For the determination whether packaging, utensils, articles intended for or used in feeding infants and toddlers, and eating and drinking utensils comply with the requirements, set in or under this decree, use has to be made of methods of investigation, which have been established by Our Minister of Social Affairs and Public Health and Our Ministers, which are also concerned, under paragraph 6, second section, under d), in as far as these methods are sufficient; use can also be made of organoleptic investigation by experts.

Paragraph 9

This decree does not apply to:

a) covering means used on eggs;

b) covering means, used on the rind of cheese,

one thing and another in as far as these can not be removed in a simple manner from the eggs and from the rind of the cheese.

Paragraph 10

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In the Royal decree of March 26, 1921 (official Gazette 638) the

statements under 2^o and 5^o are read as follows:

2. articles intended for or used for packaging or wrapping of food and beverages, as well as chewing preparations, with exclusion of those of tobacco;

5. articles intended for or used in feeding infants and toddlers.

Paragraph 11

Paragraph 3 of the General Decree (commodities Act) is read as follows

For the transportation of food and beverages and basic materials therefore no use is permitted of transport means which

a) are not in a clean and well kept state;

b) may pass on to food and beverages components in amounts, which may be harmful to health or may pollute said commodities in another manner;

c) have been cleaned with other water than meant in paragraph 1, first section, under g), except for the stipulation in paragraph 1, second section under b),

one thing and another in as far as the food and beverage or the basic material therefore come in contact with the transport means

Paragraph 12

Paragraph 3 ter of the General Decree (commodities Act) is cancelled

Paragraph 13

This decree is cited under the title: decree for packaging and utensils (Commodities Act) and comes into effect on

Explanation of the draft decree for packaging and utensils (commodities Act)

The draft decree for packaging (Commodities Act) published in the Official Gazette of the Netherlands of October 1, 1965, had as its object solely to create directions for packaging. More and more the need was felt to make also rules with regard to utensils which come in contact with food and beverages, and articles intended for or used in feeding infants and toddlers and eating and drinking utensils, which articles can produce the same hazards for public health.

The suggested extension of the effective area of the decree has moreover the advantage that difficulties with respect to the demarcation of the notion packaging is prevented, since in border cases that which

can not indisputedly be considered as packaging, will be comprised by the notion utensils.

In accordance with the above a new draft decree has been made. An explanation paragraph by paragraph is given hereafter.

Paragraph 1, under a.

The insertion of the words " or partially" has as an object to be able to exert also control for packaging material which surrounds edibles or beverages partially, for example wrappers, which partially cover a commodity, or cups for coffee, cups or plates for salads or pudding, of which the upper side is not closed.

Paragraph 1, under b

The description of the notion utensils corresponds with the description, which is given in paragraph 1 of the Act for these articles, i.e. utensils which are used for the preparation, the manufacture, the composition or the storage of foods and beverages.

Paragraph 2

This paragraph is essentially identical with the corresponding paragraph in the old draft packaging decree. The direction under c now contains a requirement for impurity. It is still a matter of consideration in what way this requirement for impurity has to be realized. On the basis of the initial draft the requirement was that from polystyrene not more than 1 mg., from polyethylene not more than 3 mg. and from polypropylene not more than 5 mg. in total of substances is passed off, all this based on 1 dm² of packaging material. In recent times the committee which prepared this draft, has however come to the conclusion that it is better logic to have a requirement for impurity holding uniformly for all packaging and based on the amount of migrated substances in the packed food. Such a requirement has now been incorporated with the object to receive comments and criticism thereon in order to be able to formulate later on a final standpoint. The thought is presently of a limit of 0.010 %.

It is observed that the Italian legislation comprises a similar requirement, however with a lower limit than was kept in mind initially in this country, i.e. 0.005%.

The attention is drawn to the fact that the impurity requirements to be set will apply to all packaging, a.o. those consisting of synthe-

tic resin, paper, glass and cans.

Paragraph 3

The requirement comprised under b deviates from the corresponding requirements for packaging since it is not quite possible for these articles, which are marketed as such, to talk about food or beverage present therein. In what way this requirement will have to be worded will have to be studied after the reactions on the draft decree have been received.

Paragraph 6

The third section provides for the possibility incidentally other auxilliary compounds are permitted in packaging, utensils, articles intended for or used in feeding infants and toddlers, and eating and drinking utensils intended for certain, exactly defined purposes, than those mentioned in the relevant appendixes. There is a need for this possibility in industry. From the viewpoint of public health there is no objection to meet this need, provided that the necessary guarantees against misuse are created by making special directions.

Paragraph 7

The first section of this paragraph serves to prevent mutual discrepancies in different decrees for enforcement of the Act. For it is not imaginary that a substance is passed off from a packaging or utensil into a food or beverage-though usually in small amount-, and is permitted to be passed off, which substance is not allowed to be present in that food or beverage on the basis of another decree for enforcement of the Act. The said requirement defines that the said substance, inasfar as stemming in type and amount from the packaging or utensil, is allowed to be present in the food or beverage in deviation from the interdiction stated elsewhere. A statement, comprising a reference to the decree for packaging and utensils should be incorporated in the relevant general decrees in order to make the required correlation.

The second section has as an object to prevent, that maximums set in other decrees for enforcement of the Act for allowed substances are exceeded by quantities of those substances stemming from the packaging or from utensils. Said maximums have been set sensibly and have to be maintained as such.

Paragraph 9

This paragraph is identical to paragraph 5 of the draft published in the Official Gazette of the Netherlands of October 1, 1965 to the extent that the exception with respect to the skins for sausages has been cancelled. From the viewpoint of public health it is necessary that the skin of sausages and other meat products comply with the same requirements as the wrappers of other foods and beverages since it provides potentially the same dangers for public health. In exceptional cases it is possible to apply paragraph 6, third section.

Paragraph 10

In the Royal Decree of March 26, 1921 (Official Gazette 638) are mentioned as commodities according to the Act amongst others rubber articles in as far they are used for feeding of children. At the time rubber nipples were held in mind. No thought was given at the time to nipples, bottles and eating and drinking utensils of plastic ~~articles~~. Since nowadays plastics are also used for the manufacture of such articles, it is necessary to set requirements with respect to those articles, the more so since it relates to the feeding of infants and toddlers, which may be more sensitive for certain substances than older persons. Therefore the wording of the abovementioned decree will have to be adapted to the present development.

In connection with the definition of "packaging" the description thereof, mentioned under 2^o of the abovementioned decree will have to be adapted.

Paragraph 11

The present decree provides detailed requirements for articles which come in contact with foods and beverages. Paragraph 3 of the General Decree (Commodities Act) also provides requirements in this field though broadly. This paragraph could therefore be withdrawn, if it were not that it also comprises requirements with respect to transportation means. The present decree does not provide therein. Thus a new wording of paragraph 3 of the General Decree (Commodities Act) has been made, comprising the requirements which relate to transportation means. These requirements have also been newly worded.

Appendix I.

belonging with the draft decree for packaging and utensils (commodities Act).

Polystyrene Homopolymer.

In this appendix is understood under polystyrene: the product obtained by polymerizing exclusively styrene.

The commodities, meant in the paragraphs 2,3,4 and 5 of the decree packaging and utensils(Commodities Act), consisting of polystyrene, have to comply with the following requirements:

1.the infrared spectrogram has to be characteristic for polystyrene;

2.the content of volatile components of the final product,determined according to the appendix"methods of investigation", should be not higher than 0.5%;

3.the auxiliary compounds added to polystyrene have to be of good technical quality;if a maximum content is given for an auxiliary compound, the content thereof, including its decomposition products, should not exceed the content defined in the final product.

Not other auxiliary compounds or other compounds are permitted in the final product than the ones mentioned below:

a.emulsifiers, in total at most 0.1 %:

alkyl(C₉-C₁₅) benzenesulfonate,sodium salt

dodecylsulfate(laurylsulfate) primary,sodium salt

polyoxyethylene(polyethyleneglycol), molecular weight more than 200,

free of ethyleneglycol and diethyleneglycol

polyoxyethylene(minimum 8) monooleate

b.other compounds:

alkanes and cycloalkanes, boiling point 0-100°C.;bentonite;calcium carbonate,chalk;sodium salt of carboxymethylcellulose;chlorides of calcium,potassium and sodium;citric acid; 2,5-di(5'-tert-butyl-benzoxazolyl-2')-thiophene;tertiary dodecylmercaptan,if not extractable from the final product;phosphates of calcium and sodium;gelatin; innocuous dyes and pigments; sodium sulfate; sodium bicarbonate; organopolysiloxanes containing 2 methyl groups at each Si-atom (silicones);paraffines,solid(synthetic included);the absorption of ultraviolet light has to comply with the values indicated in Appendix 6,Methods of Investigation; liquid paraffines(refined mineral oils), which comply with the following requirements: the color has to be weaker than standard Saybolt 30, odor has to be absent, the absorption of ultraviolet light has to comply with the values described in

appendix 6, Methods of Investigation; polyethylene, molecular weight more than 200, at most 0.5% polyvinylalcohol (the viscosity of a 4% solution in water at 20°C has to be at least 20 cPP), at most 2.5%; 1,2-propanediol; ricinolamide, at most 0.5%; fatty acids, unbranched, saturated, C₁₄-C₂₂, with even number of carbon atoms, as well as oleic acid, with a content of at most 1% of unsaponifiable components; fatty acids as described above, as esters with alifatic, unbranched, saturated primary (monohydric) alcohols C₁-C₁₈ and oleic alcohol; fatty acids as described above, as salts with aluminum, ammonium, calcium, potassium, magnesium and sodium; also zincstearate; fatty acids as described above, esterified with glycerol to mono- or diglycerides; microcrystalline waxes; tartaric acid; zincoxide;

c) decomposition products of the auxiliary compounds mentioned under A. and b.

d) decomposition products of the following initiators up to a combined content of at most 0.2% of the final product: ammoniumpersulfate; azodiisobutyric acid nitrile; dibenzoylperoxide; diisopropylperoxide; ditertiarybutylperoxide; isopropylperoxycarbonate; potassiumpersulfate; tertiarybutylhydroperoxide; tertiarybutylperoxyacetate; tertiarybutylperoxybenzoate; tertiarybutyl-peroxydiethyl^{acet}ate;

decomposition products of other compounds than those mentioned under 3 are not allowed to be present.

Appendix 2

belonging to the draft Decree for Packaging and Utensils (Commodities Act)

Mixed and copolymers of polystyrene

In this appendix is understood under mixed and copolymers of polystyrene: the products obtained by polymerization of styrene with one or more of the monomers mentioned hereafter, or by mixing polystyrene with polymers or copolymers of the monomers mentioned hereafter.

As monomer are allowed to be used exclusively: acrylonitrile; acrylic acid and the methyl, ethyl, butyl and octyl ester of acrylic acid; butadiene; p-divinylbenzene; ethylene; isobutylene; methacrylic acid and the methyl, ethyl and butyl ester of methacrylic acid; alpha-methyl styrene; styrene; vinylacetate; vinylpropionate.

The final product has to consist for at least 50% of styrene and

and alpha-methylstyrene.

The commodities meant in the paragraphs 2,3,4 and 5 of the decree Packaging and Utensils(Commodities Act), consisting of mixed and copolymers of styrene, have to comply with the following requirements:

- 1.the infrared spectrogram has to be characteristic for polystyrene;
- 2.the content of volatile constituents of the final product, determined according to the appendix "Methods of Investigation" should not be more than 0.5%.The volatile compounds have to be free of acrylonitril and divinylbenzene;

- 3.the auxiliary compounds added to the polystyrene have to be of good technical quality.If a maximumcontent of the auxiliary compound is given, the content thereof, including its decomposition products,in the final product should not exceed the amount indicated.

Not other auxiliary compounds or other compounds should be present in the final product than the ones mentioned hereinafter:

- a) antioxidants, as mentioned in appendix 3.Antioxidants in total at most 0.6%;

- b) emulsifiers, in total at most 0.1%:

alkyl(C_9-C_{15}) benzenesulfonate, sodium salt; dodecylsulfate(laurylsulfate) primary, sodium salt; polyoxyethylene(polyethyleneglycol), molecular weight more than 200, free of ethyleneglycol and diethylene glycol;polyoxyethylene(minimum 8) mono-oleate;

- c) other compounds: alkanes and cycloalkanes, boiling point 0-100°C bariumsulfate;bentonite;calciumcarbonate, chalk;sodium salt of carboxymethylcellulose; chlorides of calcium,potassium and sodium;citric acid and the potassium and sodium salts thereof;colofonium(gumresin,wood res and Chinese wood resin),if desired modified by catalytic disproportionation and completely, partially or not saponified to potassium or sodium soap The product after catalytic disproportioning contains at most 0.25% substituted phenanthrene(as retene).

In total at Most 0.3% of colofonium and derivatives in the polystyrene final product.

di-(2-ethylhexyl)phthalate, at most 0.2%; 2,5-di(5'-tert-butylbenzoxazolyl-2')-thiophene; dodecylmercaptan, tertiary, provided not extractable from the final product; ethylenediaminetetraacetic acid, sodium salts; phosphates of calcium and sodium; gelatin; glycerol; hydroxyethylcellulose;

lose; innocuous dyes and pigments; morpholin, sodium acetate; sodium sulfate; sodium bicarbonate; octadecylalcohol; organopolysiloxanes, containing 2 methyl groups at each Si-atom(silicones); paraffines, solid(including synthetic):the absorption of ultraviolet light has to comply with the values described in appendix 6, Methods of Investigation; paraffines, liquid(refined mineral oil), which comply with the following requirements:the color has to be weaker than standard Saybolt 30, odorless,the absorption of ultraviolet light has to comply with the values described in appendix 6, Methods of Investigation; polyethylene, molecular weight more than 200, at most 0.5% polymer, mixed, ~~xxxxxxx~~ of vinylpyrrolidon and polyethyleneglycol(1000); polyvinylalcohol(the viscosity of the 4% solution in water has to be at least 20 cP at 20°C) at most 2.5%; polyvinylpyrrolidon; 1.2-propanediol; ricinolamide, at most 0.5%; fatty acids, unbranched, $C_{14}-C_{22}$, with even number of carbon atoms, as well as oleic acid, with a content of at most 1% of unsaponifiable components; fatty acids as described above, as esters with alifatic, unbranched, saturated, monohydric alcohols C_1-C_{18} and oleic alcohol; fatty acids as described above, esterified with glycerol to mono- and diglycerides; Fatty acids, as described above, as salts with aluminum, ammonium, calcium, potassium, magnesium and sodium; moreover zincstearate; microcrystalline waxes; tartaric acid; zinc-2-ethylhexoate at most 0.5%; zincoxide; zincsulfide;

d) decomposition products of the auxiliary compounds mentioned under a) to c);

e) decomposition products of the following initiators to a combined content of at most 0.2% of the final product: ammoniumpersulfate; azo-bis-cyclo-hexanoyl-carbonitril; azo-di-isobutyronitril; bis(3.5.5-trimethylhexanoyl)peroxide; bis(isopropoxycarbonyl)peroxide; 1.4-bis(alpha-hydroperoxy-isopropyl)benzene; 1.3-(bis-(alpha-hydroperoxy-isopropyl)-benzene; cumylhydroperoxide; diacetylperoxide; dibenzoylperoxide; dicumylperoxide; di-decanoylperoxide; dilauroylperoxide; di-octanoylperoxide; di-pelargonoylperoxide; dipropionylperoxide; 2.2-di-tert.butyl-peroxybutane; 2.2-di-tert.butyl-peroxyhexan ; di-tert.butylperoxide; isopropylperoxycarbonate; potassium persulfate; p-(alpha-hydr peroxyisopropyl)-cumene; tert.butyl-hydroperoxide; tert.butyl-peroxydiethylacetate; tert.butyl-peroxyacetate; tert.butyl-

tert.butyl-peroxybenzoate; tert.butyl-peroxypivalate;

4.decomposition products of other compounds than those mentioned under 3 are not allowed to be present.

Appendix 3

belonging to the draft Decree for Packaging and Utensils(Commodities Act)

Antioxidants.

Except for the stipulations in other appendixes of the decree for executing paragraph 4 of the Decree for Packaging and Utensils(Commodities Act) commodities as meant in the paragraphs 2,3,4 and 5 of the Decree for Packaging and Utensils(Commodities Act) are not allowed to contain antioxidants other than the following:

ascorbic acid; BHA- mixture of 3-tert.butyl-4-hydroxyanisol and 2-tert.butyl-4-hydroxyanisol; BHT = 2.6-ditert.butyl-4-methylphenol; 2.6-ditert.butyl-p-cresol; butylated hydroxytoluene; citric acid; dilaurylthiopropionate; 2.2'-dioxy-3.3'-dicyclohexyl-5.5'-dimethyldiphenylmethane; distearylthiodipropionate; dodecylgallate; guaiac resin; carbon, including carbon black, channel black, coke powder, furnace black, graphite, soot and thermal black; monoglyceride-citrate; nordihydroguajaretic acid; n-octadecyl-beta-(4'-hydroxy-3.5'-ditert.butylphenyl)-propionate; octylgallate; propylgallate; thiodipropionic acid; 2.4.5-trihydroxy-butyrophenone; 1.3.5-trimethyl-2.4.6-tri(3.5-ditert.butyl-4-hydroxybenzyl)benzene; tri(nonylphenyl)phosphite: in this antioxidant are always present as impurities: mono-(nonylphenyl)phosphite di(nonylphenyl)phosphite, trinonyloctylphosphite, trioctyl-phenylphosphate and less than 1% triisopropanolamine sulfur.

Appendix 4

draft
belonging to the Decree for Packaging and Utensils(Commodities Act)

Polyethylene

In this appendix is understood under polyethylene: the homopolymer, obtained by polymerizing exclusively ethylene as well as the copolymers obtained by copolymerization of ethylene with hydrocarbons of the type alkene-1 with at least 8 carbon atoms, which consist for at least 95% of ethylene.

The commodities meant in the paragraphs 2,3,4 and 5 of the Decree

for Packaging or Utensils(Commodities Act) consisting of polyethylene have to comply with the following requirements:

1.the infrared spectrogram has to be characteristic for polyethylene. The density should be not less than 0.85 and not more than 1.00; In ethylacetate at 50°C not more than 3.1% of the polymer should dissolve without added auxiliary compounds;

2)the auxiliary compounds added to the polyethylene have to be of good technical quality.If a maximum content is given for an auxiliary compound, the content thereof, including its decomposition products, in the final product should not exceed said given content.

No other auxiliary compounds or other compounds other than the ones mentioned below, are allowed in the final product:

a)antioxidants to a total of at most 0.5%(without carbon);the antioxidants as mentioned in appendix 3, antioxidants; 4,4'-butylidene-bis(6-tert.butyl-3-methylphenol) up to at most 0.3%;carbon up to at most 3.0%; 4,4'-thio-bis(6-tert.butyl-3-methylphenol) up to at most 0.05%;

b)blowing agents; adipic acid; succinic acid; carbonates of ammonium potassium and sodium; citric acid; glutaric acid; levulinic acid; lactic acid;

c) emulsifiers, in total at most 0.1%:

alkyl (C₉-C₁₅) benzenesulfonate, sodium salt; dodecylsulfate(laurylsulfate) primary, sodium salt;

d) slipping agents: beeswax; carnaubawax; di(ethylhexyl)phthalate; glycerol;2-hydroxy-4n-octoxybenzophenone;octadecylalcohol;organo-polysiloxanes, containing 2 methyl groups at each Si-atom(silicones); paraffines, solid(including synthetic):the absorption of ultraviolet light has to comply with the values described in appendix 6,Methods of Investigation; silicates of aluminum, calcium, potassium, magnesium

and sodium, included asbestos, diatomaceous earth, fibreglass,infusoria earth, caoline, clay, mica and talc; sorbic acid; zincsulfide;

g) decomposition products of the auxiliary compounds mentioned under a) to f);

h) decomposition products of the following initiators up to a combine content of at most 0.2% in the final product:

bis(isopropoxycarbonyl)peroxide; bis(3.5.5-trimethylhexanoyl)peroxide; dibenzoylperoxide; dilauroylperoxide; dinonaoylperoxide; dipropionylperoxide; di-decanoylperoxide; di-pelargonoylperoxide; dioctanoylperoxide; di-tert. butylperoxide; isopropylpercarbonate; paramenthanehydroperoxide; tert. butyl-peroxy-2-ethylhexanoate; tert. butyl-peroxyacetate; tert. butyl-peroxybenzoate; tert. butyl-peroxydiethylacetate; tert. butyl-peroxyisobutyrate; tert. butyl-peroxypivalate;

3) decomposition products of other compounds than those mentioned under 2) are not allowed to be present.

Appendix 5

belonging to the Draft Decree for Packaging and Utensils (Commodities Act)

Polypropylene

In this appendix is understood under polypropylene: the homopolymer obtained by polymerizing exclusively propylene, as well as copolymers obtained by copolymerizing propylene with ethylene to products which consist for at least 80% of propylene-groups.

The commodities meant in paragraphs 2, 3, 4. and 5 of the Decree for Packaging and Utensils (Commodities Act), consisting of polypropylene have to comply with the following requirements:

1) the infrared spectrogram has to be characteristic for polypropylene. Without added auxiliary compounds not more than 3.6% of the polymer should dissolve in boiling ethylacetate;

2) the auxiliary compounds added to polypropylene have to be of good technical quality. If a maximum content is given for an auxiliary compound the content thereof in the final product, including its decomposition products should not exceed that given content. No other auxiliary compounds and other compounds are permitted in the final product than those mentioned below:

a) antioxidants up to in total at most 1% (without carbon); the antioxidants as listed in appendix 3, antioxidants; 4.4'-butylidene-bis(6-tert. butyl-3-methylphenol) up to at most 0.5%; carbon up to at most 3.5%;

b) blowing agents; adipic acid; succinic acid; carbonates of ammonium potassium and sodium; citric acid; glutaric acid; levulinic acid; lactic acid;

c) emulsifiers, in total at most 0.5%:

alkyl(C_9-C_{12}) benzenesulfonate, sodium salt; sodium salt of primary dodecylsulfate (laurylsulfate);

d) slipping agents:

di(2-ethylhexyl)adipate; di(2-ethylhexyl)phthalate; paraffine, liquid (refined mineral oil), which complies with the following requirements: the color has to be weaker than standard Saybolt 30; odorless, the absorption of ultraviolet light has to comply with the values described in appendix 6, Methods of Investigation; polyoxyethylene (polyethyleneglycol) molecular weight over 200, free of ethyleneglycol and diethyleneglycol; fatty acids, unbranched, saturated, $C_{14}-C_{22}$, with even number of carbon atoms, as well as oleic acid, with a content of unsaponifiable components of at most 1%; fatty acids as described above, as salts with aluminum, ammonium, calcium, potassium, magnesium and sodium, also zinc stearate; amides of fatty acids as above described and also erucamide; fatty acids as described above, esterified with glycerol to triglycerides (fats) and to di- and monoglycerides; fatty acids as described above, esterified with sorbitol and sorbitan;

e) other compounds:

barium sulfate; benzoic acid; N,N-bis(2-hydroxyethyl)alkyl($C_{12}-C_{18}$) amine, at most 0.1%; calcium carbonate, chalk; 2,5-di(5'-tert.butyl benzoxazolyl-2')thiophene; ethylenediaminetetraacetic acid, sodium salts sawdust; 2-hydroxy-4n-octoxybenzophenone; isopropanol; kerosine, mixture of aliphatic hydrocarbons; $C_{10}-C_{14}$, mainly $C_{12}-C_{13}$, with a boiling range of 190-260°C, aromatic content 1.0%, almost odorless, at most 1.5% in the packaging material; innocuous dyes and pigments; magnesium carbonate; oxides of aluminum, magnesium, silicon, titanium and zinc; silicates of aluminum, calcium, potassium, magnesium and sodium, including asbestos, diatomaceous earth, glass fibre, infusoria earth, caoline, clay, mica and talc; sorbic acid; zinc sulfide;

f) decomposition products of the auxiliary compounds mentioned under a) to e);

3) decomposition products of other compounds than those mentioned under 2 are not allowed to be present.

Appendix 6

belonging to the draft Decree for Packaging and Utensils

(Commodities Act)

Methods of Investigation

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1. Absorption of ultraviolet light by solid paraffine

In principle the method of J.W. Howard, E.O. Haenni and F.L. Joe, J.A.O.A.C. 48 (1965) 304-315, which has been adopted in paragraph 2 121.1156 of the U.S.A. legislation, has been followed. Interesseees are advised to ask for a detailed description of the method with the Secretary of the Advisory Committee Commodities Act.

2. Absorption of ultraviolet light by liquid paraffine

In principle the A.S.T.M. method D 2269-64 T Supplement 1965, adopted by paragraph 121.2589 of the U.S.A. legislation has been followed. Interesseees are advised to ask for a detailed description of the method with the Secretary of the Advisory Committee Commodities Act.

3. Antioxidants

The material is pulverized and extracted with ether. After mixing of the ether extract with methanol polymeric components precipitate. The filtrate is concentrated at 30-40°C and 10 mm Hg pressure.

The residue is separated by thin layer chromatography and identified on the basis of Rf-values and color reactions according to R.F. van der Heide, A.C. Maagdenburg and J.H. van der Neut, Chemisch Weekblad 61, (1965, 440).

Polystyrene of very low molecular weight may disturb the identification. When this appears to be so from the infrared spectrogram of the residue, the chromatographic investigation has to be extended.

4. Sodium dodecylsulfate (sodium laurylsulfate) and sodium alkyl (C_9-C_{15}) benzenesulfonate.

4.1. Principle. The polymer is dissolved in butanone and precipitated from the solution with methanol and then filtered off. The filtrate is concentrated and the residue extracted with water; this aqueous solution contains the emulsifiers.

The presence of sodium laurylsulfate or sodium laurylbenzenesulfonate (4.3) is demonstrated by applying thin layer chromatography.

In order to determine these compounds, a solution of methyleneblue is then added, with which the anionic emulsifiers form a complex soluble in chloroform. The solution is shaken with chloroform and the chloroform layer is separated off. The absorption of the chloroform-layer is measured at 650 nm. Disturbing compounds are removed first by shaking with an alkaline and thereafter with an acidic solution of methyleneblue (4.4)

4.2 Reagents and solutions.

Butanone-2; methanol 98%; carrying solvent acetone-hydrochloric acid: mix 20 parts by volume of acetone and 1 part by volume 1 n HCl; methylred buffer, pH=8.0: mix 36.5 ml buffer a with 13.5 ml buffer b, dissolve therein 60 mg methylred and add water up to 200 ml. Buffer a: 12.4 g H_3BO_3 and 2.925 g NaCl in water to one liter; buffer b: 19.06 g $Na_2B_4O_7 \cdot 10 aq$ in water to one liter. Borate solution: mix equal parts of 0.05 n borax and 0.1 n NaOH.

Methyleneblue solution: dissolve 250 mg methyleneblue (medically pure) in 1 liter water; H_2SO_4 , 1 n; chloroform: distill chloroform puriss. over calciumoxide. Store in a brown bottle without addition of ethanol for at most 5 days.

4.3 Identification

Bring 1 g of granulate of pieces of foil of 1 cm^2 in a beaker with 25 ml butanone (beaker 250 ml) and stir until the polymer is dissolved. Then add 100 ml cold (0°C) methanol with stirring.

Keep the solution undisturbed for 1 hour at 0°C and filter. Concentrate the clear solution under vacuum and passing through of nitrogen at room temperature to a volume of 10 ml. Bring 10 μl of this solution at the starting line of a glass plate coated with silicagel H (Merck) which has been activated for 1 hour at 115°C . Place this plate into a

development basin in which is contained a 1 cm layer of the carrying liquid acetone-hydrochloric acid. Take the plate out off the development basin after $1\frac{1}{2}$ hours, allow to dry at the air and spray with the methyl-red buffer. The emulsifiers are then visible as dark pink spots. Sodium laurylbenzenesulfonate has an Rf value of 0.37 and sodium laurylsulfate of 0.49. If no other anionic emulsifiers than these are present the determination can be carried out according to 4.4

4.4 Investigation of excess of the allowed amount.

Concentrate the solution, obtained according to 4.3 to dry. Extract the dry residue with 4 times 20 ml water fill up to 100 ml and filter this solution (solution E). Shake in a 250 ml separating funnel 50 ml distilled water, 10 ml. borate solution, 5 ml methylene blue solution and 10 ml chloroform for 30 sec. Let the chloroform run off and repeat the shaking with portions of 10 ml chloroform and removal of the chloroform layer until the last chloroform layer is colorless.

Prepare acidic methyleneblue solution as follows: prepare in a second separating funnel an alkaline solution of methylene blue as described above and add 1 N H_2SO_4 to acidic reaction on dimethylyellow paper. Purify this solution also by shaking with chloroform as described above.

Add to the separating funnel with the alkaline methylene blue solution 95 ml water, 5 ml solution E and 15 ml chloroform. Shake for 1 min. leave then undisturbed for 2 min. and then allow the chloroform layer to run into the separating funnel with acidic methylene blue solution. Shake 1 min., leave 2 min. undisturbed, put a swab in the stem of the separating funnel and let the chloroform layer flow into a 1 cm cuvet. Determine the optical density at 650 nm with respect to chloroform. Determine the blanc value of the reagents used and subtract these from the optical density obtained. The optical density is allowed to be at most 1.20 when sodium dodecylsulfate has been found in the plastic and at most 0.90 when sodium laurylbenzenesulfonate has been found in the plastic.

5. Di-2-ethylhexyl-phthalate

Bring 5 g. granulate or pieces of foam of 1 cm² and 25 ml diethylether (freshly distilled, free of peroxide) in a roundbottom of 100 ml with a stopper and place the roundbottom in the dark for 24 hours. Pour off the ether layer in 100 ml methanol, mix and filter. Concentrate the clear

solution until dry under vacuum and passing through of nitrogen at room temperature. Add 1.00 ml carbontetrachloride (spectroscopically pure). Make the infrared spectrum in a 0.2 mm cuvet compared with pure carbontetrachloride.

Determine the extinction at 8.90 μ as follows: draw a basis-transmission line between the points in the absorption curve at 8.40 μ and 9.15 μ . Read the transmission at 8.90 μ from the absorption curve ($-T_1$) and read the transmission on the basis-transmission line at 8.40 μ ($-T_0$). The extinction is $-\log \frac{T_1}{T_2}$. The extinction is not allowed to be more than 0.23.

6. Peroxides

Weigh in 20 g polystyrene in a roundbottom with a stopper, remove the air from the roundbottom by displacement by nitrogen, add 25 ml petroleum ether (b.p. 40-60°C) and 5 ml methanol and shake the mixture for 1 hour. Filter over a wad of glasswool into a roundbottom of 250 ml from which the air has been displaced by nitrogen, and add 10 ml 16 n acetic acid and 2 g sodium iodide as powder. Connect a reflux cooler and boil for 10 min. under reflux while introducing nitrogen through a tube into the liquid. Rinse the cooler with distilled water and titrate with 0.01 n thiosulfate. Carry out a blank determination in addition to the one with polystyrene. The number of ml thiosulfate, found for polystyrene is not allowed to differ more than 1.0 from that found in the blank determination.

7. Volatile compounds in polystyrene.

7.1 Principle. The combined content of styrene, α -methylstyrene, cumene and ethylbenzene is determined. To that extent the material is dissolved in dichloromethane or chloroform and the polymer is precipitated from the solution, with methanol and then filtered off. The filtrate is checked by gas chromatography. For this purpose may be used a gas chromatograph with flame ionisation detector (method A) or a gas chromatograph with catharometer (method B). Below an example of each method is described; instead of tricresylphosphate other equally stable polar stationary phases may be used. With tricresylphosphate the following relative retention times with respect to butylbenzene are found:

ethylbenzene 0.83; cumene 0.45; styrene 0.53; α -methylstyrene 0.83.

7.2 Apparatus.

For method A: gaschromatograph with flameionization detector;
 column:copper column, length 2 m., internal diameter 3 mm.
 filling:10% tricresylphosphate on Chromosorb W 80-100 mesh;
 temperature:column 110°C;injection piece 130°C; detector tension 120 V;
 carrier gas:20 ml N₂/min.;hydrogen:20 ml/min.; oxygen:80 ml/min.;
 volume of sample:0.5 µl

For method B:gaschromatograph with catharometer;
 column:copper column, length 2 m., interior diameter 3 mm.;
 filling: 10% tricresylphosphate on Chromosorb W 80-100 mesh;
 temperature:column 110°C.,injection piece 130°C.;
 bridge current: 250 mA; carrier gas: 20 ml H₂/min.;volume of sample:
 20 µl.

7.3 Solutions

Standard solutions:weigh exactly 600 mg butylbenzene and dissolve it
 in 1 l. of a mixture of dichloromethane(or chloroform)-methanol(2:1).
 Prepare herewith solutions which contain 100,200,500 and 1000 mg of
 each of the following compounds:styrene(freshly distilled), alpha-
 methylstyrene(freshly distilled), ethylbenzene and cumene.Internal
 standard solution: weigh exactly 900 mg butylbenzene and dissolve it
 in 1 l. of dichloromethane or chloroform.

7.4. Method

Dissolve 1.5 g of polymer in 10 ml internal standard solution in a
 roundbottom of 100 ml. with stopper.Add slowly 5 ml methanol while
 swinging round the roundbottom.Put the roundbottom in the refrigerator
 for 15 min,swing it round again and filter off.

Spray 0.5(or 20) µl of the filtrate on the column of the gaschroma-
 tograph.Adjust the amplifier to the suitable sensitivity after passage
 of the solvent maximums and make the chromatogram.Measure the heights
 of the peaks for ethylbenzene, cumene, ~~styrene~~ styrene, alpha-methyl-
 styrene and butylbenzene and calculate the ratio of the peak heights
 to that of butylbenzene.Read the respective concentrations in mg/ml
 from a standard graph, which has been obtained with the standard
 solutions.

7.5 Standard graph

Calculate for each standard solution the ratio of the height of the
 peaks of the compounds to be determined to that of the butylbenzene peak.

Plot this ratio graphically against the concentration in mg/ml. For each compound a straight line has to be found.

7.6 Calculation.

The content of volatile compounds in the polymer is assumed to be equal to the sum of the concentrations found for the four compounds.

8. Acrylonitrile and divinylbenzene in polystyrene.

In preparation.

9. Solubility of polyethylene in ethylacetate.

(applicable to the basis-polymer as foil of 0.1 mm or thinner or as powder finer than 80 mesh). Weigh 0.9 g material to 1 mg accurate (= a mg) in a roundbottom of 500 ml and put said roundbottom in a waterbath of 50°C. Add 250 ml ethylacetate p.a., which has been preheated to 50°C. and place a mechanically activated stirrer in the liquid. Heat with stirring for 2 hours, remove the stirrer, filtrate warm or over a preheated sintered glassfilter, on which a layer of glasswool has been applied, and rinse the roundbottom twice with 20-30 ml warm ethylacetate. Bring the filtrate in a roundbottom with ground fitting and cooler and distill the ethylacetate until 50 ml is left. Transfer the distillation residue to a glass dish or thinwalled beaker of about 100 ml., rinse with boiling ethylacetate and concentrate on a waterbath until dry. Place the dish or beaker in a vacuum desiccator until constant weight (at least 12 hours) and weigh to 0.1 mg accurate. Diminish the weight found by the weight found for a blanc test (difference = b mg). Solubility = $\frac{100 \cdot b}{a} \%$.

10. Solubility of polypropylene in ethylacetate.

(applicable to the basis-polymer as foil of 0.1 mm or thinner or as powder finer than 80 mesh). Weigh 1.0 g. to 1 mg accurate (= a mg.) in a roundbottom of 250 ml with ground connection, add some ~~mixing~~ cooking stones and 100 ml. ethylacetate, ^{Dis}connect a reflux cooler and boil for 2 hours. Filter over a sintered glass filter on which a layer of glass wool has been applied, and which has been preheated with boiling ethylacetate, while the liquid is still close to the boiling point and rinse the roundbottom twice with 10 ml. boiling ethylacetate. Put the filtrate into a ^{tares} ~~weighed~~ beaker (150 ml) and evaporate on a waterbath until dry. Put the beaker for 2 hours in ^{an oven} ~~a desiccator~~ at 105°C then for 30 min in a desiccator and weigh to 0.1 mg accurate. Diminish the weight found for the residue with the weight found by carrying out a blanc test (difference

= b mg.).The solubility = $\frac{100 b}{a}$ %.

Draft decree for packaging and utensils(Commodities Act) (from Dutch)
Correction.

In appendix 4, belonging to the draft decree for packaging and utensils (Commodities Act), published in the Official Gazette of the Netherlands of Friday, December 23, 1966, nr.250, should be inserted on page 4, third column, under d., after the twelfth line from the top: paraffin, liquid(refined mineral oil, which complies with the following requirements:

The color has to be weaker than standard Saybolt 30
odor has to be absent

the absorbtion of ultraviolet light has to comply with the requirements described in appendix 6, Methods of investigation

polyoxyethylene(polyethyleneglycol), molecular weight more than 200, free of ethyleneglycol and diethyleneglycol

polyethylene as described above, esterified with lauric acid, stearic acid, oleic acid or ricinoleic acid

polyoxypropylene(polypropyleneglycol), molecular weight more than 400

Polyoxypropylene as described above, esterified with lauric acid, stearic acid, oleic acid or ricinoleic acid,

1.2-propanediol

stearic acid, esterified with unbranched, saturated, primary alcohols C_4-C_{16} with straight chain

fatty acids, unbranchedm saturated, $C_{14}-C_{22}$, with an even number of carbon atoms, as well as oleic acid, with a content of at most 1% of unsaponifiable components

fatty acids as described above, as salts with aluminum, ammonium, calcium, potassium, magnesium and sodium; moreover zincstearate

fatty acids as described above, amides of -, and also erucamide

fatty acids as described above, esterified with glycerol to triglycerides(fats) and to di- and monoglycerides

fatty acids as described above, esterified with sorbitol and sorbitan e. polymers, copolymers and mixed polymers, containing no other auxiliary compounds than according to this appendix and complying with the requirements set for the compounds concerned:

copolymers of isobutylene with isoprene

copolymers of ethylene and ethylacrylate, methylacrylate, methylmethacrylate, vinylacetate and/or vinylbenzoate

polyisobutylene(polybutylene-1)

polypropylene

polystyrene

polyvinylalcohol(the viscosity of the 4% solution in water has to be at least 20 cP at 20°C)

f. other compounds:

ammoniumchloride

bariumsulfate

benzoic acid

N.N-bis (2-hydroxyethyl) alkyl ($C_{12}-C_{18}$) amine, at most 0.1% calcium-carbonate, chalk

2,5-di (5'-tert.-butylbenzoxazolyl-2') thiophene

ethylenediaminetetraacetic acid, sodium salts

phosphates of ammonium, potassium and sodium

sawdust

kerosine, mixtures of aliphatic hydrocarbons $C_{10}-C_{14}$, mainly $C_{12}-C_{13}$ with a boiling range of 190-260°C., aromate content of at most 1.0%, almost odorless, at most 1.5% in the packaging material

dyes and pigments, harmless

magnesiumcarbonate

oxides of aluminium, magnesium, silicon, titanium and zinc