

# **PRODUCT HEALTH AND SAFETY STANDARD**

# INDEX

|   |    |
|---|----|
| INTRODUCTION.....   | 3  |
| SCOPE OF APPLICATION.....   | 3  |
| COMPLIANCE OF THE STANDARD.....   | 3  |
| RELEVANT LEGISLATIVE REQUIREMENTS .....   | 4  |
| RESTRICTED SUBSTANCES AND PARAMETERS LIST. ....                                 | 4  |
| 1 RESTRICTED SUBSTANCES LIST IN JEWELRY ARTICLES.....                           | 5  |
| 1.1 METALS AND ITS COMPOUNDS.....   | 5  |
| 1.2 PHTHALATES .....  | 6  |
| 1.3 SHORT CHAIN CHLORINATED PARAFFINS (SCCPS).....                              | 7  |
| 1.4 ORGANOTIN COMPOUNDS .....   | 7  |
| 1.5 POLYCYCLIC AROMATIC HYDROCARBONS (PAHS) .....                               | 7  |
| 2 RESTRICTED SAFETY PARAMETERS LIST IN JEWELRY ARTICLES .....                   | 8  |
| 3 OTHER REQUIREMENTS IN JEWELRY ARTICLES.....                                   | 8  |
| 4 RESTRICTED SUBSTANCES LIST IN PACKAGING .....                                 | 9  |
| 4.1 ALKYPHENOLS (APS), ALKYLPHENOL ETHOXYLATES (APEOS) INCLUDING ALL ISOMERS .. | 9  |
| 4.2 AZO-AMINES AND ARYLAMINE SALTS .....  | 10 |
| 4.3 BISPHENOLS .....  | 11 |
| 4.4 BUTYLATED HYDROXYTOLUENE (BHT) .....  | 11 |
| 4.5 DIMETHYLFUMARATE .....  | 11 |
| 4.6 FLAME RETARDANTS .....  | 12 |
| 4.7 FORMALDEHYDE.....   | 12 |
| 4.8 HEAVY METALS (TOTAL CONTENT) .....  | 13 |
| 4.9 ORGANOTIN COMPOUNDS .....   | 14 |
| 4.10 PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) .....                           | 15 |
| 4.11 PHTHALATES .....   | 16 |
| SUPPLIERS' COMMITMENT TO PRODUCT HEALTH AND SAFETY STANDARD. ....               | 17 |

# INTRODUCTION

SASMAT RETAIL S.L. (hereinafter, SASMAT RETAIL), on behalf of its firm PDPAOLA, is committed to providing customers with jewelry and packaging articles embodying the highest standards for human health and safety.

The SASMAT RETAIL product health and safety standard (hereinafter, standard) has been developed in conformity with product health and safety laws in the markets where the company sells its products.

The main objective of this standard is to establish the requirements for chemical substances and safety parameters regulated in jewelry and packaging articles in order to guarantee a high protection of the human health and safety of consumers. It includes requirements related to the characteristics of the product to ensure that it does not present risks to the safety of users, especially children.

## SCOPE OF APPLICATION

This standard compulsorily applies to jewelry and packaging articles intended for any user regardless of their age.

Any SASMAT RETAIL product supplier must comply with the requirements of this standard. In addition, the compliance with this standard does not exempt suppliers from complying with any other regulation applicable to products.

## COMPLIANCE OF THE STANDARD

Suppliers are required to implement a consistent and competent approach to the management of the restricted substances and parameters. Similarly, suppliers are solely responsible for effective application and compliance of the standard for products supplied to SASMAT RETAIL.

SASMAT RETAIL can verify the compliance with the standard of any article provided by its suppliers, at any stage of production or distribution (e.g., through internal control programs of the company). For this purpose, suppliers shall provide adequate access to any documentation required to conduct a conformity control of the provided jewelry and packaging articles, such as, test reports or safety data sheets (SDS) for all materials, substances and preparations used in the production of a SASMAT RETAIL order.

In case of differences between the test reports provided by the supplier and those carried out by SASMAT RETAIL, the results carried out by SASMAT RETAIL shall prevail.

In the event of a non-compliance with the standard, we reserve the right to:

- Reject any order or product.
- Return any order or product delivered.
- Cancel any scheduled order.
- Hold the supplier responsible for any damage caused.

## RELEVANT LEGISLATIVE REQUIREMENTS

SASMAT RETAIL hereby asserts its prerogative to reject products that do not comply with any stipulations set out in the relevant legislation, including its modifications and national transpositions. This may include, but is not limited to:

- General Product Safety Regulation (GPSR) 2023/988/EC
- REACH Regulation (EC) No 1907/2006.
  - Candidate List of Substances of Very High Concern (SVHC) subject to Authorisation, published in accordance with Article 59(10) of the REACH Regulation.
- Safe Drinking Water and Toxic Enforcement Act of 1986, California Proposition 65.
- Biocidal Products Regulation (BPR) (EU) No 528/2012.

## RESTRICTED SUBSTANCES AND PARAMETERS LIST

The restricted substances and parameters list (hereinafter, RSPL) includes those chemicals and parameters legally restricted or prohibited in the markets where SASMAT RETAIL sells its products.

The limits for the content of chemical substances in jewelry articles and packaging products have been established considering the strictest limit, among those present in the legislation of the different trading territories where SASMAT RETAIL operates.

For each substance included in the RSPL, the following information is provided:

- CAS number<sup>1</sup>.
- Common name of the substance.
- The restriction or maximum concentration in the material/components of the final product.
- Age of the user.
- Potential uses & additional information.
- Recommended test method<sup>2</sup>.

For each safety parameter, the requirements and corresponding test methods (where applicable) are provided.

The requirements of this RSPL are mandatory for any supplier in relation to the products supplied to SASMAT RETAIL.

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<sup>1</sup> Chemical Abstracts Service number, an identification number assigned by Chemical Abstracts Service (a division of the American Chemical Society) to every chemical substance included in its database. Also referred to as CAS Registry Number or CASRN.

<sup>2</sup> These test methods are proposed as reference to be employed to check compliance with health and safety requirements.

# 1 RESTRICTED SUBSTANCES LIST IN JEWELRY ARTICLES

## 1.1 METALS AND ITS COMPOUNDS

This group of substances are those metals and metalloids commonly known as heavy metals. Even if there is not a clear definition of heavy metals, usually they are defined as elements with a high density, molecular weight, atomic number, and toxic at low concentrations.

| CAS N°  | Substances                 | Users      | Material/Limits   | Potential uses & additional information   | Test methods   |
|---------|----------------------------|------------|---|---|--|
| Various | Cadmium and its compounds  | ≤ 14 years | Total content <sup>3</sup> - Any material: No detection <sup>4</sup>                                      | Cadmium and Lead may appear in:<br><br>Metallic parts, alloys and metal coatings (as a component or impurity), including welding material.<br><br>Plastic materials and coatings due to their compounds may be used as stabilisers.<br><br>Paints, prints, glass, ceramics, or synthetic stones, where lead or cadmium compounds could be employed as pigments. | Metal:<br>CPSC-CH-E1001-08.3<br>Paints and Surface coatings:<br>CPSC-CH-E1003-09.1<br>Other materials:<br>CPSC-CH-E1002-08.3 |
|         |                            | > 14 years | Total content <sup>3</sup> - Any material: No detection <sup>4</sup>                                      |   |  |
|         |                            | ≤ 14 years | Extractable content <sup>3</sup> - Any material: No detection <sup>4</sup>                                |   | Metal:<br>CPSC-CH-E1004-11<br>Other materials:<br>EN 71-3 2020   |
| Various | Lead and its compounds     | ≤ 14 years | Total content <sup>3</sup> - Any material <sup>4</sup> : 90 ppm   |   | Metal:<br>CPSC-CH-E1001-08.3<br>Paints and Surface coatings:<br>CPSC-CH-E1003-09.1<br>Other materials:<br>CPSC-CH-E1002-08.3 |
|         |                            | > 14 years | Total content <sup>3</sup> - Paints and surface coatings: 90 ppm<br>Other materials: <sup>4</sup> 100 ppm |   |  |
|         |                            | ≤ 14 years | Extractable content <sup>3</sup> - Any material: 90 ppm   |   | EN 71-3 2020   |
| Various | Mercury and its compounds  | All ages   | Total content <sup>3</sup> - Any material: No detection   | Mercury and its compounds may be found in metal components, as an impurity, and in natural materials and paints due to the possible use of mercury compounds as preservatives.  | EN 16711-1:2016  |
|         |                            |            | Extractable content <sup>3</sup> - Any material: No detection   |   | EN 71-3 2020   |
| Various | Chromium and its compounds | ≤ 14 years | Extractable content <sup>3</sup> - Any material: 60 ppm   | Chromium and its compounds can be present in metal coatings and metal alloys. Other materials where they can also be present are natural materials (where chromium derived biocides can be used), and paints and plastics where chromium derived pigments can be employed.  | EN 16711-1:2016  |
| -       | Chromium (VI)              | ≤ 14 years | Extractable content <sup>3</sup> - Metal, rubber, plastic with metal coating: No detection                |   | CNS 15331 Annex B  |
|         |                            | > 14 years | Metal: 3 ppm  |   | GB/T 28019   |

**3** The difference between total and extractable metal content depends on how the sample is analyzed. Thus, a total metal analysis is carried out by digestion of the sample with a strong acid or a mixture of acids (the sample is completely solved), followed by the determination of the content of inorganic ions. In an extractable metal analysis, the sample is treated with an aqueous solution (simulating sweat or saliva), in which the sample is not completely solved, followed by the determination of the content of inorganic ions.

**4** In European Union and United Kingdom, the following materials are exempt from this restriction: crystal glass (as defined in Annex I of Council Directive 69/493/EEC), internal components of watch timepieces inaccessible to consumers, non-synthetic or reconstructed precious and semiprecious stones (CN code 7103 as established by Regulation (EEC) No 2658/87), unless they have been treated with Lead or its compounds or mixtures containing these substances and enamels. In USA and Israel, the following materials are exempt from this restriction, if they have neither been treated nor adulterated with the addition of materials that could result in the addition of Lead into the final article: precious gemstones (diamond, ruby, sapphire, emerald), semiprecious gemstones and other minerals (excluding any mineral that is based on Lead or Lead compounds including, but not limited to, the following: aragonite, bayldonite, boleite, cerussite, crocoite, galena, ekanite, linarite, mimetite, phosgenite, vanadinite, and wulfenite), natural or cultured pearls, wood, paper, printing inks, textiles (excluding after-treatment applications), other plant-derived and animal-derived materials and metals, such as any stainless steel or surgical steel, Gold (at least 10 karat), Silver (at least 925/1000), Platinum, Palladium, Rhodium, Osmium, Iridium, Ruthenium and Titanium.

| CAS N°  | Substances                 | Users      | Material/Limits   | Potential uses & additional information   | Test methods                          |
|---------|----------------------------|------------|---|---|---------------------------------------|
| Various | Nickel and its compounds   | All ages   | Nickel Release <sup>5</sup> - Metal <sup>6</sup> :<br>No detection in any post assemblies which are inserted into pierced ears and other pierced parts of the human body and 0.5 µg/ cm <sup>2</sup> /week for other articles intended to come into direct and prolonged contact with the skin. | Nickel is widely used as a strengthening, brightening and antioxidizing agent and, therefore, can be found mainly in metallic parts.  | EN 1811:2011+A1 2015 and EN 12472:202 |
| Various | Arsenic and its compounds  | ≤ 14 years | Total content <sup>3</sup> - Any material: 25 ppm   | Antimony, Arsenic, Barium and Selenium and derivative compounds can be found in metal parts and materials in which pigments containing these elements can be employed (e.g., paints, plastics). Antimony compounds can be also employed as polymerization catalysts (e.g., polyester) and Arsenic compounds as preservatives of natural materials (e.g., wood). | EN 16711-1:2016                       |
|         |                            | > 14 years | Total content <sup>3</sup> - Metal: 1000 ppm  |   |                                       |
|         |                            | ≤ 14 years | Extractable content <sup>3</sup> - Any material: 25 ppm   |   | EN 71-3 2020                          |
| Various | Antimony and its compounds | ≤ 14 years | Total content <sup>3</sup> - Any material: 60 ppm   |   | EN 16711-1:2016                       |
|         |                            | ≤ 14 years | Extractable content <sup>3</sup> - Any material: 60 ppm   |   | EN 71-3 2020                          |
| Various | Barium and its compounds   | ≤ 14 years | Extractable content <sup>3</sup> - Any material: 1000 ppm   |   | EN 71-3 2020                          |
| Various | Selenium and its compounds | ≤ 14 years | Extractable content <sup>3</sup> - Any material: 500 ppm  |   | EN 71-3 2020                          |

## 1.2 PHTHALATES

| CAS N°     | Substances                          | Users      | Material/Limits  | Potential uses & additional information   | Test methods       |
|------------|-------------------------------------|------------|--|---|--------------------|
| 28553-12-0 | Di-isononyl phthalate (DINP)        | ≤ 14 years | Polymeric materials (e.g., adhesives, plastics, etc.): 1000 ppm for the sum of DEHP, DBP, BBP, DIBP, DINP, DIDP and DNOP | Phthalates are a family of synthetic compounds mainly used as plasticizers, that is, they are added to polymers to increase the flexibility and durability of plastics (including adhesives and resins). They can be released from the plastic material because they are blended with the polymer without chemical bonding between them. Phthalates can be also used as a demolding agent for plastics. | CPSC-CH-C1001-09.4 |
| 26761-40-0 | Di-isodecyl phthalate (DIDP)        |            |  |   |                    |
| 117-84-0   | Di-n-octyl phthalate (DNOP)         |            |  |   |                    |
| 117-81-7   | Bis (2-ethylhexyl) phthalate (DEHP) | > 14 years | Polymeric materials (e.g., adhesives, plastics, etc.): 1000 ppm for the sum of DEHP, DBP, BBP y DIBP                     |   |                    |
| 84-74-2    | Dibutyl phthalate (DBP)             |            |  |   |                    |
| 85-68-7    | Benzyl butyl phthalate (BBP)        |            |  |   |                    |
| 84-69-5    | Diisobutyl phthalate (DIBP)         |            |  |   |                    |

**5** Release Nickel analysis involves treating of a metallic surface (sample), with an acid artificial sweat solution during 7 days, followed by determination of the concentration of nickel ions by ICP-MS analysis. Previously to this treatment, the sample is subjected to a rapid test to see if it presents Nickel in the outer surface coating, called Ni spot. If there is no Nickel in the outer coating, the sample is first subjected to a corrosion process and then to an abrasion process that simulates wear.

**6** In Israel and Rhode Island, precious metals such as: Gold (at least 9 karat), sterling Silver (at least 925/1000), Platinum, Palladium, Rhodium, Osmium, Iridium, Ruthenium and Titanium; and stainless or surgical steel grades 304, 316 and 430, are exempted to comply with these requirements.

### 1.3 SHORT CHAIN CHLORINATED PARAFFINS (SCCPs)

| CAS N°     | Substances                        | Users    | Material/Limits            | Potential uses & additional information   | Test methods   |
|------------|-----------------------------------|----------|----------------------------|---|----------------|
| 85535-84-8 | Short Chain Chlorinated Paraffins | All ages | Any material: No detection | Short chain chlorinated paraffins (SCCPs) are a complex mixture of substances, primarily used as lubricants and coolants in metal cutting and metal forming operations. Other SCCPs uses are as a flame retardant and plasticizer in the following materials: plastics, rubber, adhesives, sealants, paints and lacquers, coatings. | ISO 18219 2015 |

### 1.4 ORGANOTIN COMPOUNDS

| CAS N°   | Substances                               | Users    | Material/Limits            | Potential uses & additional information   | Test methods                                |
|----------|--|----------|----------------------------|---|---|
| 668-34-8 | Triphenyltin (TPhT)                      | All ages | Any material: No detection | Organotin compounds or organostannic compounds are chemical substances composed of tin and organic substituents. They are often used as thermal stabilisers for plastics and catalysts in polymer synthesis (such as, PVC, polyurethane, rubber, adhesives, prints, etc.). They can also be employed as preservatives of natural materials. | ISO 22744-1:2020<br>and<br>ISO 22744-2:2020 |
| Various  | Tributyltin compounds (TBT)              | All ages | Any material: No detection |   |   |
| Various  | Other trisubstituted organotin compounds | All ages | Any material 1 ppm         |   |   |

### 1.5 POLYCYCLIC AROMATIC HYDROCARBONS (PAHS)

| CAS N°   | Substances             | Users    | Material/Limits   | Potential uses & additional information  | Test methods |
|----------|------------------------|----------|---|--|--------------|
| 50-32-8  | Benzo[a]pyrene         | All ages | Polymeric materials (e.g., adhesives, plastics, etc.):<br><br>1 ppm for Benzo[a]pyrene, benzo[e]pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[j]fluoranthene, benzo[k]fluoranthene, dibenzo[a,h]anthracene (for each one of them)<br><br>1 ppm for the sum of naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, indeno[1,2,3-cd]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, dibenzo[a,h]anthracene, benzo[g,h,i]perylene | Polycyclic Aromatic Hydrocarbons (PAHs) are a family of compounds composed of fused aromatic carbons rings. PAHs are natural compounds in many fossil fuels and a common residue from incomplete combustion of such fuels. They are not intentionally added but they can be present in polymeric parts of products because of:<br><br>PAHs contaminated softening oils in rubber and flexible (soft) plastics.<br><br>PAHs contaminated carbon black as a black pigment in rubber, plastics, and paints. | AfPS GS 2019 |
| 192-97-2 | Benzo[e]pyrene         |          |   |  |              |
| 56-55-3  | Benzo[a]anthracene     |          |   |  |              |
| 218-01-9 | Chrysene               |          |   |  |              |
| 205-99-2 | Benzo[b]fluoranthene   |          |   |  |              |
| 205-82-3 | Benzo[j]fluoranthene   |          |   |  |              |
| 207-08-9 | Benzo[k]fluoranthene   |          |   |  |              |
| 53-70-3  | Dibenzo[a,h]anthracene |          |   |  |              |
| 91-20-3  | Naphthalene            |          |   |  |              |
| 208-96-8 | Acenaphthylene         |          |   |  |              |
| 83-32-9  | Acenaphthene           |          |   |  |              |
| 86-73-7  | Fluorene               |          |   |  |              |
| 85-01-8  | Phenanthrene           |          |   |  |              |
| 120-12-7 | Anthracene             |          |   |  |              |
| 206-44-0 | Fluoranthene           |          |   |  |              |
| 129-00-0 | Pyrene                 |          |   |  |              |
| 191-24-2 | Benzo[g,h,i]perylene   |          |   |  |              |
| 193-39-5 | Indeno[1,2,3-cd]pyrene |          |   |  |              |

## 2 RESTRICTED SUBSTANCES LIST IN JEWELRY ARTICLES

| Parameters                      | Requirements  | Test methods                      |
|---------------------------------|---|-----------------------------------|
| Magnets                         | The use of magnets in children's jewellery is prohibited  | -                                 |
| Sharp points and edges          | Prohibited in children's jewellery <8 years <sup>7</sup>  | 16 CFR 1500.48 and 16 CFR 1500.49 |
| Breakaway Features and Releases | Children's jewelry intended to be attached around the neck shall release, either by designed breakaway feature, attachment design or physical properties of the material, when subjected to 15 lb of tension in accordance with the breakaway tension test. No hazardous sharp points or edges shall be observed during the breakaway tension test if the children's jewelry < 8 years <sup>8</sup> | Section 13.1 of ASTM F2923-14     |

## 3 OTHER REQUIREMENTS

In addition to the restrictions set out in the RSPL of this standard, another requirement is the following:

Body piercing jewelry shall be made of one or more of the following materials:

- (a) Surgical implant stainless steel.
- (b) Surgical implant grade of titanium.
- (c) Niobium (Nb).
- (d) Solid 14 karat or higher white or yellow nickel-free gold.
- (e) Solid platinum.
- (f) A dense low-porosity plastic, including, but not limited to, Tygon or polytetrafluoroethylene (PTFE), if the plastic contains no intentionally added Lead.

<sup>7</sup> If the point has a diameter greater than 1.02 mm shall not be considered a sharp point, and if the point has a diameter less than 1.02 mm, the length of the point shall not exceed 0.5 mm. Any functional sharp point on children's jewelry is exempt.

<sup>8</sup> Looped children's jewelry which by reason of construction do not fit around the test fixture, having a circumference less than 9.4 in. shall not be subject to the requirements.



## 4 RESTRICTED SUBSTANCES LIST IN PACKAGING<sup>9</sup>

### 4.1 ALKYPHENOLS (APS), ALKYLPHENOL ETHOXYLATES (APEOS) INCLUDING ALL ISOMERS

| CAS N°  | Substances                      | Users    | Material/Limits | Potential uses & additional information   | Test methods  |
|---------|---------------------------------|----------|-----------------|---|---|
| Various | Nonylphenol (NP), mixed isomers | All ages | Total: 100 ppm  | APEOS are used as surfactants in the production of plastics, elastomers, paper, and textiles. These chemicals can be found in many processes involving foaming, emulsification, solubilization, or dispersion. APEOs can be used in paper pulping, lubrication oils, and plastic polymer stabilisation. | Textiles and Leather:<br>EN ISO 21084:2019 with determination of LC/MS or LC/MS/MS  |
| Various | Octylphenol (OP), mixed isomers |          |                 |   | Polymers and all other materials:<br>1 g sample/20 mL THF, sonication for 60 minutes at 70°C, analysis according to EN ISO 21084:2019 |
| Various | Nonylphenol ethoxylates (NPEOs) | All ages | Total: 100 ppm  | APs are used as intermediaries in the manufacture of APEOs and antioxidants used to protect or stabilise polymers.<br><br>Biodegradation of APEOs into APs is the main source of APs in the environment.  | All materials except Leather:<br>EN ISO 18254-1:2016 with determination of APEO using LC/MS or LC/MS/MS                               |
| Various | Octylphenol ethoxylates (OPEOs) |          |                 |   | Leather:<br>Sample prep and analysis using EN ISO 18218-1:2015 with quantification according to EN ISO 18254-1:2016                   |

<sup>9</sup> The section “Restricted substances list in packaging” has been adopted from the “Packaging Restricted Substances List” document with the consent of the [Affirm Group](#).

## 4.2 AZO-AMINES AND ARYLAMINE SALTS

| CAS N°     | Substances                                | Users    | Material / Limits | Potential uses & additional information   | Test methods   |
|------------|---|----------|-------------------|---|--|
| 92-67-1    | 4-Aminobiphenyl                           | All ages | 20 ppm each       | <p>Azo dyes and pigments are colorants that incorporate one or several azo groups (-N=N-) bound with aromatic compounds.</p> <p>Thousands of azo dyes exist, but only those which degrade to form the listed cleavable amines are restricted.</p> <p>Azo dyes that release these amines are regulated and should no longer be used for dyeing textiles.</p> | <p>All materials except leather:<br/>EN ISO 14362-1:2017</p> <p>Leather:<br/>EN ISO 17234-1:2020</p> <p>p-Aminoazobenzene:<br/>All materials except leather:<br/>EN ISO 14362-3:2017</p> <p>Leather:<br/>EN ISO 17234-2:2011</p> |
| 92-87-5    | Benzidine                                 |          |                   |   |  |
| 95-69-2    | 4-Chloro-o-toluidine                      |          |                   |   |  |
| 91-59-8    | 2-Naphthylamine                           |          |                   |   |  |
| 97-56-3    | o-Aminoazotoluene                         |          |                   |   |  |
| 99-55-8    | 2-Amino-4-nitrotoluene                    |          |                   |   |  |
| 106-47-8   | p-Chloraniline                            |          |                   |   |  |
| 615-05-4   | 2,4-Diaminoanisole                        |          |                   |   |  |
| 101-77-9   | 4,4'-Diaminodiphenylmethane               |          |                   |   |  |
| 91-94-1    | 3,3'-Dichlorobenzidine                    |          |                   |   |  |
| 119-90-4   | 3,3'-Dimethoxybenzidine                   |          |                   |   |  |
| 119-93-7   | 3,3'-Dimethylbenzidine                    |          |                   |   |  |
| 838-88-0   | 3,3'-dimethyl-4,4'-Diaminodiphenylmethane |          |                   |   |  |
| 120-71-8   | p-Cresidine                               |          |                   |   |  |
| 101-14-4   | 4,4'-Methylen-bis (2-chloraniline)        |          |                   |   |  |
| 101-80-4   | 4,4'-Oxydianiline                         |          |                   |   |  |
| 139-65-1   | 4,4'-Thiodianiline                        |          |                   |   |  |
| 95-53-4    | o-Toluidine                               |          |                   |   |  |
| 95-80-7    | 2,4-Toluenediamine                        |          |                   |   |  |
| 137-17-7   | 2,4,5-Trimethylaniline                    |          |                   |   |  |
| 95-68-1    | 2,4 Xylidine                              |          |                   |   |  |
| 87-62-7    | 2,6 Xylidine                              |          |                   |   |  |
| 90-04-0    | 2-Methoxyaniline (= o-Anisidine)          |          |                   |   |  |
| 60-09-3    | p-Aminoazobenzene                         |          |                   |   |  |
| 3165-93-3  | 4-Chloro-o-toluidinium chloride           |          |                   |   |  |
| 553-00-4   | 2-Naphthylammoniumacetate                 |          |                   |   |  |
| 39156-41-7 | 4-Methoxy-m-phenylene diammonium sulphate |          |                   |   |  |
| 21436-97-5 | 2,4,5-Trimethylaniline hydrochloride      |          |                   |   |  |

### 4.3 BISPHENOLS

| CAS N°   | Substances        | Users    | Material/Limits   | Potential uses & additional information   | Test methods   |
|----------|-------------------|----------|---|---|--|
| 80-05-7  | Bisphenol-A (BPA) | All ages | Receipt paper:<br>BPA: 1 ppm<br><br>Other packaging: 1000 ppm each<br><br>In preparation for forthcoming restrictions, significantly lower levels of bisphenols should be achievable, e.g., in polyamide, over time or better alternatives should be substituted if possible. | BPA may be used in the production of epoxy resins, polycarbonate plastics, flame retardants, and PVC.   | Leather: EN ISO 11936:2023<br><br>All other materials: Extraction: 1 g sample/20 ml THF, sonication for 60 minutes at 60°C, analysis with LC/MS<br><br>Note for textiles: For precipitation, draw the extract to another container and add methanol or acetonitrile. This keeps the extraction process consistent. |
| 80-09-1  | Bisphenol-S (BPS) |          |   | BPS may be used as a substitute for BPA for some specific uses, including in thermal receipt paper.   |  |
| 77-40-7  | Bisphenol-B (BPB) |          |   | BPS and BPF can be found in polyamide dye-fixing agents and in sulfone- and phenol- based leather synthetic tanning agents.   |  |
| 620-92-8 | Bisphenol-F (BPF) |          |   | BPA and BPS can be found in recycled polymeric and paper materials due to polycarbonate plastic and thermal receipt paper made with bisphenols entering waste streams.<br><br>BPA, BPS, and BPB are included on the REACH SVHC list. Additional restrictions on the entire class of bisphenols are expected, with a revised restriction proposal forthcoming in the European Union. |  |

### 4.4 BUTYLATED HYDROXYTOLUENE (BHT)

| CAS N°   | Substances                  | Users    | Material/Limits | Potential uses & additional information   | Test methods                      |
|----------|-----------------------------|----------|-----------------|---|-----------------------------------|
| 128-37-0 | Dibutylhydroxytoluene (BHT) | All ages | 25 ppm          | Used as an additive in plastics as an antioxidant to prevent aging. Can cause phenolic yellowing of textiles. | All materials:<br>ASTM D4275:2017 |

### 4.5 DIMETHYLFUMARATE

| CAS N°   | Substances              | Users    | Material/Limits | Potential uses & additional information   | Test methods                     |
|----------|-------------------------|----------|-----------------|---|----------------------------------|
| 624-49-7 | Dimethylfumarate (DMFu) | All ages | 0.1 ppm         | DMFu is an anti-mold agent used in sachets in packaging to prevent the buildup of mold, especially during shipping. | All materials:<br>ISO 16186:2021 |

## 4.6 FLAME RETARDANTS

| CAS N°     | Substances                          | Users     | Material/Limits | Potential uses & additional information   | Test methods                          |
|------------|-------------------------------------|-----------|-----------------|---|---------------------------------------|
| 1163-19-5  | Decabromodiphenyl ether (DecaBDE)   | All users | 500 ppm         | Flame retardant substances, including the entire class of organohalogen flame retardants, should no longer be applied to packaging materials during production.   | All materials:<br>EN ISO 17881-1:2016 |
| 32534-81-9 | Pentabromodiphenyl ether (PentaBDE) |           |                 |   |                                       |
| 3194-55-6  | Hexabromocyclodecane (HBCDD)        |           |                 |   |                                       |
| 79-94-7    | Tetrabromobisphenol A (TBBP A)      |           |                 | Listed here are relevant flame retardants included in the Stockholm Convention. These substances should not be used for any other purpose, e.g., as plasticizers or softeners. Impurities found may come from electronic waste recycling streams, e.g., polystyrene, and can impede future recycling opportunities. |                                       |
| 40088-47-9 | Tetrabromodiphenyl ether            |           |                 |   |                                       |
| 36483-60-0 | Hexabromodiphenyl ether             |           |                 |   |                                       |
| 68928-80-3 | Heptabromodiphenyl ether            |           |                 |   |                                       |

## 4.7 FORMALDEHYDE

| CAS N°  | Substances   | Users    | Material/Limits | Potential uses & additional information  | Test methods  |
|---------|--------------|----------|-----------------|--|---|
| 50-00-0 | Formaldehyde | All ages | 150 ppm         | <p>Formaldehyde can be found in polymeric resins, binders, and fixing agents for dyes and pigments, including those with fluorescent effects. It is also used as a catalyst in certain printing, adhesives, and heat transfers. Formaldehyde can be used in antimicrobial applications for odor control.</p> <p>Formaldehyde found in packaging can off-gas directly onto product.</p> | <p>Wood:<br/>EN 717-3:1996</p> <p>Paper:<br/>DIN EN 645:1994 &amp; EN 1541:2001</p> <p>Textiles, Finishings, Dyes, Inks &amp; Coatings:<br/>JIS L 1041-2011 A (Japan Law 112) or EN ISO 14184-1:2011</p> <p>Leather:<br/>EN ISO 17226-2:2019 with EN ISO 17226-1:2021 confirmation method in case of interferences.</p> <p>Alternatively, EN ISO 17226-1:2021 can be used on its own.</p> |

## 4.8 HEAVY METALS (TOTAL CONTENT)

| CAS N°     | Substances    | Users    | Material/Limits | Potential uses & additional information   | Test methods   |
|------------|---------------|----------|-----------------|---|--|
| 7440-43-9  | Cadmium (Cd)  | All ages | Total: 100 ppm  | Cadmium compounds are used as pigments (especially in red, orange, yellow and green) and in paints. It can also be used as a stabiliser for PVC | All materials:<br>Total heavy metals (Cd, Cr, Pb & Hg): DIN EN 16711-1: 2016. If the total of four heavy metals exceeds 100 ppm and Cr contributes to the sum, test for Cr VI.   |
| 7439-92-1  | Lead (Pb)     |          |                 | May be associated with plastics, paints, inks, pigments, and surface coatings.  | This test method detects metal elements (Cd, Cr, Hg, Pb). When the final value >100 ppm and Cr contributes to the sum, the Cr VI method described below should be used to exclude the presence of Cr VI.   |
| 7439-97-6  | Mercury (Hg)  |          |                 | Mercury compounds can be present in pesticides and as contaminants in caustic soda (NaOH). They may also be used in paints.                     |  |
| 18540-29-9 | Chromium (VI) |          |                 | Though typically associated with leather tanning, Chromium VI also may be used in pigments, chrome plating of metals, and wood preservatives.   | Metal: IEC 62321-7-1:2015 The testing laboratory will convert the test result into ppm.<br><br>Natural leather and natural materials: EN ISO 17075-1:2017 and EN ISO 17075-2:2017 for confirmation in case the extract causes interference.<br><br>Alternatively, EN ISO 17075-2:2017 may be used on its own.<br><br>All other materials: IEC 62321-7-2:2015 |

## 4.9 ORGANOTIN COMPOUNDS

| CAS N°    | Substances               | Users    | Material/Limits                 | Potential uses & additional information  | Test methods  |
|-----------|--------------------------|----------|---------------------------------|--|---|
| Various   | Dibutyltin (DBT)         | All ages | 1 ppm each                      | Class of chemicals combining tin and organics such as butyl and phenyl groups.   | All materials:<br>CEN ISO/TS 16179:2012<br>or EN ISO 22744-1:2020 |
| Various   | Diocetyl tin (DOT)       |          |                                 |  |   |
| Various   | Monobutyltin (MBT)       |          |                                 |  |   |
| Various   | Monooctyltin (MOT)       |          |                                 |  |   |
| Various   | Tricyclohexyltin (TCyHT) |          |                                 |  |   |
| Various   | Trimethyltin (TMT)       |          |                                 |  |   |
| Various   | Trioctyltin (TOT)        |          |                                 |  |   |
| Various   | Tripropyltin (TPT)       |          |                                 |  |   |
| Various   | Dimethyltin (DMT)        | All ages | Other Organotins:<br>1 ppm each | Organotins are predominantly found in the environment as antifoulants in marine paints, but they can also be used as biocides (e.g., antibacterials), catalysts in plastic and glue production, and heat stabilisers in plastics/rubber. |   |
| Various   | Diphenyltin (DPhT)       |          |                                 |  |   |
| Various   | Dipropyltin (DPT)        |          |                                 |  |   |
| Various   | Monomethyltin (MMT)      |          |                                 |  |   |
| Various   | Monophenyltin (MPhT)     |          |                                 |  |   |
| 1461-25-2 | Tetrabutyltin (TeBT)     | All ages | 0.5 ppm each                    | In textiles and apparel packaging, organotins are associated with plastics/rubber, inks, paints, metallic glitter, polyurethane products and heat transfer material.   |   |
| Various   | Tributyltin (TBT)        |          |                                 |  |   |
| Various   | Triphenyltin (TPHT)      |          |                                 |  |   |

#### 4.10 PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

| CAS N°  | Substances   | Users    | Material/Limits   | Potential uses & additional information  | Test methods  |
|---------|--|----------|---|--|---|
| Various | All PFAS as measured by total organic fluorine           | All ages | 100 ppm by 2025<br>50 ppm by 2027   | Regulations around the world ban the use of PFAS in packaging.<br><br>PFAS may be used in commercial water-, oil-, and stain-repellent agents as well as in breathable membranes that remove moisture, e.g., PTFE. | EN 14582:2016<br>or ASTM D7359:2018   |
| Various | Perfluorooctane Sulfonate (PFOS) and related substances  |          | 1 µg/m² total   |  | All materials:<br>EN ISO 23702-1:2023 or<br>EN 17681-1:2022 & EN 17681-2:2022 |
| Various | Perfluorooctanoic Acid (PFOA) and its salts              |          | 25 ppb total  |  |   |
| Various | PFOA-related substances                                  |          | 1000 ppb total  |  |   |
| Various | Perfluorohexane-1-sulphonic acid (PFHxS) and its salts   |          | 25 ppb total  |  |   |
| Various | PFHxS-related substances                                 |          | 1000 ppb total  |  |   |
| Various | C9-C14 Perfluorocarboxylic acids (PFCAs) and their salts |          | 25 ppb total  |  |   |
| Various | C9-C14 PFCA-related substances                           |          | 260 ppb total   |  |   |
| Various | PFHxA, its salts, and related substances                 |          | Anticipated regulated limits in the EU: PFHxA and its salts: 25 ppb<br>PFHxA-related substances: 1000 ppb |  |   |

## 4.11 PHTHALATES

| CAS N°      | Substances  | Users    | Material/Limits                 | Potential uses & additional information   | Test methods  |
|-------------|---|----------|---------------------------------|---|---|
| 28553-12-0  | Di-Iso-nonylphthalate (DINP)  | All ages | 500 ppm each<br>Total: 1000 ppm | <p>Esters of ortho-phthalic acid (Phthalates) are a class of organic compounds commonly added to plastics to increase flexibility. They are sometimes used to facilitate the moulding of plastic by decreasing its melting temperature.</p> <p>Phthalates can be found in:</p> <ul style="list-style-type: none"> <li>• Flexible plastic packaging</li> <li>• Components (e.g., PVC) <ul style="list-style-type: none"> <li>• Plastisol print pastes <ul style="list-style-type: none"> <li>• Adhesives</li> </ul> </li> <li>• Plastic sleeves</li> </ul> </li> <li>• Polymeric coatings</li> </ul> | All materials:<br>CPSC-CH-C1001-09.4, analysis by GC/MS |
| 117-84-0    | Di-n-octylphthalate (DNOP)  |          |                                 |   |   |
| 117-81-7    | Di(2-ethylhexyl)-phthalate (DEHP)   |          |                                 |   |   |
| 26761-40-0  | Diisodecylphthalate (DIDP)  |          |                                 |   |   |
| 85-68-7     | Butylbenzylphthalate (BBP)  |          |                                 |   |   |
| 84-74-2     | 2Dibutylphthalate (DBP)   |          |                                 |   |   |
| 84-69-5     | Diisobutylphthalate (DIBP)  |          |                                 |   |   |
| 84-75-3     | Di-n-hexylphthalate (DnHP)  |          |                                 |   |   |
| 84-66-2     | Diethylphthalate (DEP)  |          |                                 |   |   |
| 131-11-3    | Dimethylphthalate (DMP)   |          |                                 |   |   |
| 131-18-0    | Di-n-pentyl phthalate (DPENP)   |          |                                 |   |   |
| 84-61-7     | Dicyclohexyl phthalate (DCHP)   |          |                                 |   |   |
| 71888-89-6  | 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich  |          |                                 |   |   |
| 117-82-8    | Bis(2-methoxyethyl) phthalate   |          |                                 |   |   |
| 605-50-5    | Diisopentyl phthalate (DIPP)  |          |                                 |   |   |
| 131-16-8    | Dipropyl phthalate (DPRP)   |          |                                 |   |   |
| 27554-26-3  | Diisooctyl phthalate (DIOP)   |          |                                 |   |   |
| 68515-50-4  | 1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear  |          |                                 |   |   |
| 71850-09-4  | Diisohexyl phthalate (DIHxP)  |          |                                 |   |   |
| 68515-42-4  | 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)   |          |                                 |   |   |
| 84777-06-0  | 1,2-Benzenedicarboxylic acid Di-pentyl ester, branched and linear   |          |                                 |   |   |
| 68648-93-1  | 1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters or mixed decyl and hexyl and octyl diesters with $\geq 0.3\%$ of dihexyl phthalate; 1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters; 1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters |          |                                 |   |   |
| 68515-51-5  |   |          |                                 |   |   |
| 776297-69-9 | n-Pentyl-isopentylphthalate (nPIPP)   |          |                                 |   |   |
| 26040-51-7  | Bis(2-ethylhexyl) tetrabromophthalate   |          |                                 |   |   |