



EWG's Licensing Criteria: Baby Diapers



EWG's research team has developed a strict set of standards to be met by all baby diapers that bear the EWG VERIFIED™ mark. The EWG VERIFIED mark demonstrates to consumers that a product meets our strictest criteria, as outlined below.

Baby Diapers Criteria

To be considered for the EWG VERIFIED mark, a product must meet the following criteria.

1) Products shall not include any of the following chemicals or materials linked to health harm.

EWG requires that none of the following chemicals or materials linked to health harm be intentionally added to licensed products or used in the manufacturing of the components and raw materials thereof:*

- Parabens
- Phthalates
- Bisphenols
- Fragrances and fragrance ingredients, such as essential oils and botanical extracts
- Formaldehyde and formaldehyde-releasing compounds
- Formaldehyde-resin glues
- Colophony or rosin-based adhesives
- Lotions or ingredients intended to function as skin-conditioning agents or skin protectants, as defined by INCI Reported Functions
- Optical brighteners, for whitening purposes
- Antibacterial or preservative agents, including but not limited to nanosilver, triclosan, triclocarban and isothiazolinones
- Organotin compounds
- Polyvinyl chloride
- Flame-retardant chemicals
- Per- and polyfluorinated chemicals, or PFAS
- Superabsorbent polymers contaminated with acrylamide or unreacted acrylic acid
- Chlorine or elemental chlorine-free bleaching agents. Note: Only totally chlorine-free bleaching agents will be permitted
- Substances classified as carcinogenic or mutagenic, or as sensitizers, or reproductive or aquatic toxicants under the Globally Harmonized System of Classification and Labelling of Chemicals, or GHS (see Appendix A for complete list)
- Dyes and pigments not approved for use in cosmetics and food in the US and EU, and those that do not meet EWG's restrictions on heavy metals and other contaminants (see Appendix B). Note: Dyes will not be permitted on materials that come into direct contact with the baby's skin

- Plant-derived natural fibers, including but not limited to cotton, linen and hemp, contaminated with pesticides (see Appendix C for details).
- * EWG defines "intentionally added" ingredients or materials as substances that manufacturers have intentionally added to their product or those intentionally added to their raw materials that have a functional or technical effect.

2) Products must comply with EWG's standards for emissions of volatile organic compounds, or VOCs.

EWG requires products bearing the EWG VERIFIED mark to comply with EWG VOC* emissions standards, as seen in Table 1, below.

Table 1. EWG VOC Emissions Standards for Baby Diapers

<i>Substance</i>	<i>Maximum limit (ppb)</i>
Formaldehyde	No detectable concentration
Toluene	0.4
Styrene	0.6
Methylene chloride	No detectable concentration
Total VOC	60

* As cited in EU Directive 2004/42/CE, EWG defines VOCs as any organic compound having a boiling point of less than or equal to 250°C measured at standard pressure of 101.3 kPa. Total VOCs is defined as the sum of all detected volatile organic compounds, as outlined in ISO 16000-6 or EN 16516.

3) Products must meet EWG's restrictions on potentially hazardous contaminants and byproducts.

EWG requires products bearing the EWG VERIFIED mark to meet EWG's restrictions on hazardous chemicals that may contaminate diapers, as seen in Table 2 below.

Table 2. EWG Restriction on Contaminants in Baby Diapers

<i>Substance</i>	<i>Maximum limit (ppm)</i>
Poly aromatic hydrocarbons	< 0.2
Alkylphenols and alkylphenol ethoxylates	< 0.1
1,4-dioxane	< 0.3
Phthalates	< 50
Total VOC	60



4) Products, components and packaging must limit their use of plastic.

EWG requires manufacturers to limit their use of plastic and polymers in products, components and packaging to the following:

- Polyester
- Polyamide
- Polypropylene
- Polyethylene
- Polyurethane (including elastane)
- Polyactic acid
- Polymer-based adhesives (excluding those not allowed in VERIFIED products as outlined in Criterion 1)

5) Products bearing the EWG licensed mark shall not include wetness indicators that are made with ingredients linked to harm.

Products bearing the EWG VERIFIED mark shall not include wetness indicators that are made with chemicals linked to human health harms, such as quaternary ammonium compounds. Companies must also phase out the use of ingredients linked to environmental harm, such as halogenated organic compounds like bromocresol green, often used as pH indicators, within 2 years of signing a VERIFIED contract.

6) Companies must partake in meaningful plastic and waste reduction initiatives.

To be eligible for the VERIFIED program, companies must provide proof that they are partaking in meaningful action on at least one of the initiatives listed below and affirm that they will partake in at least two other listed initiatives in the next two years.

- Significant investment in research on plastics alternatives for use in diaper manufacturing – at least 1 percent of annual diapers revenue suggested
- Use of or significant investment in used diaper recycling programs → at least 1 percent of annual diapers revenue suggested
- Use of at least 50 percent post-consumer recycled plastic materials
- Offer a buy-back program for unused diapers
- Greater than 50 percent carbon neutrality, for instance, through carbon offsetting programs, use bioplastics and/or natural materials, use of renewable energy.

EWG will consider other plastic and waste reduction initiatives, if presented, and maintains the right to determine whether such initiatives meet our standards and are acceptable for the VERIFIED program.

7) Products must use fluff or pulp materials sourced from sustainably managed forests.

EWG requires a minimum of 90% by weight of the fluff or pulp used in the product to be sourced from sustainably managed forests, as certified by an independent third party, such as the Forest Stewardship Council.

8) Products must disclose all intentionally added ingredients on their packaging and website.

EWG will license only those products that disclose to the public all their intentionally added ingredients and materials. This provision includes but is not limited to complete disclosure, including chemical names, of dyes, fibers, plastic materials adhesives, coatings and other components, such as elastics and chemical components of wetness indicators. Companies must also disclose the superabsorbent polymers, or SAP, used, as well as any additives to the SAP or the wood pulp or fluff.

For disclosure on packaging: All materials and ingredients, including but not limited to dyes, fibers, plastic materials, adhesives, coatings and other components, such as elastics and chemical components of wetness indicators, must be listed in descending order of predominance.

Example of disclosure required on packaging

Ingredients/materials: Polypropylene, Polyethylene, Polyester, Sodium polyacrylate, Totally chlorine-free wood pulp, Cotton, Elastane, FD&C blue 1.

For disclosure on website: All materials and ingredients, including but not limited to dyes, fibers, plastic materials, adhesives, coatings and other components, such as elastics and chemical components of wetness indicators, must be listed by structural parts or component of the diaper, for instance, top sheet, leg cuffs, back sheet, core, etc., along with their aggregate percentages by weight.

Example of disclosure required on website

Ingredients/materials: top sheet: 100% polypropylene; leg cuffs: 50% polypropylene, 50% spandex; back sheet: 30% polyethylene, 30% polypropylene, 25% cotton, 15% polyester, 0.1% FD&C blue 1; core: 50% totally chlorine-free wood pulp, 50% sodium polyacrylate; closing system: 40% polypropylene, 40% elastane, 20% thermoplastic polyurethane.

Note: Companies must use the generic names for both synthetic and natural fibers. EWG shall recognize ingredients and material names as listed in 16 CFR § 303.7 or ISO Standard 2076: 2010(E), "Textiles—Synthetic fibres—Generic names." If conflicting names appear in the above references, either name is acceptable.

EWG shall recognize a 3% allowance for material and ingredient content claims. For example, if a product claims to have 50% polypropylene, the exact amount may range between 47% and 53%. However, companies may not intentionally misrepresent the amount of material used. For example, if a company is using 47% of a given material, it may not state the amount as 50%.



9) **Manufacturers must develop, follow and document the use of a quality control system.**

EWG requires that manufacturers of licensed products develop, follow and submit documentation detailing the use of a quality control system. These practices include but are not limited to:

- i. Maintenance of documentation and records
- ii. Procedures for analysis of product specifications and quality
- iii. Process for internal audits
- iv. Assessment of the suitability of buildings, facilities and equipment
- v. Adequate training of all personnel
- vi. Maintenance of adequate cleanliness and pest controls
- vii. Compliance of raw material suppliers with explicit agreements to monitor and meet purity and safety standards, as outlined in EWG's criteria document.
- viii. Safety assessment protocols for materials and raw materials

10) **Companies using environmental marketing claims must comply with the Federal Trade Commission's guidelines**

All "environment friendly" or "green" claims made on product packaging or in associated marketing materials, including but not limited to claims of being "free of," biodegradable, recycled content and non-toxic, must comply with FTC's **Guide for the Use of Environmental Marketing Claims**.

11) **Companies must acknowledge that EWG will annually review our criteria, including our lists of prohibited substances and allowed plastics, dyes and pigments, and update as needed. A phase-in period will be provided to allow companies to comply with any updates.**

EWG will annually review and, if necessary, update our criteria, including our lists of prohibited substances and allowed plastics, dyes and pigments, to ensure they reflect the latest in science, regulations and other relevant considerations. If changes are made, EWG will alert companies and grant them eighteen (18) months from the time the changes are announced to make the necessary changes to their formulation and packaging. At the end of the 18-month period, companies will no longer be able to manufacture or distribute products with EWG's licensed mark that do not comply with the new criteria. If companies continue to distribute noncompliant products with EWG's licensed mark, this will be treated as a breach of EWG's licensing agreement. In the rare event that scientific evidence emerges demonstrating that a diaper ingredient or component will pose significant harm to human health, EWG reserves the right to request that companies either remove the ingredient or component or cease distribution of the relevant products with EWG's licensed mark in a shorter timeframe than specified above.

Documenting Compliance with EWG's Health and Transparency Criteria for Baby Diapers

To verify a product meets EWG's standards for health and transparency, a company must submit to EWG the following documentation for each EWG VERIFIED criterion.

CRITERION 1. Products shall not include any of the following chemicals or materials linked to health harm.

DOCUMENTATION: Companies must submit a completed Product Submission Form with the product name, a list of all intentionally added chemicals, components and materials, and the function and weight, or percentage composition, of each chemical, component and material listed.

For verification purposes, companies must also submit legible images or pictures of the product label as it appears on actual products for sale. In cases where the label text or artwork has yet to be finalized, EWG will review proof images during the application process. However, companies must submit final package images for EWG's approval before the mark will be approved for use.

DOCUMENTATION: Companies must submit a signed affidavit stating that none of the following chemicals or materials was intentionally added to licensed products or used in the manufacturing of the components and raw materials thereof:

- Parabens
- Phthalates
- Bisphenols
- Fragrances and fragrance ingredients, such as essential oils
- Formaldehyde and formaldehyde-releasing compounds
- Formaldehyde-resin glues
- Colophony or rosin-based adhesives
- Lotions or ingredients intended to function as skin conditioning agents or skin protectants, as defined by INCI Reported Functions
- Optical brighteners, for whitening purposes
- Antibacterial or preservative agents
- Organotin compounds
- Polyvinyl chloride
- Flame-retardant chemicals
- Per and polyfluorinated chemicals



- Chlorine or elemental chlorine-free bleaching agents
- Substances classified as carcinogenic or mutagenic, or as sensitizers or reproductive or aquatic toxicants under the Globally Harmonized System of Classification and Labelling of Chemicals (see Appendix A for complete list).

DOCUMENTATION: To comply with EWG’s restriction on dyes and pigments, companies must submit a signed affidavit stating that i) no dyes or pigments were used in components of the diaper that come into direct contact with the baby’s skin, and ii) any dyes or pigments used in the manufacturing of the products and their raw materials are included on EWG’s list of allowed dyes and pigments, as listed in Appendix B.

If companies use a dye or pigment listed in Appendix B as having a contamination restriction, companies must submit laboratory test results showing that their dyes and pigments meet the restriction specified in Appendix B.

DOCUMENTATION: To comply with EWG’s restriction on pesticides in natural fibers, companies must submit documentation demonstrating that all lots of fiber are one of the following:

- Certified organic by the USDA National Organic Program, or
- Free from pesticides as determined through testing and certification, as outlined in Appendix C.

DOCUMENTATION: To comply with EWG’s restriction on superabsorbent polymers, companies must submit a laboratory test report demonstrating no detectable levels of acrylamide, or acrylic amide, and less than 400 parts per million, or ppm, of residual monomers, including acrylic acid, in their products.

CRITERION 2. Products must comply with EWG’s standards for emissions of volatile organic compounds, or VOCs.

DOCUMENTATION: Companies must submit a laboratory test report demonstrating no detectable formaldehyde emitted from their products. Products must be tested by methods that measure the content of free and releasable formaldehyde by aqueous extraction and determined by spectrophotometry, as outlined in Japanese Law 112.

Companies must also submit a laboratory test report demonstrating products compliance with VOC-emission restrictions, as outlined in Table 1 in Criterion 2. Emissions of these volatile compounds shall be determined by air sampling a test chamber and analysis by gas chromatography.

CRITERION 3. Products shall be free from potentially hazardous contaminants and byproducts.

DOCUMENTATION: Companies must submit laboratory test reports demonstrating that their product meets the restrictions outlined in the table 3 below. Determination of contaminant concentrations must be completed with the best available analytical methods following solvent extraction of the whole diaper (i.e., not individual parts), as detailed in Annexes B, C and D of Griet et al. (2018)*. Polycyclic aromatic hydrocarbons, phthalates, and 1,4-dioxane must be determined by gas chromatography-mass spectrometry (GC-MS). Alkylphenols and alkylphenol ethoxylates must be determined by liquid chromatography-tandem mass spectrometry (LC-MS). Note: Griet et al. (2018) is cited here for methodological guidance only; methods described therein may require modification to enable quantification of all chemicals listed in Table 3. Acceptability of methods, including detection limits achieved, are at the discretion of EWG.

Table 3: EWG Restriction on Contaminants in Baby Diapers—Expanded

Substance	Maximum limit (mg/kg)
Polycyclic aromatic hydrocarbons	< 0.2 (sum 16 PAHs)
<i>acenaphthene</i>	
<i>acenaphthylene</i>	
<i>anthracene</i>	
<i>benzo(a)anthracene</i>	
<i>benzo(a)pyrene</i>	
<i>benzo(b)fluoranthene</i>	
<i>benzo(g,h,i)perylene</i>	
<i>benzo(k)fluoroanthene</i>	
<i>chrysene</i>	
<i>dibenzo(a,h)anthracene</i>	
<i>fluoranthene</i>	
<i>fluorene</i>	
<i>ideno(1,2,3-cd)pyrene</i>	
<i>naphthalene</i>	
<i>phenanthrene</i>	
<i>pyrene</i>	
Phthalates	<50 (sum)
<i>benzyl butyl phthalate (BBP)</i>	
<i>dibutyl phthalate (DBP)</i>	
<i>di(2-ethylhexyl) phthalate (DEHP)</i>	
<i>diisobutyl phthalate (DIBP)</i>	
<i>diisodecyl phthalate (DIDP)</i>	
<i>diisononyl phthalate (DINP)</i>	
<i>di-n-octyl phthalate (DNOP)</i>	
<i>dinonyl phthalate (DNP)</i>	
<i>dipentyl phthalate (DPP)</i>	



Substance	Maximum limit (mg/kg)
<i>dimethyl phthalate (DMP)</i>	
<i>dihexyl phthalate (DHP)</i>	
Alkylphenols and alkylphenol ethoxylates	< 0.1 (sum)
<i>nonylphenol</i>	
<i>octylphenol</i>	
<i>nonylphenol ethoxylate</i>	
<i>octylphenol ethoxylate</i>	
1,4-dioxane	< 0.3

* Griet, J., et al. (2018). *Monitoring of the Belgian Market with Regard to Organic Residues in Baby Nappies—Part 2: Target Analyses*. Flemish Institute for Technological Research (VITO)/Belgian Federal Public Service Health, Food Chain Safety and Environment. https://healthpr.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/report_quantitative_analysis_baby_diapers_0.pdf

CRITERION 4. Products, components and packaging must limit their use of plastic.

DOCUMENTATION: Companies must submit a signed affidavit verifying that their products, components and packaging use only plastic or plastic polymers listed as acceptable to EWG in Criterion 4.

CRITERION 5. Products bearing the EWG licensed mark shall not include wetness indicators that are made with ingredients linked to harm.

DOCUMENTATION: Companies must submit a certificate of analysis from the supplier of their wetness indicator disclosing if their product is made with quaternary ammonium compounds or halogenated organic compounds.

To be eligible for the VERIFIED program, the product's wetness indicator shall not be made with quaternary ammonium compounds.

If a company's wetness indicator includes halogenated organic compounds, like bromocresol green, they must sign an affidavit stating that they will phase out the use of these compounds within two years of signing the VERIFIED contract.

CRITERION 6. Companies must partake in meaningful plastic and waste reduction initiatives.

DOCUMENTATION: Companies must provide documentation demonstrating that they have complied with at least one of EWG's listed plastic and waste reduction initiatives. They must also sign an affidavit stating that they will comply with two additional initiatives from the EWG

list within two years of signing the VERIFIED contract. Companies that do not provide proof of action by the two-year mark are subject to removal from the program.

CRITERION 7. Products must use fluff or pulp materials sourced from sustainably managed forests.

DOCUMENTATION: Companies must submit documentation from an independent third party demonstrating that a minimum of 90% by weight of the fluff or pulp used in their product is sourced from sustainably managed forests.

CRITERION 8. Products must disclose on their packaging and website all intentionally added ingredients.

DOCUMENTATION: Companies must submit a signed affidavit stating that they have disclosed all of the product's intentionally added ingredients to EWG, and disclosed them publicly on the product's packaging and website, as outlined in Criterion 8.

CRITERION 9. Manufacturers must develop, follow and document the use of a quality control system.

DOCUMENTATION: EWG will require companies to submit documentation describing their quality control system in detail.

CRITERION 10. Companies using environmental marketing claims must comply with the Federal Trade Commission's guidelines.

DOCUMENTATION: Companies must submit a signed affidavit stating that all of their "environment friendly" or "green" claims, made on product packaging or in associated marketing materials, comply with the FTC's **Guide for the Use of Environmental Marketing Claims**.

CRITERION 11. Companies must acknowledge that EWG will review our criteria annually, including our lists of prohibited substances and allowed plastics, dyes and pigments, and update as needed.

DOCUMENTATION: Companies must submit a signed affidavit stating that they acknowledge that EWG will annually review and update our criteria, including our lists of prohibited substances and allowed plastics, dyes and pigments; and, if companies are unable to meet the updated criteria within 18 months, they will no longer be able to manufacture or distribute products with EWG's licensed mark that do not comply with the new criteria.

APPENDICES

Appendix A

EWG's Prohibited Substances based on hazard classifications according to the Globally Harmonized System of Classification and Labelling of Chemicals

[[See supplemental document]]



Appendix B

EWG's Allowed Dyes and Pigments and Associated Contamination Restrictions

EWG's list of allowed dyes and pigments include only those that have been approved in the US and EU for use in cosmetics without restrictions (as detailed in Annex IV of the Cosmetic Directive (Regulation (EC) No. 1223/2009) and CFR Title 21) and those approved for use in food (as detailed in Annex II of Regulation (EC) No. 1333/2008 and CFR Title 21). Dyes and pigments on **EWG's Unacceptable List: Personal Care Products** and lake colors were excluded from this allowable list, even if they were covered in the EC and FDA regulations mentioned above.

[[See supplemental document]]

Appendix C

EWG's Standard for Pesticide Contamination on Natural Fibers

To demonstrate that their material meets EWG's pesticide residue standards, EWG requires all companies using natural fibers, such as cotton, in their products to submit the following documentation.

Either:

- i. USDA National Organic Program certification for all lots of organic fiber.

Or all 3 of the following:

- i. Certified laboratory report/s demonstrating that all lots of conventionally produced, or non-organic, fiber are free from detectable pesticides, as determined by a multiresidue method involving both gas chromatography- and liquid chromatography-mass spectrometry (GCMS and LCMS) analyses, such as that used by Attallah et al. (2018).^{*} Acceptability of methods are at the discretion of EWG; and
- ii. Certified laboratory report/s demonstrating that all lots of conventionally produced fiber are free from detectable concentrations of glyphosate and its metabolite, aminomethylphosphonic acid (AMPA); and
- iii. Certified laboratory report/s demonstrating that all lots of conventionally produced fiber are free from the pesticides listed in Table 4 (unless otherwise included in the laboratory reports above).

Table 4. Pesticides used in U.S. cotton production that are linked to developmental and reproductive toxicity, carcinogenicity, mutagenicity and endocrine disruption

Pesticide	CAS Registry Number
2,4-D	94-75-7
Abamectin	71751-41-2
Acephate	30560-19-1
Acetamiprid	135410-20-7
Acetochlor	34256-82-1

Pesticide	CAS Registry Number
Atrazine	1912-24-9
Bifenthrin	82657-04-3
Carbaryl	63-25-2
Chlorpyrifos	2921-88-2
Clothianidin	210880-92-5
Cyfluthrin	68359-37-5
β-cyfluthrin	68359-37-5
β-cyhalothrin	91465-08-6
Cypermethrin	52315-07-8
Diazinon	333-41-5
Dinotefuran	165252-70-0
Diuron	330-54-1
Fluazifop-p-butyl	79241-46-6
Flumioxazin	103361-09-7
Fluxapyroxad	907204-31-3
Glyphosate	1071-83-6
Imidacloprid	138261-41-3
Isoxaflutole	141112-29-0
Linuron	330-55-2
Metolachlor	51218-45-2
Pinoxaden	243973-20-8
Propanil	709-98-8
Propiconazole	60207-90-1
Pyriproxyfen-sodium	123343-16-8
Thiamethoxam	153719-23-4
Thiophanate-methyl	23564-05-8
Triadimefon	43121-43-3
Trifluralin	1582-09-8

Source: EWG, from USDA data.

^{*} Attallah, E.R., M.H. Abdelwahed, M.M. Abo-Aly (2018). *Development and validation of multi-residue method for determination of 412 pesticide residues in cotton fiber using GC-MS-MS and LC-MS-MS*. The Journal of The Textile Institute, 109 (1): 46-63.

