

# **EDANA Guidelines for the Testing of Baby Diapers**

**Version 2.0 – April 2016**



## Executive Summary

These guidelines were developed by a group of leading manufacturers of baby diapers and leading test institutes with expertise in testing baby diapers. EDANA and its member companies drafted this document with full awareness and respect for the principle of strict independence of consumer testing organisations. For this reason, these guidelines are intended as recommendations to be used as and when applicable for the objective of the test at hand and were designed as a tool to support the efficient and scientifically sound testing of diapers through best practices. Comments and proposed changes and additions will be most welcome to further improve and maintain these guidelines up to date.

Compared to the first version, these guidelines have been revised, adapted and expanded. They include all steps of a diaper consumer test, including sampling and test design, performance tests, interpretation and publication of results. Statistical methodology and technical parameters impacting test results were taken into consideration for the development of the guidelines.

In order to ensure that the products are tested in an accurate manner and that the results reflect the actual experience of consumers, it is recommended to consult manufacturers, to conduct tests in a laboratory with experience in testing diapers and to include a user trial.

For convenience of use, contact details to the main manufacturers that are members of EDANA were included, along with a sample test questionnaire. Any feedback and input to the guidelines is welcome and will be taken into consideration in future versions.

For comments and questions please e-mail [pierre.conrath@edana.org](mailto:pierre.conrath@edana.org)

## Acknowledgements

EDANA would like to thank the following member companies for their contribution:



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## Project Manager Check List

1.	My organisation is financially independent from manufacturers of baby diapers	
2.	The test compares products of equivalent size and design	
3.	The sampling is representative of products available on the market	
4.	I consulted experts in diapers prior to the choice of characteristics to be tested	
5.	Manufacturers of all diapers tested have been informed which of their products will be tested and which test methods will be used	
6.	Subjective evaluation of the products is based on a user panel or on consumer surveys	
7.	Sampling, test design, user panel recruitment and analysis of test results comply with the latest version of ASTM E1958, AFNOR (ISO/DIS 11136) and/or ESOMAR guidelines	
8.	All test methods are relevant for diapers, reproducible and scientifically rigorous	
9.	I commissioned an independent laboratory qualified in diaper testing	
10.	Test results were checked by experts and communicated to manufacturers ahead of publication	
11.	The publication includes the price of each product	
12.	I gave clear guidelines to manufacturers and retailers on how they can use the results	
13.	Performance tests were carried out during one week by a representative panel of users reflecting e.g. gender, weight distribution, market distribution of brands/types of product	
14.	Products were handed out in random order	
15.	Users filled in detailed questionnaires	
16.	Users tested the products for:	
16a	Overall preference	
16b	Leakage protection	
16c	Skin dryness	
16d	Skin friendliness	
16e	Handling	
16f	Fastening system	

<b>16g</b>	Overall fit	
<b>16h</b>	Softness	
<b>16i</b>	Optional subjective comments	
<b>17.</b>	If the test/user panel was conducted in a country other than where the test result is published, comparability of the two countries was assessed and this is clearly indicated	
<b>18.</b>	Technical lab tests were carried out on at least 5 samples	
<b>19.</b>	For tests related to product safety, results are indicated together with applicable legal standards and regulations	
<b>20.</b>	The evaluation and weighting of results is based on feedback from the user trial	
<b>21.</b>	The highest weighting is given to overall preference, leakage protection and skin dryness	
<b>22.</b>	Detailed information on each product and their manufacturer is recorded and supported with pictures	
<b>23.</b>	At least one sealed bag is stored by the laboratory for six months after the test	
<b>24.</b>	If the test/user panel was conducted in a country other than where the test result is published, comparability of the two countries was assessed and this is clearly indicated	

## 1) General principles and recommendations

- 1.1. There must be a financial independence between the testing organisations and the manufacturers.
- 1.2. Sampling, test design, panel recruitment and the analysis of test results must comply with the latest versions of ASTM E1958, AFNOR (ISO/DIS 11136) “Sensory analysis -- Methodology -- General guidance for conducting hedonic tests with consumers in a controlled area” and/or ESOMAR<sup>1</sup> guidelines, as applicable.
- 1.3. It is recommended to establish and maintain communications with manufacturers and distributors before and throughout the testing process (see 7.) Producers of baby diapers can provide helpful insights for a product test e.g. which products are comparable and/or which markets are similar, whether new technologies have been introduced into the market or if planned product changes will be made before the publication of the test results.

## 2) Sampling

- 2.1. Tests must compare products of equivalent size and design (tape/pant).
- 2.2. For performance based comparative tests, if only one size or product type is tested, tests should be conducted on the main product designs and/or the most common size.
- 2.3. The sampling must be representative of the products available on the market (brands, types, price etc.).
- 2.4. These guidelines refer to fully commercially available products. The testing organisation must ensure that the products purchased are likely to be available on the market when the test results are published. For this purpose they are encouraged to make contact with companies manufacturing each of the products tested (see annex I for a list of relevant EDANA member companies).
- 2.5. Special care must be taken regarding conditioning of products before testing (temperature and humidity) to reduce risks of deviations.
- 2.6. Products marketed under the same brand may be manufactured by different companies or in different plants. In order to avoid discrepancies between the user experience and the test results, tests covering several countries/regions should take this into account and ensure that if necessary, samples are collected from all relevant plants/manufacturers. Manufacturers/distributors are able to support (see Annex I).

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<sup>1</sup> <http://www.esomar.org>

### 3) Characteristics and parameters tested

- 3.1. Unless a test is conducted with a specific purpose (e.g. safety assessment only), the test protocol should cover all characteristics of the product relevant to the use of the product by the consumer, including characteristics related to performance, safety and sustainability (see 8, 9 and 10).
- 3.2. It is recommended that the final choice of characteristics to be tested be made after consulting experts in the product category e.g. specialised test laboratories, manufacturers or other independent experts.
- 3.3. When the characteristics tested reflect a subjective evaluation of the product, they must be based either on assessments by a consumer panel or on surveys conducted among ordinary consumers. Consumer surveys must be conducted and analysed according to standard statistical practices i.e. latest version of ASTM E1958.
- 3.4. If a test or survey is subject to limitations or reservations, these must be clearly communicated when the results are published. For example, if only eco-labelled products were tested this should be clearly stated.
- 3.5. Qualitative criteria and sustainability-related parameters may be included in the publication of the results provided this does not unreasonably impact the ranking based on quantitative tests and panel results.

### 4) Test methods



- 4.1. The test methods used must be based as much as possible on product-relevant, reproducible and rigorous methods (see 8, 9 and 10). If not possible, the reasons why other methods were selected should be given to the interested parties, on the initiative of the organisation responsible for the consumer tests.
- 4.2. Tests must be carried out in laboratories qualified in the considered field of activity and their objectivity must be recognised.
- 4.3. Information on the test methods used should be available to all relevant stakeholders.

## 5) User trial versus laboratory tests

- 5.1. User trials are crucial to evaluate overall product performance. They are needed to weight the objective results obtained according to consumer expectations by lab testing. User trials should be the predominant tool in terms of product ranking based on product performance.
- 5.2. Laboratory tests should be used to complement the results of user trials and to evaluate specific product properties. Laboratory objective performance tests should be linked with the subjective evaluation of the product. Parameters listed in sections 9.3 and 10. are examples of commonly used measures. The final decision of which parameters to be measured remains at the discretion of the responsible testing organisation.
- 5.3. It is recommended not to blind products or repack them in neutral packaging due to the risk of altering the performance of products and/or packaging. The influence of brand perception on results must be taken into account in the evaluation of test results, as branding can have an influence in subjective statements.

## 6) Interpretation of results

Test results, consistency and conclusions should be thoroughly checked. Test laboratories and producers of baby diapers can provide valuable inputs, e.g. by spotting factual errors or inconsistencies.

Significant differences between products should be taken into consideration when evaluating results. If there is no statistical significant differences between products, this should be reflected in the communication.

## 7) Communication of test results to manufacturers

- 7.1. Information on the scope of the test must be included in the first communication with manufacturers, including quality level (value/performer/premium) if not full assortment.
- 7.2. The test results, including the list of characteristics tested, the methods used and product references (batch number or other product coding), should be forwarded to the manufacturer before publication.
- 7.3. Testing organisations must give the manufacturers a reasonable amount of time to respond and communicate their comments in time to be considered before publication of results.
- 7.4. Comments from manufacturers should be taken into account by the testing organisation.
- 7.5. The testing organisation may also communicate the name of the laboratory conducting the test and the determination of the method used, provided the laboratory agrees to this.

## 8) Publication of Results

Note: see annex III for examples of questionnaires.

- 8.1. The results must be presented in language, units and symbols that are understandable to the consumer.
- 8.2. The presentation of the test results must be clearly explained. It must include the criteria used to select the products tested, the representativeness and the sampling of the products, the characteristics selected and the test methods used and their limitations if any.
- 8.3. The presentation of the results should include any complementary information, in particular, if applicable, on the relative importance given to the tests conducted and/or to the characteristics of the product, including the reasons for their relative weighting.
- 8.4. Factors that may have an impact on the perceived performance of the products should be taken into consideration. Among the information provided to the consumer, the price of the product is essential to the appreciation of the value of the product.
- 8.5. If one or more products are identified as best or better than others, the criteria used to reach this conclusion should be listed.
- 8.6. Testing organisations must provide clear guidelines on the use of test results by manufacturers and retailers to ensure that the publication of the test results by third parties does not alter their meaning and objectivity. For example, it should be required to indicate the date and source of the test result.
- 8.7. Illustrations should feature products that are effectively available on the target market.

## 9) Performance test (user trial)

Users should be selected for the study by the following criteria to represent the population:

- 9.1. To enable statistical treatment of the results, it is important to have a sufficient base size and usage duration for the user panel. A typical number of users for a home use panel is usually about 100 users, taking into consideration e.g. gender, weight distribution, product style, market distribution. A typical usage duration is one week. The number of products per user should also be considered, as a high number of products tested by the same user can influence results. For test design it is important to consult with an expert in consumer testing of baby diapers.



9.2. Laboratory and/or use test protocol has to be studied and adapted to the final objective of the study. For the comparative testing of the performance of baby diapers, we recommend the following:

- Use a sequential monadic test design.
- The products are to be handed out in random order in order to ensure that diaper A is not always used before diaper B and that influences due to weather conditions, e.g. extreme hot weather periods, have the same effect on all the products.
- The results are to be statistically evaluated after the user trial has been completed.

9.3. Questionnaires used should be based on a mix of positively and negatively phrased statements, with a consistent scale for responses. In addition to the questionnaire, it is recommended to keep a diary for each baby participating in the user trial.

It is recommended to assess the following criteria as part of a user trial (see also ANNEX III):

- Overall preference
- Leakage protection
- Skin dryness
- Skin friendliness
- Handling (putting diaper on and taking it off)
- Fastening system
- Overall fit
- Softness
- Optional comments (positive/neutral/negative)

9.4. Each product should be assessed on the basis of a questionnaire compiled by the test institute together with the testing organisation. The test is to last at least five days for each product, a full week when possible.

9.5. The ratio of boys to girls should be 1:1 (not applicable to products designed specifically for one gender).

9.6. All participants should be current users of the diaper size being tested and of the 'quality level' or tier of diaper being tested.

9.7. A mixture of participants that normally purchase a range of the main brands available in the market considered should take part in the study (e.g. to include the market leader, other brands and retailer brands). The proportions of these user groups in the panel should be comparable to the proportions of the groups in the market.

- 9.8. The product should be used under direct supervision of the respondents, in the same way and conditions as the product they normally use.
- 9.9. If the test is conducted in a different country than the target market, the comparability of the two countries should be confirmed and the name of the country where the test was conducted should be clearly stated.
- 9.10. Sick children or those with a chronic skin condition should not participate in the test. In cases where children become ill during the course of the user trial, this is to be indicated on the questionnaire and the results are not to be taken into consideration for the assessment.

## 10) Technical tests

For all following tests a minimum of 5 samples should be tested, and results should be reported with the average and standard deviation from those 5 samples.

A description of the construction of the diaper should be recorded, together with the weight and dimensions of the diaper.

A number of performance tests can be conducted with saline solution (0.9% NaCl analytical grade in de-ionized water, conductivity at 25°C, 16 mS) or with a referenced normalized synthetic urine adjusted for its superficial tension, including:

- Absorption rate/time of penetration
- Absorption before leakage
- Determination of skin wetting
- Evaluation of the closure/fastening system



A breathability test can be conducted as a means to check claims in this respect, and provide information as to whether a product backsheet is breathable at all.

## 11) Safety assessments

Note: whenever applicable, legal standards and regulations must be referred to, particularly when communicating test results. For instance, if a given amount of a substance was found in a product, the legally accepted threshold must also be indicated in order for the reader to know whether the substance is present in quantities that exceed legal thresholds or not.

- 11.1. The testing organisation should enquire with manufacturers as to what type of product safety assessment process are in place.
- 11.2. Chemical tests are optional and can be carried out following consultation with the testing organisation and in accordance with for example the Oeko-Tex 100 Standard (voluntary standard on testing textiles for babies for harmful substances).
- 11.3. Due to the dry nature of the materials and considering their final use, baby diapers have very low numbers of microorganisms and do not support microbial growth. Therefore, there is no need to prescribe specific microbiological tests for these products.

## 12) Sustainability

The testing organisation should enquire with manufacturers as to whether they have one or several of the following in place:

- Sustainability goals and strategy, including environmental labels for products and/or materials
- supplier sustainability requirements (social and environmental)
- environmental management systems
- life cycle assessments for products and/or processes

This information can be used as a qualitative parameter in the test report. Sustainability-related parameters should not unreasonably impact the ranking based on quantitative tests and panel results.

## 13) Evaluation criteria and weighting

The evaluation should be based on the consumer experience results from the user trial. The highest weighting should be given to overall preference, leakage protection and skin dryness. The other criteria can be given a lesser weight. The evaluation should be based on consumer expectations derived from panel tests. All consumer expectations for performances should be considered in this weighting.

Ranking of products should be based on performance test results. Other parameters should be mentioned separately and ranked in addition if desired. In all cases weighting should be indicated as part of the final publication to ensure that the results can be correctly interpreted.

## 14) Inventory - General Data

The following information from the packaging of the sampled products should be recorded in the test report:

- Brand name and product name and size
- Manufacturer and / or distributor (e.g. retailer brand)
- Sales promoting information and advertising claims, illustrations
- The type of packaging (bag or box)
- Quantity of contents
- Application, disposal and recycling information
- Batch number or other product coding

## 15) Photo Documentation

The testing organisation is to produce test sample and packaging photos for the test publication in order to enable the clear identification of the product tested.

## 16) Reserve Test Samples

Reserve test samples (at least one sealed bag) are to be kept under suitable conditions and stored for the testing organisation for six months after publication of the test results.



## ANNEX I – List of contacts from EDANA member companies producing baby diapers

Note: Testing organisations are welcome to contact EDANA should they have any doubts as to whom they should contact within a given company or to ensure that they are contacting all relevant market players.

**Drylock Technologies NV**  
Werner van Ingelgem  
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**SCA Hygiene Products**  
Gunilla Wormbs  
[gunilla.wormbs@sca.com](mailto:gunilla.wormbs@sca.com)  
[www.sca.com](http://www.sca.com)

## ANNEX II – List of relevant test laboratories that are members of EDANA

**Centre Technique du Papier (CTP)**  
Philippe Ritzenthaler  
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## ANNEX III – Samples of questionnaires

### Questionnaire Example (after usage)

#### General Information

Name

Panellist-Identification

Gender of child

Weight of child in kg (with 1 digital accuracy)

Age of Child in months

Height of child in cm

#### Product questions

##### Mandatory:

1. How would you rate the diaper overall (excellent-very good-good-fair-poor)?
2. Comments: What did you like about this diaper? (open question)
3. Comments: What did you not like about this diaper? (open question)
4. How do you rate dryness of the skin (excellent-very good-good-fair-poor)?
5. How would you rate the leakage protection of this diaper (excellent-very good-good-fair-poor)?
6. How would you rate protection against skin redness (excellent-very good-good-fair-poor)?

##### Optional

1. How do you rate dryness of the skin at night (excellent-very good-good-fair-poor)?
2. How do you rate dryness of the skin at day (excellent-very good-good-fair-poor)?
3. How would you rate the breathability of the diaper (excellent-very good-good-fair-poor)?
4. How would you rate the ease of application of the diaper (very easy-easy-rather inconvenient-inconvenient very inconvenient)?
5. How would you rate ease of taking the diaper off (very easy-easy-rather inconvenient-inconvenient very inconvenient)?
6. How would you rate the diaper's fastening system during wear time (always stayed closed, open by itself sometimes, often did not stay closed, hardly ever stayed closed, never stayed closed)?
7. How would you rate the size of the diaper for your child (much too small-a little too small-just right-a little too large-much too large)?
8. How would you rate the fit of the diaper (much too tight-a little too tight-just right-a little too wide-much too wide)?
9. How would you rate the softness of the diaper next to the skin (soft-soft enough-a little too hard-hard)?
10. How would you rate the appearance of the diaper (excellent-very good-good-fair-poor)?
11. Were there pressure marks when using the diaper (none-yes, but not concerning – concerning-very concerning)?

##### If no diary is placed

12. Was there any leakage of urine or faeces during the last week at **day** (never-sometimes-often-almost always-always)?
13. Was there any leakage of urine or faeces during the last week at **night** (never-sometimes-often-almost always-always)?



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