BLUE ANGEL

The Environmental Label

Disposable nappies

DE-UZ 208

Basic Award Criteria

Edition January 2018

Version 4

The Environmental Label is supported by the following four institutions:

Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is the owner of the label. It regularly provides information on the decisions taken by the Environmental Label Jury.

Umwelt Bundesamt

The German Environmental Agency with its specialist department for "Ecodesign, Eco-Labelling and Environmentally friendly Procurement" acts as office of the Environmental Label Jury and develops the technical criteria of the Basic Criteria for Award of the Blue Angel.

Jury Umweltzeichen

The Environmental Label Jury is the independent, decision-making body for the Blue Angel and includes representatives from environmental and consumer associations, trade unions, industry, the trade, crafts, local authorities, academia, the media, churches, young people and the German federal states.

RAL gGmbH

The RAL gGmbH is the awarding body for the Environmental Label. It organises the process for developing the relevant award criteria in independent expert hearings – which involve all relevant interest groups.

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This document is a translation of a German original. In case of dispute, the original document should be taken as authoritative.

1 Introduction

1.1 Preface

In cooperation with the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, the German Environmental Agency and considering the results of the expert hearings conducted by RAL gGmbH, the Environmental Label Jury has set up these Basic Criteria for the Award of the Environmental Label. RAL gGmbH has been tasked with awarding the Environmental Label.
Upon application to RAL gGmbH and on the basis of a Contract on the Use of the Environmental Label to be concluded with RAL gGmbH, the permission to use the Environmental Label may be granted to all products, provided that they comply with the requirements as specified hereinafter.
The product must comply with all the legal requirements in the country in which it is to be marketed. The applicant shall declare that the product meets this requirement.

1.2 Background

The proportion of children in Germany who wear disposable nappies in their first years of life is estimated to be 95%. This means that around ten million nappies are used and thrown away every day. This high number is especially relevant because a large amount of raw materials are used in their production and the nappies create a corresponding amount of waste after their use. According to projections based on these figures, 154,680 tonnes of waste nappies are produced annually. This was preceded by the use of large quantities of plastics, fluff pulp and chemical components, not to mention the energy consumed during their production and the emissions generated.
In addition, the wearing of disposable nappies means that these products are constantly in contact with the skin of babies and small children on a daily basis and thus even the smallest quantities of chemicals harmful to health could have a negative impact.
Those products labelled with the Blue Angel Environmental Label face up to these challenges by exclusively using fluff pulp sourced from certified, sustainably operated businesses that remain close to nature and engage in energy efficient and low emission fluff pulp production. In the further development of the Environmental Label, the possibility of unbleached fluff pulp or completely chlorine-free bleaching processes (TCF) will be examined.
In the production of other biogenic raw materials, which may possibly be used in the products, only certified biomass is approved.
There are strict requirements placed on all of the approved materials in the certified products and a detailed exclusion list for hazardous substances and those harmful to health.
Furthermore, the use of lotions, fragrances and odour absorbers is prohibited in the products awarded with the Environmental Label. Individual components of these additives could be allergenic and thus should not be used.

1.3 Objectives of the Environmental Label

Climate protection, a reduction in power consumption, increased use of sustainable resources and the avoidance of pollutants and waste are key objectives of environmental protection.
The Blue Angel Environmental Label for disposable nappies may be awarded to products featuring the following environmental properties:

- Avoidance of hazardous substances or those harmful to health
- Use of fluff pulp from certified sources, as well as from paper mills that utilise particularly energy efficient and low emission production technologies
- Avoidance of cosmetic additives (such as e.g. odour absorbers, lotions and fragrances)

Therefore, following benefits for the environment and health are stated in the explanatory box:

1.4 Definitions

- **Degradation product:** Degradation products are transformation products that are created in the degradation of substances and mixtures (according to the REACH Regulation).
- **Incontinence product:** Incontinence products are used by people with uncontrolled bladder or bowel movements in order to make their everyday lives easier. They are often used in care homes and hospitals. Different versions exist, such as e.g. pads, disposable underwear, incontinence slips or anal tampons.
- **Superabsorbent polymers:** Superabsorbent polymers are synthetic polymers designed for absorbing and retaining large amounts of liquid compared to their own mass[1]. Other names are superabsorbers or SAP.
- **Sales packaging:** Packaging offered as one sales unit and used by the end consumer. This also includes packaging for the retail trade and other service providers that enables or supports the delivery of goods to the end consumer (service packagings)[2].
- **Segregation (supply chain management):** The raw material from a certified production location is kept separate from other non-certified raw materials along the entire supply chain.
- **Mass balance (supply chain management):** The raw material from a certified production location is monitored administratively in the supply chain based on its weight. The raw material can be mixed with non-certified raw materials and then separated from the mixture using a mass balance.
- **Book & Claim (supply chain management):** Manufacturers purchase certificates via a trading platform based on the quantity of raw materials added to their product. There is no physical relationship between the added raw materials and the production promoted by the certificate.

[1] Definition according to (2014/763/EU) (establishing the ecological criteria for the award of the EU Ecolabel for absorbent hygiene products).
[2] Definition based on the "Ordinance for the avoidance and recycling of packaging waste" (VerpackV).

2 Scope

The Basic Award Criteria cover disposable nappies that are designed for use by babies, children, teenagers and adults. Examples of these products are fitted nappies, nappy slips, swim nappies and pants.

3 Requirements

3.1 Product description

A precise product description and a description of the packaging are required when applying for the Environmental Label. The following information is required: the name of the manufacturer, the product name, classification of the sizes (body weight), functions of the disposable nappy, the suppliers of the added components and a list of the functional materials used.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract and submit a product description based on the printed form in Annex 2.

3.2 General exclusion of substances with certain properties

To protect the environment and health, substances and mixtures with certain properties are not permitted in the product or parts of the product.

The following substances may not be a constituent component of the disposable nappy[3] or parts thereof[4]:

a) The use of substances of very high concern (SVHC) that have been identified as being particularly alarming in accordance with Article 57 of Regulation (EC) No 1907/2006 (REACH) and added to the so-called "candidate list"[5] according to Article 59 Paragraph 1 of the same regulation is prohibited in the end products.
The version of the list of candidates at the time of application is valid.

b) Substances and mixtures which according to the criteria of Regulation (EC) No 1272/2008 (CLP)[6] are assigned the following H Phrases named in the table or which meet the criteria for such classification.[7]

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[3] Constituent components are substances or mixtures added to the product or the intermediate product and remain there unchanged in order to achieve or influence certain product properties and those required as chemical cleavage products for achieving the product properties. This does not include, for example, residual monomers that have been reduced to a minimum and unavoidable impurities. If necessary, these substances are covered by their own requirements.

[4] This does not include process chemicals. The dimethylacetamide (DMAc) used in the production of elastic fibres is considered a process chemical.

[5] The list of candidates in its relevant version can be found at: http://echa.europa.eu/web/guest/candidate-list-table

[6] Regulation (EC) No. 1272/2008 on classification, labelling and packaging of substances and mixtures.

[7] The harmonised classifications and labellings of dangerous substances can be found in Annex VI, Part 3 of the CLP Regulation. Furthermore, a comprehensive classification and labelling inventory, which also includes all of the self-classifications of hazardous substances made by manufacturers, has been made available to the public on the website of the European Chemicals Agency: ECHA classification and labelling inventory.

Table 1: H Phrases and associated wording

H Phrases	Wording
Toxic substances	
H300	Fatal if swallowed
H301	Toxic if swallowed
H302	Harmful if swallowed
H304	May be fatal if swallowed and enters airways
H310	Fatal in contact with skin
H311	Toxic in contact with skin
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H330	Fatal if inhaled
H331	Toxic if inhaled
H332	Harmful if inhaled
H370	Causes damage to organs
H371	May cause damage to organs
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure
Sensitising substances	
H317	May cause an allergic skin reaction
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
Carcinogenic, mutagenic and reprotoxic substances	
H340	May cause genetic defects.
H341	Suspected of causing genetic defects
H350	May cause cancer.
H350i	May cause cancer if inhaled.
H351[8]	Suspected of causing cancer.
H360D	May damage the unborn child.
H360F	May damage fertility.
H360FD	May damage fertility. May damage the unborn child.
H360Df	May damage the unborn child. Suspected of damaging fertility.
H360Fd	May damage fertility. Suspected of damaging the unborn child.
H361f	Suspected of damaging fertility
H361d	Suspected of damaging the unborn child

[8] Except titanium dioxide, because its classification only applies to inhalable powders.

H Phrases	Wording
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child
H362	May cause harm to breast fed children
Environmental hazards	
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long-lasting effects
H411	Toxic to aquatic organisms with long-lasting effects
H412	Harmful to aquatic organisms with long lasting effects
H413	May cause long lasting harmful effects to aquatic life

Source: H Phrases according to the CLP Regulation

c) Substances whose degradation products have properties that are carcinogenic, mutagenic or reprotoxic. No dyes that contain azo dyes that could release aromatic amines classified as carcinogens (see Appendix A: "Carcinogenic aromatic amines") are permitted. These dyes are named in the REACH Regulation (1907/2006/EC), Annex XVII, Entry 43.

d) Substances classified as carcinogenic, mutagenic or reprotoxic substances in categories 1, 2 and 3 in the currently valid version of TRGS 905[9].

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract. If the substances or mixtures require safety data sheets according to the legal regulations, these shall also be enclosed. The verification can also be directly supplied to the awarding body for the Environmental Label by the suppliers of the functional materials if desired.

3.3 Testing for certain chemical substances in the end product

Laboratory tests must be carried out for the following chemical substances to verify that the products do not contain these pollutants. Based on the measurements on the end product (disposable nappies) or individual components, referred to under "Test objects", it must be verified that the concentrations of the relevant chemical substances do not exceed the concentrations stated under "Requirement".

[9] TRGS 905, Directory of carcinogenic, mutagenic or teratogenic substances from the Committee for Hazardous Substances (AGS). The current version at the time of application is valid. The TRGS lists such CMR substances that have not received harmonised classifications up to now or where the AGS has come to a different classification.

Table 2: Requirements for the test objects

Substance	Test object	Requirement
Formaldehyde in water extract	Product without absorbent core	<1 mg/dm² or <16 mg/kg (measured according to Japanese Law 112)
Glyoxal in water extract	Product without absorbent core	< 1.5 mg/dm2
Heavy metals (antimony)	Product without absorbent core	< 5 mg/kg
Heavy metals (lead)	Product without absorbent core	< 3 mg/kg
Heavy metals (cadmium)	Product without absorbent core	< 0.5 mg/kg
Heavy metals (chromium)	Product without absorbent core	< 0.004 mg chromium III/dm²
Heavy metals (mercury)	Product without absorbent core	< 0.3 mg/kg
1,3 DCP (1,3-dichloro-2-propanol) in water extract	Product without absorbent core	< 2 µg/l
3 MCPD (3-monochloro-1,2-propandiol) in water extract	Product without absorbent core	< 12 µg/l
Nonylphenol	Product without absorbent core	< 5 mg/kg
Phthalates (DEHP, DBP, DINP, DIDP, DNOP, DIBP, DIHP, DHNUP, BMEP, PiPP, DnPP, DNHP, DCP, Dipentyl phthalate [branched and linear], diisobutyl phthalate)	Product without absorbent core	Total: <500 mg/kg
Organotin compounds: TBT, TPT, DBT, DOT, MBT	Product without absorbent core	• Tributyltin compounds (TBT): <0.025 mg/kg • Triphenyltin (TPT): <0.05 mg/kg • Dibutyltin compounds (DBT): <0.1 mg/kg • Dioctyltin compounds (DOT): <0.1 mg/kg • Monobutyltin compounds (MBT): <0.1 mg/kg
Polycyclic aromatic hydrocarbons (18 PAHs[10])	Product without absorbent core	Total <1 mg/kg
Chlorophenols: • trichlorphenole TCP; • tetrachlorphenole TeCP; • pentachlorphenol PCP	Fluff pulp/absorbent core	• TCP: <0.1 mg/kg • TeCP: <0.1 mg/kg • PCP: <0.1 mg/kg

[10] Testing and assessment of polycyclic aromatic hydrocarbons (PAHs) in the course of awarding the GS mark; https://www.baua.de/DE/Aufgaben/Geschaeftsfuehrung-von-Ausschuessen/AfPS/pdf/AfPS-GS-2014-01-PAK.pdf

Substance	Test object	Requirement
Polychlorinated biphenyls (PCB 28, PCB 52, PCB 101, PCB 138, PCB 153, PCB 180)	Fluff pulp/absorbent core	Total: <2 mg/kg
Dimethylacetamide (DMAc)	Elastic threads	<200 mg/kg
Carcinogenic aromatic amines (Appendix A)	Coloured parts of the product	Total: <20 mg/kg
Resistance to saliva and perspiration	Coloured parts of the product	Level 4 or better of the grey scale

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 and submit a test report as Annex 3. The test must be carried out on a representative product. In the case of identically produced products (disposable nappies of different sizes), it is sufficient to carry out tests on one of the product sizes. The test report must be produced by a testing laboratory accredited according to DIN EN ISO/IEC 17025 (general requirements for the competence of testing and calibration laboratories) or with official accreditation as a GLP laboratory[11]. In-house laboratories are recognised as being of an equivalent standard when they have been accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory). The method used for preparing the samples shall be stated in the test report. In Appendix B "Analysis methods for the end products" there is a list of analysis methods that have been approved for carrying out the measurements. If other analysis methods are used, the equivalence of these methods must be verified.

3.4 Fluff pulp

3.4.1 Origin of the fluff pulp

The wood used for the production of the fluff pulp must be sourced 100% from sustainably managed forests that can verify that they are managed in an ecological and socially responsible manner.

Verification for the fluff pulp used in the product

- must be provided in the form of one of the following certificates:
  - Forest Stewardship Council (FSC): FSC Mix Credit or FSC 100%,
  - Programme for the Endorsement of Forest Certification Schemes (PEFC): PEFC certified,
- or by submitting a comparable certificate whose scope and requirement standards is equivalent to one of the named certification systems. The equivalence of the certification system must be confirmed by an independent environmental verifier.
- Alternatively, individual verifications in accordance with the criteria and verification requirements of one of the named certification systems may be presented if an equivalent level of protection can be achieved. The equivalence of the individual verifications must be confirmed by an independent environmental verifier.

[11] http://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm

For the wood used in the production of the fluff pulp, the tree species including their scientific names (e.g. Pinus elliottii for pine) and the geographical location of the forest (country) must be stated.

The following information must be provided about the fluff pulp used for manufacturing the disposal nappies:

- The trading name of the fluff pulp
- The technical data sheet
- The certification system used to verify the origin of the wood
- The bleaching processes used in production

Compliance verification

The applicant shall declare compliance with the requirement and state the names of the wood used for production of the fluff pulp, the geographical location of the forest and the trading names of the fluff pulp, as well as the certification system and the bleaching process used during production in Annex 1 to the contract and shall also verify compliance with the requirement by submitting declarations from the suppliers in Annex 4. The applicant shall submit a certificate for the certification system used for the fluff pulp added to the product. FSC, PEFC or systems or verifications whose equivalence has been proven are accepted.

3.4.2 Emissions to waste water in fluff pulp production

There are strict requirements for the emissions to waste water during the production of the fluff pulp used in the disposable nappies. The applicant must determine the levels of the following chemical substances in the emissions to waste water at the fluff pulp plant (measurement specifications, see Appendix D "Measurement of emissions to air"):

- Chemical oxygen demand (COD) in kg O per air dry tonne[12]
  Proportion of chemically oxidising organic compounds in the waste water (usually based on analyses using dichromate oxidation) given as O
- Total nitrogen content in kg N per air dry tonne
  Total-N (Total nitrogen, Tot-N), given as N. This includes organic nitrogen, free ammonia and ammonium (NH_4^+-N), nitrites (NO_2--N) and nitrates (NO_3--N).
- Total phosphorous content in kg P per air dry tonne
  Total-P (Tot-P), given as P. This includes both dissolved phosphorous and also undissolved phosphorous which enters the waste water in the form of precipitates or microorganisms.

The following reference values apply to the named substances:

- Chemical oxygen demand: $COD_{reference}$ = 18.00 kg O/air dry tonne
- Total nitrogen content: $N_{reference}$ = 0.25 kg N/air dry tonne
- Total phosphorous content: $P_{reference}$ = 0.03 kg P/air dry tonne

Based on the measurement values, the applicant must calculate so-called emission points (P) for each of the measured substances as a ratio between the measurement value and the reference value as follows:

[12] air dry: air dried fluff pulp

- $P_{COD} = \frac{COD_{Measurement\ value}}{COD_{Reference\ value}}$
- $P_N = \frac{N_{Measurement\ value}}{N_{Refererence\ value}}$
- $P_P = \frac{P_{Measurement\ value}}{P_{Reference\ value}}$

The following requirements apply:

a) For each of the emission points P_{COD}, P_N, P_P, a value of 1.5 must not be exceeded in each case and
b) the sum of the emission points must not exceed a value of 3.0.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and submit Annex 5 (emission values) completed by the producers of the fluff pulp, as well as submitting test reports in Annex 6 and the required supplementary documentation to the contract. The supplementary documentation comprises calculations of the emission points verifying compliance with this requirement. The test reports must comply with the measurement requirements according to the measurement specifications in Appendix C "Measurement of emissions to waste water". The submitted test reports must be produced by a testing laboratory accredited according to DIN EN ISO/IEC 17025 (general requirements for the competence of testing and calibration laboratories) or with official accreditation as a GLP laboratory[13]. In-house laboratories are recognised as being of an equivalent standard when they have been accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory).

3.4.3 Emissions to air in fluff pulp production

There are strict requirements for the emissions to air during the production of the fluff pulp used in the disposable nappies. The emissions to air include those from the recovery boiler, lime kiln, steam boiler and incinerator for strong smelling gases. Diffuse emissions must also be taken into account. The applicant must determine the levels of the following chemical substances in the emissions to air at the fluff pulp plant (measurement specifications, see Appendix D "Measurement of emissions to air"):

- Gaseous sulphur compounds (sulphur) in kg S per air dry tonne
  Total reduced sulphur (TRS): Sum of the following reduced bad-smelling sulphur compounds released during the production of the fluff pulp: hydrogen sulphide, methyl mercaptan, dimethyl sulphide and dimethyl disulfide, given as S, plus sulphur dioxide (SO_2), given as S
- Nitrogen oxide (NO_x) in kg NO_x per air dry tonne
  Sum of nitrogen oxide (NO) and nitrogen dioxide (NO_2), given as NO_2
- Dust emissions (dust) in kg dust per air dry tonne
  Sum of the dust emissions at the recovery boiler and lime kiln, given as dust

The following reference values apply to the named substances:

- Gaseous sulphur compounds: $Sulphur_{reference}$ = 0.6 kg S/air dry tonne

[13] See footnote 11

- Nitrogen oxide: $NO_{x\_reference}$ = 1.5 kg NO_x/air dry tonne

Based on the measurement values, the applicant must calculate so-called emission points (P) for each of the measured substances as a ratio between the measurement value and the reference value as follows:

- $P_{Sulphur} = \frac{Sulphur_{Measurement\ value}}{Sulphur_{Reference\ value}}$

- $P_{NOx} = \frac{NOx_{Measurement\ value}}{NOx_{Reference\ value}}$

The following requirements apply:
a) For each of the emission points $P_{Sulphur}$ and P_{NOx}, a value of 1.5 must not be exceeded in each case and
b) the sum of the emission points must not exceed a value of 2.0.

In addition, it is recommended for the dust emissions that a reference value of 0.45 kg dust/air dry tonne is not exceeded. In future revisions of these Basic Award Criteria, it is anticipated that this value will be set as an obligatory requirement.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and submit Annex 5 (emission values) completed by the producers of the fluff pulp, as well as submitting test reports in Annex 6 and the required supplementary documentation to the contract. The supplementary documentation comprises calculations of the emission points verifying compliance with this requirement. The test reports must comply with the measurement requirements according to the measurement specifications in Appendix D "Measurement of emissions to air". The submitted test reports must be produced by a testing laboratory accredited according to DIN EN ISO/IEC 17025 (general requirements for the competence of testing and calibration laboratories) or with official accreditation as a GLP laboratory[14]. In-house laboratories are recognised as being of an equivalent standard when they have been accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory).

3.4.4 Bleaching processes

In the production of the fluff pulp, the following requirements apply to the bleaching process:
- The fluff pulp must not be bleached using elementary chlorine.
- The specific amounts of poorly biodegradable complexing agents (ethylenediaminetetraacetic acid (EDTA) and diethylenetriaminepentaacetic acid (DTPA)) must be stated in kg per air dry tonne, expressed as an annual average.
- In the case of chlorine compounds used as bleaching agents, only a modern elementary chlorine free (ECF) bleaching process is permitted. In this case, the specific amount of chlorine dioxide (ClO_2) consumed, expressed as an annual average, must be stated in ClO_2 per air dry tonne. The adsorbable organically combined halogens (AOX) must be measured

[14] See footnote 11

in the waste water. The annual average for the measured AOX emissions to waste water must not exceed a value of 0.14 kg AOX per air dry tonne.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and submit a declaration from the fluff pulp producer in Annex 7 verifying no elemental chlorine is used in the bleaching processes. Based on the test reports, the applicant shall state the specific amounts of EDTA and DTPA consumed, as well as the ClO_2, in Annex 8. If chlorine compounds (e.g. ClO_2) are added to the bleach for the fluff pulp, the applicant shall submit a test report for the AOX emissions to waste water in Annex 8. One of the test methods ISO 9562, EN1485, DIN 38409 Part 14 or the equivalent EPA 1650C must be used for measuring the AOX emissions. The measurements shall be carried out over a production period of 12 months, with measurements taken on at least a monthly basis. The submitted test reports must be produced by a testing laboratory accredited according to DIN EN ISO/IEC 17025 (general requirements for the competence of testing and calibration laboratories) or with official accreditation as a GLP laboratory[15]. In-house laboratories are recognised as being of an equivalent standard when they have been accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory).

3.4.5 Energy consumption in fluff pulp production

The specific energy consumption in fluff pulp production must not exceed the following limit values:

- Electrical energy: ≤1,125 kWh/air dry tonne
- Heating energy: ≤7,500 kWh/air dry tonne

a) Electrical energy (electricity):
The electricity consumed in the production of the fluff pulp must be measured over a period of 12 months and stated in relation to the fluff pulp produced (air dry tonnes) during this period.

The electricity consumption is calculated as follows:

Electricity consumption = electricity generated at the plant
- plus the electricity purchased from outside of the plant
- less the electricity sold outside of the plant
- less the electricity consumed for processes not related to the fluff pulp production at the plant
- less the electricity consumed at the treatment plant

b) Heating energy (fuel):
The heating energy consumed in the production of the fluff pulp must be measured over a period of 12 months and stated in relation to the fluff pulp produced (air dry tonnes) during this period. Heating energy can be in the form of gaseous, liquid or solid fuels (e.g. natural gas, heating oil, biomass) or in the form of heat transfer media (e.g. water, steam). For the energy content of the fuel, the lower heating value (LHV) for the relevant fuel is used. In

[15] See footnote 11

the case of damp fuels (e.g. wood, biomass), the effective calorific value (after subtracting the evaporation energy of the enclosed water) is used, while the effective energy content is used for heat transfer media.

The heating energy consumption is calculated as follows:

Heating energy consumption = fuel produced at the plant
- plus the purchased heating energy or fuel
- less the heating energy or fuel sold
- less 1.25 x the electricity generated at the plant
- less heating energy consumed for processes not related to the fluff pulp production at the plant

Note:
The heating energy includes all fuels used (their lower heating value) and the heating energy recovered from the incineration of pulping liquors and waste at the production site (e.g. waste wood, sawdust, pulping liquor, waste paper, rejected paper), as well as the heating energy recovered from the plant's own electricity generation. The applicant must present the calculation for the energy consumption for the fluff pulp production in the form of an energy statement together with the calculation parameters used. If the applicant does not have their own heating values for the fuels used, the heating values documented in the Nordic ecolabel for paper products[16] may be used.

Compliance verification

The applicant shall state the specific energy consumption and declare compliance with the requirement in Annex 1 to the contract. In addition, the applicant shall submit an energy statement in Annex 9, which documents the energy consumption over a period of 12 months, the heating values for the relevant fuels used, the annual production of fluff pulp and the calculation of the specific energy consumption values.

3.5 Plastics

Plastics made from fossil or renewable raw materials that are added to the disposable nappies must comply with the requirements in the following subsections.
The plastics added to the nappies must each comply here with the general requirements stated in Paragraph 3.5.1 and – if applicable – with the additional requirements stated in Paragraphs 3.5.2 to 3.5.6.
Plastics in the sales packaging are only subject to Paragraph 3.5.1 "General requirements for plastics".

3.5.1 General requirements for plastics

3.5.1.1 Exclusion of substances with certain properties

The requirements and verifications according to Paragraph 3.2 apply to all plastics.

[16] Nordic Ecolabelling of Paper Products – Basic Module, www.nordic-ecolabel.org/CmsGlobal/Criteria/Basic_module.pdf

3.5.1.2 Halogenated polymers

The product is not permitted to contain any halogenated polymers (e.g. polyvinyl chloride).

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract.

3.5.1.3 Heavy metals

Lead, cadmium, hexavalent chromium, mercury and their compounds must not be used in the production.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract.

3.5.1.4 Origin of renewable raw materials for biobased plastics

If renewable raw materials are used to produce biobased plastics, these must be sourced from sustainable cultivation on cultivation areas that can verify that they are managed in an ecological and socially responsible manner.
The origin of the renewable raw materials for the production of the biobased plastics must be verified in the form of a certificate from one of the following certification systems:

- International Sustainability and Carbon Certification (ISCC+),
- Roundtable on Sustainable Biomaterials (RSB),
- Rainforest Alliance (SAN),
- Roundtable Responsible Soy (RTRS),
- Roundtable on Sustainable Biomaterials (RSB),
- Forest Stewardship Council (FSC),
- Programme for the Endorsement of Forest Certification Schemes (PEFC)
- or a comparable certification system whose scope and requirement standards is equivalent to one of the named certification systems. The equivalence of the certification system must be confirmed by an independent environmental verifier.
- Alternatively, individual verifications in accordance with the criteria and verification requirements of one of the named certification systems may be presented if an equivalent level of protection can be achieved. The equivalence of the individual verifications must be confirmed by an independent environmental verifier.

The use of purchased certificates based on the Book & Claim system is excluded so that the traceability of the raw materials is possible.
The proofs of purchase for the raw materials or semi-finished products must be based on processes according to the segregation or mass balance systems (see Paragraph 1.4 Definitions).

Compliance verification

The applicant shall declare in Annex 1 to the contract whether renewable raw materials are used to produce the plastics. If this is the case, the applicant shall document the origins and proportions by mass of the renewable raw materials used for the plastics in Annex 10 and submit the required certificates or verifications.

3.5.2 Superabsorbent polymers

Superabsorbent polymers (in short: superabsorbers or SAP) added to the product are subject to additional requirements described in the following subsections.

3.5.2.1 Description

The following information must be provided for the superabsorbent polymers:

- Trading name
- Technical data sheet
- Safety data sheet including the chemical composition of the superabsorbent polymers added to the product and their CAS number
- The production processes/production steps used

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and submit the corresponding product information (e.g. technical data sheet, safety data sheet, description of the production processes) in Annex 11.

3.5.2.2 Acrylamide

Acrylamide (CAS number: 79-06-1) must not be added to the product.

Compliance verification

The applicant shall declare compliance with the requirement In Annex 1 to the contract and submit a declaration from the SAP producer verifying that the substance has not been added.

3.5.2.3 Residual monomers

Superabsorbent polymers used in the product may contain a maximum of 1,000 ppm residual monomers that are classified with the H Phrases listed under Paragraph 3.2.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and submit a declaration from the SAP producer stating the amount of residual monomers in the superabsorbent polymers as Annex 12 to the contract. If requested to do so by RAL gGmbH, the applicant shall submit the relevant safety data sheets. Recommended test methods are ISO 17190 (Urine-absorbing aids for incontinence – Test methods for characterising polymer-based absorbent materials – Part 2: Determination of amount of residual monomers) and NWSP 210.0.R2 (15) (Nonwovens Standard Procedures NWSP 210.0.R2 (15) Polyacrylate Superabsorbent Powders – Determination of the Amount of Residual Monomers). A description of the analysis method shall be provided.

3.5.2.4 Water-soluble extracts

Superabsorbent polymers used in the product may contain a maximum of 10% water-soluble extracts (≤10%) by mass. The water-soluble extracts must comply with the requirements in Paragraph 3.2. In the case of sodium polyacrilate, these represent monomers and oligomers of acrylic acid whose molecular weight is lower than the superabsorbent polymers (according to ISO 17190 – Urine-absorbing aids for incontinence – Test methods for characterising polymer-based absorbent materials).

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and submit a declaration from the SAP producer stating the amount of water-soluble extracts in the superabsorbent polymers as Annex 12 to the contract and confirming compliance with the requirements in Paragraph 3.2. Recommended test methods are ISO 17190-10:2001 (Urine-absorbing aids for incontinence – Test methods for characterising polymer-based absorbent materials – Part 10: Determination of extractable polymer content by potentiometric titration) and NWSP 270.0.R2(15) (Polyacrylate Superabsorbent Powders- Determination of Extractable Polymer Content by Potentiometric Titration). A description of the analysis method shall be provided.

3.5.3 Polyurethane and elastane

The sum of the proportions by mass of polyurethane and elastane in the product, based on the total weight of the nappy, must not exceed a value of 5%.

Compliance verification

The applicant shall declare in Annex 1 to the contract whether polyurethane or elastane have been added to the product and state their proportion by mass.

3.5.4 Polyamide

If polyamide with a proportion by mass of 5% or more (≥ 5%) is added to the product, additional requirements for the manufacturing process for polyamides apply. The N_2O emissions to air during the production of the monomers, expressed as an annual average, must not exceed a value of 9 g per kg of caprolactam (for polyamide 6 fibres) or 9 g per kg of adipic acid (for polyamide 6.6 fibres).

Compliance verification

The applicant shall declare in Annex 1 to the contract whether polyamides with a proportion by mass ≥ 5% have been added to the product. If this is the case, the applicant shall submit a declaration from the plastics producer as Annex 13 to the contract verifying compliance with the requirement.

3.5.5 Natural latex

The use of natural latex in disposable nappies is prohibited.

Compliance verification

The applicant shall declare in Annex 1 to the contract that no natural latex has been added to the product.

3.5.6 Silicone

It is not permitted to add any silicone during the production of the disposable nappies and their components.
An exception is made for adhesive strips. If the adhesive strips are coated with silicone, the following requirements apply:

- Silicone coatings containing solvents must not be used.

- The chemicals used in the silicone treatment must not contain either octamethyl cyclotetrasiloxane D4 (CAS 556-67-2) or decamethyl cyclopentasiloxane D5 (CAS 541-02-6). This requirement is considered to be fulfilled if D4 and D5 are not intentionally added to the material or product and the concentrations found in the silicone are less than 800 ppm (proportion by mass) of the adhesive strip.
- The use of organotin compounds as a catalyst is not permitted in the production of the silicone polymers.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract. If silicone is added to adhesive strips, the applicant shall submit a declaration from the supplier or adhesive strip manufacturer as Annex 14 to the contract verifying compliance with the requirement.

3.6 Adhesives

Alongside the chemical-based requirements in Paragraph 3.2, the adhesives used on the product are not permitted to contain any of the following substances:

- Colophony resins (CAS numbers 8050-09-7, 8052-10-6, 73138-82-6),
- Formaldehyde (CAS numbers 50-00-0): The maximum limit for the content of formaldehyde generated during adhesive production is 250 ppm, measured in newly produced polymer dispersion. The content of free formaldehyde in hardened adhesive must not exceed 10 ppm. Hotmelt adhesives are exempt from this requirement.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and submit a declaration from the supplier or adhesive strip manufacturer as Annex 15 to the contract verifying compliance with the requirements.

3.7 Optical brighteners

It is not permitted to add any optical brighteners. An exception is made for the fluorescent markings required for the production process.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract.

3.8 Dyeing and printing

The product and its components must not be dyed or printed.
Exceptions are made for:

- Packaging materials and closing systems (adhesive strip, landing zone);
- Discreet printing of materials that do not come into contact with the skin, with a low colour intensity and not printed over the full surface;
- Wetness displays for checking the bladder function.

If printing inks and dyes are used in the product, the chemical-related requirements apply (see Paragraph 3.2).

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract. Insofar as printing inks and dyes are used for the exceptions described above, the applicant shall submit a declaration from the dye manufacturer as Annex 16 to the contract verifying compliance with the chemical-related requirements. If requested to do so by RAL gGmbH, the applicant shall submit the relevant safety data sheets.

3.9 Additives

No additives such as lotions, mineral oil components, fragrances, antibacterial agents (biocides), a wetness indicator or odour absorbers may be added to the disposable nappies.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract.

3.10 Packaging

3.10.1 Sales packaging made out of paper and cardboard

If sales packaging made out of paper and cardboard is used, it must comply with the following requirements:

- It must be produced using recycled fibres accounting for at least 80% by mass.
- The approved proportion of virgin fibres must not be sourced from forests that are particularly worthy of protection e.g. tropical or boreal forests.
- Composite packaging or coating of the paper/cardboard with plastics or metals are not permitted.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract.

3.10.2 Sales packaging made out of plastic

If sales packaging made out of plastic is used, the plastic added to the packaging must comply with the requirement in Paragraph 3.5.1 General requirements for plastics.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract and state the plastics used in the sales packaging.

3.11 Consumer information

The sales packaging must contain consumer information (e.g. printed on the sales packaging) that includes the following information for the disposal of the used disposable nappies:

- The disposable nappies must not be thrown into the toilet.
- The disposable nappies should be disposed of with the household waste.

Compliance verification:

The applicant shall declare compliance with the requirement in Annex 1 to the contract and submit a sample of the product packaging (photo) on which the consumer information is printed as Annex 17.

3.12 Quality and fitness for use

The disposable nappies must be of a high quality and fit for use. The applicant must verify this by submitting suitable test results.

At least the following test results must be given for each product size:

- Product description
  - Weight
  - Dimensions
  - Design features of the product
- Quality test
  - Absorption test
  - Rewetting test
- Skin irritation test
- Application test (using one product size as an example)

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 and submit the relevant test reports in Annex 18. The tests must be product-relevant, repeatable and based on strict methods. At least five samples must be used for the quality tests. The average results and the standard deviation must be stated. A suitable number of samples must be used when carrying out the application tests. The test reports must be produced by a testing laboratory accredited according to DIN EN ISO/IEC 17025 (general requirements for the competence of testing and calibration laboratories) or with official accreditation as a GLP laboratory[17]. In-house laboratories are recognised as being of an equivalent standard when they have been accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory).

4 Applicants and Parties Involved

Manufacturers or distributors of final products according to Paragraph 2 shall be eligible for application.

Parties involved in the award process are:

- RAL gGmbH to award the Blue Angel Environmental Label,
- the federal state being home to the applicant's production site,
- Umweltbundesamt (German Environmental Agency) which after the signing of the contract receives all data and documents submitted in applications for the Blue Angel in order to be able to further develop the Basic Award Criteria.

5 Use of the Environmental Label

The use of the Environmental Label by the applicant is governed by a contract on the use of the Environmental Label concluded with RAL gGmbH.

[17] See footnote 11

Within the scope of such contract, the applicant undertakes to comply with the requirements under Paragraph 3 while using the Environmental Label.

Contracts on the Use of the Environmental Label are concluded to fix the terms for the certification of products under Paragraph 2. Such contracts shall run until December 31, 2021. They shall be extended by periods of one year each, unless terminated in writing by March 31, 2021 or March 31 of the respective year of extension.
After the expiry of the contract, the Environmental Label may neither be used for labelling nor for advertising purposes. This regulation shall not affect products being still in the market.

The applicant (manufacturer) shall be entitled to apply to RAL gGmbH for an extension of the right to use the ecolabel on the product entitled to the label if it is to be marketed under another brand/trade name and/or other marketing organisations.

The Contract on the Use of the Environmental Label shall specify:

- Applicant (manufacturer/distributor)
- Brand/trade name, product description
- Distributor (label user), i.e. the above-mentioned marketing organisations.

Appendix A Carcinogenic aromatic amines

Table 3: Azo dyes – list of aromatic amines

Carcinogenic aromatic amines	CAS no.
biphenyl-4-ylamine / 4-aminobiphenyl / xenylamine	92-67-1
benzidine	92-87-5
4-chloro-o-toluidine	95-69-2
2-naphthylamine	91-59-8
o-aminoazotoluene / 4-amino-2',3-dimethylazobenzene / 4-o-tolylazo-o-toluidine	97-56-3
5-nitro-o-toluidine	99-55-8
4-chloroaniline	106-47-8
4-methoxy-m-phenylenediamine	615-05-4
4,4'-methylenedianiline / 4,4'-diaminodiphenylmethane	101-77-9
3,3'-dichlorobenzidine / 3,3'-dichlorobiphenyl-4,4'-ylenediamine	91-94-1
3,3'-dimethoxybenzidine / o-dianisidine	119-90-4
3,3'-dimethylbenzidine / 4,4'-bi-o-toluidine	119-93-7
4,4'-methylenedi-o-toluidine	838-88-0
6-methoxy-m-toluidine / p-cresidine	120-71-8
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	101-14-4
4,4'-oxydianiline	101-80-4
4,4'-thiodianiline	139-65-1
o-toluidine 2-aminotoluene	95-53-4
4-methyl-m-phenylenediamine	95-80-7
2,4,5-trimethylaniline	137-17-7
o-anisidine / 2-methoxyaniline	90-04-0
4-amino azobenzene	60-09-3
2,4-xylidine	95-68-1
2,6-xylidine	87-62-7

Source: REACH Regulation (1907/2006/EC), Annex XVII, Appendix 8

Appendix B Analysis methods for the end products

The following test methods are approved for carrying out the tests. If other test methods are used, these must be stated by the applicant and the equivalence of the test method must be verified (e.g. new version of a testing standard with a different name). In the case of test methods named as "in-house methods used by the laboratory", a short description of the method must be provided.

Table 4: Accepted test methods

Substance	Test method	Title of the standard and the analysis method
Formaldehyde	• DIN EN 120 • EN1541 • Japanese Law 112	• Wood-based panels - Determination of formaldehyde release - Extraction method (called perforator method); • Paper and board intended to come into contact with foodstuffs - Determination of formaldehyde in an aqueous extract
Glyoxal	• FRANCK 36 LFG	• FRANCK 36 LFG May 1986: Photometric determination of glyoxal in paper
	• DIN 54603	• Testing of paper, paperboard and board - Determination of glyoxal content
Heavy metals	• Perspiration extraction method • DIN EN 645 • DIN EN ISO 11885 • DIN EN ISO 17294-2 • DIN EN 1483 (mercury)	• According to Ökotex Standard 100 (Class 1, Baby) according to ISO 105-E04 (Textiles - Tests for colour fastness - Part E04: Colour fastness to perspiration) • Paper and board intended to come into contact with foodstuffs; preparation of a cold water extract • Water quality - Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES); • Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS) - Part 2: Determination of 62 elements • Water quality - Determination of mercury - Method using atomic absorption spectrometry

Substance	Test method	Title of the standard and the analysis method
1,3 DCP (1,3-dichloro-2-propanol) and 3 MCPD (3-monochloro-1,2-propandiol)	• DIN 645 • BVL B 80.56-2 according to § 64 • LFGB	• Paper and board intended to come into contact with foodstuffs; preparation of a cold water extract • Testing of consumer goods – determining 1,3-dichloro-2-propanol and 3-monochloro-1,2-propandiol in water extracts from paper, paperboard and cardboard
Nonylphenol	• DIN EN ISO 18857-1 • or in-house method used by the laboratory	• Water quality - Determination of selected alkylphenols - Part 1: Method for non-filtered samples using liquid-liquid extraction and gas chromatography with mass selective detection
Phthalates	• DIN EN ISO 18856 • DIN EN ISO 6427	• Water quality - Determination of selected phthalates using gas chromatography/mass spectrometry • Plastics - Determination of matter extractable by organic solvents (conventional methods)
Organotin compounds	• DIN EN ISO 17353 • or in-house method used by the laboratory	• Water quality - Determination of selected organotin compounds - Gas chromatographic method
Polycyclic aromatic hydrocarbons (PAHs)	• AfPS GS 2014:01 PAK	• Product Safety Commission (AfPS) Testing and assessment of polycyclic • aromatic hydrocarbons (PAHs) • in the course of awarding the • GS mark
Chlorophenols	• BVL B 82.02-8 (PCP) • DIN EN ISO 17070 • or in-house method used by the laboratory	• Testing of consumer goods – verifying and determining pentachlorophenol in consumer goods, especially those made of leather and textiles • Leather - Chemical tests - Determination of tetrachlorophenol-, trichlorophenol-, dichlorophenol-, monochlorophenol-isomers and pentachlorophenol content
Polychlorinated biphenyls (PCB)	• DIN 38414-20	• German standard methods for the examination of water, waste water and sludge - Sludge and sediments (group S) - Part 20: Determination of 6 polychlorinated biphenyls (PCB) (S 20)

Substance	Test method	Title of the standard and the analysis method
DMAc	• DIN 54439 • or in-house method used by the laboratory	• Textiles - Methods for the determination of N,N-dimethylacetamide (DMAc) and N,N-dimethylformamide (DMF) in man-made fibres of polyacrylonitrile, polyurethane and aromatic polyamide fibres
Carcinogenic aromatic amines	• DIN EN 14362-1 • DIN EN 14362-3 • or in-house method used by the laboratory	• Textiles - Methods for determination of certain aromatic amines derived from azo colourants - Part 1: Detection of the use of certain azo colourants accessible with and without extracting the fibres
Resistance to saliva and perspiration	• DIN 53160 Parts 1 and 2 • BVL B 82.10-1	• Determining the colour fastness of consumer goods -part 1: Test with artificial saliva • Determining the colour fastness of consumer goods -part 2: Test with artificial sweat

Appendix C Measurement of emissions to waste water

Measurement of emissions to waste water must be carried out on unfiltered and unsettled samples, either after preparation at the production plant or after preparation at an urban waste water treatment plant.
The measurements must be carried out over a production period of 12 months. The frequency of the measurements must be at least monthly (once a month). In the case of new or renovated production plants, the measurements must be based on at least 45 consecutive days of continuous plant operation. The measurements must be representative for the relevant periods.

Accepted test methods include:

- CSM: ISO 6060, ISO 15705, NS 4748, SFS 3020 SFS 5504, SS 028142, DIN 38409 part 41, NFT 90101, ASTM D 1252 83, EPA SM 5220D or HACH 8000
- Total N: EN ISO 11732, EN 10304-2, EN ISO 13395, SFS 5505, SS 0280101
- Total P: ISO 6878, SS 028102, SFS 3026, NS 4725, EN 1189:1993, SM4500, APAT IRSA CNR 4110 or Dr Lange LCK 349
- An equivalent test method whose scope and requirement standards are equivalent to one of the named national and international standards. The equivalence of the certification system must be confirmed by an independent environmental verifier.

Alternatively, individual verifications in accordance with the criteria and verification requirements of one of the named test methods may be presented if an equivalent level of protection can be achieved. The equivalence of the individual verifications must be confirmed by an independent environmental verifier.

Appendix D Measurement of emissions to air

The measurements of the emissions to air are carried out over a production period of 12 months. The frequency of the measurements must be at least monthly (once a month). Emissions associated with the generation of electrical energy do not need to be taken into account. The S-emissions associated with the generation of heating energy from oil, coal and other external fuels with known S-contents can be measured or calculated and must be taken into account. In the case of new or renovated production plants, the measurements must be based on at least 45 consecutive days of continuous plant operation. The measurements must be representative for the relevant periods.

Accepted test methods include:

- Gaseous sulphur compounds: NS 4859, SFS 5265, SS 028421, EPA 8, EPA 16A
- NO_x: ISO 11564, ISO 10849, EN 14792, SS 028425, EPA 7E
- Dust: EN 13284-1, SFS 3866
- An equivalent test method whose scope and requirement standards are equivalent to one of the named national and international standards. The equivalence of the certification system must be confirmed by an independent environmental verifier.

Alternatively, individual verifications in accordance with the criteria and verification requirements of one of the named test methods may be presented if an equivalent level of protection can be achieved. The equivalence of the individual verifications must be confirmed by an independent environmental verifier.