

natureplus e.V.

**Guideline 2001**

**Prefabricated elements  
in timber constructions**

**Issue: June 2020**

**For the Awardance of the Eco-Label**



## 0. Preliminary remarks

Construction elements are complex products consisting of many individual components. In order to be able to make sufficient statements about the environmental and health properties of the components and their input materials, natureplus introduces the so-called *evaluation* in this guideline. This is intended to ensure the minimum ecological and health standards for all components during the initial inspection. As a further result of the evaluation, a plan of measures for the follow-up audit to improve data availability and data quality of the individual components is to be defined. The overriding objective is the continuous improvement and quality assurance of the construction elements themselves.

## 1. Application Areas

The following award criteria contain requirements for awarding the natureplus® quality mark to factory-made flat construction elements such as exterior and interior wall constructions, facades, roof and ceiling constructions in timber construction (hereinafter: construction elements), which consist of a combination of various construction products (hereinafter: *components*) and contain all functional layers for serviceability. The criteria are to be applied exclusively to the above-mentioned construction elements. The following materials, products and systems are not considered:

- Wood hybrid construction elements
- Windows and Doors
- Finishing materials for further interior work, such as wallpaper, tiles or floor coverings
- Electrical, heating, ventilation and sanitary installations and furniture.

The certification of the construction element does not entitle the user to advertise the individual components contained therein with the natureplus mark. A building made of certified construction elements may not be advertised with the natureplus® quality mark or as a "natureplus house".

## 2. Award Criteria

The prerequisite for labelling a product with the natureplus® quality mark is compliance with the following award guidelines, where applicable:

- RL-5001 Chemicals Directive
- RL-5002 Timber extraction and origin
- RL-5003 Nature Conservation in the Mining of Mineral Raw Materials
- RL-5004 Transparency and social responsibility



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All components and alternative components in the element structure must be named and declared individually in accordance with the *natureplus declaration regulations* in GL-5001. Components used in the elements must be certified or be certifiable based on a natureplus award guideline. This does not apply to *technical aids* and auxiliary materials. At least one of the components used in a construction element must hold a valid natureplus certificate. For elements with more than five components at least one other component must be certified. Technical aids and auxiliary materials are not counted as components. If the construction element is offered in different versions, this requirement must be proven for all versions to be certified.

### 2.1 Functional Suitability

The manufacturer provides information about technical and physical characteristics of the product and specifies the standards, test procedures and methods used to determine these properties. If the applied standards contain requirements for the products, it is to be clearly indicated whether they are met.

Construction elements used against outside air, soil or unheated parts of buildings must be suitable for use in buildings which comply with the national standards of the *Energy Performance of Buildings Directive* 2010/2018 in the countries in which the elements are sold.

For all elements, the prescribed structural approvals and/or declarations of conformity to the CE declaration in accordance with the EU Construction Products Directive and safety data sheets as well as other evidence of usability must be submitted. If available, the results of voluntary quality tests such as laboratory test reports or environmental product declarations (EPD) as well as other product or input material information must also be submitted.

### 2.2 Composition, Forbidden Substances, Substance Restrictions

The construction element must consist of 95 % by mass of renewable or mineral raw materials. Fasteners and technical aids are not included in this calculation.

The use of petrochemical substances is only permitted in their function as fasteners and technical aids. The use of plastic sheets for *moisture protection* is permitted if compliance with the Chemicals Directive RL-5001 can be demonstrated. The use of PVC both as a component and as an ingredient, e.g. in auxiliary materials or aids, is not permitted. Chemical wood preservatives for the preventive protection of wood and wood-based components are not permitted.

Within the scope of the initial inspection, all components must be recorded completely using the natureplus data collection form for construction elements. Components that have been awarded the natureplus® quality mark do not require further testing. Components that have not been awarded the natureplus® quality mark are subject to evaluation. The requirements of the Chemicals Directive RL-5001 as well as the substance prohibitions, substance restrictions and analysis regulations of the applicable natureplus guideline apply.

Fasteners should be used in such a way that they do not hinder the subsequent separation of components for recycling or reuse.

## 2.3 Raw Material Sourcing, Production of Preliminary Products, Production

Proof of origin must be provided for all raw materials, prefabricated products and input components.

Components made of mineral raw materials must comply with the requirements of the basic guideline RL-5003. Components made from the raw material wood must comply with the requirements of the Basic Guideline RL-5002. The production of construction elements and components must comply with the requirements of the Basic Guideline RL-5004. Compliance with these requirements must be demonstrated and documented based on manufacturer's declarations.

The manufacturer must demonstrate whether working procedures avoiding dust release are available for the processing of the product. If this is the case, these procedures are to be recommended and suitably presented within the processing guidelines. If compliance with the general dust limit values might not be guaranteed, wearing personal protection equipment must be recommended.

## 2.4 Usage

Construction elements with indoor air contact (inside the vapour barrier or airtight layer incl. vapour barrier or airtight layer itself) must meet the natureplus limit values for VOC, SVOC and formaldehyde emissions into the indoor air in accordance with Section 3.1 VOC / TVOC.

It is possible to recognise existing emission certificates (e.g. eco-label, Blue Angel or comparable), which have been issued in accordance with the natureplus implementation regulations applicable in each case. If the available data are not significant with regard to categorisation of the applied natureplus guideline, further examinations will be necessary.

As a result of the evaluation, laboratory tests may be required for individual components in accordance with the applicable natureplus guideline.

## 2.5 Recycling/Disposal

The manufacturer of the construction elements must present a dismantling concept with the aim of high-quality reuse or recycling of the construction element or its components. The concept must ensure that the individual components can be separated into high-quality recyclable components again with little effort. For the essential components/fractions resulting from the dismantling concept, proof of existing recycling processes must be provided.

Regardless of the recycling efforts and the actual recycling rates, the separated mineral fraction must be disposable at inert material landfills in accordance with Directive 2003/33/EC. The organic frac-

tions must be easily disposable in waste incineration plants. None of the components must be classified as hazardous waste.

## 2.6 Ecological Parameters

A Life Cycle Assessment (LCA) according to EN 15804 for the manufacturing phase in the product life cycle from the extraction of the raw materials to the ready-to-deliver product (modules A1 to A3 of the LCA) is prepared for the construction element. The following impact and environmental parameters are considered:

- Non-renewable primary energy without feedstock (PENRE) in MJ
- Non-renewable and renewable primary energy (PET) in MJ
- Photosmog (POCP) in kg Ethylen-equiv.
- Acidification potential (AP) in kg SO<sub>2</sub>-equiv.
- Eutrophication potential (EP) in kg PO<sub>43</sub>--equiv.
- Global warming potential (GWP) in kg CO<sub>2</sub>-equiv.
- Consumption of abiotic resources (ADP) in kg Sb-equiv.

The components must be included in the life cycle assessment. In the case of components with valid natureplus certification, the respective manufacturers can submit the life cycle assessment results for recognition. In the case of components without natureplus certification, the suppliers must prepare and submit the *life cycle inventory data* for the respective manufacturing processes. If, during the initial inspection, life cycle inventory data for components cannot be collected or submitted, the results for the life cycle assessment are first approximated with *reference values*.

Approximation with reference values is only possible if

- product specific data are provided for at least half of the components in a construction element
- the component does not exceed a share of 10 % in any of the above categories of effects

Otherwise the natureplus® quality mark cannot be awarded.

## 2.7 Declaration

An inventory must be made available to the customer. The inventory list may also be part of other product information such as the technical leaflet and must contain the following information:

- For all components:
  - Full declaration of the input materials of the components (in the national language or in English) analogous to the EU Cosmetics Regulation<sup>1</sup> after decreasing mass fraction to indicate
  - Input substances from precursors or preparations which remain in the product with a mass content of > 0.1 % must also be considered in the full declaration.
  - If ingredients with environmentally hazardous potential are contained, information on which environmental protection measures are to be taken during dismantling or demolition work (e.g. controlled dismantling)
- For the construction element
  - Instructions for use and safety precautions
  - Indications for storage and disposal
  - Batch numbers
  - City/town and country of production
  - Technical instructions for dismantling in accordance with Section 2.5

## 3. Laboratory Tests

For the laboratory analyses, a representative sample of the element is taken during the inspection of the plant. In deviation from the usual sampling, the sample is specially produced according to the specifications of the laboratory in charge in order to obtain a test specimen that is as representative as possible, adapted to the size of the test chamber and sample preparation.

Due to the short time interval between production and occupation of the finished building, the test chamber examination must be completed no later than 10 weeks after production.

### 3.1 VOC / TVOC

The product is subject to a test-chamber examination to survey the emissions of VOC, SVOC and other volatile compounds and to check compliance with the respective natureplus limit values. The measurements are usually taken after 3 and 28 days. The test-chamber examination is carried out in

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<sup>1</sup> Declaration of the input materials  $\geq 1$  M-% with the designation of the substance, input materials  $< 1$  M-% at least with the functional designation (e.g. flame retardant)



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accordance with natureplus guideline 5010 Low Emission Construction Products. The limit values, test chamber conditions and requirements for the test specimen listed therein apply.

## 4. Glossary

### **natureplus declaration regulations**

The construction elements and their components with the respective input materials are to be captured using the natureplus declaration form for construction elements. All input substances must be declared with the designation of the substance and with their input quantity. See guideline 5001 for further details.

### **National energetic standards according to the Energy Performance of Buildings Directive**

In Germany, for example, the EU Buildings Directive is implemented by the Energy Saving Ordinance (EnEV). The EnEV sets minimum thermal protection requirements for construction elements such as exterior walls, roofs, etc. Manufacturers should have appropriate evidence (such as test reports / proof of thermal insulation of the construction element).

### **Evaluation**

In the context of this natureplus guideline evaluation means that conformity with the natureplus guideline applicable to the product is assessed based on the manufacturer's information (components, assemblies and preliminary products) and the documents submitted by the manufacturer (e.g. product and safety data sheets, building inspection approval, etc.).

This includes the initial assessment of the environmental compatibility over the life cycle, the sustainability of the resource extraction as well as the hazardousness of the ingredients and potential emissions into the indoor air.

The evaluation identifies and assesses components within the construction element that have an impact on the ecological balance sheet and are problematic for health. The result of the evaluation is a plan of measures for the follow-up audit.

For the evaluation, the following documents must be available to the auditor

- natureplus survey form for construction elements and their components and alternative components
- natureplus certificates for tested components
- Proof of functional suitability and product data sheets/technical data sheets for construction elements and components
- Safety data sheets of input materials
- Manufacturer's confirmation of compliance with the guidelines RL5002, RL5003, 5004

- If available, reports on laboratory analysis of the components

Based on this information, the assessor can assess whether

- or which information/evidence is missing
- the construction element and the components (presumably) comply with RL5001.
- there are enough life cycle inventory data for the LCA or whether an estimate with reference values is possible
- laboratory analysis is required

Based on the results, the assessor can

- create a plan of measures for the following assessment steps
- issue a recommendation on the certifiability of the construction element

### **Moisture protection**

Plastic sheets for moisture protection in connection with this natureplus guideline include vapour barriers, sarking membranes, sealing membranes and other foils which protect the construction element against moisture penetration, i.e. against driving rain, drift snow, condensation and soil moisture.

### **Component**

Building product which is part of a building element, e.g. insulation or building slabs within an external wall. Component layer within a construction.

### **Reference values**

If no product-related data is available, reference values are used. These are

- natureplus reference values of the appropriate natureplus guidelines,
- Data from construction product databases (e.g. ecoinvent, baubook, etc.),
- or LCA life cycle assessment studies based on generic data from ecoinvent

If there is no guideline yet for the component, the natureplus Criteria Commission is mandated to determine ecological parameters.

### **Life Cycle Inventory**

Recording of all essential material and energy flows for the production of the components

### **Technical adjuvants/aids**

Mechanical fasteners such as nails, screws, dowels, etc., other technical auxiliary materials made of plastic or metal such as plaster rails or nail plates.