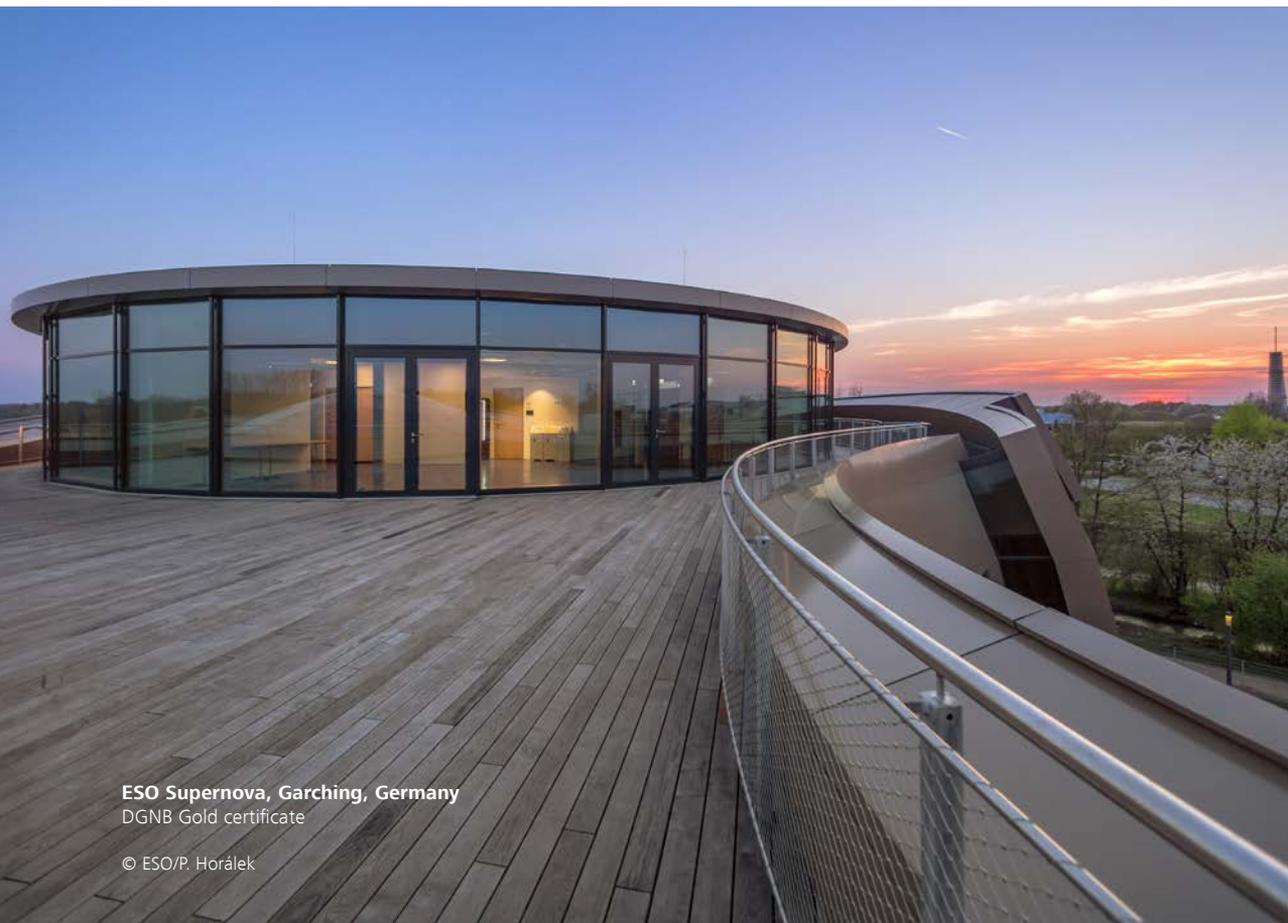




Keep an overview of sustainable building

With the construction product platform DGNB Navigator



ESO Supernova, Garching, Germany
DGNB Gold certificate

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Taking responsibility

Building sustainably means much more than merely paying attention to energy consumption, pollutants, or convenience in actual operation. The issue of “resource consumption” is, alongside climate protection, fast becoming one of the biggest challenges faced by the building and property sector.

Comprehensive climate protection will only be possible, if we permanently use less material, increasingly use renewable raw materials, and plan construction projects to be longer lasting, of sustained value, and more recycling-friendly.

Construction products play a central role here. This is because, across their entire life cycle, they make a decisive contribution to the overall performance of a sustainable building. This begins with the availability of resources and responsible raw material extraction. During the subsequent manufacture it is particularly a question of the environmental effects of energy or water consumption and pollutant emissions. Also relevant are the costs of the products across the entire life cycle which can be significantly affected by maintenance costs, repairs, cleaning costs, and the potential need to replace them multiple times as part of the building’s operation. And, of course, at the end of their use the question must be answered of whether the products can be used again, recycled, or safely disposed of without issue.

- Whoever wants to build sustainably requires information on the construction products and services that provides transparent, concise, and focused answers to these questions.
- Many product-specific verifications are required for comprehensive and relevant building documentation.
- For this, manufacturers require a platform to provide this information to the respective target groups in the correct form and in a manner that will garner their attention.

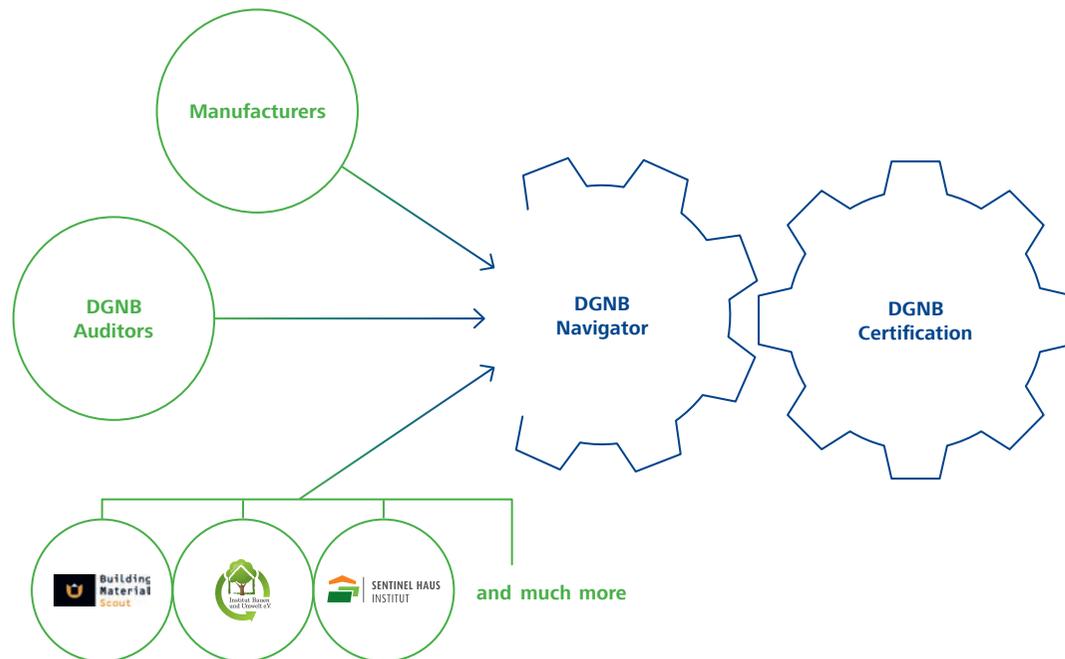
This is precisely the option we are offering with our online platform for construction products: the DGNB Navigator.



The bridge between planning and certification

There are already a few construction platforms on both the German and international market, however, the DGNB Navigator is unique. It brings the information provided by manufacturers regarding aspects related to sustainability together with inquiries from planners on one platform and combines these with the DGNB Certification.

All relevant data is provided in a focused manner by the respective manufacturer on the DGNB Navigator and checked for plausibility by the DGNB. Products can thus be systematically compared and assessed in relation to sustainability features, for example, with regard to their content of pollutants or hazardous substances, the CO₂ emissions linked to the manufacture, or their recycling-friendliness. As owner of the data, the manufacturer holds data sovereignty and is obliged to keep the data up-to-date.

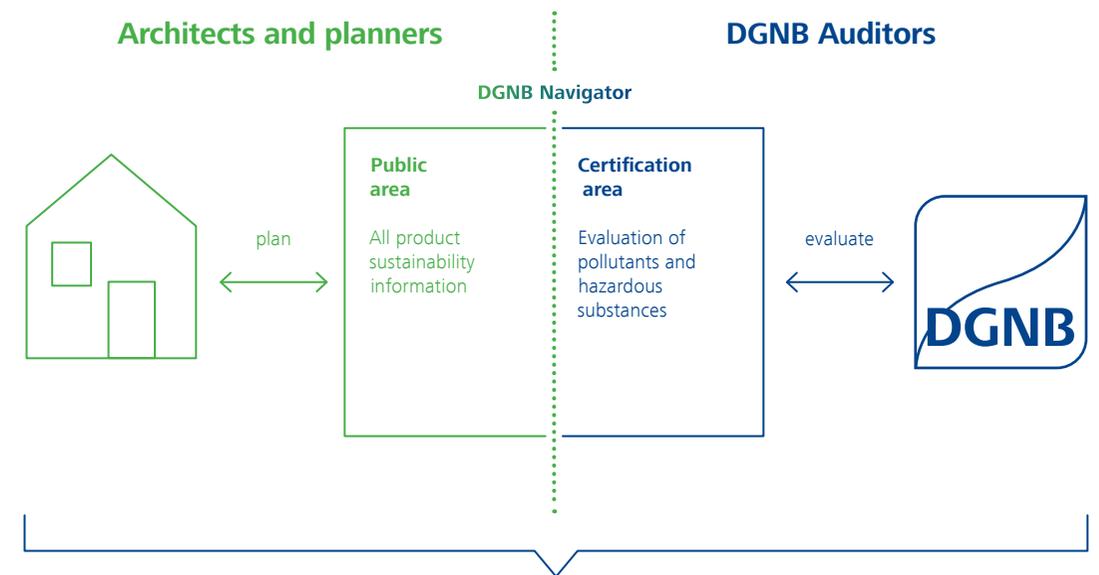


With its certification area for auditors the DGNB Navigator presents the central platform for the documentation of “material ecology” (criterion ENV 1.2: Risks for the local environment) in the DGNB System. Here the DGNB auditor can list the products to be documented as per the criterion for the project to be certified, which will lead to a classification for the project. In doing so the auditor will reference either:

- the products published and previously assessed in the Navigator,
- the products already classified by an auditor in another project and checked by the DGNB, or
- the auditor will expand and evaluate the products not yet published in the Navigator and upload the required verifications for the certification to the certification area.

With this continuously independently expanding database the DGNB Navigator can provide the direct connection between construction products and the DGNB Certification System for sustainable districts, buildings and interiors.

Whoever wants to plan, build, and be certified as per the DGNB, uses the Navigator as an interface to the system.



The tool for demonstrably better buildings

Construction products in the DGNB System

The DGNB System for sustainable districts, buildings, and interiors goes far beyond a mere evaluative and award-giving role. In everyday practice it is used as an efficient optimisation tool for sustainability regarding planning, constructing, and operating. No individual measures are evaluated, but instead impacts within the overall context in relation to the entire life cycle, that is, the actual performance of all projects.

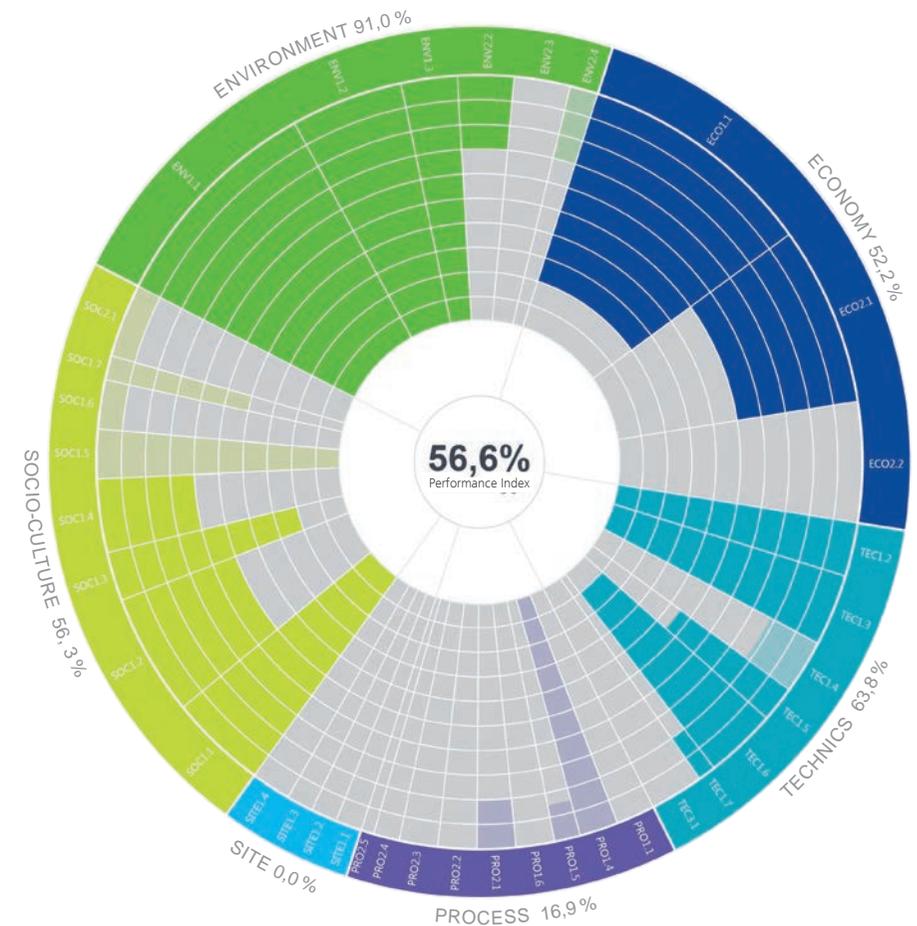
Of the total 37 sustainability criteria (DGNB System for newly constructed buildings), the choice of construction products has an impact on the entire performance of the project for more than half of the criteria.

We distinguish between:

- Direct impact: Qualitative and quantitative features/properties of a concrete product within the construction context.
- Indirect impact: Planning-based services in relation to construction products (defining environmental requirements for construction products in the tender phase) or methods of resolution which can be implemented either through planning or also through the concrete product selection (for example, reducing potable water consumption through the greywater utilisation or water-saving fixtures).

Overall construction products can impact a project's certification by up to 56.6 percent. The coloured amplitude in the evaluation chart (p. 5) illustrates per DGNB criterion the potential percentage of construction products in the evaluation.

DGNB criteria as per which construction products have an impact on the evaluation



Criteria with direct impact

ENV1.1 Building life cycle assessment

The emission-related environmental impact and the consumption of finite resources across all life phases of a building.

ENV1.2 Local environmental impact

Requirements for the environmental sustainability of the materials. The local risks are assessed in relation to harmful substances with the introduction of quality levels.

ENV1.3 Sustainable resource extraction

The environmental and social standards for raw material extraction. A positive evaluation will be given if, for example, secondary raw materials are used, raw materials are renewable, or are even certified.

ENV2.2 Potable water demand and waste water volume

The potable water demand and waste water volume is definitively affected by the planning, greywater or rainwater usage, as well as by the reduction in potable water demand. Water-saving fixtures, among other things, also have an impact here.

ECO1.1 Life cycle cost

The construction costs of the CG 300 (costs for building materials and construction) and CG 400 (costs for technical equipment and installation) as per DIN 276-1 are related to the building's theoretical lifestyle.

Carrying out construction projects sustainably

A tool for planning and evaluation

Within the context of sustainable planning and DGNB Certification, the DGNB Auditor plays a central role. He or she is the system user who knows the DGNB System from A to Z and who can competently converse with all those involved in the construction about the verifications required.

In correspondence with the client and the planning team, the auditor defines the qualities to be taken into account in relation to the construction products to be tendered.

As a construction product platform the Navigator offers the necessary transparency to be able to decide which products meet these requirements.

The auditor either finds the required parameters for all of the selected construction products pre-evaluated in the navigator, or has to request them from the manufacturer.

In the certification area for auditors regarding the criterion of pollutants and hazardous materials (ENV1.2) the auditor shall then record all relevant construction products used in the concrete project and evaluate these in the case that an evaluation has not yet taken place. Here, an interface for the DGNB System software facilitates an un-complicated and efficient mode of operation when dealing with the DGNB Certification.

Once a construction product has been used in a project before and documented via the Navigator certification area, other auditors can access these values and only need to check that the product data is up to date. This means that it is possible to see which products have already been used in other sustainable projects.

The Navigator certification area for auditors thereby becomes a learning and constantly growing database for sustainable building.

- ECO2.1 Flexibility and adaptability**
Flexible systems that can be changed without extensive construction measures will be evaluated positively. For example, this includes facade connections for modifiable separating wall systems or the flexibility of the building services.
- SOC1.1 Thermal comfort**
Specific requirements for building ventilation systems and properties for significant materials (for example, building envelope) apply. Draft effects, surface temperatures and asymmetries, and air humidity are taken into account.
- SOC1.2 Indoor air quality**
The TVOCs and formaldehyde concentration of all integrated materials and products are documented as per this criterion during the indoor air quality measurement.
- SOC1.3 Acoustic comfort**
Differently used spaces are evaluated via measurements or calculations of the reverberation period. The surface materials of the spatial boundary surfaces here provide the impact for a positive result.
- SOC1.4 Visual comfort**
Visual comfort is composed of daylight access, visual access to the outside space, freedom from glare, and the consideration of the artificial light quality. It is therefore equally based on design features and products.

Criteria with indirect impact

- ENV2.4 Biodiversity at the site**
Biotope offerings in the form of green areas and hotbeds at, on, and around the building will be taken into account. The basis for this is offered by the roof structure and/or the preliminary setup for vertical vegetation, and so the materials here flow indirectly into the evaluation.
- SOC1.5 User control**
The controllability of artificial light, ventilation, temperatures, clouding, and glare protection.
- SOC1.6 Quality of indoor and outdoor spaces**
The existence of equipment features that impact the quality of outside areas will be positively evaluated. Example: Firmly-anchored sun protection.
- SOC1.7 Safety and security**
Among other things, the existence of technical safety devices, such as video monitoring, broadcasting systems, and emergency phones.
- SOC2.1 Design for all**
Design of threshold-free entrances, expansion, use, and accessible bathrooms.

- TEC 1.2 Sound insulation**
The airborne sound insulation between spaces (requirements for walls, ceilings, doors, and floors), footfall insulation (upper storeys and staircases) and the airborne sound protection against outside noise and technological household systems, are taken into account.
- TEC1.3 Quality of the building envelope**
Heat transition coefficients, transmission via thermal bridges, summer heat protection, and the building envelope's airtightness are taken into account.
- TEC1.5 Ease of cleaning building components**
Alongside planning- and operation-relevant impacts, the conditions of construction products also have an impact on the maintenance of the building's maintenance, e.g. floor coverings and general surface conditions.
- TEC1.6 Ease of recovery and recycling**
In order to fully think through the life cycle of building materials, ease of recycling must be considered during selection. Furthermore, a building construction designed for dismantling will be positively evaluated.
- TEC1.7 Immissions control**
Properties of lighting that keep light pollution as low as possible, e.g. external lighting pointed downwards, are taken into account.

- TEC1.1 Fire protection**
The classification of the fire protection classes is relevant for international projects. This query is not made within Germany due to the high legal requirements.
- TEC1.4 Use and integration of building technology**
A building design making the best-possible use of passive systems and the integration of regenerative energies for the technical systems required will be positively evaluated.
- PRO1.4 Sustainability aspects in tender phase**
Indirect impact on the determination of the requirements for construction products and technical features within the tender.
- PRO1.5 Documentation for sustainable management**
Comprehensive documentation of maintenance, inspection, operational and care instructions will be requested.
- PRO2.1 Construction site/Construction process**
A construction site with low noise, dust and rubbish levels. This may already be indirectly affected by the construction product selection.

Transparent customer communication

For manufacturers

The Navigator provides manufacturers with clear orientation and customer communication with regard to sustainability:

- Strong positioning of the company on the sustainability market due to documentation and transparency of the product quality
- Direct target group address with individualised product presentation
- Targeted sales support due to the deposit of product brochures, images, and contact details
- Uniform and systematic specifications of which product data is relevant for sustainable building
- The impact of the respective construction product on all relevant criteria is made visible

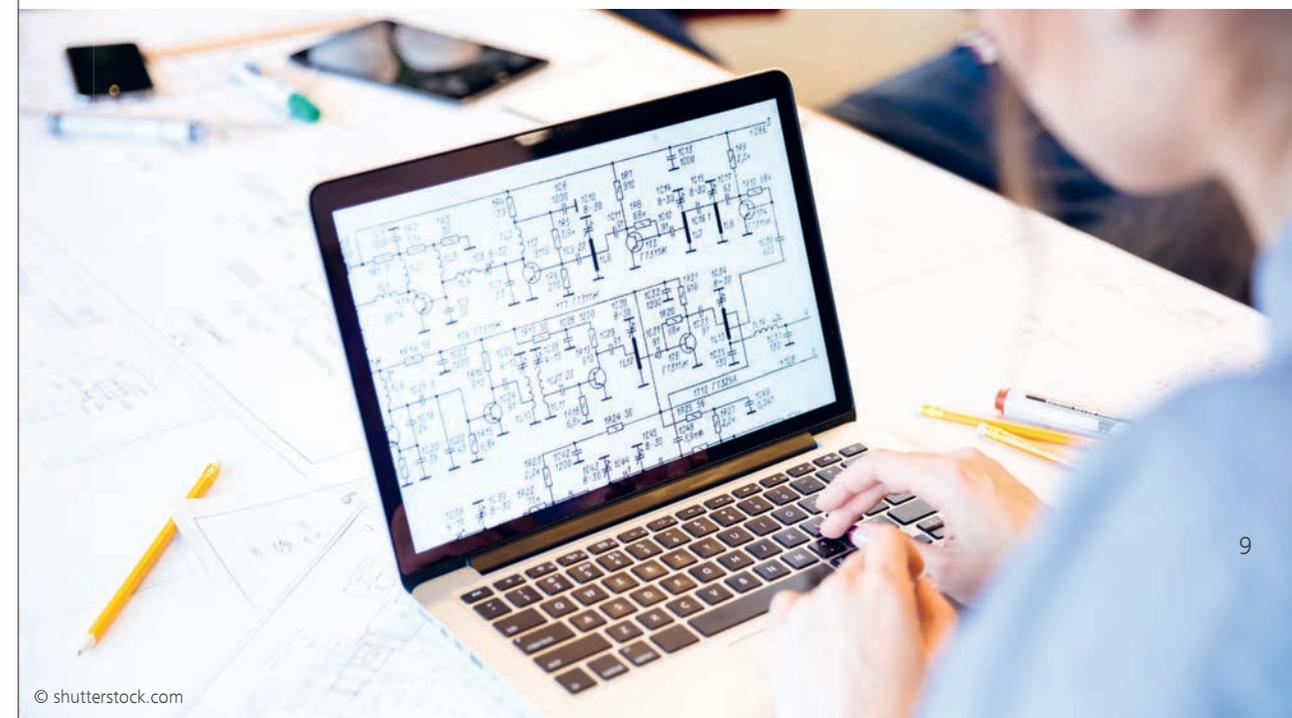


Making well-grounded decisions

For architects & planners

The Navigator provides planners with a transparent overview to ensure a well-grounded product decision:

- Comprehensive information platform on sustainable building with information on sustainability features, visualisations, and contact partners
- Reliable orientation during product selection due to the display of all specific values corresponding to the DGNB requirements per product
- Intelligent product search with defined filter options
- Easy product comparability thanks to uniform classification
- Additional information such as product catalogues, CAD drawings, BIM objects, tender texts, and manufacturer contact details
- Create a watch list and export life cycle assessment data for further processing
- Free use of the database



Experience sustainable building – the DGNB office

With the support of around 30 members, in 2014 the DGNB office on Tübinger Straße in Stuttgart was extended to become a living showroom for sustainable building. This case study illustrates the impact of construction products in sustainable building through the use of exemplary product groups.

The factors listed below are evaluated per product group as part of a DGNB Certification.

Relevant for all five product groups

- ✓ Data for the life cycle assessment with regard to emission-related environmental effects and the primary energy consumption
- ✓ Reference usage period
- ✓ Expenditure for maintenance, inspection, and repair
- ✓ Maintenance, inspection, operation and care instructions
- ✓ Safety datasheets
- ✓ Documentation of the materials and additives contained

Paint

- ✓ Information on the risks for the local environment (VOC content, RAL quality mark, GISCODE)
- ✓ Emissions tests/labels with regard to TVOC and formaldehyde concentration as per the AgBB scheme
- ✓ Substances that would cause caustic and corrosive fumes in the case of fire
- ✓ Measures that lead to the avoidance or recovery of construction site waste

Lighting

- ✓ Glare-free level of the artificial lighting
- ✓ Expenditure for disassembly and separation
- ✓ Energy requirements and/or power output of standard equipment
- ✓ Verifications of energy-efficient user facilities
- ✓ Measures that lead to the avoidance or recovery of construction site waste

Internal walls

- ✓ Emissions tests/labels with regard to TVOC and formaldehyde concentration as per the AgBB scheme
- ✓ Sound absorption level
- ✓ Building sound absorption coefficient assessed in dB
- ✓ Substances that would cause caustic and corrosive fumes in the case of fire
- ✓ Fire protection: Building material class
- ✓ Expenditure for disassembly and separation
- ✓ Measures that lead to the avoidance or recovery of construction site waste
- ✓ Certificates for sustainable raw material extraction
- ✓ Information on the risks for the local environment (e.g. factory priming, chromium(VI) oxide surface finishing, lead, cadmium, and chromium (VI) bonds)
- ✓ Admissibility, if relevant, of biocides used

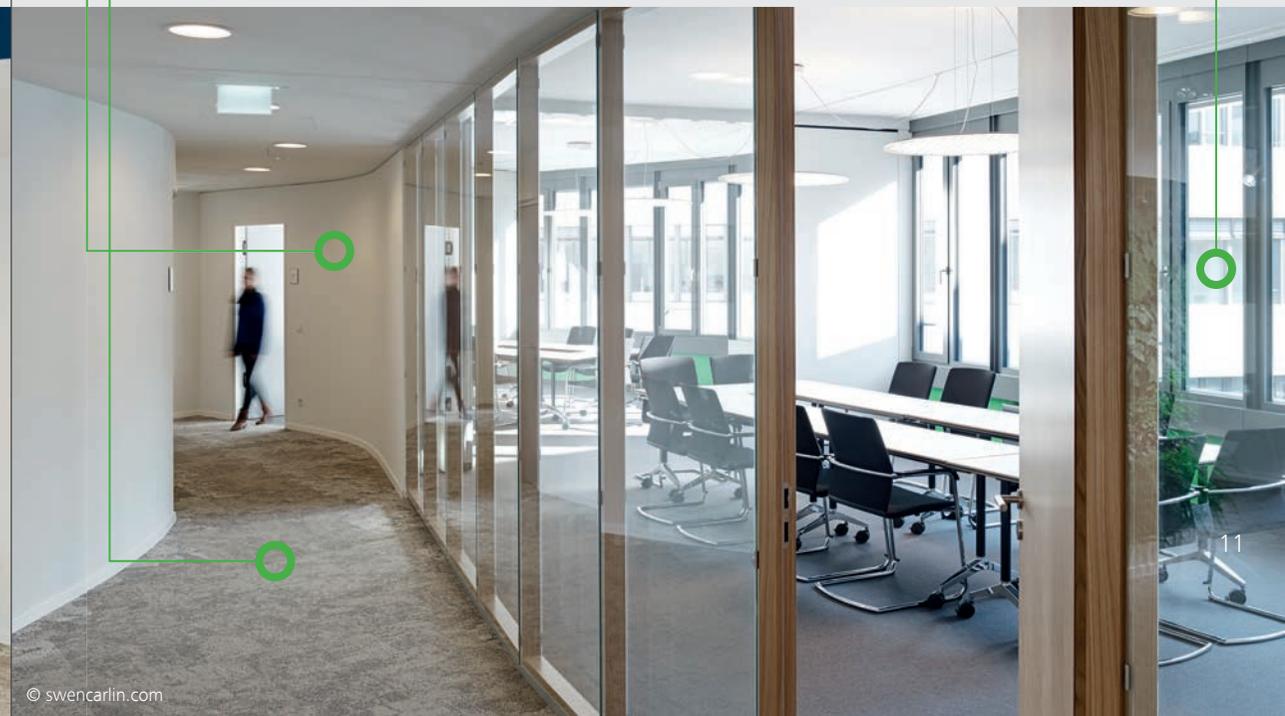
Windows

- ✓ Information on the risks for the local environment (e.g. factory priming, chromium(VI) oxide surface finishing, lead, cadmium, and chromium (VI) bonds)
- ✓ Lead and tin content
- ✓ Admissibility, if relevant, of biocides used
- ✓ BAuA registration
- ✓ Heat transition coefficient
- ✓ Sun- and glare-protection class with regard to visual contact outside, as well as lack of glare during daylight
- ✓ Substances that would cause caustic and corrosive fumes in the case of fire
- ✓ Building sound absorption coefficient assessed
- ✓ Certificates for sustainable raw material extraction
- ✓ Expenditure for disassembly and separation Measures that lead to the avoidance or recovery of construction site waste

Flooring

- ✓ Emissions tests/labels with regard to TVOC and formaldehyde concentration as per the AgBB scheme
- ✓ Substances that would cause caustic and corrosive fumes in the case of fire
- ✓ Admissibility, if relevant, of biocides used
- ✓ Lead and tin content
- ✓ Fire protection: Building material class
- ✓ Certificates for sustainable raw material extraction

- ✓ Sound absorption level
- ✓ Information on footfall insulation in dB
- ✓ Tolerance against contamination
- ✓ Measures for the avoidance or recovery of construction site waste
- ✓ Expenditure for disassembly



One label for data transparency

A database's quality relies on the accuracy and completeness of the data provided. The DGNB Navigator guarantees both through comprehensive data queries and a transparent indication of the sources as well as up-to-dateness. It is based on the idea of showing all relevant data on the environmental impacts of construction products transparently, completely, and reliably. The DGNB checks the plausibility and completeness of the information, and the classification of the quality levels in relation to pollutants and hazardous materials.

A construction product entered into the DGNB Navigator can receive the DGNB Navigator Label through the provision of a product-specific environmental product declaration (EPD) coupled with the completeness of the data query following a relevant data comparison by the DGNB.

With the DGNB Navigator Label the manufacturer can document their commitment to sustainability and provide the demand side with the required orientation and transparency in product selection. The label can be placed both on the product and/or on its packaging, as well as on all product-specific communications.

The DGNB Navigator Label is provided with an individual 6-figure registration code issued upon product registration. This code guides the user from the landingpage of the DGNB Navigator directly to the product's information. The manufacturer is therefore additionally supported in product communication.



The conditions at a glance

The use of the DGNB Navigator online platform is free of charge for auditors, architects, designers and all interested parties.

Entering product data in the DGNB Navigator is possible for every manufacturer organisation, independent of a DGNB membership. However, DGNB members receive attractive benefits as well as all the advantages of DGNB membership. For adding a product together with general product information and relevant data for the DGNB Certification System into the DGNB Navigator the charges listed below apply. The more products you enter, the more attractive the price.

Annual fees for presenting construction products, furnitures or services in the DGNB Navigator:

Number of products	DGNB members	Non-members
Up to 3 products	free of charge	€ 370
4 to 10 products	€ 480	€ 980
11 to 50 products	€ 850*	€ 1850*
More than 50 products	On request	On request

* contains access to the DGNB Navigator certification area for auditors

Notes:

- Annual charges apply for products which are entered by the manufacturer in the DGNB Navigator
- If entered for less than a year the full months up to the year-end are charged pro rata from the date of publication
- Entering products or updating datasets and documents can be supported by DGNB employees and is charged on a time and materials basis
- Fees stated above are exclusive of VAT

Benefit as a DGNB member

DGNB: independent and neutral

The offerings of the DGNB are based on the results of voluntary panel work of the DGNB Association. As an independent non-profit organisation the DGNB e.V. includes around 1,200 member organisations, who cover the entire value creation chain in the construction and property sector. Together, all support the objective of establishing and developing sustainable building, based on the principles of independence, contemporary thinking and continuous quality assurance.

Use the construction product platform DGNB Navigator for your sustainable building project. Here you will find detailed product information, with a direct interface to the DGNB Certification.

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The DGNB is a one-hundred percent subsidiary of DGNB e.V.

