Tox-Free Building Blueprint:

Chemical Criteria for Building certification and Procurement Draft

Interreg
Baltic Sea Region

Co-funded by
the European Union

SUSTAINABLE WATERS
NonHazCity 3

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NHC3 GoA2.2. part of Output O2.2.

June 2025

This material was developed as part of the NonHazCity 3 (#C014) project, with financial support from the INTERREG Baltic Sea program of the European Union. The content of this material is solely the opinion of the authors, not that of the European Commission.

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1. INTRODUCTION

Construction materials are used in very high volume in the European cities for both new construction and building refurbishment or extension. Chemical products such as coatings or building materials such as polyurethane insulation contain many chemical substances, including hazardous chemicals particularly harmful to our health and the environment.

During the construction and use phase due to natural diffusion, leaching, wear and tear these chemicals may spread into surroundings and contaminate the environment and indoor space. Examples include persistent PFAS chemicals, which end up in the food chains and are dubbed as the “forever chemicals” as they do not easily degrade in the environment and may cause detrimental long-term effects.

Furthermore, at the end of their useful service life, hazardous chemicals containing construction materials may contaminate the environment or the hazardous constituents may prevent the secondary use of these materials or their recycling. Thus, solving hazardous chemicals issues is important to achieving circular economy objectives. It would in turn allow us to reduce our greenhouse gas emissions to which construction sector contributes significantly, as buildings are responsible for nearly 36 % of the emissions in the EU (European Environment Agency, 2022).

Sustainable construction is becoming increasingly important in the EU as regulatory requirements tighten, the goals of circular economy and climate neutrality are pursued. One of the ways to achieve building sustainability is to pursue building sustainability certification schemes that are standardised frameworks that evaluate and certify a building’s environmental impact, occupant well-being and other sustainability aspedcts.

Another tool that helps to pursue building sustainability, especially in the public sector is Green Public Procurement. It is seen as increasingly powerful tool for sustainable economy. Benefits of applying sustainability criteria in procuring buildings and construction works include health and environmental benefits, economic benefits due to energy efficiency and reduced healthcare costs, promotion of innovation and green technology.

NonHazCity 3 overall aim is to advance the use of tox-free and sustainable construction practices in the Baltic Sea Region. In this publication we analysed and compared several common building certification systems as well as some national systems from the project’s countries. We present our findings. The overview of chemical criteria presented here can be utilised by smaller national or regional building certification frameworks in their potential development seeking to advance the level of human health and environmental protection from the effect of harmful chemicals.

The publication is also designed to help procuring organisations, such as municipalities that are developing their capacity for sustainable procurement, to apply additional environmental criteria focused on reducing hazardous chemicals in construction. We present the summary of hazardous chemical criteria, that are science based and could be used by the public sector institutions as sustainability criteria in procurement of tox-free buildings

1.1. NonHazCity 3 findings on hazardous chemicals in construction sector

The literature analysis conducted within the NonHazCity 3 project revealed that hazardous chemicals, such as phthalates, bisphenols, PFAS, brominated flame retardants, preservatives and other pollutants are commonly found in construction materials. These findings are presented in project's publication "Building materials catalogue for tox-free construction" (NonHazCity, 2023).

Furthermore, project team conducted chemical analysis of building pollutants. Findings are presented in the report "Occurrence of substances of concern in Baltic Sea Region buildings, construction materials and sites" (NonHazCity, 2024). The chemical analysis as well as the systematic review of scientific publications presented in the "Source mapping" chapter of the report confirmed that chemicals in building materials are indeed emitted into the environment and indoor spaces. Thus, it is clear, that current regulations and measures fail to fully protect the human health and the environment from the effects and hazardous chemicals. To achieve the EU's zero pollution ambitions for a non-toxic environment by 2050, additional effort and tools are urgently needed to reduce the hazardous chemicals use construction sector.

The NonHazCity 3 project also produced a publication "Step-by-step guide for the process management of toxfree construction at municipalities" for guiding municipal specialists during various stages of building construction with a sustainability point of view (NonHazCity, 2023). The recommendations are provided for selection and application of various methods and tools, that help to avoid hazardous chemicals use, such as considering strategic level decisions or applying green public procurement. Various stages of a building procurement are discussed starting with the conceptual decision-making stage, towards elaboration of a building design, detailed planning and preparation for construction works with a focus on avoiding hazardous chemicals in construction.

2. TOX-FREE BUILDINGS THROUGH GREEN PUBLIC PROCUREMENT AND BUILDING CERTIFICATION.

2.1. Green public procurement

Public procurement in the EU, represents approximately 14% of the region's GDP, which is close to €2 trillion per year. Construction sector comprises 10% of this value. This purchasing power could be leveraged to influence construction sector in a positive way by pursuing sustainable tox-free public buildings, through green public procurement. However, this potential to reduce the hazardous substance use in municipal and public sector is presently underutilised.

What is green public procurement?
European Commission in 2008 defined Green public procurement (GPP) as "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured." The central principle of GPP is to establish clear, verifiable, justifiable, and ambitious environmental criteria for products and services, based on a life-cycle perspective and supported by scientific evidence (European Comission, 2008).

Besides typical requirements for specific qualities of products and services in public procurement, GPP introduces additional environmental criteria for goods and services specified in the tender documents. Voluntary GPP criteria are provided by the European Commission that are occasionally updated/ revised for several product groups. These criteria could be used by procurers. Many of these voluntary GPP criteria take some hazardous chemicals aspects into account along with other environmental requirements. However, the environmental criteria are not always used due to various reasons:

- their voluntary nature;
- lack of know-how on implementing green public procurement, applying additional sustainability criteria, maintaining market dialogue and lack of such training;
- budget constraints or perceived conflict between cost and sustainability;
- high legal responsibility for procurer when doing extra (including additional environmental criteria),
- lack of political ambitions within public sector entities for pursuing sustainable construction or sustainable procurement, resistance to change.
  (Caruana et al, 2024, Wetzels, 2022)

Today the green public procurement is seen as increasingly important tool to for sustainable economy, as it provides numerous benefits. Procuring organisations, such as municipalities, that pursue tox-free and sustainable construction:

- Influence the market by facilitating innovation, improving the knowledge and availability of tox-free and sustainable building products and solutions.
- Increases the awareness within the procuring organisation on the environmental and human health effects of construction materials and promotes sustainability mindset.
- Displays the commitment of the public sector for environmental protection and promotion of sustainable construction materials. Displays an example for other municipalities to follow.

In EU countries GPP is mostly a voluntary instrument, with some countries having advanced their national requirements and made Green public procurement mandatory for some product groups. In addition, municipalities can set their own commitments regarding the GPP and develop environmental targets for the new buildings. As of 2022, more than a dozen of EU member state implemented mandatory application of environmental criteria for some product groups, including buildings (ISD, 2022).

Lithuania recently implemented mandatory minimal environmental criteria for 20 product groups, including building design services and numerous building materials. From 2023 onwards 100% of public procurement in Lithuania needs to be green. That means that the environmental criteria needs to be applied for nearly all of the procurements with some minor exceptions (Ministry of Environment of the Republic of Lithuania, 2011).

In Latvia since 1st of January, 2024 application of GPP procedure for new construction, refurbishment, detailed planning, and demolition of certain types of public buildings is mandatory. Requirements and criteria are set for elaboration of detailed plan, construction works, demolition and construction site preparation. (Cabinet of Ministers of the Republic of Latvia, 2017).

2.2. Building certifications systems

2.2.1. What are building certification systems?

Building certification systems are voluntary measures developed to assess building sustainability performance. In principle they are ranking systems with sets of sustainability criteria. The main objectives of building certification systems are to measure/ optimize building sustainability performance and to do so in a quantified, consistent and objective manner. Buildings or construction projects are assessed by a third-party assessor and are awarded a certificate if they meet certain level of sustainability performance.

The certification criteria may include requirements/ limitations for: building energy efficiency, GHG footprint, hazardous chemicals use in the incoming materials, VOC concentration indoors, material sourcing, social and environmental responsibility and certification, circularity aspects and application of life-cycle approach. Different certification schemes vary in their approach and may have requirements for different phases of building life cycle: planning, design, construction, operation, maintenance, renovation, and eventual demolition.

A number of certification systems use ratings for buildings. For example, in BREEAM buildings are rated and certified on a scale of Unclassified, Pass, Good, Very Good, Excellent and Outstanding. Typically, sustainability and hazardous chemical requirements increase with each higher grade.

Several countries in the Baltic Sea region have their own national green building councils, which have developed certification programs for local conditions. At the same time BREEAM and LEED – green building certification systems that are used globally – are popular also in the countries of the Baltic Sea region.

Building certification is said to provide numerous benefits to the owner of the building. This includes increased property value, reduced environmental impact of the building, lower operating costs, premium rental prices. Additionally, certifying buildings demonstrate the sustainability commitments of the owner and contribute to company/ brand image.

Compared to the private sector certification of public sector buildings is much less common (with exception being Sweden), according to publicly available certified building lists, such as BREEAM, LEED, DGNB. Firstly, the building certification may be costly and may not fit the tight municipality budgets, secondly, there may not be a higher-level initiative or a drive in a public sector to pursue building certification.

In the NonHazCity 3 project, we looked at building certification systems used in the Baltic Sea Region, such as widely used LEED and BREEAM systems, German DGNB and others. We also analysed Nordic Swan ecolabel criteria for building certification “Nordic Ecolabelling for New buildings” which is used to certify new buildings in Nordic countries and has expansive criteria for hazardous substances.

We extracted hazardous chemicals criteria from each building certification system to compare the level of human health and environmental protection offered by each framework. In Annex II the compilation of chemical criteria from different building certification systems is presented.

The hazardous chemical criteria building certification systems can be used by procuring organisations as pre-made environmental criteria in cases when procuring a tox-free, human-health and environmentally friendly construction project is sought, but building sustainability certification is not considered, e.g. due to lack of priority or budget constraints.

2.2.2. Building certifications systems

Nordic Swan ecolabel for new buildings

Nordic Swan ecolabel has an environmental certification scheme for new buildings. Certified buildings need to meet strict obligatory requirements for the whole life cycle of the building, including extraction and production of materials, the construction process, the use phase as well as the recycling and waste stages. The requirements concern resource efficiency, reduced greenhouse gas footprint, tox-free building materials, circular economy and conservation of biodiversity, good indoor air quality and indoor climate. This building certification scheme has a comprehensive criteria for chemicals in construction products and materials. The label applies to various building types: offices, schools, kindergartens, day-cares, residential buildings. This Nordic Swan certification scheme is applicable only in Nordic countries (Denmark, Finland, Iceland, Norway, and Sweden).

BREEAM

BREEAM, which stands for Building Research Establishment Environmental Assessment Method, is among the most widely adopted and recognized environmental assessment methods for both buildings and infrastructure projects. It was developed in the United Kingdom in 1990. BREEAM serves as a comprehensive framework for evaluating the sustainability performance of buildings and offers a standardized approach to assess their environmental, social, and economic implications across their entire lifecycle. The compliance with BREEAM standards is validated by an independent third-party organization. The BREEAM certification system encompasses critical criteria, including energy efficiency, health and wellbeing, accessibility by transport, water usage and management, environmental impact of materials, waste reduction, and the influence on the surrounding environment. The results are classified into five categories for new buildings and six for existing ones, representing varying levels of excellence.

LEED

LEED, short for Leadership in Energy and Environmental Design, is another most widely used and recognized green building certification program, established by the U.S. Green Building Council in 2000. LEED uses a point-based rating system, where buildings accumulate points by meeting specific sustainability criteria. This rating system encompasses various aspects of a building's design, construction, operation, and maintenance. Based on the number of points earned,

a building can attain different certification levels, namely Certified, Silver, Gold, or Platinum. The LEED certification system relies on several critical criteria in the categories of Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation in Design.

DGNB Certification

The German Sustainable Building Council (DGNB) certification system originated in Germany in 2007. DGNB conducts a comprehensive assessment of a project's sustainability, addressing ecological, economic, sociocultural, and functional dimensions. It places a strong emphasis on a life cycle perspective, considering the entire journey of a building from construction through to demolition and recycling. DGNB awards quality labels in various levels, including bronze (not applicable to new buildings), silver, gold, and platinum. For exceptional architectural excellence, buildings with gold or platinum status may also qualify for a diamond award. Notably, entire neighbourhoods can also attain certification. DGNB's evaluation encompasses a wide array of areas, including ecology, economics, and social aspects. While prerequisites must be met, optional criteria offer opportunities for additional points.

Miljöbyggnad

Miljöbyggnad is the most widespread environmental certification system for buildings in Sweden. Environmental properties of a building are assessed by a third party. These properties determine whether it is given a rating of Bronze, Silver, or Gold. Assessment includes fifteen different indicators for energy use and climate, indoor environment (e.g. materials and hazardous substances), outdoor environment and circularity. Miljöbyggnad has requirements regarding chemicals and materials: avoid hazardous substances and a project needs to have logbook to document content and information about material and products that are built-in. The indicators also include requirements for climate impact of the building (climate calculation) and climate adaption. Regarding circularity there are requirements about the design being more resource efficient, adaptable, flexible and demountable, circular material flows, and the recycling of construction waste. Miljöbyggnad is aligned with the EU-taxonomy.

BNB

The Assessment System for Sustainable Building (Bewertungssystem Nachhaltiges Bauen, BNB) is a German certification system introduced by the Federal Ministry for Housing,

Urban Development and Building in 2011 to evaluate the sustainability of federal buildings, such as offices, educational facilities, and laboratories. BNB adopts a life-cycle-based approach to assess ecological, economic, socio-cultural, technical, and process-related criteria. The system is concerned with resource efficiency, environmental protection, user wellbeing, and long-term value. There are 3 certification levels: bronze (50%), silver (65%), and gold (80%) that are awarded based on compliance with measurable standards. BNB is primarily used for public sector projects. It aligns with the DGNB system and supports sustainable construction through tools like the eLCA software for life cycle assessments.

Nachhaltiges Bauen

Lithuanian Building Sustainability Evaluation System (LPTVS)

The Lithuanian Green Building Council has introduced a regional building sustainability assessment standard and certification system tailored to the Lithuanian market. This system provides an evaluation of buildings in Lithuania, considering local natural conditions, legal requirements, and market demands. It applies to various building types and offers ratings that range from Assessed to Good, Very Good, Excellent, and Outstanding. The LPTVS assessment system encompasses eight categories: Health, Energy, Transport, Land Use and Ecology, Materials, Waste Management and Pollution, Project Management, and Water Management. Within these categories, there are 29 specific criteria used for assessment.

LIETUVOS PASTATŲ TVARUMO VERTINIMO SISTEMA
LPTVS
2025

2.2.3. Analysis of hazardous chemical criteria in building certification systems

We have selected 20 hazardous chemical substances/ substance groups/ materials or regulatory lists (e.g. REACH Candidate list of SVHCs) based on our overview of building certification system criteria and prior knowledge on what chemicals are the most relevant in buildings (NonHazCity3, 2023).

THIS INCLUDES:

- Phthalates,
- PFAS (per- and polyfluoralkyl substances),
- Bisphenols,
- Chlorinated paraffins (SCCP & MCCP),
- Alkylphenols (nonyl- and octyl- phenols),
- Brominated flame retardants (BFRs),
- Tris (2-chloroethyl) phosphate TCEP,
- Heavy metals,
- Organic tin compounds,

- Heavy metals,
- Organic tin compounds,
- Isothiozolinones,
- Total preservatives,
- Biocides,
- MCPP (Mecroprop),
- Polyurethane (PU),
- Aromatic compounds,
- Boric acid (boron compounds),
- Halogenated compounds,
- SVHC and other categories,
- VOCs and formaldehyde,
- other hazardous chemicals

We have also distinguished main construction materials, chemical products, building components in which these hazardous chemicals can be found and are restricted by building certification systems. Building components include the following, but there may be additional relevant building components in some of the certification systems:

- Walls & slabs
- Roofs
- Windows (and doors)
- Facades
- Insulation
- Floors
- Coatings
- Adhesives
- Sealants
- Renders, plasters
- Plates/ boards
- Materials from PVC
- Other plastics
- Wood-based material (e.g. chipboard, blockboard, veneer panels, fibreboard)
- Cooling systems / technical building equipment / split units
- Flame-retardant building products

Below in Annex I an overview table is provided indicating the presence criteria for hazardous chemicals in different building materials or parts of the building versus different building certification systems.

In Annex II – tables are provided listing chemical criteria, for example, maximum concentrations or restricted chemicals for each building certification system. In some cases, there may be numerous sub-categories of buildings materials, e.g., different coating types. In this case these different subcategories are listed in the table with their respective criteria.

Disclaimer: the analyses of building certification systems have been performed in May 2025 based on the latest versions of each system. For the latest and up-to-date criteria of each system – see the newest versions of each building certification system criteria documents.

Additionally, the analysis of hazardous chemicals criteria is non-exhaustive, as some hazardous chemical criteria are very specific and do not fit into the analysis framework.

HAZARDOUS CHEMICAL CRITERIA IN BUILDING CERTIFICATION SYSTEMS

Nordic Ecolabel for New Buildings

In terms of hazardous chemicals criteria, Nordic ecolabel certification for new buildings covers most of the main building components and building products/ materials from the list above. Most important hazardous chemicals or their groups are addressed by limiting their concentration in building products and materials. Building materials/ products must not contain SVHCs (Substances of Very High Concern); substances evaluated as PBT (persistent, bioacummulative, toxic) or very persistent and very bioaccumulative (vPvB) in accordance with the criteria in Annex XIII of REACH, as well as endocrine disrupting chemicals that are included in the Endocrine Disruptor Lists (ED Lists, 2025). Some ingoing materials must not contain chemicals classified as carcinogenic, mutagenic, or toxic for reproduction (CMR) Category 1A or 1B. For individual chemicals or their groups, the criteria document usually sets out a concentration limit for ingoing substances below 100 mg/kg (0,01% by weight). For chemical groups like PFAS, that are considered hazardous even at low levels and are used in products/ articles at low concentrations, this threshold may not be highly ambitious but is stricter than current regulatory requirements. Nordic Ecolabel specification for new buildings is one of the most rigorous system in protecting human health and the environment from chemical effects and can be used as a benchmark for comparison with other building certification systems. (Nordic Ecolabeling, 2024).

BREEAM International New Construction

This building certification system primarily focuses on volatile organic compound in construction materials in buildings. Its criteria address formaldehyde, total volatile organic compounds (TVOC), total semi-volatile organic compounds (TSVOC) in building materials and also in indoor air. The limit quantities are expressed in µg/m³ (micrograms per square meter), indicating that emission rates from building materials need to be known. Exemplary level criteria for VOCs are stricter, thus better protecting human health. Criteria are also set for category 1A, 1B carcinogens in several building components and construction materials. However, this system has no criteria for the main hazardous chemical groups assessed in this work and does not restrict SVHCs. (BREEAM, 2021)

LEED

LEED building certification sets limits for several individual VOCs and total VOC emissions

from building components/ building materials and indoor air. Limit quantities are expressed in µg/m³ (micrograms per square meter), indicating that emission rates from building materials need to be known. TVOC limits are slightly higher (less strict) compared to BREEAM exemplary level limit concentrations. LEED also sets limits for SVHCs, below 0.1% in building products and materials. It has no criteria for the main hazardous chemical groups (besides those covered by limiting SVHCs) assessed in this work. (LEED, 2025)

DGNB

DGNB building certification sets out chemical criteria for most of the building elements, building materials. It distinguishes many types building materials, especially numerous coatings types and for each type (category or function) a separate set of requirements is provided, especially with regards to VOC concentrations in building products/ materials. In the annex 1 of the DGNB specification document a table of chemical criteria is provided. It is convenient and easy to navigate. DGNB also sets out requirements with regards to limits of SVHC concentrations of 0.1% for some of the product groups. While extensive in scope, DGNB system does not separately address several of the hazardous substance groups, like PFAS, or restrict chemicals such as phthalates only in specific construction materials. Overall, DGNB system is advanced and covers many substance groups, but in terms of human health protection it falls below the Nordic Ecolabel certification for new buildings. (DGNB, 2020)

Miljöbyggnad

Miljöbyggnad is unique in a way, that it's hazardous chemical requirements are mostly based on regulatory lists and other public lists of hazardous chemicals. REACH candidate list substances above 0.1% , also Phase-out substances and Prioritized risk-reduction substances according to KEMI PRIO are avoided, as well as Endocrine disrupting substances from the SIN List and limits are set for VOCs and formaldehyde. It also requires that the building project has a digital materials logbook, for example, in BVB system. Overall the requirements are less strict than for Nordic Ecolabel building certification. (Sweden Green Building Council, 2022)

BNB

BNB distinguishes many types of building materials and sets out numerous requirements to limit hazardous chemicals. Numerous chemical product types are distinguished in BNB system, especially coatings. For each type (category or function) a separate set of requirements is provided, especially with regards to VOC concentrations. BNB systems sets a mandatory requirement for declaration of contents of SVHC above 0.1% in building materials, but unlike the Nordic Ecolabel, which sets a stricter 0.01% limit for SVHCs, BNB does not limit their concentrations. PBT/vPvB substances and endocrine disruptors are also not addressed. BNB does not explicitly address certain hazardous groups like PFAS, Compared to BREEAM and LEED, which focus primarily on VOC emissions (in µg/m³) and limited SVHC restrictions, BNB's broader scope and detailed product-specific requirements make it more rigorous, though it falls short of Nordic Ecolabel's comprehensive chemical restrictions. (BNB, 2015)

Lithuanian Building Sustainability Evaluation System (LPTVS)

With regards to hazardous chemicals, this system only sets out the requirements for total VOC concentrations and formaldehyde in indoor air. (Lietuvos Žaliųjų Pastatų Taryba, 2023).

2.2.4. Recommendations for improving national/ regional building certification systems

There are numerous smaller, less extensive building certification systems in Europe, such as Polish Green Building Council system “Zieliony Dom” or Lithuanian Green Building Council system “LPTVS” and several others. They are designed for a more regional or national level as opposed to above mentioned international systems DGNB, BREEAM and others, which have an extensive set of various sustainability criteria. These local systems may be more suitable for mid-range or smaller construction projects, as the certification process is usually less costly and less rigorous.

In NonHazCity 3 we follow the principle of 3 pillars of sustainability: chemicals, circularity, climate. Each of the three pillars is interconnected with the other two and each is equality important for sustainability. However, what is meant by building sustainability in many cases is limited to energy efficiency objective, reduced GHG (greenhouse gas) footprint, maybe waste reduction and perhaps some other circular economy aspects. Hazardous chemicals issues are often left out of equation, although they are equally important for sustainability. Solving hazardous chemical issues is the enabler of circular economy permitting more efficient recycling and reuse, which in turn helps to reduce GHG footprint. Most importantly, avoiding hazardous chemicals in construction will help to reduce negative health effects, including endocrine disruption and reproductive effects, and improve overall well-being. Thus, solving hazardous chemicals issues in construction should be a high priority.

As can be seen from the analysis performed, most building certification system address indoor air quality and VOC issues. This mostly reflects perceivable and acute health effects that chemicals can cause, while invisible long-term effects, such as those caused by bisphenols, phthalates, brominated flame-retardant chemicals are less addressed building certification systems. However, the effects of endocrine disruptive, reprotoxic, persistent, bioacumulative and other hazardous chemicals are also great. It has been estimated that health cost due to endocrine disrupting chemicals in Europe can be at least €163 billion (Trasande et al, 2016)

We thus recommend for smaller regional/ national building certification systems, such as Lithuanian Green Building Council’s system “LPTVS” , Polish Green Building Council’s system “Zieliony Dom” or other building certification frameworks still in development or during future updates to include additional hazardous chemical criteria to protect human health and environment from the effect of harmful chemicals.

From the analysis conducted it is clear that Nordic Ecolabel certification of new buildings addresses the largest variety of hazardous chemicals in many of the most important building components or construction products/ materials. We, thus recommend using Nordic Ecolabel specification for new buildings as a benchmark and develop additional chemical criteria based on this system. For the summary of chemical criteria in each analysed building certification system – see Annex II.

2.2.5. Which criteria are most adaptable in public procurement?

The overview of chemical criteria extracted from building certification systems is presented in Annex II and discussed in section 2.2.3. These criteria can be used as pre-made criteria in procurement and are science-based.

As buildings are complex structures, consisting of many different building materials, it is important to consider hazardous chemicals in each building component. This requires multiple competences: in construction, hazardous chemicals issues and procurement, so applying an existing framework of chemical criteria in procurement will greatly enhance the ability of a procuring organisation to procure a sustainable building project.

For a procuring organisation seeking to build tox-free buildings with the highest level of human health and environmental protection – it is advisable to consider adopting a set of hazardous chemical criteria similar to those of the Nordic Ecolabel for new buildings, as it is the most ambitious and advanced of all systems analysed in this work and covers most of the main building components and building materials.

For lowest-effort approach with considerable protection of human health and the environment, consiuder an approach to exclude or limit hazardous chemicals listed in regulatory lists, such as REACH Candidate List and chemicals with certain properties included in other lists (e.g. endocrine disrupting substances included in the SINList), or chemicals of certain hazard classes (e.g. CMR categories 1A, 1B), etc. This approach is similar to that of the Miljöbyggnad system.

Procurers may also find useful the criteria from the DGNB system, which lists many different building product types and sets out hazardous chemical limits, especially for coating products. There are also EU GPP Voluntary Criteria for coatings that can be found in the document “EU green public procurement criteria for paints, varnishes and road marking” (European Commission, 2017).

This building certification system analysis is non-exhaustive, therefore it is advisable to also refer to the specification documents of the building certification system of interest when producing a set of criteria for a tox-free building procurement. Additionally, future updates of chemical criteria in building certification systems are not automatically included in this document, thus for the newest information, please refer to criteria documents.

3. GPP AND THE USE OF ENVIRONMENTAL CRITERIA FOR AVOIDING HAZARDOUS CHEMICALS USE AND EFFECTS - THE IMPORTANCE OF STRATEGY, CLEAR GOALS, PLANNING

3.1. Strategic approach and planning of procurement process

Implementing Green Public Procurement (GPP) is essential for driving sustainable practices within public sector purchasing. By adopting a strategic approach, organisations can ensure that environmental considerations are integrated at every level of decision-making, from planning to execution. This is especially important in sustainable construction, as building are long lasting assets and changes post construction are harder to implement than during the planning phases. Additionally, during construction, a large volume of chemicals and construction materials is used up and "deposited", thus the impact on the environment can be significant. Therefore, in order to make sustainable building decisions, purchasing organisations, need to have a structured and strategic approach to constructing or renovating buildings.

- The internal organisation strategy should clearly state the actions necessary to reduce hazardous substance effects, such as specifying the use of tox-free construction products and materials. It should also define the roles and responsibilities of all involved parties, ensuring accountability and clarity in the implementation process.
- It is important to establish clear, measurable goals that provide direction and focus for sustainable building initiatives. E.g. no use of phthalate plasticisers, indoor VOC concentrations below certain limit, Net carbon neutral building, % of recycled materials, etc. Clear goals help to guide procurement decisions and provide benchmarks against which progress can be measured.
- Leadership plays a pivotal in driving organisational change towards sustainability focused and committing to GPP.
- Collaboration across different municipality departments and functions involving teams from procurement, environmental management, engineering, finance and legal will bring together specialized knowledge to ensure GPP is practical, compliant, and impactful.

HAZARDOUS CHEMICAL CRITERIA IN BUILDING CERTIFICATION SYSTEMS

Planning is as important as the procurement itself. Effective planning is the cornerstone of successful GPP. As the procurement of sustainable buildings involves multiple stakeholders, and significant investments, thorough planning is essential. Planning helps to streamline procedures, mitigate risks, and optimize resource allocation, ensuring that sustainability goals are not only set but achieved

Early and comprehensive planning provides the opportunity to engage with architects, construction contractors and other stakeholders. This will help to collaboratively define more realistic sustainability criteria based on the obtained information, possibilities. Stakeholder engagement can foster innovation and encourage the market to develop solutions that meet the set criteria.

Without adequate preparation, organizations may set unrealistic sustainability targets, fail to account for market capabilities, or overlook critical environmental considerations. This can result in lowering of the intended sustainability level, limit the potential for innovation. Therefore the earlier in the process of procurement we start thinking about avoiding hazardous chemicals – the more chance that this can succeed.

Rushing planning phase can lead to limiting organisation's opportunities and suppliers' ability to meet the criteria. It is important to inform the market about the needs as early as possible.

It is advisable at this stage to already think about building sustainability objectives, including the material requirements for the avoidance of hazardous chemicals

Examples of pre-made criteria for avoiding hazardous chemicals (extracted from building sustainability certification systems) in construction are provided in the Annex II

More information about procurement planning and strategic approach can be found in NonHazCity3 publication "Strategic solutions for managing procedures for construction materials and sites" (NonHazCity3, 2023)

3.2. Conducting market dialogue and obtaining information

Market dialogue is vital in chemical-smart procurement, as the topic of hazardous chemicals in construction materials is a multi-faceted and difficult problem. In most of the cases the procuring organisation will not have the necessary expertise and knowledge or the possibility to stay updated. Market dialogue enables municipalities to engage with suppliers early, obtain information on alternative, safer construction products and materials,

which leads to maximising the chance for success in reducing hazardous chemicals in construction. A successful market dialogue communication with market actors needs to be well structured and transparent. During the market dialogue, possibilities of implementing sustainable and tox-free construction solutions are explored, supplier capabilities assessed and realistic procurement criteria are established. This type of engagement ensures alignment with environmental and health objectives while ensuring feasibility, cost-effectiveness.

The process begins with identifying key market players. Various kinds of stakeholder engagement are possible:

- bilateral communication,
- public consultations,
- supplier workshops,
- online questionnaires.

These interactions allow municipalities to gather insights on available products, suitable technologies, and supplier readiness to meet sustainability requirements. Suppliers, in turn, gain clarity on municipal needs and gain an incentive for innovation.

During dialogue, procuring organisations should communicate their sustainable construction priorities clearly, the need for tox-free and sustainable construction products. Safety, as well as technical information on building products and materials can be requested. This back and forth itterative exchange facilitates refining tender requirements, ensuring they are ambitious yet achievable. It also builds trust with service providers, encourages innovation. The outcome of a successfull market dialogue is a well-informed procurement project.

EFFECTIVE MARKET DIALOGUE SHOULD:

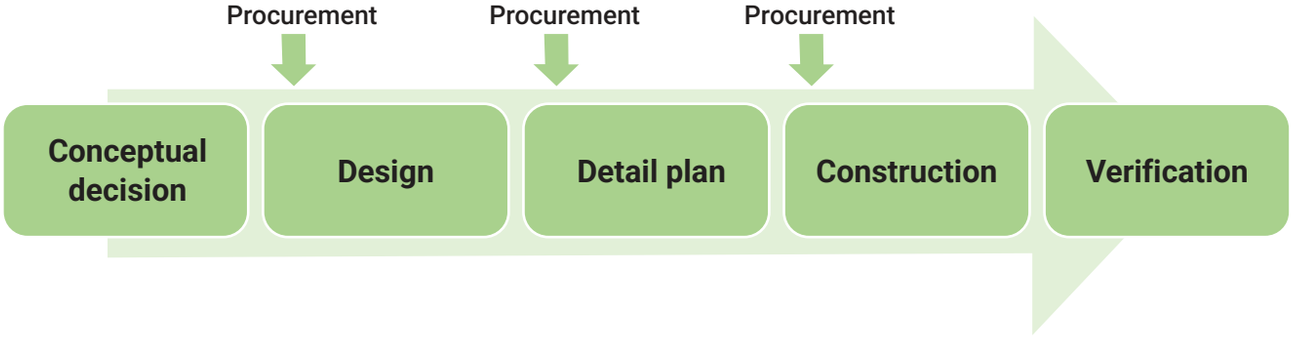
- **Be transparent:** clearly communicate project goals and expectations to all stakeholders equally and transparently, ensure equal possibilities for engagement for all potential service providers.
- **Encourage innovation:** invite suppliers to propose safer alternatives or new solutions to meet proposed sustainability targets, chemical reduction goals.
- **Help you to stay informed:** use dialogue to stay updated on market trends, such as non-toxic materials.
- **Document findings:** use insights gained through stakeholder engaggement to inform tender documents and ensure traceability of decisions.

Effective market dialogue benefits both parties and results in a well-informed procurement project that drives demand for safer, sustainable products, contributes safer environment and public health.

For comprehensive guidance on implementing GPP, market dialogue and stakeholder engagement in public procurement and many useful examples, see the publication: „Guide For Chemical Smart Public Procurement“ , which was developed during the previous NonHazCity project by Turku University of Applied Sciences (NonHazCity, 2020).

3.3. How are tox-free buildings procured?

The procurement of a building process consists of several stages. From the concept stage to the construction works there are multiple opportunities to introduce environmental criteria. However, it is important to establish clear sustainability goals, ambitions, and desired outcomes as early as the conceptual design phase. During this phase, initial decisions are made to pursue tox-free construction.



3.3.1. Procurement of design and detail plan phase

After the market has been engaged into a dialogue, the needs of the procuring organisation are established and the market readiness to provide services/goods are assessed the procurement of the design and detail plan phase for green buildings can comence. Environmental targets should be set for material selection, focusing on environmentally friendly, tox-free and certified products, energy efficiency and circularity. Criteria should be developed to guide material and design choices, for example: requirements to prioritize low-VOC (volatile organic compound) or non-emitting materials, to limit or entirely avoid certain hazardous chemicals or particular hazard categories, to prioritise wooden construction materials and other environmentally friendly options for both exterior and interior applications.

In Annex II, examples of pre-made criteria for avoiding hazardous chemicals in building elements/ construction chemicals and materials are preented. These requirements are science-based and can be used by procuring organisations ir their tox-free building project procurements.

Engagement with stakeholders and experts (architects, engineers, sustainability experts, construction service providers and suppliers) is critical to ensure that these criteria are successfully integrated into the design and detail plan. By involving suppliers, the availability of sustainable materials can be confirmed, while planners and engineers can address technical feasibility. This collaborative approach ensures that the sustainable design can be implement to its full extent.

To ensure the pre-selection of capable service providers, specific selection criteria can be established in procurement to evaluate service provider expertise in sustainable design and detail planning. These criteria should assess a supplier's proven experience in sustainable architecture and in particular, what is the track record in designing tox-free buildings. Additionally, service providers should demonstrate their ability in integrating sustainable tox-free materials and circular economy principles into design and detailed design plans. By prioritizing environmental expertise, the procurement process ensures that selected partners are capable of fulfilling the specified sustainable building project's objectives.

When determining the award criteria, the focus should extend beyond the cost and emphasize the quality and innovation of proposed sustainable solutions. Suppliers should be evaluated on their ability to incorporate tox-free and sustainable building materials, implement effective energy efficiency and circular design measures. By leveraging sustainability-focused award criteria appropriately, the procurement process incentivises suppliers to deliver high-quality, environmentally responsible designs.

For more information and examples of the seletion criteria for the contractors see pages 9-13 of the EU voluntary GPP criteria document "EU GPP Criteria for Office Building Design, Construction and Management"

DECIDING ON THE PROCUREMENT PROCEDURE

In cases where technical specifications cannot be clearly defined, it is important to choose the right procurement procedure. For complex projects, the choice of procedure can significantly influence the project's success and its adherence to sustainability goals.

- In situations where the technical requirements are intricate and cannot be precisely outlined from the start, an open procedure may not be ideal.
- Both the competitive procedure with negotiation and the competitive dialogue offers considerable advantages in complex procurement cases by providing flexibility and adaptability through direct involvement of suppliers, by encouraging co-development and exploration of ideas and by allowing specifications to be tailored to achieve innovative, sustainable and efficient project results.
- Design contests allow multiple architects or designers to submit proposals, which are evaluated based on specific criteria such as functionality, sustainability, and visual appeal. This procedure is beneficial when the contracting authority seeks a wide range of design solutions before selecting the most appropriate one.

3.3.2. Construction and verification phase

After preparing and approving the detailed technical project, the contracting authority (municipality) can procure the services of a construction company to carry out construction/ renovation works. It is essential that the construction contractor has the appropriate experience to execute the project, thus selection criteria could be introduced for an assessment of supplier qualifications: experience of sustainable construction work carried out, experience of the specialists involved in the project, etc.

It is crucial during construction to ensure that the specifications established during the design phase are implemented during the construction, and construction product/ material compliance documents of the materials used in construction will need to be verified against the project specification. Therefore, it is important to clearly specify in the technical specifications, which documents are acceptable and how they will be checked.

DECIDING ON THE PROCUREMENT PROCEDURE

Declarations and Certifications:

- Manufacturer's declaration: Declarations from manufacturers of building materials.
- Wood origin certificates: Certificates for wood and wood products (e.g., FSC, PFSC).
- Material usage log verification: Inspection of the log of materials used during construction (or renovation, extension) to ensure non-toxic, recycled, or reused materials were utilized.
- Environmental Product Declaration (EPD): Documentation of environmental impact.
- Type I Ecolabels: certifications indicating that products meet stringent environmental criteria, verified through third-party assessment (e.g., EU Ecolabel, Nordic Swan, Blue Angel)

Data Sheets:

- Manufacturer's technical data sheet: Documents provided by the manufacturer indicating compliance with relevant standards and technical characteristics.
- Safety Data Sheets (SDS) for chemical products: SDSs are legal documents supplied by vendors, who are responsible for the quality of the information contained within them. Section 2 of SDS contains information of hazard classification of the chemical mixture, while Section 3 contains information on the hazardous constituents of the mixture.

3.3.3. Contract management

Well-drafted contract performance clauses are one of the most important milestones. While particular attention is paid to the drafting and formulation of technical specifications, the drafting of contracts often receives insufficient attention. The works contract is the main document used to communicate with the contractor.

Contract should specify:

- How the requirements (construction project specifications) will be checked;
- What documents the contractor must provide;
- What action you will take if the conditions are not met;
- Key performance indicators (KPI's);
- Possible third-party audits etc.

A detailed guidance on steps of a sustainable building procurement with many useful advice and examples can be found in NonHazCity3 publication "Step-by-step guide for the process management of toxfree, circular and climate-neutral construction at municipalities" (NonHazCity3, 2023).

3.3. Challenges and solutions, misconceptions

Procurement of sustainable public buildings involves numerous challenges. Here are some more common ones:

- Procurement procedures are lengthy and complex: procurement processes can be time-consuming, but this risk can be managed by starting the planning as early as possible and involving all necessary experts and stakeholders.
- Higher initial costs: sustainable, tox-free products could come with higher upfront costs. Emphasizing long-term savings and benefits, such as reduced waste, energy consumption, reduced GHG footprint, improved indoor air quality, reduced negative health effects from hazardous chemicals, etc., can highlight their overall value.
- Limited availability: tox-free building materials may have limited availability in certain markets. Expanding the supplier base and encouraging innovation through incentives can help address these limitations.
- Resistance to change: organisational resistance can hinder the adoption of sustainable practices. Management support and training

programmes can highlight the benefits of GPP and facilitate change.
- Complex regulations: navigating regulatory requirements can be complex. Collaboration with legal teams and engagement with regulatory bodies can provide clarity and simplify the process.

There are also several prevalent misconceptions surrounding the sustainable procurement, such as building procurement:

- **"Sustainable means expensive":** while initial costs may be higher, sustainable procurement provides long-term long-term benefits through energy efficiency, implemented circular economy principles and possibly even lowering health cost due to reduced hazardous chemical effects.
- **"Limited choices":** the perception of limited sustainable, tox-free material solutions is often due to a lack of market exploration. Engaging in market dialogue can reveal a broader range of sustainable products.
- **"Sustainability compromises quality":** on the contrary, sustainable products often meet high-quality standards, offering durability and reliability.

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Annex I: overview of chemical criteria in different building certification systems

Table 1: Hazardous chemicals, their groups or lists of chemical substances analysed in building certification systems.

Phthalates	PFAS	Bisphenols	SCCP & MCCP	Nonyl-octyl phenols	BFRs	TCEP	Heavy metals	Organic tin compounds	Isothiozolinones
A	B	C	D	E	F	G	H	I	J
Total preservatives	Biocides	MCPP (Mecroprop)	PU	Aromatic compounds	Boron compounds	Halogenated compounds	SVHCs and/ or other categories	VOC, Formaldehyde	Other hazardous substances
K	L	M	N	O	P	R	S	T	U

Table 2: Overview table of hazardous chemical criteria in different building certification systems.

	BNB	**BREEAM**	**DGNB**	**Nordic Swan**	**LEED**	**Sentinel Haus Institut**
Walls & slabs	-	S, T	H, K, L, P, S, T, U	A, B, C, D, E, F, H, I, P, R, S	B, H, S, T	-
Roofs	T	-	H, S	A, B, C, D, E, F, H, I, P, S	S	-
Windows	A, H, L	-	H, K, S	A, H, S, R	S	-
Facades	L	-	K, U	A, B, C, D, E, F, H, I, P, S	S	-
Insulation	D, G, N, P, R, O	S, T	A, F, P, R, U	A, B, C, D, E, F, H, I, P, R, S	S, T	D, G, P
Floors	A, C, D, E, F, H, T	S, T	A, D, H, L, S, T, U	A, B, C, D, E, F, H, I, L, P, S	S, T	G, T
Coatings *	A, D, G, H, T	S, T	A, H, K, O, P, R, T, U	A, B, C, D, E, F, H, I, J, K, O, S	S, T	G
Adhesives	G, T	S, T	A, D, H, N, R, T, U	A, B, C, D, E, F, H, I, J, K, O, S	S, T	G
Sealants	D, G, N	S, T	D, F, G, N, R, T, U	A, B, C, D, E, F, H, I, J, K, O, S	S, T	G
Renders, plasters	H, T	-	-	A, B, C, D, E, F, H, I, J, K, O, P, S	S, T	G, H, T
Plates/ boards	D, G	-	-	A, B, C, D, E, F, H, I, P, R, S, T	S, T	G, L
Materials from PVC	A, D, H	-		A, B, C, D, E, F, H, I, P, S	S	-
Other plastics	-	-	U	A, B, C, D, E, F, H, I, P, S	S	-
wood-based materials	L, R	S, T	P, T	A, B, C, D, E, F, H, I, L, S	S, T	-
Cooling syst./ tech. building equipment / split units	-	-	R, U	-	R, S	-
Flame-retarded building products	-	-	D, F, S, U	-	S	-
Indoor air	-	T	-	-	T	-
Ceilings	-	-	-	-	S, T	-
Cables and electrical conduits	-	-	-	A, B, C, D, E, F, H, I, R, S	-	-

Annex II: hazardous chemical criteria in building certification systems

Also available in excel format:
https://pagalvok.lt/wp-content/uploads/sites/8/2025/06/Tox-free_building_blueprint_chemical_criteria.xlsx

Title: "Nordic Ecolabelling for New buildings, 089", version 4.5, 10 December 2024
Criteria document available at: https://www.nordic-swan-ecolabel.org/492ae8/contentassets/b9969713cbc445949d910bce4d4f3c1c/criteria-document_089_new-buildings-089_english.pdf

	Phthalates	PFAS	Bisphenol A (CAS no. 80-05-7), bisphenol S (CAS no. 80-09-1) and bisphenol F(CAS no. 620-92-8)	SCCP & MCCP	Nonyl-/ octyl-phenols	Brominated flame retardants	TCEP	Heavy metals	Organic tin compounds	Isothiazolinones	Total preservatives	Biocides	MCPP (Mecroprop)	PU	Aromatic compo	Boric acid, sodium perborate, perboric acid, sodium borate (borax) and any other boron compounds classed as carcinogenic, mutagenic or reprotoxic in category 1A/1B/2/Lact.	Halogenated compounds	SVHCs and other categories	VOC, Formaldehyde	Other hazardous substances
Walls & slabs	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg -**Surface layers may not contain chlorinated plastics (e.g. PVC).** - plastic or textile wall and ceiling coverings, interior use. Limit for *ingoing substance: <100 mg/kg	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg -Plastic or textile wall and ceiling coverings, interior use. Limit for *ingoing substance: <100 mg/kg	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg -Plastic or textile wall and ceiling coverings, interior use. Limit for *ingoing substance: <100 mg/kg	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg -Plastic or textile wall and ceiling coverings, interior use. Limit for *ingoing substance: <100 mg/kg	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg -Plastic or textile wall and ceiling coverings, interior use. Limit for *ingoing substance: <100 mg/kg	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg -Plastic or textile wall and ceiling coverings, interior use. Limit for *ingoing substance: <100 mg/kg		-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. -Plastic or textile wall and ceiling coverings, interior use.-limit for *ingoing substance: <100 mg/kg : lead, cadmium, arsenic, chromium (VI), mercury and their compounds.	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg -Plastic or textile wall and ceiling coverings, interior use. Limit for *ingoing substance: <100 mg/kg			-biocide surface treatments in interior wall surfaces are not allowed				-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg -Plastic or textile wall and ceiling coverings, interior use. Limit for *ingoing substance: <100 mg/kg	-Doors, windows and interior surface layers on floors, ceilings and walls may not contain chlorinated plastics (e.g. PVC). This includes watertight layers, wall film, acoustic dampening foams and other products used directly underneath the surface layer. Mouldings, skirtings and surface wall films are included.	**No ingoing substances in chemical products used in building:** -SVHC included in the EU Candidate List are prohibited -Evaluated as persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III. **Wall and ceiling coverings made of plastic, textile, sealing products for walls, foundation, including membranes, tape and sealing collars. Must not contain ingoing substances:** -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Substances classified as carcinogenic, mutagenic, or toxic for reproduction (CMR) Category 1A or 1B. -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.		
Roofs	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg		-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg : lead, cadmium, arsenic, chromium (VI), mercury and their compounds. -Roof and facade cladding materials and products for roofs and facades (roof drainage products, gutters, exhaust hoods, eaves nets, cover profiles and the like) must not contain more than 10% by weight of copper.	-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg							-sealing construction products (not chemical products), e.g. membranes, tape, sealing collars, other. Limit for *ingoing substance: <100 mg/kg		**No ingoing substances in chemical products used in building:** -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III. **Sealing products for roofing, including membranes, tape and sealing collars must not contain ingoing substances:** -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Substances classified as carcinogenic, mutagenic, or toxic for reproduction (CMR) Category 1A or 1B. -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.		
Windows	**-may not contain chlorinated plastics (e.g. PVC).**																-doors, windows and interior surface layers on floors, ceilings and walls may not contain chlorinated plastics (e.g. PVC). This includes watertight layers, wall film, acoustic dampening foams and other products used directly underneath the surface layer. Mouldings, skirtings and surface wall films are included.	**No ingoing substances in chemical products used in building:** -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.		
Facades	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg		-recycled plastic resource may not contain lead or cadmium in levels exceeding 100 ppm. -Interior and exterior building panels, not wood-based, wood-plastic composite. Limit for ingoing substance: <100 mg/kg : lead, cadmium, arsenic, chromium (VI), mercury and their compounds. -Roof and facade cladding materials and products for roofs and facades (roof drainage products, gutters, exhaust hoods, eaves nets, cover profiles and the like) must not contain more than 10% by weight of copper.	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg							-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg		**No ingoing substances in chemical products used in building:** -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III. **Wood that is preservative-treated or chemically modified as protection, or wood-plastic composite must not contain ingoing substances:** -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Substances classified as carcinogenic, mutagenic, or toxic for reproduction (CMR) Category 1A or 1B. -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.		
Insulation	-thermal, acoustic and technical insulation. Limit for *ingoing substance: <100 mg/kg	-thermal, acoustic and technical insulation. Limit for *ingoing substance: <100 mg/kg	-thermal, acoustic and technical insulation. Limit for *ingoing substance: <100 mg/kg	-thermal, acoustic and technical insulation. Limit for *ingoing substance: <100 mg/kg	-thermal, acoustic and technical insulation. Limit for *ingoing substance: <100 mg/kg	-thermal, acoustic and technical insulation. Limit for *ingoing substance: <100 mg/kg		-thermal, acoustic and technical insulation. -limit for ingoing substance: <100 mg/kg : lead, cadmium, arsenic, chromium (VI), mercury and their compounds.	-thermal, acoustic and technical insulation. Limit for *ingoing substance: <100 mg/kg							-thermal, acoustic and technical insulation. Limit for *ingoing substance: <100 mg/kg		**The following substances must not be an ingoing substance in chemical products used in building:** -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III. **Thermal, acoustic and technical insulation must not contain ingoing substances:** -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Substances classified as carcinogenic, mutagenic, or toxic for reproduction (CMR) Category 1A or 1B. -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.		
Floors	**-may not contain chlorinated plastics (e.g. PVC).** -Plastic or textile floor coverings, interior use. Limit for *ingoing substance: <100 mg/kg	-plastic or textile floor coverings, interior use. Limit for *ingoing substance: <100 mg/kg	-plastic or textile floor coverings, interior use. Limit for *ingoing substance: <100 mg/kg	-plastic or textile floor coverings, interior use. Limit for *ingoing substance: <100 mg/kg	-plastic or textile floor coverings, interior use. Limit for *ingoing substance: <100 mg/kg	-plastic or textile floor coverings, interior use. Limit for *ingoing substance: <100 mg/kg		-limit for *ingoing substance: <100 mg/kg : lead, cadmium, arsenic, chromium (VI), mercury and their compounds.	-limit for *ingoing substance: <100 mg/kg			-biocide surface treatments are not allowed				-plastic or textile floor coverings, interior use. Limit for *ingoing substance: <100 mg/kg	-doors, windows and interior surface layers on floors, ceilings and walls may not contain chlorinated plastics (e.g. PVC). This includes watertight layers, wall film, acoustic dampening foams and other products used directly underneath the surface layer. Mouldings, skirtings and surface wall films are included.	**The following substances must not be an ingoing substance in chemical products used in building:** -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III. **Floor coverings made of plastic, textile must not contain ingoing substances:** -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Substances classified as carcinogenic, mutagenic, or toxic for reproduction (CMR) Category 1A or 1B. -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.		
**Coatings	Phthalates (Esters of phthalic acid (orthophthalic acid / phthalic acid /1,2- benzene dicarboxylic acid) **Prohibited**	PFAS prohibited	Bisphenol A (CAS no. 80-05-7), bisphenol S (CAS no. 80-09-1) and bisphenol F(CAS no. 620-92-8) **prohibited.**	SCCPs (C10-C13) & MCCPs (C14-C17) **prohibited**	Alkylphenols, alkylphenol ethoxylates (APEO) and other alkylphenol derivates (APD) **prohibited**	Brominated flame retardants **prohibited**		The heavy metals lead, cadmium, arsenic, chromium (VI), mercury and their compounds **prohibited**	Organotin compounds **prohibited**	For indoor use: Isotiozolinones: <600 ppm ; BIT: <500 ppm CMIT/MIT: <15 ppm MIT: <15 ppm OIT: <15 ppm	Paints, varnishes, base paints with tinting paints etc. for indoor use.: < 900 ppm (0.09% w/w) Wet room paint specifically <1600 ppm (0.16% w/w); Isotiozolinones: <600 ppm ; BIT: <500 ppm CMIT/MIT: <15 ppm MIT: <15 ppm OIT: <15 ppm	See "preservatives"			Volatile aromatic hydrocarbons (VAH) no more than 1% by weight.	-		The following substances must not be an ingoing substance in chemical products used in building: -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.		
**Adhesives	Phthalates (Esters of phthalic acid (orthophthalic acid / phthalic acid /1,2- benzene dicarboxylic acid) **Prohibited**	PFAS prohibited	Bisphenol A (CAS no. 80-05-7), bisphenol S (CAS no. 80-09-1) and bisphenol F(CAS no. 620-92-8) **prohibited.**	SCCPs (C10-C13) & MCCPs (C14-C17) **prohibited**	Alkylphenols, alkylphenol ethoxylates (APEO) and other alkylphenol derivates (APD) **prohibited**	Brominated flame retardants **prohibited**		The heavy metals lead, cadmium, arsenic, chromium (VI), mercury and their compounds **prohibited**	Organotin compounds **prohibited**	For indoor use: Isotiozolinones: <600 ppm ; BIT: <500 ppm CMIT/MIT: <15 ppm MIT: <15 ppm OIT: <15 ppm	Isotiozolinones: <600 ppm ; BIT: <500 ppm CMIT/MIT: <15 ppm MIT: <15 ppm OIT: <15 ppm IPBC: <2000ppm Bronopol: <500ppm	See "preservatives"			Volatile aromatic hydrocarbons (VAH) no more than 1% by weight.	-		The following substances must not be an ingoing substance in chemical products used in building: -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.		
**Sealants	Phthalates (Esters of phthalic acid (orthophthalic acid / phthalic acid /1,2- benzene dicarboxylic acid) **Prohibited**	PFAS prohibited	Bisphenol A (CAS no. 80-05-7), bisphenol S (CAS no. 80-09-1) and bisphenol F(CAS no. 620-92-8) **prohibited.**	SCCPs (C10-C13) & MCCPs (C14-C17) **prohibited**	Alkylphenols, alkylphenol ethoxylates (APEO) and other alkylphenol derivates (APD) **prohibited**	Brominated flame retardants **prohibited**		The heavy metals lead, cadmium, arsenic, chromium (VI), mercury and their compounds **prohibited**	Organotin compounds **prohibited.** With exception for (Dibutyltin (DBT) compounds and dioctyltin (DOT) compounds in sealing products ≤ 5000 ppm (0.5% by weight) in the final product.)\	For indoor use: Isotiozolinones: <600 ppm ; BIT: <500 ppm CMIT/MIT: <15 ppm MIT: <15 ppm OIT: <15 ppm	Isotiozolinones: <600 ppm ; BIT: <500 ppm CMIT/MIT: <15 ppm MIT: <15 ppm OIT: <15 ppm IPBC: <2000ppm Bronopol: <500ppm	See "preservatives"			Volatile aromatic hydrocarbons (VAH) no more than 1% by weight.	-		The following substances must not be an ingoing substance in chemical products used in building: -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.		
**Renders, plaste	Phthalates (Esters of phthalic acid (orthophthalic acid / phthalic acid /1,2- benzene dicarboxylic acid) **Prohibited**	PFAS prohibited	Bisphenol A (CAS no. 80-05-7), bisphenol S (CAS no. 80-09-1) and bisphenol F(CAS no. 620-92-8) **prohibited.**	SCCPs (C10-C13) & MCCPs (C14-C17) **prohibited**	Alkylphenols, alkylphenol ethoxylates (APEO) and other alkylphenol derivates (APD) **prohibited**	Brominated flame retardants **prohibited**		The heavy metals lead, cadmium, arsenic, chromium (VI), mercury and their compounds **prohibited**	Organotin compounds **prohibited**	For indoor use: Isotiozolinones: <600 ppm ; BIT: <500 ppm CMIT/MIT: <15 ppm MIT: <15 ppm OIT: <15 ppm	Isotiozolinones: <600 ppm ; BIT: <500 ppm CMIT/MIT: <15 ppm MIT: <15 ppm OIT: <15 ppm IPBC: <2000ppm Bronopol: <500ppm	See "preservatives"			Volatile aromatic hydrocarbons (VAH) no more than 1% by weight.	-		The following substances must not be an ingoing substance in chemical products used in building: -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.		
Plates/ boards	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg		-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg : lead, cadmium, arsenic, chromium (VI), mercury and their compounds.	-interior and exterior building panels, not wood-based. Limit for *ingoing substance: <100 mg/kg							-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg	-doors, windows and interior surface layers on floors, ceilings and walls may not contain chlorinated plastics (e.g. PVC). This includes watertight layers, wall film, acoustic dampening foams and other products used directly underneath the surface layer. Mouldings, skirtings and surface wall films are included.	**The following substances must not be an ingoing substance in chemical products used in building:** -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III. **Wood that is preservative-treated or chemically modified as protection, or wood-plastic composite must not contain ingoing substances:** -SVHC included in the EU Candidate List are prohibited- Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Substances classified as carcinogenic, mutagenic, or toxic for reproduction (CMR) Category 1A or 1B. -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.	-formaldehyde content in MDF panels 0.09 mg/m3, other types of panels 0.07mg/m3, non wood high pressure laminates (HPL), continuous pressure laminates (CPL) and compact laminates 0.03mg/m3	
wood-based material, chipboard, blockboard, veneer panels, fiberboard	-for preservative treated wood limit for *ingoing substance: <100 mg/kg	-for preservative treated wood limit for *ingoing substance: <100 mg/kg	-for preservative treated wood limit for *ingoing substance: <100 mg/kg	-for preservative treated wood limit for *ingoing substance: <100 mg/kg	-for preservative treated wood limit for *ingoing substance: <100 mg/kg	-for preservative treated wood limit for *ingoing substance: <100 mg/kg		-for preservative treated wood limit for *ingoing substance: <100 mg/kg	-interior and exterior building panels, not wood-based, wood-plastic composite. Limit for *ingoing substance: <100 mg/kg			-the use of preservative-treated, chemically modified or thermally modified wood must be documented. -For preservative treated wood: limit for *ingoing substance: <100 mg/kg				-for preservative treated wood limit for *ingoing substance: <100 mg/kg		Wood that is preservative-treated or chemically modified for protection, wood-plastic composite must not contain ingoing substances:: -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Substances classified as carcinogenic, mutagenic, or toxic for reproduction (CMR) Category 1A or 1B. -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.		
Cables and electrical conduits	-limit for *ingoing substance: <100 mg/kg	-limit for *ingoing substance: <100 mg/kg	-limit for *ingoing substance: <100 mg/kg	-limit for *ingoing substance: <100 mg/kg	-limit for *ingoing substance: <100 mg/kg	-limit for *ingoing substance: <100 mg/kg		-limit for *ingoing substance: <100 mg/kg : lead, cadmium, arsenic, chromium (VI), mercury and their compounds.	-limit for *ingoing substance: <100 mg/kg							-limit for *ingoing substance: <100 mg/kg	-heavy current cables: Halogen acid content <5mg/g	The following substances must not be an ingoing substance in chemical products used in building: -SVHC included in the EU Candidate List are prohibited -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Endocrine disruptors: Substances on the EU member state initiative "***Endocrine Disruptor Lists", List I, II and III.		
Playgrounds																		Plastic and rubber surfaces on playgrounds and outdoor areas: -The use of impact attenuating ground cover materials with synthetic components is restricted on outdoor areas (with some exceptions - see the criteria document) -if synthetic materials were to be used in according to exceptions: a) The synthetic ground cover materials must not contain material from recycled tyres (SBR). b) Surfaces must not consist of material with loose infill of plastic or rubber granules. c) Granule catchers or other systems for microplastic retention must be installed in drains adjacent to the materials. -Examples of plastic and rubber surfaces to which this requirement apply are: artificial turf, mats, tiles or in situ cast surfaces made from plastic or rubber. Fibres, chips, or granules of renewable materials with a synthetic binding agent or cover are also subject to the requirement. Materials in artificial turf, mats, tiles and granulate must be declared. Artificial turf, mats, tiles and granulate materials used in impact atenuating outdoor surfaces must not contain: -Substances of Very High Concern (SVHC) included on the EU Candidate List are prohibited [O18] -Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH -Substances classified as carcinogenic, mutagenic, or toxic for reproduction (CMR) Category 1A or 1B. -Endocrine disruptors: Substances on the EU member state, initiative "Endocrine Disruptor Lists", List I, II and III.		

*Ingoing substance means all substances in the construction product that are present in concentrations higher than 100 ppm (0.010 w%,
** chemical products

A set of requirements for chemical products. Chemical products must not be classified :
-Hazardous to the aquatic environment Aquatic Acute 1 (H400), Aquatic Chronic 1 (H410), Aquatic Chronic 2 (H411); hazardous to ozone layer (H420);
-acute toxicity: Acute Tox. 1 or 2 (H300, H310, H330), Acute Tox. 3 (H301 H311 H331);
-Specific target organ toxicity: STOT SE 1 (H370) STOT RE 1 (H372);
-Carcinogenicity: Carc. 1A or 1B (H350), Carc. 2 (H351);
-Germ cell mutagenicity: Muta. 1A or 1B (H340), Muta. 2 (H341);
-Reproductive toxicity: Repr. 1A or 1B (H360), Repr. 2 (H361), Lact. (H362); with exemptions for certain products (p52).
No CMRs: Chemical products must not contain any ingoing substances* classified as carcinogenic, mutagenic or reprotoxic:
-Carcinogenicity: Carc. 1A or 1B (H350), Carc. 2 (H351);
-Germ cell mutagenicity: Muta. 1A or 1B (H340), Muta. 2 (H341);
-Reproductive toxicity: Repr. 1A or 1B (H360), Repr. 2 (H361), Lact. (H362); with exemptions for certain products (p53)
Preservatives in other chemical produts intended for indoor use:
-Only preservatives compliant with PT 6 (in-can) and PT 7 (dry-film) according to Regulation (EU)528/2012 (The Biocidal Products Regulation) can be used;
-Paints, varnishes, base paints with tinting paints etc. for indoor use. Preservatives total <900ppm; wet room paint: <1600ppm;
Specific compounds: Sum isotiozolinone: <600 ppm, BIT: <500 ppm, CMIT/MIT: <15 ppm , MIT: <15 ppm, OIT: <15 ppm,
Preservatives in other chemical products for indoor use: Sum isotiozolinone: <600 ppm, BIT: <500 ppm, CMIT/MIT: <15 ppm , MIT: <15 ppm, OIT: <15 ppm, IPBC: <2000ppm, Bronopol: <500ppm;
Prohibited substances (must not be ingoing in chemical produts): categorised as SVHCs, evaluated to be PBT and vPvB, Endocrine disruptors (lists given).
Additional substances/ groups of substances are prohibited: SCCPs (C10-C13) & MCCPs (C14-C17), PFAS, APs, APEOs, other AP derivates, BFRs, Phthalates (esters of phthalic acid (orthophthalic acid / phthalic acid /1,2- benzene dicarboxylic acid), Bisphenol A, Bisphenol S, Bisphenol F, heavy metals: lead, cadmium, arsenic, chromium (VI), mercury and their compounds, Volatile aromatic hydrocarbons (VAH) >1% by weight, organotin compounds with exemptions for certain chemicals (p56).
***Ingoing substances defined as:**
For chemical products: All substances in the chemical product regardless of amount, including additives (e.g., preservatives and stabilizers) in the raw materials. Substances known to be released from ingoing substances (e.g., formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances.
For construction products: All substances in the construction product that are present in concentrations higher than 100 ppm (0.010 w-%, 100 mg/kg).

***Endocrine disruptor lists:
https://edlists.org/the-ed-lists/list-i-substances-identified-as-endocrine-disruptors-by-the-eu
https://edlists.org/the-ed-lists/list-ii-substances-under-eu-investigation-endocrine-disruption
https://edlists.org/the-ed-lists/list-iii-substances-identified-as-endocrine-disruptors-by-participating-national-authorities

Title: “BREEAM International New Construction"
Version 6.0.0 – 01/12/2021

	Phthalates	PFAS	Bisphenols	SCCP & MCCP	Nonyl-/ octyl-phenols	Brominated flame retardants	TCEP	Heavy metals	Organic tin compounds	Isothiozolinones	Total preservatives	Biocides	MCPP (Mecroprop)	PU	Aromatic compounds	Boric Acid (Boron compounds)	Halogenated compounds	SVHCs and other categories	VOC, Formaldehyde	Other hazardous substances
Walls & slabs																		Cat. 1A, 1B cancerogens ≤1 µg/m³	Formaldehyde: ≤60µg/m³ TVOC: ≤1000µg/m³ *Exemplary level: Formaldehyde: ≤10 µg/m³ TVOC: ≤300 µg/m³ TSVOC: ≤100 µg/m³	
Roofs																				
Windows																				
Facades																				
Insulation																		Cat. 1A, 1B cancerogens ≤1 µg/m³	Formaldehyde: ≤60µg/m³ TVOC: ≤1000µg/m³ *Exemplary level: Formaldehyde: ≤10 µg/m³ TVOC: ≤300 µg/m³ TSVOC: ≤100 µg/m³	
Floors																		Cat. 1A, 1B cancerogens ≤1 µg/m³	Formaldehyde: ≤60µg/m³ TVOC: ≤1000µg/m³ *Exemplary level: Formaldehyde: ≤10 µg/m³ TVOC: ≤300 µg/m³ TSVOC: ≤100 µg/m³	
Coatings *																		Cat. 1A, 1B cancerogens ≤1 µg/m³	Formaldehyde: ≤60µg/m³ TVOC: ≤1000µg/m³ *Exemplary level: Formaldehyde: ≤10 µg/m³ TVOC: ≤300 µg/m³ TSVOC: ≤100 µg/m³ VOC in liquid paints: 10-100g/l depending on the category.	
Adhesives																		Cat. 1A, 1B cancerogens ≤1 µg/m³	Formaldehyde: ≤60µg/m³ TVOC: ≤1000µg/m³ *Exemplary level: Formaldehyde: ≤10 µg/m³ TVOC: ≤300 µg/m³ TSVOC: ≤100 µg/m³	
Sealants																		Cat. 1A, 1B cancerogens ≤1 µg/m³	Formaldehyde: ≤60µg/m³ TVOC: ≤1000µg/m³ *Exemplary level: Formaldehyde: ≤10 µg/m³ TVOC: ≤300 µg/m³ TSVOC: ≤100 µg/m³	
Renders, plasters																				
Plates/ boards																				
Materials from PVC																				
Other plastics																				
wood-based material, chipboard, blockboard, veneer panels, fiberboard																		Cat. 1A, 1B cancerogens ≤1 µg/m³	Formaldehyde: ≤60µg/m³ (Non-MDF) ≤80µg/m³ (MDF) TVOC: ≤1000µg/m³ *Exemplary level: Formaldehyde: ≤10 µg/m³ TVOC: ≤300 µg/m³ TSVOC: ≤100 µg/m³	
Cooling systems / technical building equipment / split units																				
Flame-retardant building products																				
Indoor air quality																			Post-construction (but pre-occupancy): Formaldehyde ≤100 µg/m³ TVOC ≤300 µg/m³	

* "exemplary credit" refers to an additional recognition that can be awarded to a project for demonstrating performance that goes beyond the standard requirements of a specific BREEAM issue.

Title: "LEED NEW CONSTRUCTIONCORE AND SHELL final draft"
version: V5, February 2025

	Phthalates	PFAS	Bisphenols	SCCP & MCCP	Nonyl-/ octyl-phenols	Brominated flame retardants	TCEP	Heavy metals	Organic tin compounds	Isothiozolinones	Total preservatives	Biocides	MCPP (Mecroprop)	PU	Aromatic compounds	Boric Acid (Boron compounds)	Halogenated compounds	SVHCs and other categories	VOC, Formaldehyde	Other hazardous substances
Walls & slabs		<100 ppm of PFCs or PFOA Only for healthcare						<100 ppm Hg, Cd, Pb, Sb, Cr(VI) Only for healthcare										*<0.1% SVHC	TVOC ≤ 500 µg/m^3 Individual VOCs: Acetaldehyde: ≤ 70 µg/m^3 Benzene: ≤ 3 µg/m^3 Carbon disulfide: ≤ 400 µg/m^3 Carbon tetrachloride: ≤ 20 µg/m^3 Chlorobenzene: ≤ 500 µg/m^3 Chloroform: ≤ 150 µg/m^3 Dichlorobenzene (1,4-): ≤ 400 µg/m^3 Dichloroethylene (1,1): ≤ 35 µg/m^3 Dimethylformamide: ≤ 40 µg/m^3 Ethylbenzene: ≤ 1000 µg/m^3 Hexane (n-): ≤ 3500 µg/m^3 Methylene chloride: ≤ 200 µg/m^3 Naphthalene: ≤ 4.5 µg/m^3 Phenol: ≤ 100 µg/m^3 Styrene: ≤ 3.5 µg/m^3 Tetrachloroethylene: ≤ 17.5 µg/m^3 Toluene: ≤ 150 µg/m^3 Trichloroethylene: ≤ 300 µg/m^3 Xylenes (total): ≤ 100 µg/m^3	
Ceilings																		*<0.1% SVHC	TVOC ≤ 500 µg/m^3 Individual VOCs: Acetaldehyde: ≤ 70 µg/m^3 Benzene: ≤ 3 µg/m^3 Carbon disulfide: ≤ 400 µg/m^3 Carbon tetrachloride: ≤ 20 µg/m^3 Chlorobenzene: ≤ 500 µg/m^3 Chloroform: ≤ 150 µg/m^3 Dichlorobenzene (1,4-): ≤ 400 µg/m^3 Dichloroethylene (1,1): ≤ 35 µg/m^3 Dimethylformamide: ≤ 40 µg/m^3 Ethylbenzene: ≤ 1000 µg/m^3 Hexane (n-): ≤ 3500 µg/m^3 Methylene chloride: ≤ 200 µg/m^3 Naphthalene: ≤ 4.5 µg/m^3 Phenol: ≤ 100 µg/m^3 Styrene: ≤ 3.5 µg/m^3 Tetrachloroethylene: ≤ 17.5 µg/m^3 Toluene: ≤ 150 µg/m^3 Trichloroethylene: ≤ 300 µg/m^3 Xylenes (total): ≤ 100 µg/m^3	
Roofs																		*<0.1% SVHC		
Windows																		*<0.1% SVHC		
Facades																		*<0.1% SVHC		
Insulation																		*<0.1% SVHC	TVOC ≤ 500 µg/m^3 Individual VOCs: Acetaldehyde: ≤ 70 µg/m^3 Benzene: ≤ 3 µg/m^3 Carbon disulfide: ≤ 400 µg/m^3 Carbon tetrachloride: ≤ 20 µg/m^3 Chlorobenzene: ≤ 500 µg/m^3 Chloroform: ≤ 150 µg/m^3 Dichlorobenzene (1,4-): ≤ 400 µg/m^3 Dichloroethylene (1,1): ≤ 35 µg/m^3 Dimethylformamide: ≤ 40 µg/m^3 Ethylbenzene: ≤ 1000 µg/m^3 Hexane (n-): ≤ 3500 µg/m^3 Methylene chloride: ≤ 200 µg/m^3 Naphthalene: ≤ 4.5 µg/m^3 Phenol: ≤ 100 µg/m^3 Styrene: ≤ 3.5 µg/m^3 Tetrachloroethylene: ≤ 17.5 µg/m^3 Toluene: ≤ 150 µg/m^3 Trichloroethylene: ≤ 300 µg/m^3 Xylenes (total): ≤ 100 µg/m^3	
Floors																		*<0.1% SVHC	TVOC ≤ 500 µg/m^3 Individual VOCs: Acetaldehyde: ≤ 70 µg/m^3 Benzene: ≤ 3 µg/m^3 Carbon disulfide: ≤ 400 µg/m^3 Carbon tetrachloride: ≤ 20 µg/m^3 Chlorobenzene: ≤ 500 µg/m^3 Chloroform: ≤ 150 µg/m^3 Dichlorobenzene (1,4-): ≤ 400 µg/m^3 Dichloroethylene (1,1): ≤ 35 µg/m^3 Dimethylformamide: ≤ 40 µg/m^3 Ethylbenzene: ≤ 1000 µg/m^3 Hexane (n-): ≤ 3500 µg/m^3 Methylene chloride: ≤ 200 µg/m^3 Naphthalene: ≤ 4.5 µg/m^3 Phenol: ≤ 100 µg/m^3 Styrene: ≤ 3.5 µg/m^3 Tetrachloroethylene: ≤ 17.5 µg/m^3 Toluene: ≤ 150 µg/m^3 Trichloroethylene: ≤ 300 µg/m^3 Xylenes (total): ≤ 100 µg/m^3	
Coatings *																		*<0.1% SVHC	TVOC ≤ 500 µg/m^3 Individual VOCs: Acetaldehyde: ≤ 70 µg/m^3 Benzene: ≤ 3 µg/m^3 Carbon disulfide: ≤ 400 µg/m^3 Carbon tetrachloride: ≤ 20 µg/m^3 Chlorobenzene: ≤ 500 µg/m^3 Chloroform: ≤ 150 µg/m^3 Dichlorobenzene (1,4-): ≤ 400 µg/m^3 Dichloroethylene (1,1): ≤ 35 µg/m^3 Dimethylformamide: ≤ 40 µg/m^3 Ethylbenzene: ≤ 1000 µg/m^3 Hexane (n-): ≤ 3500 µg/m^3 Methylene chloride: ≤ 200 µg/m^3 Naphthalene: ≤ 4.5 µg/m^3 Phenol: ≤ 100 µg/m^3 Styrene: ≤ 3.5 µg/m^3 Tetrachloroethylene: ≤ 17.5 µg/m^3 Toluene: ≤ 150 µg/m^3 Trichloroethylene: ≤ 300 µg/m^3 Xylenes (total): ≤ 100 µg/m^3	
Adhesives																		*<0.1% SVHC	TVOC ≤ 500 µg/m^3 Individual VOCs: Acetaldehyde: ≤ 70 µg/m^3 Benzene: ≤ 3 µg/m^3 Carbon disulfide: ≤ 400 µg/m^3 Carbon tetrachloride: ≤ 20 µg/m^3 Chlorobenzene: ≤ 500 µg/m^3 Chloroform: ≤ 150 µg/m^3 Dichlorobenzene (1,4-): ≤ 400 µg/m^3 Dichloroethylene (1,1): ≤ 35 µg/m^3 Dimethylformamide: ≤ 40 µg/m^3 Ethylbenzene: ≤ 1000 µg/m^3 Hexane (n-): ≤ 3500 µg/m^3 Methylene chloride: ≤ 200 µg/m^3 Naphthalene: ≤ 4.5 µg/m^3 Phenol: ≤ 100 µg/m^3 Styrene: ≤ 3.5 µg/m^3 Tetrachloroethylene: ≤ 17.5 µg/m^3 Toluene: ≤ 150 µg/m^3 Trichloroethylene: ≤ 300 µg/m^3 Xylenes (total): ≤ 100 µg/m^3	
Sealants																		*<0.1% SVHC	TVOC ≤ 500 µg/m^3 Individual VOCs: Acetaldehyde: ≤ 70 µg/m^3 Benzene: ≤ 3 µg/m^3 Carbon disulfide: ≤ 400 µg/m^3 Carbon tetrachloride: ≤ 20 µg/m^3 Chlorobenzene: ≤ 500 µg/m^3 Chloroform: ≤ 150 µg/m^3 Dichlorobenzene (1,4-): ≤ 400 µg/m^3 Dichloroethylene (1,1): ≤ 35 µg/m^3 Dimethylformamide: ≤ 40 µg/m^3 Ethylbenzene: ≤ 1000 µg/m^3 Hexane (n-): ≤ 3500 µg/m^3 Methylene chloride: ≤ 200 µg/m^3 Naphthalene: ≤ 4.5 µg/m^3 Phenol: ≤ 100 µg/m^3 Styrene: ≤ 3.5 µg/m^3 Tetrachloroethylene: ≤ 17.5 µg/m^3 Toluene: ≤ 150 µg/m^3 Trichloroethylene: ≤ 300 µg/m^3 Xylenes (total): ≤ 100 µg/m^3	
Renders, plasters																		*<0.1% SVHC	TVOC ≤ 500 µg/m^3 Individual VOCs: Acetaldehyde: ≤ 70 µg/m^3 Benzene: ≤ 3 µg/m^3 Carbon disulfide: ≤ 400 µg/m^3 Carbon tetrachloride: ≤ 20 µg/m^3 Chlorobenzene: ≤ 500 µg/m^3 Chloroform: ≤ 150 µg/m^3 Dichlorobenzene (1,4-): ≤ 400 µg/m^3 Dichloroethylene (1,1): ≤ 35 µg/m^3 Dimethylformamide: ≤ 40 µg/m^3 Ethylbenzene: ≤ 1000 µg/m^3 Hexane (n-): ≤ 3500 µg/m^3 Methylene chloride: ≤ 200 µg/m^3 Naphthalene: ≤ 4.5 µg/m^3 Phenol: ≤ 100 µg/m^3 Styrene: ≤ 3.5 µg/m^3 Tetrachloroethylene: ≤ 17.5 µg/m^3 Toluene: ≤ 150 µg/m^3 Trichloroethylene: ≤ 300 µg/m^3 Xylenes (total): ≤ 100 µg/m^3	
Plates/ boards																		*<0.1% SVHC	TVOC ≤ 500 µg/m^3 Individual VOCs: Acetaldehyde: ≤ 70 µg/m^3 Benzene: ≤ 3 µg/m^3 Carbon disulfide: ≤ 400 µg/m^3 Carbon tetrachloride: ≤ 20 µg/m^3 Chlorobenzene: ≤ 500 µg/m^3 Chloroform: ≤ 150 µg/m^3 Dichlorobenzene (1,4-): ≤ 400 µg/m^3 Dichloroethylene (1,1): ≤ 35 µg/m^3 Dimethylformamide: ≤ 40 µg/m^3 Ethylbenzene: ≤ 1000 µg/m^3 Hexane (n-): ≤ 3500 µg/m^3 Methylene chloride: ≤ 200 µg/m^3 Naphthalene: ≤ 4.5 µg/m^3 Phenol: ≤ 100 µg/m^3 Styrene: ≤ 3.5 µg/m^3 Tetrachloroethylene: ≤ 17.5 µg/m^3 Toluene: ≤ 150 µg/m^3 Trichloroethylene: ≤ 300 µg/m^3 Xylenes (total): ≤ 100 µg/m^3	
PVC																		*<0.1% SVHC		
Other plastics																		*<0.1% SVHC		
wood-based material, chipboard, blockboard, veneer panels, fiberboard																		*<0.1% SVHC	Formaldehyde <9µg/m3 . Applies to composite wood: all particleboard, medium-density fiberboard, hardwood plywood with veneer, composite or combination core, and wood structural panels or structural wood products.	
Cooling systems / technical building equipment / split units																	Refrigerants: Chlorofluorocarbon (CFCs) 0% Hydrochlorofluorocarbon (HCFCs) 0%	*<0.1% SVHC		
building																		*<0.1% SVHC		
Indoor air quality																			TVOC: ≤ 500 µg/m^3 Formaldehyde: ≤ 20 µg/m^3 Individual VOCs: Acetaldehyde: ≤ 70 µg/m^3 Benzene: ≤ 3 µg/m^3 Carbon disulfide: ≤ 400 µg/m^3 Carbon tetrachloride: ≤ 20 µg/m^3 Chlorobenzene: ≤ 500 µg/m^3 Chloroform: ≤ 150 µg/m^3 Dichlorobenzene (1,4-): ≤ 400 µg/m^3 Dichloroethylene (1,1): ≤ 35 µg/m^3 Dimethylformamide: ≤ 40 µg/m^3 Ethylbenzene: ≤ 1000 µg/m^3 Hexane (n-): ≤ 3500 µg/m^3 Methylene chloride: ≤ 200 µg/m^3 Naphthalene: ≤ 4.5 µg/m^3 Phenol: ≤ 100 µg/m^3 Styrene: ≤ 3.5 µg/m^3 Tetrachloroethylene: ≤ 17.5 µg/m^3 Toluene: ≤ 150 µg/m^3 Trichloroethylene: ≤ 300 µg/m^3 Xylenes (total): ≤ 100 µg/m^3	

* this provision is found in LEED version 4.1, but is no longer evident in LEED v5.
Information on the SVHC 0,1% limit can be found in this link: https://www.usgbc.org/credits/new-construction-core-and-shell-schools-new-construction-retail-new-construction-healthca-24

Title: “DGNB System New Construction Buildings Criteria Set"
Version 2020 International

	Phthalates (and other plasticisers)	PFAS	Bisphenols	SCCP & MCCP	Nonyl-/ octyl-phenols	Brominated flame retardants	TCEP	Heavy metals	Organic tin compounds	Isothiozolinones	Total preservatives	Biocides	MCPP (Mecoprop)	PU	Aromatic compounds	Boric Acid (Boron compounds)	Halogenated compounds	SVHCs and other categories	VOC, Formaldehyde	Other hazardous substances	Other requirements
Walls & slabs								Pb <0,1% and Sn <0,1% in Resilient plastic wall coverings, skylights			**Preservative-free.** Applicable for interior coatings on mineral substrates, wallpaper, fleece, plasterboard, etc.	<40g/l of total hazardous substances applicable for exterior mineral surfaces				≤ 0.1% Boron compounds in load bearing wooden structures		≤ 0.1% SVHC in Plastic wall sealing films, plastic wall coverings, plastic wallpapers,	≤ 0.5% VOC content in primers, precoats, joint mortars, fillers and adhesives under wall and floor coverings. (Exception: Epoxy resin products solvent content ≤ 10%) ≤ 1000 µg/m³ after 3 days or ≤ 100 µg/m³ after 28 days from primers, precoats, joint mortars, fillers and adhesives under wall and floor coverings. Mould oils and release agents for concrete: solvent content ≤ 0.5%	No PCBs in primers, precoats, joint mortars, fillers and adhesives under wall and floor coverings. Asbestos free - exterior and interior walls, wall cladding, ceiling cover	
Roofs								Pb <0,1% and Sn <0,1% in plastic film for roof										≤ 0.1% SVHC in plastic roof sealing			
Windows								Pb <0,1% and Sn <0,1% in plastic windows			No chemical wood preservative in the interior and exterior Exception: Windows only with marketable biocidal products in accordance with 528/2012/EC							≤ 0.1% SVHC in plastic windows			
Facades											No chemical wood preservative in the interior and exterior Exception: Windows only with marketable biocidal products in accordance with 528/2012/EC									Asbestos free Facade cladding,	
Insulation						No HBCD in Synthetic insulation materials such as PS/XPS, PUR/PIR, Resol panels.										≤ 0.1% Boron compounds in insulation incl. blown-in products and fills, organic insulating materials (cellulose, fibreboard, wood shavings, sheep's wool, etc.)	No use of halogenated propelants in PS/XPS/PUR insulating products, flexible building technology insulation (rubber and PE)			Asbestos free No use of Artificial mineral fibers ≤ 3 µm in Heat and sound insulation of buildings Insulations of pipelines	
Floors	≤ 0.1% phthalates that are toxic to reproduction (= SVHC)			< 0.1% chlorinated paraffins				Resilient floor coverings: no use Pb, Cd compounds Pb <0,1% and Sn <0,1% in Resilient plastic floor coverings (e.g. PVC, rubber)				in accordance with 528/2012/EC						≤0.1% SVHC	< 250 µg/m³ after 3 days or <100 µg/m³ after 28 days from Textile floor coverings For resilient floorings: < 1000 µg/m³ after 3 days or < 300 µg/m³ after 28 days ≤ 0.5% VOC content in primers, precoats, joint mortars, fillers and adhesives under wall and floor coverings. (Exception: Epoxy resin products solvent content ≤ 10%) ≤ 1000 µg/m³ after 3 days or ≤ 100 µg/m³ after 28 days from primers, precoats, joint mortars, fillers and adhesives under wall and floor coverings.	No PCBs in primers, precoats, joint mortars, fillers and adhesives under wall and floor coverings. Asbestos free	
Coatings *	≤ 0.7 g/l plasticisers in coatings for mineral interior subsurfaces as well as wallpaper, non-woven materials, plasterboard, etc.							No use Pb, Cd compounds no Cd, Pb, Cr (IV) compounds in fire safety coating for load bearing metal components. no Cd, Pb, Cr (IV) compounds in corrosion protection coatings for load bearing metal components Chromium (VI)-free products for passivation of aluminium and stainless steel building components No Cd, Pb, Cr(IV) compounds in primers and coatings (e.g. paints, lacquers, powder coatings)			In wood coating products for internal and external load bearing wood components:: wood preservative for construction purposes only in accordance with national "Building inspection approval"				< 1% of aromatic substances for coatings used for stone impregnations in the interior that do not form films <25 % aromatic substances content in bitumen primers for roof sealing Zero aromatic compounds in wood coating products	≤ 0,1% Boron compounds in wood preservative preparations	fire safety coating for load bearing metal components: Free of halogenated compounds;		<100g/l for Coatings on non-mineral sub-surfaces: Metals, wood, plastics, i.e. decorative liquid coatings: Paints/varnishes with primer coats ≤0.7 g/l VOC in coatings on predominantly mineral interior subsurfaces, wallpaper, non-woven materials, plasterboard, etc. I.e. decorative paints, primers, decorative fillers (incl. Q-filler) and deep primer. <5g/l in dustbinding coatings and primer coats on predominantly mineral interior subsurfaces such as concrete, masonry, mortar and filler. <40 g/l for decorative coating materials for exterior mineral surfaces such as concrete, masonry, mineral mortar and filler, plaster, ETICS, wallpaper (facade wallpaper), plasterboard, etc. < 5% VOC in coatings used for stone impregnations in the interior that do not form films < 1g/l VOC in fire safety coating for metal components. < 100 g/l in waterborne corrosion protection coatings for load bearing internal components. < 30 g/m² VOC in corrosion protection coatings coating system for load bearing metal components <140 g/l VOC in corrosion protection coatings and effect coatings for non-load-bearing metal component. Exception: For metallic effect paints < 300 g/l VOC. ≤0.5 % solvent content in PU paints (2 component), PU floor coatings ≤10 % solvent content in PU primers ≤ 5% solvent content in water-borne wood floor finish with or without isocyanatecontaining hardener ≤ 0.5% solvent content in PMMA and PMMA/epoxy coatings for floor and wall surfaces ≤10 % solvent content in Epoxy paints (2 component), Epoxy floor coatings, epoxy primers <3% solvent content in bitumen emulsion roof and building sealing coating products Zero solvent content in wood coating products.	no PCBs (polychlorinated biphenyls) no PCBs in fire safety coating for load bearing metal components no PCBs in corrosion protection coatings for load bearing components No PCBs in corrosion protection coatings and effect coatings for non load-bearing metal component. No PCBs in PU paints (2 component), PU floor coatings, PU primers No PCBs in Epoxy paints (2 component), Epoxy floor coatings, epoxy primers Roof sealing coating products and bitumen primer free of tar and tar products. No DDT, PCP, Lindane in chemical wood protection internal and external loadbearing components. Asbestos free	No hazard statements according to CLP Regulation (1272/2008/EC) in roof sealing coating products No hazard statements according to CLP Regulation (1272/2008/EC) in roof sealing primers, with exception to H315, H319, H336, H411, H412.
Adhesives	≤ 0.7 g/l plasticisers in wall and ceiling lining adhesive Sealants and adhesives for attaching components in interior and ventilation ducts: Acrylic sealants/adhesives, silicone sealants and SMP (hybrid sealants) < 0.1% HC plasticers			Sealants and adhesives for attaching components in interior and ventilation ducts: Acrylic sealants/adhesives, silicone sealants and SMP (hybrid sealants) <0.1% chlorinated paraffins				No use Pb, Cd compounds						Solvent content ≤10%			Installation adhesives and sealants on the facade, windows and external doors: e.g. PU, PU hybrid, MS polymer, SMP, etc. < 0.1% halogenated propellants		For PU and silane modified polymer based products for attaching components in interior : ≤ 1000 µg/m³ after 3 days or ≤ 100 µg/m³ after 28 days Installation adhesives and sealants on the facade, windows and external doors: e.g. PU, PU hybrid, MS polymer, SMP, etc. : VOC <1%; ≤ 1000 µg/m³ after 3 days or ≤ 100 µg/m³ after 28 days ≤ 0.5% solvent content in PU adhesives	no PCBs (polychlorinated biphenyls) Asbestos free tile adhesives	
Sealants	Sealants and adhesives for attaching components in interior and ventilation ducts: Acrylic sealants/adhesives, silicone sealants and SMP (hybrid sealants) < 0.1% HC plasticers No use of plasticisers in assembly foams for installing external doors and windows and for fittings, e.g. door frames			Sealants and adhesives for attaching components in interior and ventilation ducts: Acrylic sealants/adhesives, silicone sealants and SMP (hybrid sealants) <0.1% chlorinated paraffins No use of CPs in assembly foams for installing external doors and windows and for fittings, e.g. door frames		No use of halogenated flame retardants in assembly foams for installing external doors and windows and for fittings, e.g. door frames	No use of TCEP in assembly foams for installing external doors and windows and for fittings, e.g. door frames							Solvent content ≤10%			Installation adhesives and sealants on the facade, windows and external doors: e.g. PU, PU hybrid, MS polymer, SMP, etc. < 0.1% halogenated propellants No use of halogenated propellants in assembly foams for installing external doors and windows and for fittings, e.g. door frames		For PU and silane modified polymer based products for attaching components in interior : ≤ 1000 µg/m³ after 3 days or ≤ 100 µg/m³ after 28 days Installation adhesives and sealants on the facade, windows and external doors: e.g. PU, PU hybrid, MS polymer, SMP, etc. : VOC <1%; ≤ 1000 µg/m³ after 3 days or ≤ 100 µg/m³ after 28 days ≤0.5 solvent content in PU sealants ≤10 % solvent content in Epoxy sealants ≤ 750 µg/m³ VOC after 3 days or ≤ 60 µg/m³ after 28 days in assembly foams for installing external doors and windows and for fittings, e.g. door frames	no PCBs (polychlorinated biphenyls) No PCBs in PU sealants No PCBs in Epoxy sealants Asbestos free	
Renders, plasters																					
Plates/ boards																					
Materials from PVC																					
Other plastics																				Asbestos free plastic coverings	
wood-based material, chipboard, blockboard, veneer panels, fiberboard																≤ 0.1% Boron compounds in wood materials			≤ 0.08 ppm Formaldehyde (corresponds to 0.096 mg / m³) emission from interior materials: wood-based interior doors, room acoustic elements, room-inroom systems, Panel cladding on the wall and ceiling ≤ 0.08 ppm (corresponds to 0.096 mg / m³) formaldehyde in: bracing wooden panels on walls, floors and ceilings in wooden houses / wooden structures		
Cooling systems / technical building equipment / split units																	Does not contain halogenated/ partially halogenated refrigerants			Asbestos free industrial screeds piping and insulation (heating and ventilation systems)	
Flame-retardant building products				< 0.1% CPs in Firewall filler, fire protection coatings for cables, fire protection silicones, PU installation adhesives for insulating materials (EPS, XPS, PUR) < 0.1% CPs in construction products equipped with flame retardant (products): Insulating materials for building services and wall coverings (fibreglass wallpapers, non-woven paint substrates, non-woven decorative fabrics, etc.). Exemption: For construction material class B1, insulating materials with longchain CP (LCCP) are tolerated		< 0.1% PBDEs and < 0.1% PBBs in construction products equipped with flame retardant (products): Insulating materials for building services and wall coverings (fibreglass wallpapers, non-woven paint substrates, non-woven decorative fabrics, etc.)												≤ 0.1% SVHC Firewall filler, fire protection coatings for cables, fire protection silicones, PU installation adhesives for insulating materials (EPS, XPS, PUR) < 0.1% SVHC in construction products equipped with flame retardant (products): Insulating materials for building services and wall coverings (fibreglass wallpapers, non-woven paint substrates, non-woven		No PCBs (polychlorinated biphenyls)	
Other materials																		≤ 0.1% SVHC in plastic cable sheathing	≤ 0.5% VOC content in auxilary materials (Barrier coatings, resin screeds, seals under tiles) ... (Exception: Epoxy resin products solvent content ≤ 10%) ≤ 1000 µg/m³ after 3 days or ≤ 100 µg/m³ after 28 days from auxilary materials (Barrier coatings, resin screeds, seals under tiles)	no PCBs (polychlorinated biphenyls) in auxilary materials: barrier coatings, resin screeds, seals under tiles.	