“ÖkoKauf Wien” — green public procurement in Vienna

The way in which we run our economies often impinges negatively on the natural environment and human health: climate change, growing mountains of waste and diseases caused by pollutants are just some of the consequences of un-ecological practices.

Everyone’s actions count, and everyone can contribute to improvements by opting for eco-friendly products. Major buyers can additionally promote the introduction of environmentally sound products in their markets.

The City of Vienna has recognised its responsibility and launched the “ÖkoKauf Wien” programme as a way towards “greening” its procurement processes.

Procurement in Vienna

Every year, the City of Vienna buys about five billion euros worth of products and services. Given this large volume of purchases, it can more easily influence the quality of products than individual consumers — and increasing demand for ecologically sound products also has a positive long-term effect on the prices of these products.

Development and implementation of “ÖkoKauf Wien”

The “ÖkoKauf Wien” programme was introduced in October 1998 as part of Vienna’s Climate Protection Programme (“KliP”). “ÖkoKauf Wien” was designed as an implementation programme to ensure that the City administration would take into account ecological aspects when purchasing goods and services. Criteria developed under “ÖkoKauf Wien” are an integral and binding part of public procurement regulations.

Organisation of “ÖkoKauf Wien”

“ÖkoKauf Wien” is a cross-departmental programme led by the Municipal Department 22 (Environmental Protection).

Under the programme, ecological criteria for products and services are developed in working groups, taking into account practicality and serviceability too. These criteria are applied in procurement processes in combination with economic considerations.

There are 25 working groups, of which the following are relevant for construction and engineering: building construction, civil engineering, interior construction, domestic engineering, green and open space planning and environmentally sound construction site logistics. Criteria that play an important role in ecological procurement for construction projects of the City of Vienna include: PVC-free products, avoidance of climate-damaging halogenated hydrofluorocarbons and tropical timber, and minimal use of solvents and biocides. Sets of criteria, text modules for tender documents and other relevant documents are prepared by the competent “ÖkoKauf Wien” working groups.

Criteria lists, guidelines, position papers and other information materials are available at www.oekokauf.wien.at.

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New labelling for chemicals

New rules for the labelling of substances (including hazardous substances listed on the Safety Data Sheets of products) came into force on 1 December 2010. Under the CLP Regulation, the GHS system has to be applied in the classification and labelling of substances. The same system will become mandatory for mixtures (products) in 2015; until then, mixtures may still be labelled in accordance with the old rules.

New European legislation on the classification and labelling of chemical substances

The European Union has adopted the CLP Regulation\(^1\) (Classification, Labelling and Packaging Regulation) to implement the GHS, the Globally Harmonised System of Classification and Labelling of Chemicals, which was prepared by a UN working group. Contrary to its predecessor directives on the classification of substances\(^2\) and mixtures\(^3\) and on Safety Data Sheets\(^4\), which were transposed into national legislation in Austria by the Chemikaliengesetz\(^5\) and Chemikalienverordnung\(^6\) (Chemicals Act and Chemicals Regulation), the new CLP Regulation does not require transposition into national law, but takes direct effect in the EU member states.

Elements of the GHS system

The elements of the new system are:

- **Hazard classes** (new) and **hazard categories** (defined by level of hazard, new)
- **Hazard statements** (\(H\) statements; they replace the previous \(R\) phrases)
- **Precautionary statements** (\(P\) statements; they replace the previous \(S\) phrases) on prevention, reaction, storage and disposal
- **GHS pictograms** (partly new) and
- **Signal words** (new, “Danger” or “Warning”)

GHS pictograms

The most obvious change compared to the “old” hazard symbols is that the signal colour orange has been replaced by inconspicuous white. The graphic design has been retained in some of the new symbols, but there are also new ones. A very important one is the new symbol for health hazards (substances with chronic and specific target organ toxicity), which replaces the skull and crossbones (only used for acute toxicity in the new system).

Signal word

For high hazard levels, the signal word “Danger” or, for a lesser degree of hazard, “Warning” has to be added to the pictogram. No signal word is required for lower hazard categories.

The elements all hang together: the hazard category of a hazard class determines the signal word and the \(H\) and \(P\) statements. Here is an example for the hazard class “Hazardous to the aquatic environment”, category 1 (acute hazard):

<table>
<thead>
<tr>
<th>Piktogramm</th>
<th>Signal word</th>
<th>Hazard statement</th>
<th>Precautionary statements</th>
</tr>
</thead>
</table>

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2) Directive 67/548
3) Directive 1999/45
4) Directive 2001/58
6) Austrian Federal Law Gazette (BGBl.) II No. 81/2000

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## Environmental quality marks

Environmental quality marks can help in the selection of green products. “ÖkoKauf Wien” does not require certification as a mandatory condition, though it does accept a number of quality marks as proof of compliance with specific criteria. However, a quality mark does not automatically imply compliance with all “ÖkoKauf Wien” criteria for the respective product category!

<table>
<thead>
<tr>
<th>Name</th>
<th>Area covered</th>
<th>Logo</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Umweltzeichen      | Austria      | ![Logo](image) | The official Austrian environmental quality mark.  
• Stringent, long list of criteria  
• Hardly any products in many of the product categories |
| Blauer Engel       | Germany      | ![Logo](image) | The official German environmental quality mark.  
• The most successful national environmental label, large number of products; newer guidelines are exacting  
• Many older guidelines only specify a single criterion |
| Ecolabel           | EU           | ![Logo](image) | The official EU environmental quality mark.  
• Sometimes undemanding criteria that can easily be met by Central European products of average quality |
| TÜV Süd-Mark       | Interior wall paints, primers | ![Logo](image) | Criteria for emissions (test chamber measurement) and ingredients (partly manufacturer’s declaration, partly analysis).  
• Stringent, monitoring of production |
| TÜV Nord/CERT certificate | Wall paints | ![Logo](image) | Criteria for emissions (test chamber measurement) and ingredients (partly manufacturer’s declaration, partly analysis).  
• Stringent, monitoring of production |
| TÜV Nord/CERT certificate | Wall paints | ![Logo](image) | TÜV Nord/Süd criteria must be complied with, plus the allergenic potential of the product is also tested.  
• The most stringent allergy certification scheme in the construction sector |
| EMICODE            | Flooring installation products, parquet coatings, flexible sealants | ![Logo](image) | Criteria for emissions and ingredients; several categories, the relevant ones being EC-1 (“very low emission”) and EC-1 PLUS. Products with R phrases and substances that give off volatile fumes during curing are labelled with an “/R” suffix (e.g. EC-1/R).  
• To date the only quality mark in most of the product categories covered, particularly well established for flooring installation products  
• Criteria are often not very stringent, notably for ingredients |
| GUT                | Carpets      | ![Logo](image) | Bans on use and emissions limits for specific harmful substances, eco-friendly production standards, odour test.  
• A “good” quality label  
• PVC and PVC-related criteria (e.g. phthalates) are less strict |
| FSC                | Products made from wood and wood-based materials | ![Logo](image) | Chain-of-custody certification system for products made from wood and wood-based materials; tracking of timber from forest to final user with the aim of avoiding tropical and rainforest timbers from non-eco-friendly sources.  
• Highly recommended |
| natureplus         | Various building materials | ![Logo](image) | Quality mark for building materials with a focus on sustain-ability; combination of life-cycle assessment, ingredients and emissions criteria for specified product categories.  
• The most comprehensive sustainability certification scheme in the construction sector |
Indoor air quality

Guidelines for indoor air quality analysis have been developed by a working group led by experts from the Ministry of the Environment to provide a nationwide standard for the assessment of indoor air pollutant levels.

Indoor air quality and health

Europeans spend an average 90% of their lifetime indoors. Indoor air quality is thus crucial for human health and well-being. Exposure to airborne indoor pollutants does not usually result in specific diseases, but in one or more complaints and conditions (lack of concentration, irritation of mucous membranes, headaches, reduced stamina, etc.). The combination of these ailments has been described as "sick building syndrome" (SBS). It is difficult to attribute concrete consequences to low indoor air quality because of the overlap with other factors, such as nutrition, smoking or stress. Austrian health statistics for the last few years show rising rates of allergic diseases (asthma, atopic dermatitis, etc.) in which inhalation of pollutants is presumably at least a contributory factor.

Pollutants and their sources

As most airborne pollutants are absorbed by the human body through the lungs, volatile organic compounds (VOCs) are the most important substances in indoor air quality assessments. Solvent-containing paints and adhesives are some of the sources that cause indoor VOC emissions.

However, volatile substances may also be released indoors over an extended time period by outgassing from household, DIY and hobby products. In addition, formaldehyde may be released by furniture made from chipboard. Formaldehyde has been classified as a carcinogenic substance by the World Health Organization. Other potential indoor air pollutants are: asbestos (used in panelling and insulation material from the 1950s to the 1980s), fungi (mould) and bacteria (from humidifiers, air conditioning equipment and damp walls), biocides (e.g. from wood preservatives) and ozone (from office equipment).

Indoor air assessment guidelines

A working group on indoor air quality was set up by the Ministry of the Environment in 1999. This group of experts developed a guideline with recommended limits for individual substances (e.g. formaldehyde), the so-called Wirkungsbezogene Innenraumrichtwerte, or IWR ("effect-based recommended indoor limits"). These limits are used by experts to assess pollution loads in legal disputes. This creates legal certainty as it makes the outcome of litigation more predictable. The recommended limit for carbon dioxide is particularly important in practice as a measure of sufficient ventilation.

There are no recommended limits with respect to the sum of all organic compounds measured in the air (TVOC, total volatile organic compounds); instead, assessment limits are defined (see table on the right).

Pollutant loads can be kept at "low" to "average" levels with the help of building biology experts (chemicals management). Without such measures, "clearly" or even "strongly elevated" levels are found in most construction projects.

<table>
<thead>
<tr>
<th>TVOC assessment values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Concentration</strong></td>
</tr>
<tr>
<td>&lt; 250 µg/m³</td>
</tr>
<tr>
<td>250–500 µg/m³</td>
</tr>
<tr>
<td>500–1000 µg/m³</td>
</tr>
<tr>
<td>1000–3000 µg/m³</td>
</tr>
<tr>
<td>&gt; 3000 µg/m³</td>
</tr>
</tbody>
</table>

→ For further information, see “ÖkoKauf Wien” information sheets “Indoor air quality assessment”, “VOCs” and “Biocides”
Indoor air quality measurement

Indoor air quality is very important for human health. Airborne pollutants can be measured in standardised processes and assessed on the basis of recommended limits. Measurement and assessment procedures have to comply with the rules laid down in the Richtlinie zur Bewertung der Innenraumluft ("Indoor Air Quality Assessment Guideline") which has been issued by the Ministry of the Environment.

Selection of rooms
Rooms selected for measurements must be capable of being closed in such a way as to prevent any significant air exchange.
This means that
• all doors and windows must be in place and capable of being closed;
• there must be no openings that cannot be closed (neither towards the outside nor towards the interior of the building);
• building materials and interior decoration must be standard (e.g. chemicals used in construction, fixtures and furnishings);
• the rooms must be lockable;
• if there is ventilation equipment, it must be capable of being deactivated for measurements.

The measurement rooms have to be selected so as to rule out any interference from outside sources (e.g. asphalt ing works in front of the window; solvent fumes rising from the basement through shafts to upper levels; cleaning work in the corridors, or similar extraneous sources).
The interior finishing of measurement rooms (particularly panelling and coatings) should be typical for the building in question. Unless otherwise agreed for a specific project, measurements shall always be taken before furniture is placed in the room.
Any deviation from these guidelines will affect the measurement results, potentially up to the point of making them useless.

Preparation of the selected (and adjacent) rooms
All works in the selected rooms have to be completed 28 days before the measurement. After completion of the works, windows, doors and other openings must remain closed throughout; under no circumstances should any follow-up work (such as repairs or cleaning work) be carried out. Before the measurement is taken, the room shall be thoroughly aired and subsequently kept closed for at least five hours (entry prohibited!), any ventilation equipment (air conditioning, etc.) must be switched off. These preparations ensure that the measured substances are spread evenly and reproducibly in the air that is to be analysed.

Measurement
The testing institute takes samples from the air in the room over a defined period of time (usually one hour) by suctioning air at constant volumes through tubes filled with a certain substrate material.
In the laboratory, substances that have collected in the tube are expelled from it by means of a suitable gas, and are then subjected to qualitative (which substances?) and quantitative (how much?) analyses.
Pollutant concentrations in the air in the measurement room are then calculated by putting the measurement results in relation to the total volume of air that was suctioned through the test tube during the sampling.

For further information, see “ÖkoKauf Wien” information sheet “Indoor air quality”
Safety Data Sheets are documents that have to be prepared by law for all chemicals (substances and mixtures) with hazardous properties. Whoever has manufactured the product or imported it into the EU has to supply the recipient with the relevant Safety Data Sheet for the product. This legal requirement is based on article 31 of the REACH Regulation (EC Regulation No. 1907/2006); the details are laid down in Annex II of this Regulation. Although not required by law to do so, practically all manufacturers and suppliers of chemicals used in construction also provide Safety Data Sheets for products that have no hazardous properties.

Content

Safety Data Sheets contain the following information, organised in chapters:

1. Identification of product and company, use of the product, emergency telephone number
2. Identification of hazards:
   Dangerous properties of the product (labelling, R phrases)
   Product classification according to the “old” rules (orange hazard symbols, R phrases) is mandatory, inclusion of information according to the “new” GHS system (white hazard symbols, hazard categories, H statements, signal word) is optional.
3. Composition, information on ingredients
   Dangerous substances which are responsible for the hazardous properties of the product, hazard classification of these substances
   Substance classification according to the new GHS system is mandatory (as of 1 Dec. 2010), additional information according to the “old” classification is optional.
4. First Aid measures
5. Fire-fighting measures
6. Measures in case of accidental release
7. Handling and storage
8. Exposure control and personal protection
9. Physical and chemical properties
   In some cases, this may include information on volatile organic compounds (VOCs).
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information, such as R and S phrases
   In addition to the hazard classifications, which are repeated here (labelling and R phrases as in chapter 2), the safety phrases (S phrases) and all other legally required information on dangerous properties is listed here.
16. Other information

Among other things, this section includes P statements for substances that are not included in section 3. However, please note that this is not the hazard classification of the product!

→ For further information, see “ÖkoKauf Wien” information sheet “New labelling for chemicals”
**Biocides**

The term “bio-cide” means “killer of life”. Because biocides kill living organisms, they are a potential danger for human health as well. Their use should therefore be restricted to what is technically absolutely necessary. The most important biocides in construction industry products are fungicides (against fungi), algicides (against algae), herbicides (against plants) and preservatives.

Biocides may be contained in wall and wood paint, wood-based materials, sealants, disinfectants, carpets and insulating materials. The use of biocides can often be avoided, however, or the risk reduced by opting for less harmful substances.

**Definition**

“Biocides” is a blanket term that covers many different substances and applications, similar to “pesticides” in agriculture and forestry. In chemicals and products used in construction, the purpose of biocides is to destroy, control or repel harmful organisms, such as insects, fungi, algae and bacteria in order to prevent damage to the construction.

**Biocides and human health**

Apart from their intended effects on harmful organisms, biocides may also pose a threat to human health and the environment, especially if instructions for proper use are not closely observed. Potential adverse effects may range from headaches to nausea, allergic reactions or damage to the nervous system.

**Alternatives**

Before using a biocide-containing product, one should always consider whether its use is really necessary, and if yes, whether the hazards inherent in the selected product can be properly assessed. As a rule, solutions have to be worked out on a case-by-case basis.

Here are some examples:

- Painting interior walls with biocide-containing paint “to be on the safe side” is not necessary: mould will not grow in rooms that are sufficiently ventilated. In places where there is a strong risk that mould may develop, lime or silicate mineral paints may be used. These are alkaline materials that prevent fungus growth, but are less harmful for human health.
- Roofing sheets with integrated copper mesh can prevent plants from penetrating the roof just as well as herbicide-containing membranes. The substances contained in the latter, though largely insoluble in water, may over time “hydrolyse”, i.e. convert into water-soluble acids, which are then carried away by rainwater and released into the environment.

With respect to the group of preservative products, a highly critically view must be taken of formaldehyde – classified as a carcinogen by the WHO – and isothiazolinones, which are powerful allergens. Both substances should be avoided wherever possible, or their use minimised.

→ For further information, see “ÖkoKauf Wien” information sheet “VOCs”
HFCs

HFCs are used as blowing agents in XPS insulation boards, PU foams and PUR insulation elements. HFCs are greenhouse gases that are very harmful to the earth’s climate. A wide range of climate-friendly substitute products is available. The City of Vienna’s general policy is to avoid the use of products that contain HFCs.

CFCs, HCFCs or HFCs?

These abbreviations not only closely resemble each other; they are also difficult to remember and easily confused. CFCs are ChloroFluorocarbons, compounds made up of the elements chlorine, fluorine and carbon; HCFCs — HydroChloroFluoroCarbons — additionally contain hydrogen. In HFCs, or HydroFluoroCarbons, some of the hydrogen atoms are replaced by fluorine, but they contain no chlorine.

CFCs and HCFCs were formerly used as propellants in aerosol cans, as foaming agents, and as refrigerants in air-conditioning systems and refrigerators. They have long been banned because of their severely harmful effects on the earth’s ozone layer and the global climate. However, products are still advertised as “CFC-free” or “HCFC-free”, which is misleading. HFCs are now used as a substitute for the ozone killers. Because they are chlorine-free, they do not harm the ozone layer, but they still contribute significantly to global warming.

HFC avoidance and climate protection

As a consequence of human activities, the concentration of greenhouse gases (substances which convert solar light to heat which is not reflected back into space) in the earth’s atmosphere is continuously on the rise, resulting in an ongoing global warming process. The climate toxicity of HFCs exceeds that of the most important greenhouse gas, carbon dioxide, by up to three orders of magnitude.

The consequences of man-made climate change are: increasing incidence of extreme weather episodes, such as droughts, rain- and hailstorms; forest fires, floods, the continuous melting of the polar ice caps and rising sea levels resulting in loss of biodiversity, crop failures, loss of habitable land, etc.

Alternatives

All manufacturers of PU foams supply products with low-boiling hydrocarbons (without fluorine or chlorine) as foaming agents. Both XPS and PUR insulation boards can be produced using gases that are less harmful to the climate (carbon dioxide or hydrocarbons). For some XPS applications, suitable EPS substitute products are available (EPS, or expanded polystyrene, has bigger pores than extruded polystyrene; some EPS boards are manufactured in special processes to give them the properties of XPS boards. EPS is always HFC-free.).

“ÖkoKauf Wien” bans HFCs as a matter of principle. Note that products must be shown to be HFC-free (not CFC- or HCFC-free)!

For further information, see “ÖkoKauf Wien” information sheet “Flexible sealants”
PVC

Pipes, window and door frames, flooring, wallpapers and electrical materials are the main areas of application for PVC. This plastic causes a multitude of environmental and health hazards in production, during use and also when it comes to final disposal. Halogen-free substitutes are already available for the main applications in construction and even for electrical installations. This has enabled the City of Vienna to implement its decision to routinely avoid PVC products.

The following comments are based on the “ÖkoKauf Wien” position paper on the avoidance of organochlorines.

PVC, a mass-market plastic

PVC (polyvinyl chloride, “vinyl”) is an organochlorine plastic. A wide variety of additives, most of them harmful to human health and the environment, are added to the basic polymer to make it workable and achieve certain desired product properties. These include, for example, stabilisers to improve resistance to temperature fluctuations and ageing. To turn rigid pure PVC into flexible PVC, plasticisers are added, usually health-damaging phthalates. In addition to the plasticiser, which may make up as much as 50 per cent of the material weight, halogenated (chlorinated or bromated) flame retardants are frequently added as well.

Environmental and health hazards

Vinyl chloride, the precursor material from which the polymer PVC is made, is a highly flammable, toxic and carcinogenic gas whose transport (usually by train) poses safety risks that can hardly be overestimated. PVC production generates extremely noxious wastes that are contaminated with carcinogenic dioxins. The combustion of PVC also gives rise to highly toxic chlorine compounds, dioxins and hydrochloric acid, which is corrosive and causes chemical burns. Plasticisers are not firmly bonded in PVC and therefore evaporate slowly into ambient air. The phthalate DEHP, a frequently used plasticiser, contributes to infertility and to malformations in the human foetus; it may trigger allergies, and is a suspected carcinogen and hormonal disruptor. Fires involving PVC quickly generate thick, caustic smoke, and the combustion process releases hydrochloric acid and toxic fumes; as a result, expensive decontamination measures may become necessary, driving up the cost of repair and remodelling.

Vienna’s pioneering role

Since 1992, the City of Vienna has been following a PVC avoidance policy. Whenever suitable alternatives are available, they are used instead of PVC. This policy has been laid down in the “ÖkoKauf Wien” position paper on the avoidance of organochlorines (especially PVC), available (in German) at: www.oekokauf.wien.at/pdf/chlororganisch.pdf

PVC substitutes

Halogen-free substitutes have meanwhile become available for all major applications in construction, so that halogen-free products can be used almost everywhere. Experience has shown that higher costs are only to be expected for PVC-free windows and halogen-free electrical installations. It should be noted, however, that halogen-free substitutes frequently offer higher quality as well.

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Heavy metals

Heavy metals pose a hazard to humans and to the environment. Lead, for example, is harmful to health, cadmium and chromate salts are carcinogenic, and organotin compounds can adversely affect reproduction. Heavy metals are also bio-accumulative, i.e. they accumulate in rising concentrations down the food chain, which adds to the danger.

Heavy metals are used for a significantly smaller range of applications today than in the past (stabilisers in PVC, pigments in anti-corrosion coatings, drying agents in paints and varnishes); however, the fact that they were once broadly used makes them a major issue in cleanup and rehabilitation works.

Definition

Heavy metals are all metals with a density of 5 g/cm³ or more. The group includes lead, tin, nickel, cadmium, cobalt, mercury, (organic) tin and hexavalent chromium (chromate), among others. Heavy metals are used as stabilisers in plastics such as PVC, as biocides, as drying agents in paints and varnishes and as anti-corrosives in rustproofing paints. Avoidance strategies are therefore varied.

The case of lead

Lead and its compounds are among the most eco-toxic substances. Repeated absorption of small doses of lead over an extended period of time is particularly harmful. The symptoms of lead poisoning include fatigue, loss of appetite, painful abdominal cramps and muscular weakness. In the past, lead was used as an anti-knock agent in petrol. The pipes of drinking water supply systems were often made of lead, and lead compounds were used as anti-corrosive pigments (minium, red lead). These past applications are the cause of significant hazards in building rehabilitation today.

Lead is still used as a stabiliser in pipes and cables made of PVC and as a drying agent in paints and varnishes. Some anti-rust primers that contain lead or lead chromate are also still available on the market. But construction chemicals that contain heavy metals are unnecessary, and it is easy to avoid them.

The case of organotin compounds

Unlike harmless metallic tin, organic compounds that contain it, such as tributyltin and dibutyltin compounds, are very harmful to health. They were formerly used in anti-fouling coatings for ships’ hulls. This application was banned in Austria by the 1990 anti-fouling regulation (BGBl. 577/1990) because the compounds are not only toxic, but also affect hormones and may damage the immune systems of humans and animals.

In the construction industry, organotin compounds were in broad use as wood preservatives; the most important application today is in silicone sealants (as catalyst or biocide).

Heavy metals (especially lead, cadmium, chromate and organotin compounds) are banned by “ÖkoKauf Wien” as a matter of principle.
The world’s rainforests are the means of subsistence for millions of people. They are home to an estimated half of all species that exist on this planet, and their biomass stores vast amounts of carbon dioxide (CO₂). Uncontrolled harvesting of tropical timber endangers the livelihood of people and has adverse effects on biodiversity and the global climate.

For these reasons, timber and in particular tropical timber should be supplied only from sustainably managed forests. Sustainable forest management ensures that the timber is harvested from the forest ecosystem with as little disruption as possible, and that tree stands remain intact over the long run. In the case of tropical timber, this can be ensured by “FSC” certification.

Rain forest = climate protection = biodiversity = livelihood for millions of people
The greenhouse gas carbon dioxide is an important factor in anthropogenic climate change. Logging of tropical forests currently accounts for up to 25 per cent of all man-made CO₂ emissions. Massive rainforest destruction is happening today, especially in South America, Southeast Asia and Central Africa.

The case of the Democratic Republic of Congo
The forests of the Democratic Republic of Congo (formerly Zaire) contain eight per cent of all carbon that is stored in forests around the world. It has been estimated that the destruction of the tropical forests in this country alone will result in the release of up to 34.4 billion tonnes of CO₂ by 2050. This means that deforestation in the DRC will cause a level of CO₂ emissions that is equivalent to the CO₂ output caused by traffic, industry and heating in industrialised Germany! About 40 million of the DRC’s more than 60 million citizens rely on the rainforests for food, health remedies, energy and construction materials. Also, our closest relatives as a species — chimpanzees, bonobos and gorillas — will only survive if their habitats are protected.

The roads built for logging are entry gates to the rainforests. They give access to poachers who kill large mammals to sell their meat and ivory. And once roads are in place, the surrounding areas also become more accessible for slash-and-burn clearance to create tillable land or grazing.

FSC — (tropical) timber from sustainably managed forests
Boycotting tropical timber will not prevent rainforest destruction, but sustainable, eco-friendly management of these forests will contribute to their preservation. This is why the “Forest Stewardship Council” (FSC) label has been created. The FSC is an independent international organisation which ensures that FSC-certified timber is supplied by companies that manage forests sustainably; their operations help to preserve biodiversity, they are socially beneficial and economically viable. The most frequently used types of tropical timber are mahogany, teak, meranti, pafuki and ramin.

“ÖkoKauf Wien” position on tropical timber
There are no laws in Austria that ban the use of tropical timber or define ecological minimum standards. The use of any but FSC-certified tropical timber in building construction is prohibited under the “ÖkoKauf Wien” criteria. As sustainable forest management cannot be taken for granted anywhere, wood from other regions should also be FSC certified.

Another frequently seen quality label is the “PEFC” label: its aims are fundamentally the same, but it is based on less strict criteria and is therefore less reliable in ensuring compliance with ecological objectives.
VOCs

Volatile organic compounds (VOCs) are used as solvents, plasticisers, fragrances and cleaning agents, etc. Not only may they affect the health of direct users, they may also, by way of indoor air pollution, harm the inhabitants of buildings; moreover, they promote the formation of health-damaging low-level ozone. VOC pollution can be significantly reduced or avoided completely by making suitable product choices.

Definition and use
A VOC (volatile organic compound) is an organic substance with a boiling point of at least 50°C and at most 250°C. Similar groups of organic compounds are **VVOCs** (very volatile organic compounds) with boiling points below 50°C and **SVOCs** (semi-volatile organic compounds) with boiling points between 250°C and approximately 400°C. VOCs are used for many purposes, including as solvents, cleaning agents, thinners, fragrances and coalescing agents. VOCs occur both naturally and as the outcome of petrochemical production processes. A solvent is generally used to dissolve or dilute substances or products; a VOC cleaning agent, for example, dissolves fatty impurities. Note: The definition of solvents usually includes a maximum limit of 200°C, so products advertised as “solvent-free” may still contain VOCs. **Coalescing agents** lower the temperature at which a surface coating material forms a film.

Health and the environment
VOCs may cause odour stress, sleeping disorders, loss of concentration, headaches, fatigue, memory loss, irritation of the eyes and mucous membranes, rashes, nervous system disorders and other ailments. They are also regarded as a factor in so-called “sick building syndrome”, and they are the main cause of health-damaging “low-level ozone”.

“Low-emission” is better than “solvent-free”
More and more products that claim to be “solvent-free” or “VOC-free” are being offered in the market. All too often, however, the only change is that solvents with boiling points below 200°C or 250°C have replaced substances with higher boiling points — a trend that shifts health hazards from the user of the chemical agent to the inhabitant of the building, as less volatile chemicals are continuously released into indoor air over a long period of time. The best option is to use products that have been tested in test chambers by the relevant testing institutes and have been certified as “low-emission” products. Our modern lifestyle means that we spend an average 90% of our lifetime indoors, which makes VOC reduction in buildings a very important objective.

→ For further information, see “ÖkoKauf Wien” information sheet “Indoor air quality”
Building construction

In the context of building construction special attention needs to be paid to —

- avoiding plastics containing organochlorines (especially PVC)
- excluding HFCs (XPS boards, PU installation foams, PUR hard foams)
- avoiding materials harmful to health (especially in flexible sealants)
- and minimising the use of solvents (bituminous primers, paints, etc.)

Avoiding PVC

Owing to its numerous negative effects on the environment, organochlorine plastic has been declared undesirable under the “ÖkoKauf Wien” programme, whenever technical alternatives are available.

Main fields of application of PVC in building construction:
- Hard PVC: plastic pipes, electric ducts, spacers, etc.
- Soft PVC: coverings, foils and films, gaskets, vinyl wallpaper

Excluding HFCs

HFCs (partly fluorinated hydrocarbons) with their toxic effects on the climate are subject to a wholesale ban on “ÖkoKauf Wien” building sites. Austria has banned these substances in PUR hard-foam panels, flexible PU foams and XPS boards up to a thickness of 8 cm, though licensed exceptions may be granted. There are practically no restrictions on aerosol cans; the only exception are PU installation foams, which rarely contain HFCs. HFCs are still admissible in XPS boards of more than 8 cm thickness.

EPS and vacuum insulation panels (= EPS panels with the characteristics of XPS boards) are HFC-free on principle — and hence need not be tested.

Avoiding materials that are harmful to health

While curing, silicones invariably release substances that are more or less injurious to health. Whereas acetic acid (especially from sanitary silicone — handle with care: do not inhale; thoroughly ventilate rooms!) and alcohols (alkoxy cure silicones) are relatively harmless, the substances released from (neutral) oxime cure or (base) amine cure silicones have a pronounced injurious effect on human health.

While acrylic sealants do not release any substances, they contain relatively high amounts of extender oils (plasticiser). Phthalates, which are frequently used, are pseudo-hormones that even in low concentrations can seriously compromise the fertility of both humans and water organisms and, being high-boiling substances, contaminate the indoor air for long periods of time, putting users at risk.

Avoiding solvents

Volatile organic substances are contained in a large number of construction materials. Foremost among them are

- bitumen and other waterproofing coatings
- coatings of all types
- formwork oil

The minimisation requirement applies as a matter of principle: This implies that a product containing markedly less VOC (solvent) must invariably be preferred to a product with a markedly higher VOC content. In addition there are mandatory “ÖkoKauf Wien” criteria regarding the maximum permissible VOC content of a whole range of product groups (paints, varnishes, concrete and screed coatings, intumescent paints, etc.).
Floor laying

The choice of low emission floor coverings and of low emission products for flooring installation is crucial to the indoor air quality. The legal requirements pertaining to construction chemicals are totally inadequate in terms of precautionary health and environmental protection.

Whenever possible, the choice of products should be governed by “ÖkoKauf Wien” specifications; i.e. wood and linoleum, which are made from renewable materials, should be given preference over PVC floor coverings, which are considered undesirable by the City of Vienna.

Floor laying — requirements
The following notes are based on the position paper on the avoidance of organochlorine compounds as well as on Criteria Lists 08002 Resilient floorings, 08003 Textile floor coverings, 08006 Products for flooring installation, 08010 Skirting boards, and 08016 Flooring finishes, and refer to the services categorised in the Service Group LG50 Bonding work — floor and wall coverings, as set out in the specifications for building construction.

Choice of floor coverings
Two building ecology requirements ought to be considered when choosing floor coverings. On the one hand, PVC (floor coverings, skirting boards, etc.) should be avoided. Please note: "CV coverings" are PVC coverings with a structured, foamed surface! Also to be avoided are PVC-coated non-PVC coverings (linoleum, cork, etc.) as well as coverings with PVC backing or backing that contains PVC.
On the other hand, the use of renewable raw materials ought to be stepped up, which implies that preference should be given to wooden floors and linoleum. Both are noted for good reparable and long service life. When using linoleum, it is important to ensure high-quality factory-applied coating to avoid solvent-containing primer coating directly after installation. This has the very welcome added advantage that the surface coating can be restored with acrylates.
Please note that PVC skirting boards should be avoided as well! Chlorine-free plastics or composite materials are available as an alternative to battens made of the floor-covering material.

Products for flooring installation and flooring finishes
With very few exceptions, products for flooring installation (levelling compounds, primers, adhesives) must be emission tested. In accordance with “ÖkoKauf Wien” specifications, these products have at least to meet the criteria laid down for class “EC 1 — very low emission” by EMICODE, the voluntary quality association for flooring installation products. (Recently a premium class — EC 1 PLUS — has been added to this system: it guarantees that even stricter environmental and health requirements can be met whenever the required products are available).
In flooring finishes the maximum content of volatile organic compounds permitted by “ÖkoKauf Wien” is 6 % (with high boilers accounting for no more than 2%); two-component finishes are permitted in exceptional cases only. In calls for tender, care should be taken to indicate minimum technical requirements, in particular wear ratings, in addition to the ecological criteria.

→ For further information, see “ÖkoKauf Wien” information sheets “VOCs” and “PVC”
Halogen-free electrical installations

Avoidance of the pollutant plastic PVC (polyvinyl chloride) is one of the core criteria pertinent to eco-friendly construction laid down in “ÖkoKauf Wien”. Opting for PVC/halogen-free electrical installations is of prime importance, since it excludes several risks and pollutants in one go. Moreover, it does not pose any technical difficulties.

Electrical installations — requirements
The following notes are based on the position paper on the avoidance of organochlorine compounds and make reference to the services listed in Service Groups LG06 (Low-voltage distribution), 07 (Cables for power and signal transmission), 08 (Insulated cables), and 09 (Support systems), which form part of the specifications re. domestic engineering for technical building installations.

PVC
PVC is the dominant material in the electrical installation sector — usually due to the attractive price. There are several reasons why the City of Vienna avoids PVC. Among them are pollution in its wide variety of manifestations and the risks to human health and the environment that arise from the production of both this synthetic material and its source material. Additional risk factors are the large amounts, the variety and the frequently dangerous nature of the substances that need to be added to this as opposed to other plastics to render it at all workable or to endow it with the required properties: stabilisers containing heavy metals, plasticisers toxic to reproduction, eco-unfriendly flame retardants, etc. These mostly dangerous additives make up approximately 50% of soft PVC. There is yet another serious risk that comes into play especially in the electrical installation sector: owing to its chlorine content, PVC does not spontaneously burst into flame, but in case of fire will burn just like any other material, with the effect that an incredibly intense smoke mixed with highly corrosive hydrochloric acid will form within no time at all. In case of fire, PVC therefore makes it difficult to find escape routes, plus people who have inhaled the hydrochloric acid may be unable to save themselves. All this is aggravated by the destructive impact of the released hydrochloric acid on metals and by the contamination of buildings by ultra-toxic chlorinated dioxins that are released during combustion and may render the demolition and removal and/or restoration of buildings or parts of buildings extremely expensive or impossible. On account of this heightened risk of fire damage, the German Verband der Sachversicherer (German Insurance Association) in its “Directive 2357” on fires, has assigned fires involving major amounts of PVC or other chlorine-containing or brominated substances to a higher risk category.

Definition of “halogen-free” — “PVC-free”
The stipulation that electrical installations be “halogen-free” (fluorine, chlorine, bromine and iodine are the halogens) is of the essence, because it is designed to exclude not only PVC, but also other chlorinated or bromated compounds (such as flame retardants), which, in case of fire, have similarly harmful effects as PVC.

Main areas of application in the electrical installation sector
The principal fields of application are empty conduit systems for electrical installation as well as cable and line sheathing in diverse fields. Halogen-free products made of diverse halogen-free plastics (polyethylene, polypropylene, polyamide, polystyrene plastics, rubber) are available for most applications. For some applications (e.g. sockets, light switches) the halogen-free version has become standard.

→ For further information, see “ÖkoKauf Wien” information sheet “PVC”

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Windows

Windows are an important category in ecological product selection. Prompted by the harmful environmental characteristics of PVC, the City of Vienna is steering clear of PVC windows.

In life-cycle assessments, wooden windows come off best (followed by wood-aluminium windows).

When installing windows, care must be taken to avoid foams containing HFCs. The sealants used must not be oxime cure silicones or phthalate-containing acrylic or MS polymer sealants; moreover, care must be taken to ensure that the maximum permissible (S)VOC values are complied with.

Windows — requirements
The following notes are based on the position paper on the avoidance of organochlorine compounds and on Criteria Lists 08008 Wood and metal coatings and 08009 Flexible sealants; they also make reference to the services listed in Service Groups LG51 to LG55, as set out in the specifications for building construction. Service Group LG53 (Windows and French doors made of plastic) is not applicable, since PVC windows are currently the only windows available on the market.

Window materials
Assuming identical service life including maintenance work, comparisons of the life cycle analyses of generally available window materials (wood, wood-aluminium and PVC) show that wooden windows clearly come out top ahead of wood-aluminium windows. This is primarily due to the use of wood, which is a renewable resource. Thanks to the aluminium skin, the external surface of wood-aluminium windows is largely maintenance-free, which makes for an extra-long useful life. The key factor in ecological terms is to forego tropical timber as a window material. Only sustainable forestry products that have been awarded the FSC (Forest Stewardship Council) seal are exempt from this rule.

For both ecological and technical reasons, PVC avoidance also applies to sealants: the (noxious) plasticisers contained in soft PVC can migrate into the coating, softening it and rendering it permanently sticky.

Window installation — use of chemicals
The use of PU bonding foams must be limited to HFC-free products. When using sealants (silicones, acrylic sealants, MS polymer (modified silane polymer — “MS hybrid”) sealants, care must be taken to avoid solvents and to rule out noxious plasticisers (especially phthalates) as well as other substances harmful to human health and the environment.

When choosing a coating system, compatibility with the base should be ensured by opting for a suitable product (block-resistant water-based paint) or by mounting a sealing lip. Two painted surfaces are block-resistant if they do not stick together when tightly compressed. This is a crucial point when choosing window paints. Coats of paint and priming coats need to conform to the requirements of Criteria List 08016 for surface coatings (especially as regards maximum permissible VOC and SVOC content). Anti-corrosion coatings that contain lead or chromium are not acceptable.

→ For further information, see “ÖkoKauf Wien” information sheets “Window Renovation”, “VOCs”, “PVC”, “Tropical Timber”, “HFCs”, “Heavy metals”, and “Biocides”
Window renovation

When historic wooden windows are to be renovated, it frequently happens that for lack of competence the entire stock is replaced. In most cases this is the wrong decision in both ecological and economic terms: more often than not, wooden windows can be refurbished and upgraded to conform to modern energy standards.

As the refurbishment of windows may involve a wide range of materials that are potentially harmful to human health and to the environment, compliance with the “ÖkoKauf Wien” criteria for avoiding HFCs and solvents is of paramount importance.

Window renovation — requirements

The following notes are based on the guidelines for window renovation as well as on the position paper on the avoidance of organochlorine compounds, and they make reference to carpentry services and services listed in Service Group LG45 Wood and metal coatings, as set out in the specifications for building construction.

Window renovation

Currently, window renovation is mistakenly and unjustifiably taken to imply the complete replacement of historic casement windows by modern insulated glass windows. Only if virtually all the windows in a building are irreversibly damaged can complete replacement be considered reasonable in ecological and economic terms. In terms of energy efficiency casement windows are actually not bad at all; glazing and insulation pose no difficulty, and when upgraded in a technically correct manner, casement windows will meet both current and future energy benchmarks. It follows that (genuine) refurbishment is in any case the best solution in both ecological and economic terms, and clearly preferable to replacement.

Construction chemicals

Refurbishment of wooden windows implies the use of a wide variety of chemicals — quite a number of them containing high amounts of solvents.

Mechanical removal of old paintwork (hot air; no sanding off, since historic coatings may contain heavy metals!) must be given preference over paint strippers.

When it comes to original “modern” coatings (mostly post-war windows), VOC-reduced modern resin coatings based on acrylic, polyurethane (single-component) or copolymers can be used for coating as well as priming. In such cases the specifications laid down in Criteria List 08008 Wood and metal coatings (in particular the restrictions imposed on VOCs and SVOCs) shall apply in full.

The method of choice for refurbishing historic windows, regardless whether or not they have previously been “renovated” using synthetic resin varnish, is an oil-based system containing moderate amounts of VOCs. Any previous synthetic resin coatings need to be thoroughly removed prior to re-coating.

An oil-based system involves the following operations:

• impregnation with boiled linseed oil • glazing with linseed oil putty • priming with oil-based paint (low in solvents) • puttying • refurbishing locks and fittings (no rust-proof pigments containing heavy metals!)

• final coating with stand oil paint.

Diffusion requires the application of an extra coat to the inner window surfaces.

Other materials

According to the position paper, soft-PVC sealants should be ruled out in order to avoid organochlorines, but they are also unsuitable for technical reasons (diffusion of plasticisers into the coating).

Further information is available (in German) in a manual on window renovation, including model tender documents of the Vienna Hospitals Association: H. Lerner, F. Leutgeb, E. Mailinger: “Leitfaden Fanstersanierung”; commissioned by Municipal Department 22 under the project “ÖkoKauf Wien”; Wien 2009 incl. annex: “Beispielausreibung Wiener Krankenanstaltenverbund”.

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Tiling

The following points need to be considered in the context of tiling: sealants, the fact that construction panels need to be HFC-free and foils and films PVC-free, that two-component reactive coatings are to be avoided and that there are upper limits for solvents.

Since emissions from grout, tile cement and floor filling compounds are insignificant, these materials are exempt from ecological assessment.

Tiling — requirements

The following notes are based on the position paper on the avoidance of organochlorine compounds, on Criteria Lists 08011 Coatings for screed and concrete and 08009 Flexible sealants, and they make reference to services listed in Service Group LG24 (Tiling, paving and mosaic laying), as set out in the specifications for building construction.

Insulating materials

come into play in the form of construction panels; care must be taken to ensure that the hard foam (usually PUR) is HFC-free.

Flexible sealants

Sealants may contain or release a number of substances that are harmful to health.

- Silicons may release oximes (2-butanonoxime) or amines: 2-butanonoxime is harmful to health and suspected to be carcinogenic; it may cause sensitisation upon skin contact (allergy risk!). In combination with other substances, amines may react to form nitroamines, which are harmful to health. Acetoxy or alkoxy cure products are alternatives, a wide selection of which is on offer from various producers.

- When using acrylic and MS polymer sealants ("MS hybrid") care must be taken to avoid phthalate plasticisers. Phthalates are chemical substances that may be harmful to health even in minimum concentrations. Some of these substances are known to have these effects and have thus been classified as "CMR substances" (carcinogenic, mutagenic or toxic to reproduction), which is the top hazard category; others have not yet been investigated, which does not render them "safe". All phthalates are ecologically persistent and ought not to be used. Phthalates that have been classified as harmful must be listed in the safety data sheets of products; those not yet classified as harmful need not (yet) be listed. With a mind to applying the precautionary principle to health and environmental protection, all phthalates ought to be avoided.

The technical profile of silicone and acrylic sealants is so variegated that any of the substitute products on offer from various manufacturers will do.

Foils and films

Foils and films must be PVC-free.

Coatings

When choosing coatings (screed, sealants), two-component reactive coatings (especially epoxies) should be avoided and the ÖkoKauf upper limits for solvents (6% VOCs) respected.

→ For further information, see “ÖkoKauf Wien” information sheets “Flexible Sealants”, “HFCs”, “Concrete and screed coatings”, and “PVC”
Domestic engineering

According to “ÖkoKauf Wien” special attention should be paid to the following criteria when performing domestic engineering jobs:

- PVC should be avoided (especially in pipe systems)
- HFCs should be excluded (aerosol cans)
- toxic substances should be avoided (flexible sealants)
- the use of solvents should be minimised (priming)
- heavy metals should be excluded (corrosion control)

Domestic engineering — requirements
The following notes are based on the position paper on the avoidance of organochlorine compounds and on Criteria Lists 08008 Coatings for wood and metal and 08009 Flexible sealants, and they make reference to services laid down in the specifications for domestic engineering.

Avoiding PVC
Avoiding PVC is especially important in all types of pipe systems (sewage, drinking water, brine pipes, pressure pipes). PVC components are only permitted, if it has been expressly established that no chlorine-free alternative is available for a specific application. There is also a certain potential for the use of PVC in sealings, films and foils.

Excluding HFCs
HFCs with toxic effects on the climate may be present as propellants in all aerosol cans. Even though PU flexible foam is banned under the regulatory provision on HFC-CFC-SF₆ (Austrian Federal Law Gazette 447/2002), some manufacturers have been issued certificates of exemption. Since there is no ban on HFCs in Austria’s neighbouring countries, directly imported products may contain HFCs.

Toxic substances harmful to human health
Oxime cure silicone sealants may only be used if it has been established that there is no technical alternative (e.g. alcoxy cure products).
Acrylic and MS polymer (“MS hybrid”) sealants must not contain any phthalates.

Minimising solvents
Solvent-containing products are put to a wide variety of uses, and the technical requirements are equally varied. In many cases, the use of solvent-containing adhesives and sealants can be avoided by opting for intelligent solutions: instead of gluing insulating tubes for cold water pipes surface to surface with adhesives containing high amounts of solvents, they can very often be joined with self-adhesive tape (if placed neatly edge to edge). In most cases this is sufficient to prevent condensation (though not in heat pump brine pipes). Insulating materials for shafts can in most cases be mechanically fixed without the use of adhesives, the options ranging from bolting via strapping bands to other similar available systems.

Heavy metal exclusion
Lead (red lead, minium) or chromate-containing anti-corrosion coatings must not to be used. Zinc-based anti-corrosion pigments are exempt from this rule.

→ For further information, see “ÖkoKauf Wien” information sheets “PVC”, “HFCs”, “VOCs”, “Flexible sealants” and “Heavy metals”

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Wood floor laying

Provided it is a sustainable forestry product, wood is in principle a material of high ecological value. Guaranteeing this is one of the aims of the “ÖkoKauf Wien” criteria.

Moreover, floor coverings and the construction chemicals used in floor laying are of essential importance for the indoor air quality. Since the legal requirements pertaining to construction chemicals are totally inadequate in terms of precautionary health and environmental protection, “ÖkoKauf Wien” has set standards for avoiding substances that are harmful to human health and the environment in the flooring installation products and coatings used.

Wood floor laying — requirements
The following notes are based on Criteria Lists 08005 Wood and engineered wood floor coverings, 08006 Products for flooring installation, 08015 Laminate floor coverings and 08016 Surface coatings, and make reference to the services listed in Service Group LG38 Wooden floors, as set out in the specifications for domestic engineering.

Ecological assessment
Wood is a regenerative material and, provided it is a sustainable forestry product, it deserves top quality ratings; these ratings must be reversed if it is the product of non-sustainable forest management (clear-felling, non-sustainable plantation management). This is why “ÖkoKauf Wien” requires proof of origin for the wood fraction, the main purpose being to prevent the use of tropical timber from non-sustainable production. Only sustainable forestry products that have been awarded the FSC (Forest Stewardship Council) seal are exempt from this rule. This is why the so-called FSC seal is required for tropical timber; for non-tropical timber proof must be furnished that it comes from countries subscribing to sustainable forestry, or that it carries the FSC and/or PEFC seal.

Products for flooring installation and coating
Products for flooring installation (levelling compounds, primers, adhesives) must, with very few exceptions, be emission tested. In accordance with “ÖkoKauf Wien” specifications, these products need to meet at least the criteria laid down for class “EC 1 — very low emission” by EMICODE, the voluntary quality association for products for flooring installation. (Recently a premium class — EC 1 PLUS — has been added to this system; this seal guarantees that even stricter environmental and health requirements are being met whenever the required products are available).

In coating systems the maximum content of volatile organic compounds permitted by “ÖkoKauf Wien” is 6 % (with high boilers accounting for not more than 2 %); two-component coating systems are admitted in exceptional cases only. In calls for tender, care should be taken to indicate minimum technical requirements, in particular wear ratings, in addition to the ecological criteria.

→ For further information, see “ÖkoKauf Wien” information sheets “VOCs”, “Wood-based materials” and “Tropical timber”
Raised access floors

Raised access floors (both cavity and raised floors) are becoming the rule in office construction. Provided the pertinent criteria laid down by “ÖkoKauf Wien” are complied with, wood-based construction materials are superior to the other commonly used materials. Volatile organic compounds that tend to be contained primarily in pedestal adhesives and thread sealings must be avoided at all costs.

The criteria laid down in the pertinent lists of products for flooring installation as well as those pertaining to the installation of such products apply in full, no matter whether the installation is performed locally or ex-factory.

Requirements for raised access floors
The following notes are based on Criteria Lists 08006 Products for flooring installation and 08017 Cavity floors, and make reference to the services listed in the Service Group Raised access floors, as set out in the specifications for building construction.

Materials used
In ecological terms, the mainly biogenic fibre boards are clearly superior to calcium sulphate, cement fibre and metal boards and should, whenever possible, be the material of choice.
In this context compliance with the criteria laid down in 08014 Wood-based materials is imperative, in particular proof of origin (countries subscribing to sustainable forest management, waste timber or FSC or PEFC certification) and proof of “E0.5”, i.e. half the formaldehyde emission legally admissible in Austria.

Use of construction chemicals
Pedestal adhesives and thread sealings are the chemicals most frequently used when installing cavity floors. Pedestal adhesives are by definition products used in flooring installation. It follows that the standards specified in the criteria list (in particular the use of low-emission tested products) will apply in full. These standards are now met by a number of products (mostly based on modified silane polymers).
Caution: This is the very segment in which certain manufacturers issue misleading pseudo-EMICODE seals of approval (meets EMICODE emission criteria after xy days) for products containing consider-able amounts of solvents (indeed even of aromatics). Solvent-containing products, however, can never meet EMICODE standards!
Since solvent-free systems are available for thread sealings, solvent-containing systems should be avoided.

Flooring installation
Depending on the type of flooring installed on raised access floors, Criteria Lists 08002 Resilient floor coverings, 08003 Textile floor coverings, 08005 Wood and engineered wood floor coverings as well as 08006 Products for flooring installation and 08010 Skirting boards shall apply in full, no matter whether the installation is effected locally or ex-factory.

→ For further information, see “ÖkoKauf Wien” information sheets “Wood-based materials”, “Floor laying”, “VOCs” and “Tropical timber”
Cleaning of buildings

Besides the ecological and hygienic aspects, using eco-friendly products and opting for value-preserving processes and techniques in the cleaning of buildings is of economic benefit too. In buildings, preserving the value of floorings is a key consideration in this context. “ÖkoKauf Wien” has defined tender criteria for eco-friendly cleaning products for use in the cleaning of buildings.

The following notes are based on Criteria List 10001 Cleaning agents and pertain to building cleaning services (esp. end-of-build cleaning, maintenance cleaning).

Harmful substances from cleaning agents

The use of low-pollutant cleaning products can prevent substances that are harmful to the environment and to health from “contaminating” the environment (particularly via waste and wastewater) and the indoor air during both end-of-build cleaning (after completion of construction work) and ongoing upkeep (maintenance cleaning). Using such products also protects cleaning staff from hazardous substances that can cause skin irritations, allergies, etc. “ÖkoKauf Wien” has therefore developed comprehensive criteria for cleaning agents to be used in the cleaning of buildings.

“ÖkoKauf Wien” criteria

The criteria list for cleaning agents sets out minimum technical requirements for the respective product categories (floor cleaner, sanitary cleaner, etc.), lists the product requirements for the manufacturers and defines content limits for the critical substances. Floor strippers, for instance, are required to have a solvent content of less than 30%, while aromatic hydrocarbons and phthalates are completely prohibited. When selecting and using cleaning agents it is also important to ensure that they are suitable for use with one another and appropriate for the materials to be cleaned.

Example: Linoleum floorings

Linoleum floorings used to be delivered to the building site with a protective wax layer, which had to be removed after laying using a solvent-based stripping agent. A metallised coating was then applied. Today’s floorings are delivered to the building site with a high-quality, factory-applied surface finish, acrylate coatings being particularly advantageous because the finish can be partially restored. After laying, these floorings should not be cleaned with a stripping agent, as this would remove the factory-applied coating, resulting in unnecessary use of solvents, additional costs and impairment of the surface quality. Simple mopping in accordance with the manufacturer’s care instructions is sufficient.

Implementation of the “ÖkoKauf Wien” criteria

The Vienna Hospitals Association assesses the ecological compatibility of washing and cleaning agents offered in response to central calls for tender in accordance with the minimum requirements set out in the “ÖkoKauf Wien” criteria list for cleaning agents. Appropriate eco-friendly products are assessed in terms of price and the tender awarded to the best bidder. The Vienna Hospitals Association is then bound to purchase these products.

When new cleaning contracts are put out to tender by the departments of the city administration, manufacturers are required to confirm their compliance with the criteria for the individual products. Here too purchasing is done centrally and the cleaning products subsequently distributed to the users. This procedure guarantees that no unnecessary burden is placed on the environment in connection with cleaning of buildings belonging to the City of Vienna.
Asphalting

In order to comply with the criteria defined by “ÖkoKauf Wien” it must be ensured, in particular, that all insulating materials used are HFC-free, that bituminous primer is solvent-free (bituminous emulsions should be used) and that roofing membranes are PVC-free.

The following notes pertain to the services listed in Service Groups LG12 (Sealants) and LG21 (Asphalting), as set out in the specifications for building construction.

Building materials
XPS boards (XPS stands for “extruded polystyrene”) are used as insulating material in the perimeter zone as well as on flat and inverted roofs. From the ecological point of view it is important that only HFC-free XPS boards (or alternatively substitute products made from EPS) are selected.

Insulating materials made from EPS (“expanded polystyrene”) are generally HFC-free. However, PVC-coated EPS boards are also available; for these, the “Okokauf Wien” position paper on the avoidance of organochlorine compounds applies.

There are a multitude of halogen-free alternatives to PVC waterproofing membranes in which both the material (plastic, bitumen) and the flame retardants are free of halogens. An additional merit of these products is that they also contain no plasticisers.

Chemicals used in construction
Due to their very high solvent content of around 50%, bituminous primers used in waterproofing work are especially significant in ecological terms as they are the major source of VOCs in building construction. Solvent-free bituminous emulsions are technically equivalent and also no more expensive.

A problem of bituminous emulsions, of course, is the fact that they “break” (i.e. the water and bitumen mixture separates) in cold conditions, which precludes both processing and storage in cold weather. In this regard it should be noted that all bituminous primers (including solvent-based ones) as standard require an ambient temperature of at least 5°C for processing. However, with intelligent site logistics it is possible to work without solvents, even in the winter months: to begin with, the work schedule should be checked through and if necessary modified to allow the major part of the asphalting work to be carried out at times when minimum temperatures of above 5°C are guaranteed.

Where this is impossible, the work crew should first be provided with a lockable store fitted with a frost alarm to avoid problems with temperature during storage. It is essential that the store be located as close as possible to the surfaces to be asphalted (e.g. on the topmost floor in the case of roofing work) in order to avoid having to haul large barrels over unreasonable distances and/or several storeys.

Even in the winter months there are frequently periods with suitable temperatures. The waterproofing work should be organised in such a way that the application of the primer — if possible to all surfaces at once — can be carried out during such periods. (Above-zero temperatures are not imperative for torching of bitumen membranes.)

A number of manufacturers also offer polymer-modified bitumen, polyester or elastomeric roofing membranes (some self-adhesive) under various designations (e.g. “all-weather”), which can be used in extremely lengthy periods of very cold conditions. (Mastic asphalt can also be applied at low temperatures.)

→ For further information, see the “ÖkoKauf Wien” information sheets “VOCs”, “PVC” and “HFCs”
Drywall construction work

In drywall construction work, construction panels and sealants, in particular, require special attention from the ecological point of view. Plasterboard and gypsum fibreboard panels must comply with specified radioactivity limits, wood-based panels with formaldehyde emission limits.

In addition, wood-based panels must be proven to contain no tropical timbers or be FSC-certified. Acrylic or MS polymer sealants should be checked to ensure they are free of phthalates; oxime cure and amine cure silicone sealants should be avoided.

Drywall construction — requirements
The following notes are based on Criteria Lists 08007 Construction panels and 08009 Flexible sealants and pertain to the services listed in Service Group LG39 (Drywall construction work), as set out in the specifications for building construction. There is a separate information sheet for the services of the Service Group Raised access floors.

Construction panels
“ÖkoKauf Wien” has defined criteria for construction panels (drywall panels, wood-based panels). Plasterboard and gypsum fibreboard panels are required to comply with specified radioactivity limits, because plaster (especially recycled plaster from flue gas desulphurisation plants) may contain radon. Wood-based panels must be proven to comply with emissions criteria for formaldehyde (industry standard “E 0.5”). Formaldehyde is a toxic, caustic, allergenic gas which several years ago was also classified as a carcinogenic substance by the World Health Organisation; the binders used in wood-based materials are the main potential source of formaldehyde fumes. Wood-based panels must also be proven to contain no tropical timbers or must have FSC certification, which shows that they come from sustainable forestry sources.

Flexible sealants
• Silicone sealants may give off oximes (2-butanonoxime) or amines: butanonoxime is harmful to health; it is a suspected carcinogen and a contact allergen. Amines may react with other substances to form nitrosamines, which are harmful to health. Alternatives are acetoxy (acetic acid) or alcoxy silicone sealants, a large selection of which are offered by various manufacturers.
• Acrylic and MS polymer (“hybrid”) sealants containing phthalate plasticisers should be avoided. Phthalates are chemical substances that even in minimal quantities can be harmful to health. A number of substances in this group are known to have pseudo-hormonal effects and are therefore classified as being toxic to reproduction, others have not (yet) been studied. All of them are ecologically persistent and should therefore not be used. Phthalates classified as harmful have to be listed in product Safety Data Sheets; those not yet classified as harmful need not (yet) be listed. In the interests of precautionary health and environmental protection, phthalates should be generally avoided. The technical profile of silicone and acrylic sealants is so varied that substitute products can usually be easily sourced from a number of different manufacturers.

→ For further information, see the “ÖkoKauf Wien” information sheets “VOCs”, “Flexible sealants”, “Wood-based materials” and “Tropical timber”
Composite thermal insulation systems

Avoidance of HFCs is one of the most effective climate protection measures in building construction. If XPS boards or PUR boards are being installed, it is therefore important to ensure that they are completely HFC-free. EPS (including EPS boards manufactured in special processes to give them the properties of XPS boards) is universally HFC-free, so need not be checked. PU bonding foams may also contain HFCs; ones that do are to be avoided. Flexible sealants should be checked to ensure they do not contain or give off certain substances that are harmful to health.

The following notes are based on Criteria List 08011 Flexible sealants and pertain to the services listed in Service Group LG44 (Composite thermal insulation systems), as set out in the specifications for building construction.

Polystyrene: XPS and EPS
The most commonly used plastic-based insulating material, polystyrene, can be classified into “two-and-a-half” different types:

- **XPS**: extruded polystyrene, has a smaller pore size and comes in coloured boards: for use in areas exposed to splashing water and areas that are in contact with the ground, as well as on flat and inverted roofs, may contain HFCs or be HFC-free!
- **EPS**: expanded polystyrene (“Styrofoam”, larger pore size, mostly white): always HFC-free
- **EPS boards with XPS properties**: always HFC-free

In the 1980s and 1990s, XPS boards and PUR boards were foamed using CFCs (= chlorofluorocarbons). Due to their severely harmful effects on the earth’s ozone layer and the global climate, CFCs were replaced at the end of the 1990s by HCFCs and several years later by HFCs. Because they are chlorine-free, HFCs do not harm the ozone layer, but they still contribute significantly to global warming: 1 cubic metre of XPS boards foamed using the HFC R134a (used, for instance, in “blue” XPS boards) is about as damaging to the environment as driving all the way around the globe in a VW Golf! Alternatives to HFCs include CO₂ or low-boiling hydrocarbons.

Sealants should be checked for substances and emissions that are harmful to health:

- **Silicone** sealants may give off oximes or amines during curing. Acetoxy (= acetic acid) or alcoxy cure products are alternatives.
- **Acrylic** and **MS polymer** (“hybrid”) **sealants** containing phthalate plasticisers should be avoided altogether.

→ For further information, see the “ÖkoKauf Wien” information sheets “HFCs” and “Flexible sealants” and the bauXund “Yellow List” (http://www.bauXund.at/133/)
Concrete and screed coatings

The most important criterion for concrete and screed coatings is the avoidance of two-component reactive coatings, particularly epoxy resin coatings. Further criteria are the avoidance of volatile organic compounds (VOCs) and certain other substances that are harmful to health.

Intumescent paints — requirements
The following notes are based on Criteria List 0801 Coatings for screed and concrete and pertain to the services listed in Service Groups LG11 (Screed laying) and LG46 (Coatings on masonry, plaster and concrete), as set out in the specifications for building construction.

Two-component reactive coatings
By far the most important criterion is the avoidance of two-component reactive coatings. These systems (PU, PMMA, epoxy resin systems) can seriously impair the health of users upon skin contact or inhalation. Bitumen/cement systems do not fall into this category.
In two-component PU systems it is primarily the diisocyanates contained in the curing agents that are severely hazardous to health: they are toxic on inhalation and highly allergenic, which means that they can trigger an allergic reaction.
Epoxy resin systems are particularly hazardous: in these products both components contain highly allergenic substances. A single exposure can cause an allergic reaction, or in some circumstances even lead to lifelong occupational incapacity.
Two-component reactive coatings are only permitted if it has been expressly established that no technical alternatives are available. Technical alternatives not only include other chemicals, but specifically also alternative solutions such as e.g. membranes, ceramic or stoneware tiles, or other floor coverings.
Intelligent planning of the work schedule is another key avoidance strategy: two-component screed coatings are very frequently used as moisture barriers under parquet flooring, usually because too little time is factored in for drying of the screed (especially at cold times of the year when drying is much slower).

Further criteria
Further criteria correspond to the general “ÖkoKauf Wien” specifications for coatings: the avoidance of solvents/VOCs and VVOCs (high boilers) (maximum content 6% and 2% respectively), the ban on biocides for interior use, the prohibition of aromatic hydrocarbons, APEOS (a group of ecologically harmful non-ionic tensides with hormone-like properties) and heavy metals, and the limitation on in-can preservatives.

→ For further information, see the “ÖkoKauf Wien” information sheets “VOCs” and “Heavy metals”
Intumescent paints

The most important criteria relating to intumescent paints pertain to the avoidance of volatile organic compounds (VOCs), the ban on problematic flame retardants, the avoidance of reactive coatings, and the exclusion of heavy metals, organochlorines, aromatic hydrocarbons and certain other substances that are harmful to health and/or the environment.

Intumescent paints — requirements

The following notes are based on Criteria List 08012 Intumescent paints and pertain to the services listed in Service Groups LG32 (Constructional steelwork) and LG46 (Coatings on masonry, plaster and concrete), as set out in the specifications for building construction.

Environmental and health considerations

Solvent-based intumescent (foaming) paints can be problematic for two reasons. Firstly, the extremely high VOC emissions (several kg per m², which is much higher than in comparable coatings) pose a considerable hazard to the environment (formation of low-level ozone, greenhouse effect). Secondly, especially when the pressure of building deadlines results in insufficient time being allowed for airing prior to application of the final coat, they are a source of long-lasting pollution of the indoor air. This is because the final coat initially traps in all the solvent residues that have not yet evaporated, severely impeding further evaporation so that the fumes continue to be released during the service life of the building. The noxious VOCs evaporating into the indoor air threaten the health of the building’s users, while subsequent damage to the top coat of paint can still give rise to strong VOC emissions decades later.

“ÖkoKauf Wien” criteria

The most important criteria defined by “ÖkoKauf Wien” for intumescent paints pertain to the avoidance of solvents and the prohibition of the more problematic flame retardants. The maximum permitted VOC content is 6%, the maximum permitted VVOC content 2%. Two-component reactive coatings may only be used if it can be demonstrated that no technical alternatives are available. Further criteria include the ban on biocides for interior use (with the exception of in-can preservatives), the prohibition of heavy metals, organochlorine compounds (in paint strippers), aromatic hydrocarbons and certain other substances that are harmful to health, and the definition of maximum limits for microbicides used as in-can preservatives (including formaldehyde).

→ For further information, see the “ÖkoKauf Wien” information sheets “VOCs” and “Heavy metals”
Flexible sealants

There are several different categories of flexible sealants, with separate rules for each depending on their chemical composition. The foremost consideration with PU sealants is the ban on HFCs, and care should also be taken with regard to dangerous diisocyanates. Oxime cure silicone sealants and acrylic sealants containing phthalates may only be used if no technical alternatives are available.

The following notes are based on Criteria List 08009 Flexible sealants and pertain to services listed in a large number of Service Groups, as set out in the specifications for building construction.

Polyurethane (PU) sealants

are one- or two-component flexible sealants and adhesives. They are good insulators and are used in a multitude of different trade applications (construction and plumbing work, window and door leaf installation). They cannot be painted over and may yellow.

Polyurethane sealants cure in moist air, giving off carbon dioxide. During curing, polyhydric alcohols are cross-linked with diisocyanates, highly reactive substances that pose a serious health hazard to users (toxic on inhalation, allergenic). They are the main component of the curing agents in two-component products.

PU foam fillers are usually sold in aerosol cans. CFCs and HCFCs used to be used as propellants, replaced by HFCs when the former were banned; nowadays HFCs are increasingly being replaced by carbon dioxide or volatile hydrocarbons (propane, butane, pentane).

HFCs are to be avoided because of their damaging effect on the climate.

Silicone sealants

These products are usually of the one-component type and are based on organic elastomers whose chain-forming element is silicon instead of carbon. Silicones can be coloured with pigments, but they cannot be painted over. During curing they release low-molecular-weight substances; according to the pH of the latter they are classified as acidic, neutral or base (alkaline) silicones.

Base silicones are rare, and the amines they emit are usually hazardous to health. Acidic silicone sealants are always of the acetoxy cure type and give off acetic acid during curing, so they are easily recognised by their vinegar smell. It goes without saying that it is important not to inhale the acid fumes and to ensure adequate ventilation, but otherwise acetic acid poses a very low risk. Neutral silicones are usually of the oxime cure type, which means they give off the health-damaging substance 2-butanonoxime (suspected carcinogen, allergenic) during curing. Neutral silicones that do not pose a health risk are those of the acloxy or benzamide cure types (release alcohol and benzamides, respectively).

Oxime cure silicones may only be used if no technical alternatives are available.

Acrylic sealants

Acrylic sealants can be painted over, but they do not adhere as well and are also less elastic and water repellent than silicones.

Acrylic sealants do not give off any harmful substances during curing. However, some products contain extender oils (plasticisers) that are problematic, especially the group known as phthalates. A number of phthalates have been proven to have a pseudo-hormonal effect and many others are suspected of having such an effect, which is why they are to be generally avoided in building construction.

MS polymer sealants

Sealants based on modified silane polymers have similar properties to silicones; during curing they release relatively harmless alcohols. Thanks to their good adhesive properties and elasticity they are coming into more widespread use. Like acrylic sealants, however, they may contain phthalate plasticisers, which can impair fertility; such products should be avoided.

→ For further information, see the “ÖkoKauf Wien” information sheet “HFCs”
Paints and varnishes

The most important criteria for paints and varnishes pertain to the avoidance of volatile organic compounds (VOCs), the avoidance of two-component reactive coatings, and the exclusion of heavy metals, organochlorines, aromatic hydrocarbons and certain other substances that are harmful to health and/or the environment.

Paints and varnishes — requirements

The following notes are based on Criteria Lists 08001 Interior wall paints and 08016 Coatings for wood and metal and pertain to the services listed in Service Groups LG45 (Coatings on wood and metal) and LG46 (Coatings on masonry, plaster and concrete), as set out in the specifications for building construction.

Information regarding the criteria defined by “ÖkoKauf Wien” for the following paints, varnishes and coating products is not contained in this information sheet, but in the ones indicated below:

- Fillers: Information sheet “Construction panels, plasters and fillers”
- Concrete and screed coatings: Information sheet “Concrete and screed coatings”
- Intumescent paints: Information sheet “Coating products: intumescent paints”
- Flexible sealants: Information sheet “Flexible sealants”

“ÖkoKauf Wien” criteria

The most important “ÖkoKauf Wien” criteria for paints and varnishes pertain to the avoidance of solvents/VOCs and VVOCs (high boilers).

Further “ÖkoKauf Wien” criteria for paints and varnishes include the avoidance of two-component reactive coatings, the ban on biocides for interior use (with the exception of in-can preservatives), the prohibition of heavy metals, organochlorine compounds (in paint strippers), aromatic hydrocarbons and certain other substances that are harmful to health, and the definition of maximum limits for microbiocides used as in-can preservatives (including formaldehyde).

All interior wall paints (incl. latex paints) used must be exclusively solvent-free, plasticiser-free (esp. phthalate-free), and formaldehyde-free (confirmation from the manufacturer).

In metal and wood coatings for interior use, the total content of VOCs and VVOCs (high boilers) may not exceed a maximum of 8 per cent by mass (6% for white paints); the maximum admissible percentage of VVOCs (high boilers) is 3% (2% for white paints).

→ For further information, see the “ÖkoKauf Wien” information sheets “VOCs”, “Heavy metals” and “Environmental quality marks”
Wood-based materials

As a renewable material, wood is of high ecological value provided it comes from a sustainable forestry source; for this reason, “ÖkoKauf Wien” requires a relevant proof of origin. The main sources of indoor hazardous substance emissions are formaldehyde (from the binders), wood preservative (an additive) and terpenes (from the wood). “ÖkoKauf Wien” has defined criteria for formaldehyde emissions (“E 0.5”, “E1/2”).

The following notes are based on Criteria List 08014 Wood-based materials and pertain to services listed in various different Service Groups, as set out in the specifications for building construction.

Classification of wood-based materials
Wood-based materials (as opposed to solid wood) refers to all materials produced from small pieces of wood, usually by binding them together with an adhesive, but also by mechanical means. A distinction is made between materials based on conventional wood (e.g. laminated wood and plywood), veneer board, chipboard/particleboard, fibreboard (e.g. MDF and HDF) and composite materials. The most important category in terms of use and impact on the indoor air are the fibreboards, and the two most important materials are chipboard/particleboard and waferboard (or OSB).

Ecological assessment
Providing it comes from a sustainable forestry source, wood is a renewable material and earns a top rating. However, the complete reverse applies to wood from non-sustainable sources (clear-felling, non-sustainable plantation management). “ÖkoKauf Wien” therefore requires proof of origin for the wood fraction, the main purpose being to prevent the use of tropical timber from non-sustainable production. Tropical timbers are therefore required to bear the so-called FSC label, while non-tropical timbers must be shown to be sourced from countries committed to sustainable forestry, or bear the FSC and/or PEFC label.

Emissions of hazardous substances from wood-based materials
Wood-based materials have three main sources of hazardous substances: emissions from the binding agent, from additives and from the wood itself.

The most important category of binding agents are phenol-formaldehyde resins. These and other formaldehyde-based adhesives give off formaldehyde, a toxic, caustic, allergenic gas which several years ago was also classified as a carcinogenic substance by the World Health Organization. A series of different additives are used, e.g. flame retardants, water repellents and hardeners; the most important in terms of their health impact are biocides (primarily wood preservatives), the best-known of these being PCP (pentachlorophenol), which has now been banned.

Wood itself (especially coniferous wood) can give off a large number and indeed considerable quantities of volatile organic compounds (VOCs), chiefly terpenes, a group of natural aromatics that are predominantly emitted by the resin and many of which have irritant and even allergenic properties.

→ For further information, see the “ÖkoKauf Wien” information sheets “VOCs”, “Tropical timbers” and “Biocides”
Nowadays it is hard to imagine life without plastics. However, the plastics used in building construction vary very widely in terms of their eco-friendliness: whereas the chlorine-free polyalkenes (polyethylene and polypropylene) earn a positive rating and polystyrene is neutral, the City of Vienna avoids PVC on principle due to the multitude of environmental hazards it poses throughout its entire life cycle and the large number of additives it contains, which in most cases are harmful to the environment and to health.

The following notes are based on the “ÖkoKauf Wien” position paper on the avoidance of organo-chlorine compounds.

Attractive price and outstanding material properties are just two of the many reasons why plastics are so widely used in building construction nowadays. The four plastics that are most commonly produced worldwide are polyethylene (PE, frequently also referred to as HDPE or LDPE), polypropylene (PP), polystyrene (PS) and polyvinyl chloride (PVC). The main applications for PE and PP in building construction include pipes (sewage, drainage, electrical installations), floorings, foils and films and roofing membranes, as well as packaging. PS is mainly used in insulation boards for facades (as XPS or EPS/“Styrofoam”). PVC (sometimes also referred to as “vinyl”) is used for pipes, windows and doors, roofing membranes, sealants, cable sheetings and floorings, among other things. Polyamides (PA) are used to produce textile flooring materials, and synthetic rubber (usually styrene-butadiene copolymers) for rubber floor coverings.

Plastics — a comparison

Polyethylene and polypropylene — often grouped together as “polyalkenes” — are equivalent from the ecological point of view and the most eco-friendly option compared to the other mass-market plastics: although they are manufactured from petroleum or natural gas, they require only very small quantities of additives and are thus largely homogeneous and free of halogens. This means that they can be disposed of on landfill sites, incinerated in suitable facilities or recycled without posing a risk.

Polystyrene (PS) is likewise produced from petroleum or natural gas. Due to the health and environmental risks associated with its base material, styrene monomer, it no longer obtains such positive ecological ratings as PE/PP.

However, the outstanding insulating properties of PS make it a good choice of product in its main field of application, composite thermal insulation systems (EPS, XPS boards), provided care is taken to avoid environmentally dubious flame retardant additives.

Polyvinyl chloride (PVC) is an organochlorine plastic. Brittle and chemically unstable in its raw state, the basic polymer requires a wide variety of additives (stabilisers, flame retardants), most of which are harmful to both health and the environment. Soft PVC also contains plasticisers, the production and use of which are associated with considerable health risks. When burnt, PVC gives off highly toxic chlorine compounds (including e.g. dioxins) as well as caustic hydrochloric acid. The problem of PVC waste disposal remains largely unresolved, with only a negligible proportion of PVC waste being recycled. For these and other reasons, the City of Vienna routinely avoids the use of PVC in construction projects.

Alternatives

Halogen-free alternatives are now available for all major PVC applications in building construction. Experience has shown that higher costs are only to be expected for PVC-free windows and halogen-free electrical installation materials.

The alternatives for pipes are PP and PE, for windows wood and wood/aluminium. A broad spectrum of alternative floorings is available, from linoleum through wood to tiles and stone, and halogen-free plastics such as PE, PP, PB (polybutene) or polyamide can be used for electrical applications.

→ For further information, see the “ÖkoKauf Wien” information sheet “PVC”
Construction panels, plasters and fillers

The primary criteria with regard to construction panels pertain to the potential radioactivity of plaster and verification of the origin of the wood fraction of wood-based panels. Plasters and fillers for interior use, unless they are in powder form anyway, should be (V)VOC-free, biocide-free and free of hazardous substances. Products in powder form are to be given preference; the proportion of organic substances in mineral products is limited to a maximum of 3%.

Construction panels, plasters and fillers — requirements

The following notes are based on Criteria Lists 08007 Construction panels and 08013 Plasters and fillers and pertain to the services listed in Service Groups LG 09 (Masonry and setting work), LG 10 (Plastering work), LG 36 (Carpentry work), LG 39 (Drywall construction work) and LG 46 (Coatings on masonry and concrete), as set out in the specifications for building construction.

Construction panels

Depending on the production process used, industrial plasters may contain radioactive substances (e.g. potassium-40, radium-226 or thorium-232). According to the criteria defined by “ÖkoKauf Wien”, plasterboard and gypsum fibreboard panels may therefore not exceed a specified radioactivity limit. “ÖkoKauf Wien” further specifies that construction panels must not contain APEOs. For products made from wood-based materials, proof of origin must be furnished (countries committed to sustainable forestry, FSC or PEFC certification) to demonstrate that they come from sustainable forestry sources.

The organic substance content of mineral products may not exceed a maximum of 3%; composite products should be avoided where possible because they are difficult to recycle.

→ For further information, see the “ÖkoKauf Wien” information sheets “Wood-based materials”, “Tropical timber” and “Environmental quality marks”

Plasters and fillers

Preference should automatically be given to products in powder form because this saves transport energy (water) and cuts down on (allergenic) in-can preservatives; also, powders naturally contain no VOCs. With products in paste form, however, the avoidance of VOCs is very important, not least because plasters are applied in considerably thicker layers than, for instance, wall paints and can thus give rise to significantly higher indoor air emissions than the latter. As in other products for interior use, biocides (with the exception of certain in-can preservatives) are not permitted.

The organic substance content of mineral plasters may not exceed a maximum of 3%.

→ For further information, see the “ÖkoKauf Wien” information sheets “VOCs”, “Indoor air quality” and “Biocides”