ECARF
For a Better Life with Allergies

ALLERGY FRIENDLY BUILDINGS ALLIANCE

ECARF HANDBOOK FOR ALLERGY-FRIENDLY CONSTRUCTION

Version 1.0 (2022)

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Background to the ECARF seal

Allergies – a common ailment

Allergies are the most common chronic disease worldwide, affecting some 25 million individuals in Germany alone. Hay fever alone is estimated to affect between 400 and 500 million individuals worldwide. Allergies are always chronic and progressive. Untreated hay fever is considered one of the main risk factors for developing asthma. Experts also refer to this progression as the "allergic march" or "atopic march". However, up to 90 percent of allergy sufferers in Europe go untreated or receive inadequate treatment.

Allergies can appear in different forms e.g. watery and itchy eyes, sneezing or shortness of breath due to swollen mucous membranes. The most widespread is pollen allergy, which predominantly manifests as hay fever. But other allergies may also reduce quality of life: Contact allergies, allergic bronchial asthma and allergies to food, dust mites or insect venoms. While adults often complain of severe impairments to work performance, children and adolescents suffer from concentration disorders, which may, among others, affect their performance at school and their ability to learn. A child with an untreated allergy has a 40% probability of dropping at least one grade at school.

Allergens

In general, there are two types of allergens: type 4 allergens, which elicit a T-cell response, and type 1 allergens, which elicit an immediate hypersensitivity reaction.The rather common type 1 allergens significant in the construction sector include pollens that are transferred into the building from the outdoors. Pollen from tree species such as birch, alder, hazel and less allergenic species such as beech and oak are worth particular mention in this respect.

The German Society for Contact Allergy (DKG) publishes well-defined lists of contact allergens. The components listed are attributed different levels of importance depending on the materials that contain them. For example, a rubber compound which forms part of the backing material of a carpet is not a problem, whereas a volatile preservative contained in the backing material of the carpet may impact indoor air quality. The same applies to plastic sheaths e.g. for cables. When these warm up under an electrical load, in particular, they may give off considerable fumes due to plasticisers, and are therefore detrimental to the indoor environment.

Healthy building

The indoor environment constitutes one of the top 5 health risks facing the population, and this risk must be reduced. A 'healthy building' allows for greater productivity, increases job satisfaction and creativity, and thus reduces illness-related absences. A tenant can and should support this too, for instance by signing a 'Healthy Lease Agreement' which describes the requirements for an allergy-friendly building operation.

Allergy Friendly Building Alliance

ALLERGY FRIENDLY
BUILDINGS ALLIANCE

Health is Wealth

On average, individuals spend 90 percent of their time indoors: either in their apartment or house, at the workplace or in public buildings. The objective of the Allergy Friendly Building Alliance – AFBA is to improve the well-being of allergy sufferers in buildings and to support the construction industry in developing allergy-friendly projects.

In cooperation with the ECARF Foundation (European Centre for Allergy Research Foundation), which is one of the AFBA co-founders and is part of the network of European university medicine, the AFBA supports project developers in obtaining the Seal for Allergy-Friendly Construction. The ECARF seal is awarded to buildings that meet the scientifically formulated claim of being allergy-friendly.

In Germany alone, 100 million days are wasted because of allergies. The economic damage amounts to 150 billion euros in the EU, which also translates to a reduction in performance. Our mission therefore is to develop allergy-friendly buildings together with the developer by revising the building specifications and conducting medical tests on the components of the materials to be used.

Allergies may arise through direct contact with substances, as well as via airborne pollen or moulds. Fumes emanating from components or materials may also cause allergies. The focus here is on the medical-scientific aspect which takes into account that the complexity of allergens not only hinges on their threshold values, but also on how they interact with and are handled by individuals. The choice of building materials and even the design of outdoor spaces have so far almost exclusively been based on economic considerations, with medical factors only playing a subordinate role. It should be noted that allergy-friendly construction does not necessarily equate to higher building costs.

The newly established ECARF Seal for Allergy-Friendly Buildings embraces a completely novel holistic approach. The evaluation process not only starts with the outdoor facilities, encompassing the entire building structure, planning and construction, but also offers consulting services for the users. The ECARF seal assesses both the origin and causes as well as the practical implementation.

Facility management in particular is of great importance throughout the entire operating period. As part of the FM (facility management) service, specific work instructions for the maintenance, inspection, operation and care instructions are prepared for the project.

Consequences and effects

- The increasing prevalence of allergies has considerable economic consequences due to the reduced ability to work and increase in sick leave.
- Allergies are often associated with substantial declines in quality of life.
- In a survey of allergy sufferers in Europe, around 80% of respondents stated that their allergy significantly interfered with daily activities.
- Potential side effects include: Fatigue, listlessness, depression, nervousness, restlessness, hyperactivity.
- Chronic fatigue also affects job and school performances.
- Owing to the more frequent use of the health care system, long-term medication and absenteeism, allergies result in high direct and indirect medical costs.

About Prof. Zuberbier

Prof. Dr. med. Dr. h. c. Torsten Zuberbier is a dermatologist and one of the world's leading allergy research specialists. In 1996, Zuberbier was appointed as head of allergology in the Clinic of Dermatology, Venereology and Allergology at the Charité university hospital in Berlin. In September 2001, he was appointed as extraordinary professor. In 2003, he was appointed as endowed chair (C4) of allergy research. He is also the spokesperson for the Allergie-Centrum-Charité (Charité university hospital allergy centre).

That same year, he headed the European Centre for Allergy Research Foundation ECARF at the clinic for dermatology, venereology and allergology, Charité university hospital, in Berlin. Since October 2004, he has been heading the Allergie-Centrum-Charité at the dermatology clinic in Berlin-Mitte. Before being elected managing director of the clinic for dermatology, venereology and allergology at Charité in January 2012, he was co-director of the clinic. In 2021, he was appointed director of the IFA Institute of Allergology and co-director of the Fraunhofer Institute for Translational Medicine and Pharmacology ITMP, the location for the allergology and immunology department.

In collaboration with the forerunner Mercedes-Benz, Torsten Zuberbier designed the interior of the manufacturer's vehicles to be allergy-friendly. The European Centre for Allergy Research Foundation (ECARF) seal is now borne by all of the Mercedes-Benz model series, from the A- to the S-Class. The seal indicates that the levels inside the car meet the strict requirements of the Foundation and that this has been verified by test procedures. The results were confirmed in a medical study conducted by the ECARF Institute GmbH in an innovative, mobile pollen chamber on the grounds of the Charité hospital in Berlin.

Key objectives

Living with allergies poses many challenges during everyday life. In order to be able to 'take a breather', the ECARF seal checks housing complexes and buildings, gets to the bottom of the causes and provides advice on how to make the building as allergy-friendly as possible. Although it is not possible to eliminate all allergies due to the large number of allergies, it is possible to improve the usage quality for allergy sufferers, asthmatics and non-allergy sufferers alike. The ECARF system for allergy-friendly housing complexes and buildings defines three key objectives:

Health is Wealth

30% of all Germans suffer from allergies – impacting your daily life, reducing your efficiency, and bringing hardships onto you and your family. ECARF is doing its part to minimize the impact of allergies on your daily lives: You can only feel wealthy when you're healthy.

Staying ahead of the Allergy

We spend 90% of our lives indoors, and 2/3 of that time in the home. Using allergy-friendly building materials, cleaning products, and maintaining good caretaking practices will limit allergies' impacts on our lives.

Medically Accompanied

Spearheaded by internationally leading scientists and technicians, ECARF's mission is to ensure that people with allergies receive the best possible guidance in everyday matters and treatment opinions. Criteria is regularly updated with the latest scientific developments, and ECARF spends a portion of proceeds on additional research.

These three objectives are used to robustly describe the individual contexts and define the certification framework at the building and housing complex levels.

The ECARF Seal for Allergy-Friendly Construction

The ECARF is committed to helping individuals who suffer from allergies and aims to improve medical care, promote allergy research and raise awareness of the issue. The Foundation has also supported medical research at the Charité in Berlin for many years and collaborates with 129 university hospitals throughout the world.

"The ECARF Foundation aims to ensure that individuals with allergies receive the very best information and care available to address everyday issues and treatment options."

Prof. Dr. med. Dr. h. c. Torsten Zuberbier – ECARF Foundation Chairman

The ECARF seal, issued by the Foundation, is awarded to products and services that restore the zest for life to individuals with allergies. The award has been conferred to thousands of products and services since it was first launched in 2004. An independent advisory board of 15 leading international scientists and technicians has developed criteria that are periodically adapted to reflect the latest scientific findings. The guidelines include thresholds and exclusion criteria that reduce the probability of an allergic reaction occurring. Evidence of compliance with the criteria must be provided in the form of expert reports or studies.

The ECARF Seal for Allergy-Friendly Construction denotes buildings that meet the scientifically formulated claim of being allergy-friendly. The seal can be awarded to buildings that are in the planning stages as well as for existing buildings or for buildings that are already under construction.

By designing and constructing allergy-friendly buildings, users experience

- a higher productivity of their employees working in the building
- Increased wellbeing
- Increased efficiency
- Fewer absences
- Less sick leave
- Greater feel-good effects in the building – even for non-allergy sufferers!

ECARF consultant for buildings and housing complexes

The ECARF seal can also be applied in the building sector, which requires a consultant to act as a link between the client, the project team and the AFBA. The **ECARF consultant** status may be obtained by sustainability consultants with an initial qualification in this region (DGNB Consultant/Auditor, BNB Sustainable Building Coordinator, BREEAM Auditor/AP, LEED AP, WELL AP) and successful participation in a compact ECARF training module (1/2 day). The ECARF seal is not an asset certification such as DGNB, BNB, BREEAM or LEED, but a supplementary/stand-alone certification of healthy construction with a special focus on allergy friendliness and medical care.

ECARF consultants are listed as consultants on the AFBA homepage and can be found/ commissioned via this website.

There are three levels of requirements for the ECARF Seal for Allergy-Friendly Construction. This three-part classification is derived from the most common types of allergies that are triggered in interior and exterior building spaces. Ring I deals with respiratory allergies, which are predominantly caused by pollen or material fumes. Ring II – Respiratory irritants are allergies that are caused by small particles which irritate the respiratory tract.
Ring III specifies requirements for dealing with contact allergens i.e. allergenic components that are released from materials and substances.

The three rings are assigned specific criteria which collectively form the ECARF Seal for Allergy-Friendly construction. The criteria are broken down into indoor and outdoor spaces and, when considered as a whole, reflect the different impact zones of allergenic substances.

RING I
Respiratory allergies

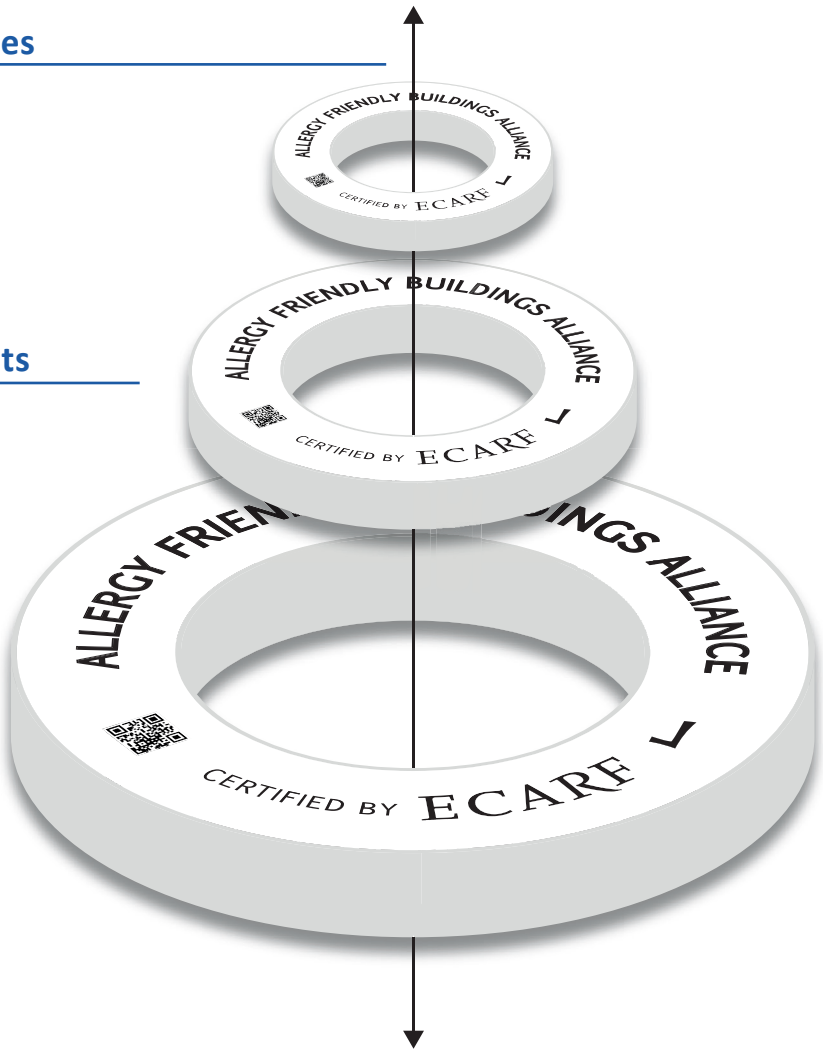
***Outdoors** and indoors*

RING II
Respiratory irritants

***Outdoors** and indoors*

RING III
Contact allergens

***Outdoors** and indoors*



The certification process

The criteria that need to be satisfied are generally based on elements that are important for individuals that come into contact with the product, which in this case is the building. Different elements are taken into account e.g. the type of exposure and duration of contact that the user of a specific building is subjected to in individual rooms and with individual components of the building.

ECARF consultant compiles all relevant documents based on the criteria catalogue and submits the project to the AFBA GmbH. The design status is assessed based on the building specifications provided by the client.

Once the project objectives, current planning and identification of as yet undefined planning objectives and qualities have been analysed, the result is presented in the form of a pre-check.
After successfully defining the target requirements and desired qualities of the project in consultation with the clients, planners and specialist engineers, the extent to which the project can be certified is determined. After target agreements and declarations of intent have been made, the preliminary certificate can be issued. The ECARF consultant and the AFBA carry out the continuous monitoring of the planning process and the construction.

The consultant also offers support to compile any of the required documentation and to prepare and supply the necessary documents and supporting evidence required: For the medical support which is handled by the AFBA and reinforced by the ECARF consultant on the client side.

After the final inspection and completion of the project, for awarding the seal and the final certificate for allergy-friendly construction. The seal is valid until there are major changes of use.

The AFBA also provides advice in the following areas:

- Real estate development (all asset classes: residential, offices, commercial, hotel, public facilities)
- Landscape design
- Transportation and mobility (train stations, airports, etc.)
- Interior design
- Equipment for cruise ships
- Construction of detached houses and apartment buildings

The handbook uses the term 'mitigation' to refer to the medical term for alleviation or attenuation.

Allergy-friendly construction in outdoor spaces

Criteria – Exterior spaces

R1.1 Site analysis for avoiding pollen
R1.2 Avoidance of mould spores in outdoor spaces

R2.1 Monitoring of particulate matter and ozone pollution on site and introduction of feasible reduction strategies
R2.2 Avoidance of allergenic timber treatments
R2.3 Reduction of volatile organic compounds in outdoor spaces
R2.4 Avoidance of tobacco smoke around the building

R3.1 Avoidance of allergenic fragrances and preservatives in outdoor spaces
R3.2 Compliance with criteria for metal surfaces in outdoor spaces as regards the risk of nickel, chromium and cobalt contact allergies
R3.3 Compliance with criteria for allergy-friendly rubber materials in outdoor spaces
R3.4 Avoidance of plants that trigger contact allergies in outdoor spaces

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ALLERGY FRIENDLY BUILDINGS ALLIANCE

R1.1 SITE ANALYSIS FOR AVOIDING POLLEN

Objective:

The objective is to analyse the site's environment in order to identify avoidable pollen sources in advance.

The medical perspective on the criterion:

Pollen allergy, also known as hay fever, is the most common form of allergy. More than 15% of the adult population in Germany and Austria develop an allergy to tree pollen, grass pollen or weed pollen during their lives and report the typical symptoms: red eyes, sneezing fits and rhinitis.

Evidence:

General plan of potential pollen sources, including at least:

- Range of influence of a 100-metre radius of the property
- Photo record of status and location on the plan
- Planting scheme

Mitigation:

If adverse effects exist, consult with the AFBA medical team depending on possible action.

R1.1 SITE ANALYSIS FOR AVOIDING POLLEN

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R1.2 AVOIDANCE OF MOULD SPORES IN OUTDOOR SPACES

Objective:

The objective is to avoid any adverse effects caused by mould spores by adopting appropriate practices in green and cultivated areas, as well as by dealing with dead wood and composting in the area to be developed.

The medical perspective on the criterion:

Moulds are inhaled allergens that also spread in outdoor spaces. They feed on animal and plant debris. Mould contamination in the air reaches its peak in late summer. Moulds such as Alternaria alternata and Cladosporium herbarum are most commonly found in outdoor spaces e.g. in soil, potting soil, silage and rotting plant material, and cause allergic symptoms such as red eyes, sneezing fits and rhinitis.

Evidence:

Scheduled protocol discussion between auditor and open space planner, including:

- Recommendations for the developer on how to avoid mould spores
- Compliance with a minimum distance (of at least 15 m) depending on type of composting system and building
- Planting scheme

Mitigation:

In case of mould spores, keep a record according to protocol, develop an action plan and dispose of the source.

R1.2 AVOIDANCE OF MOULD SPORES IN OUTDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R2.1 MONITORING OF PARTICULATE MATTER AND OZONE POLLUTION ON SITE AND INTRODUCTION OF FEASIBLE REDUCTION STRATEGIES

Objective:

The objective is to reduce each individual exposure to ozone, particulate matter (e.g. PM2.5) and other emissions (e.g. from combustion processes).

The medical perspective on the criterion:

Fine dust and ozone pollution irritate the respiratory tract and may negatively affect lung function and cause headaches, watery eyes or even coughing.

Evidence:

Report on potential irritants, including the following components:

- Results of a commissioned measurement on site
- Overview of local measurement results
- Map of the measurement results

Mitigation:

In case of adverse effects, consult with the AFBA medical team
depending on possible action (e.g. installation of HEPA filter systems, no windows facing main roads or emission sources). Depending on the result, actions required for criterion R5.2.

R2.1 MONITORING OF PARTICULATE MATTER AND OZONE POLLUTION ON SITE AND INTRODUCTION OF FEASIBLE REDUCTION STRATEGIES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R2.2 AVOIDANCE OF ALLERGENIC TIMBER TREATMENTS

Objective:

The objective is to avoid potentially allergenic timber treatments in outdoor spaces.

The medical perspective on the criterion:

Unsuitable timber treatments can trigger a range of allergy- and toxicity-related symptoms such as facial swelling, chronic bronchitis, rhinitis and subsequent sleep disturbances, drowsiness, listlessness and a lack of concentration.

Evidence:

Concept for allergy-friendly timber treatments in outdoor spaces:

- Protocol discussion between the auditor and the developer
- Testing of timber treatment and compliance with the DIN 68800-2, DIN EN 350-2 or 528/2012/EC requirements
- Recording of material specifications within the building specifications

Mitigation:

Not applicable

R2.2 AVOIDANCE OF ALLERGENIC TIMBER TREATMENTS

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R2.3 REDUCTION OF VOLATILE ORGANIC COMPOUNDS IN OUTDOOR SPACES

Objective:

The objective is to avoid volatile organic compounds that pose a significant risk to humans in outdoor spaces.

The medical perspective on the criterion:

Volatile organic compounds (VOCs) are responsible for unpleasant odours, respiratory irritation and eye irritation. VOCs must be avoided entirely for healthy everyday life.

Evidence:

Provide evidence on how VOCs are avoided in outdoor spaces by:

- Testing of fumes emanating for prolonged periods of time in outdoor spaces
- Recording of material specifications within the building specifications

Mitigation:

Implement the ECARF material checklist in the project.

R2.3 REDUCTION OF VOLATILE ORGANIC COMPOUNDS IN OUTDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R2.4 AVOIDANCE OF TOBACCO SMOKE AROUND THE BUILDING

Objective:

The objective is to avoid the adverse effects of tobacco smoke in the immediate vicinity of the building.

The medical perspective on the criterion:

Tobacco smoke is harmful to health in general and particularly for allergy sufferers, even tobacco smoke in the immediate vicinity of a building may trigger chronic rhinitis, conjunctivitis and mild respiratory distress. This applies to both active and passive smokers.

Evidence:

Implement a spatial tobacco smoke prevention strategy in outdoor spaces of the building:

- Smoking areas only at ground level with a minimum distance of 7.5 m from entrances and air intakes; show smoking areas in plans.
- Provide evidence of no smoking on balconies and roof terraces in the form of a photo record of the no smoking signs (for non-residential buildings).

Mitigation:

Create designated smoking zones.

R2.4 AVOIDANCE OF TOBACCO SMOKE AROUND THE BUILDING

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R3.1 AVOIDANCE OF ALLERGENIC FRAGRANCES AND PRESERVATIVES IN OUTDOOR SPACES

Objective:

The objective is to avoid the adverse effects of allergenic fragrances and preservatives (e.g. wall paints, adhesives, sealants, floor coverings) in outdoor spaces.

The medical perspective on the criterion:

Individual fragrances and preservatives can cause severe hypersensitivity reactions. Symptoms may include eczema, asthma, hives and Quincke's oedema.

Evidence:

Provide evidence on how allergenic fragrances and preservatives are avoided in outdoor spaces by:

- Recording of material specifications within the building specifications

Mitigation:

Implement the ECARF material checklist in the project.

R3.1 AVOIDANCE OF ALLERGENIC FRAGRANCES AND PRESERVATIVES IN OUTDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R3.2 OBSERVANCE OF SURFACES CONTAINING NICKEL, CHROMIUM AND COBALT

Objective:

The objective is to draw attention to surfaces that contain nickel, chromium and cobalt that are expected to come into prolonged contact with the skin (e.g. railings, furniture).

The medical perspective on the criterion:

Sensitisation to metals, particularly nickel, chromium and cobalt, is one of the most common forms of contact allergies. Symptoms manifest as eczema. The decisive factor is the duration of skin contact and any potential friction e.g. stair railings, while in contrast, very brief contact e.g. with window catches, is less problematic.

Evidence:

Provide evidence on how surfaces containing nickel, chromium and cobalt are avoided in outdoor spaces by:

- Recording the material specifications within the building specifications
- Nickel release in synthetic sweat: Less than 0.5 mg/cm2/week should be released in synthetic sweat. Source: Schmidt et al: Neues zur Pathophysiologie des allergischen Kontaktekzems auf Nickel. [Novel insights into the pathophysiology of allergic contact dermatitis to nickel.] Allergo J 20, 74-80 (2011)

Mitigation:

Surface coating, if applicable

R3.2 OBSERVANCE OF SURFACES CONTAINING NICKEL, CHROMIUM AND COBALT

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R3.3 COMPLIANCE WITH CRITERIA FOR ALLERGY-FRIENDLY RUBBER MATERIALS IN OUTDOOR SPACES

Objective:

The objective is to draw attention to surfaces that contain allergy-promoting rubber materials that are expected to come into prolonged contact with the skin (+60 sec) (e.g. floor coverings, facades, playground equipment).

The medical perspective on the criterion:

Intense contact with specific rubber substances can cause discomfort, especially for individuals with contact allergies. This may cause itchy skin lesions in the form of eczema, which severely affect quality of life.

Evidence:

Provide evidence on how surfaces containing rubber materials are avoided in outdoor spaces by:

- Recording the material specifications within the building specifications

Mitigation:

Not applicable

R3.3 COMPLIANCE WITH CRITERIA FOR ALLERGY-FRIENDLY RUBBER MATERIALS IN OUTDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R3.4 AVOIDANCE OF PLANTS THAT TRIGGER CONTACT ALLERGIES IN OUTDOOR SPACES

Objective:

The objective is to avoid plants that cause contact allergies in outdoor spaces of the building (e.g. chrysanthemums).

The medical perspective on the criterion:

Independently of respiratory allergies triggered by pollen, a range of plants that are often found in living areas, balconies or terraces can also trigger airborne contact dermatitis. Chrysanthemums are an excellent example, as plant hairs, withered plant particles are dispersed through the air and may provoke severe contact allergies if they come into contact with skin.

Evidence:

Protocol discussion between auditor and open space planner:

- Recommendations for avoiding plants that cause contact allergies
- Confirmation of location as appendix to open space maintenance
- Comparison with ECARF excluded plant list
- Planting scheme

Mitigation:

Where plants that trigger contact allergies are already established, record and consider eradication and also disposal of the source. For new plantings, avoid plants as per recommended action.

R3.4 AVOIDANCE OF PLANTS THAT TRIGGER CONTACT ALLERGIES IN OUTDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

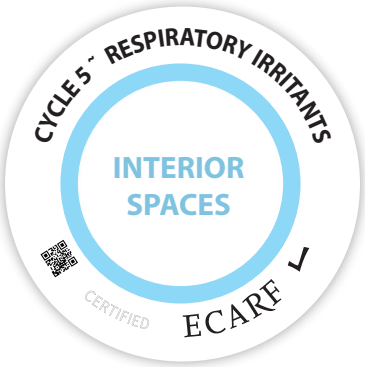
Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

Allergy-friendly construction in indoor spaces

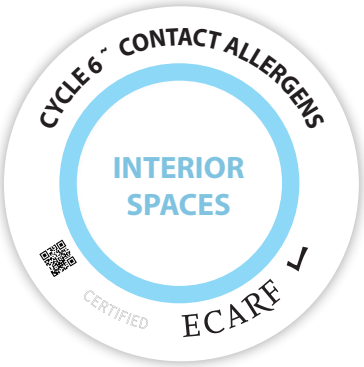
Criteria – Interior spaces

R4.1 Reduction of house dust mites in indoor spaces
R4.2 Avoidance of mould spores in indoor spaces
R4.3 Reduction of exposure to animal hair in indoor spaces
R4.4 Measures to contain pollen in indoor spaces
R4.5 Avoidance of pests in indoor spaces
R4.6 Avoidance of allergenic indoor plants
R4.7 Avoidance of allergenic cleaning agents

R5.1 Reduction of volatile organic compounds in indoor spaces
R5.2 Avoidance of exposures to (fine) dust and exhaust fumes in indoor spaces
R5.3 Avoidance of excessive exposure to formaldehyde in indoor spaces



R6.1 Avoidance of the use of allergenic fragrances and preservatives
R6.2 Observance of the use of allergenic contact allergens



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ALLERGY FRIENDLY BUILDINGS ALLIANCE

R4.1 REDUCTION OF HOUSE DUST MITES IN INDOOR SPACES

Objective:

The objective is to avoid excessive exposure to house dust mites indoors.

The medical perspective on the criterion:

House dust mites are among the most significant triggers of allergies. Their optimal reproductive conditions are 70-80% humidity and temperatures above 25 degrees Celsius. A dust mite allergy is characterised by a watery runny nose or nasal congestion. Symptoms include itchy eyes and sneezing fits. Long-term exposure to house dust may develop into bronchial asthma with symptoms such as coughing, shortness of breath and wheezing.

Evidence:

Building specifications. Smooth floor coverings/short pile carpets are favoured.
Construction-related dust traps should be avoided (e.g. floor joint connection). In rooms with more than one shower, hygrometers are mandatory (discretion in the choice of design, record of device as part of the photo documentation).
Evidence: Representative photo record

Mitigation:

Periodically measure air humidity and regulate air humidity (e.g. with a dehumidifier) below a level of 60% relative humidity.

R4.1 REDUCTION OF HOUSE DUST MITES IN INDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R4.2 AVOIDANCE OF MOULD SPORES IN INDOOR SPACES

Objective:

The objective is to avoid mould spores indoors.

The medical perspective on the criterion:

Moulds are ubiquitous and mould allergies are common (2-32% of all allergy sufferers). Mould requires high humidity to spread. Unsuitable air-conditioning systems can promote the growth of moulds inside buildings. In addition to damp walls, poorly maintained humidifiers and filter mats in air conditioning and ventilation systems can also contribute. Avoidance room conditioning via air (full air conditioning systems)

Evidence:

Protocol discussion between auditor and owner/operator:

- Damp rooms should be equipped with adequate ventilation options (mechanical or analogue) (air humidity below 60%).
- Submit the specialist planner's ventilation and air conditioning concept (RLT).
- In rooms with more than one shower, hygrometers are mandatory (discretion in the choice of design, record of device as part of the photo documentation).
- Development and implementation of a ventilation and drying concept for the constructed building components.

Mitigation:

Periodically measure air humidity and regulate air humidity (e.g. with a dehumidifier) below a level of 60% relative humidity.

R4.2 AVOIDANCE OF MOULD SPORES IN INDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R4.3 REDUCTION OF EXPOSURE TO ANIMAL HAIR IN INDOOR SPACES

Objective:

The objective is to avoid or reduce exposure to animal hair indoors.

The medical perspective on the criterion:

After pollen and mites, animal hair is the most common source of inhaled allergens. Cats are by far the most significant triggers. Individuals that are allergic to animals experience respiratory allergies, itching, red skin, conjunctivitis or hives when they come into contact with the animal epithelia. It can also trigger neurodermatitis flare-ups.

Evidence:

Protocol discussion between auditor and owner/operator:

In the workplace:

- Cleaning recommendations (pre-printed form) and use as training material for FMs or owners
- Designation of animal-free zones, where possible
- Evidence of animal-free zones via photo record of signs (for non-residential buildings).

Mitigation:

Implementation of the cleaning recommendations. If applicable, animal-free buildings (or individual floors). In case of mechanical ventilation, periodic cleaning of the air conditioning system and replacement of the filters.

R4.3 REDUCTION OF EXPOSURE TO ANIMAL HAIR IN INDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R4.4 MEASURES TO CONTAIN POLLEN IN INDOOR SPACES

Objective:

The objective is to implement measures to contain and reduce pollen in indoor spaces

The medical perspective on the criterion:

In the flowering season, tree and grass pollen also trigger allergies indoors. In the warmer months in particular, it is unavoidable that pollen collects on walls, textiles and furniture through open windows.

Evidence:

Protocol discussion between auditor and owner/operator:

In the workplace:

- Evidence of HEPA 13 filters in the room air systems
- Optional: Installation of pollen grids in rooms with natural ventilation
- Evidence of the room air conditioning concept (RLT) and photo record of the pollen grids, if applicable.

Mitigation:

Implementation of an allergy-friendly room air technology concept in consultation with the medical team. In case of mechanical ventilation, periodic cleaning of the air conditioning system and replacement of the filters.

R4.4 MEASURES TO CONTAIN POLLEN IN INDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R4.5 AVOIDANCE OF PESTS IN INDOOR SPACES

Objective:

The objective is to avoid indoor pests (particularly cockroaches). These typically retreat into crevices and cracks in the floor or in areas around the skirting boards.

The medical perspective on the criterion:

Pests such as cockroaches, but also other beetle species, can trigger respiratory allergic reactions (rhinoconjunctivitis, bronchial asthma). Insects such as bees and wasps have toxins that may cause life-threatening anaphylactic reactions.

Evidence:

Protocol discussion between auditor and owner/FM:

- Cleaning recommendations (pre-printed form) and use as training material for FMs or owners

Mitigation:

- Clean cooking and dining spaces periodically
- Identify any potential hiding spaces, such as gaps and cracks e.g. seal them with silicone compound.
- Avoid build-up of open rubbish and decaying matter

R4.5 AVOIDANCE OF PESTS IN INDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R4.6 AVOIDANCE OF ALLERGENIC INDOOR PLANTS

Objective:

The objective is to avoid allergenic indoor plants in rooms accessible to the public.

The medical perspective on the criterion:

Flower decorations, with hazel catkins or flowering grasses, for example, can trigger respiratory allergies, as can a range of indoor plants such as the rubber plant or ficus.

Evidence:

Protocol discussion between auditor and owner/operator:

- Provide a list of indoor plants
- Develop a training document for FMs or owners
- Do not use allergenic indoor plants specified in the ECARF plant list in the appendix (e.g. Ficus Benjamina, etc.).
- Cleaning recommendations (pre-printed form) and use as training material for FMs or owners

Mitigation:

Implementation of the ECARF plant list.

R4.6 AVOIDANCE OF ALLERGENIC INDOOR PLANTS

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R4.7 AVOIDANCE OF ALLERGENIC CLEANING AGENTS

Objective:

The objective is to avoid cleaning agents that trigger allergies.

The medical perspective on the criterion:

Cleaning agents often trigger breathing difficulties, sneezing fits and itchy skin in asthmatics and individuals that are allergic to fragrances.

Evidence:

Protocol discussion between auditor and owner/FM:

- Develop a training document for operators
- Use cleaning agents suitable for allergy sufferers e.g. cleaning agents bearing the ECARF seal.
- Include cleaning company contract as an appendix.

Mitigation:

Mandatory use of allergy-friendly cleaning agents e.g. in accordance with the ECARF seal

R4.7 AVOIDANCE OF ALLERGENIC CLEANING AGENTS

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R5.1 REDUCTION OF VOLATILE ORGANIC COMPOUNDS IN INDOOR SPACES

Objective:

The objective is to avoid VOCs that pose a significant risk to humans in indoor spaces.

The medical perspective on the criterion:

Exposure to VOCs in daily life is multi-faceted. Paints, varnishes and other building materials often trigger allergic reactions. Using the right materials indoors may prevent symptoms such as sneezing, coughing and eye irritation.

Evidence:

Provide evidence on how VOCs are avoided in indoor spaces by:

- Recording of material specifications within the building specifications
- Confirm compliance with ECARF material checklist
- Representative measurement before commissioning and without furniture

Mitigation:

If necessary, use longer airing periods in heated rooms to further reduce VOC fumes

R5.1 REDUCTION OF VOLATILE ORGANIC COMPOUNDS IN INDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R5.2 AVOIDANCE OF EXPOSURES TO (FINE) DUST AND EXHAUST FUMES IN INDOOR SPACES

Objective:

The objective is to avoid exposure to (fine) dust and exhaust fumes in indoor spaces

The medical perspective on the criterion:

Long-term exposure to particulate matter can lead to a variety of respiratory diseases. Allergic reactions may increase when pollen and fine dust particles coincide.

Evidence:

Description of potential irritants:

- Identification of the project's most relevant respiratory irritants (criterion R2.1)
- Protocol discussion between AFBA medical team and TGA planning.
- Submit the specialist planner's ventilation and air conditioning concept (RLT).

Mitigation:

In case of adverse effects, consult with the medical team depending on possible action (e.g. installation of HEPA 13 filter systems, no uncontrolled opening of windows to main roads or emission sources)

R5.2 AVOIDANCE OF EXPOSURES TO (FINE) DUST AND EXHAUST FUMES IN INDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R5.3 AVOIDANCE OF EXCESSIVE EXPOSURE TO FORMALDEHYDE IN INDOOR SPACES

Objective:

The objective is to avoid exposure to formaldehyde in indoor spaces.

The medical perspective on the criterion:

Due to its diverse characteristics, formaldehyde is a commonly used substance. It is found in preservatives and disinfectants as well as in clothing, plastics and cleaning agents. Not only is it carcinogenic, but it may also cause respiratory allergies and, in rare cases, anaphylactic reactions.

Evidence:

Description of potential irritants:

- Recording of material specifications within the building specifications
- Confirm compliance with ECARF material checklist
- Indoor pollutant measurement prior to installation of built-in furniture and occupancy
- Comply with the threshold value of 60 µg/m^3

Mitigation:

In case of adverse effects, consult with the medical team depending on possible action

R5.3 AVOIDANCE OF EXCESSIVE EXPOSURE TO FORMALDEHYDE IN INDOOR SPACES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R6.1 AVOIDANCE OF THE USE OF ALLERGENIC FRAGRANCES AND PRESERVATIVES

Objective:

The objective is to avoid exposure to allergenic fragrances and preservatives in indoor spaces. Some typical on-site sources are wall paints, varnishes and floor coverings as well as associated care products.
Typical sources in the workplace include cleaning agents, room fragrances and toilet hand soaps.

The medical perspective on the criterion:

Contact allergies can be caused by direct contact as well as by airborne contact. Some typical examples include wall paints, but also room fragrances that are transmitted through the air and hand soaps and creams that can cause allergies after direct
contact.

Evidence:

Record requirements in the building specifications

- Cleaning schedule
- Specifications for room fragrance systems
- Indoor pollutant measurement prior to installation of built-in furniture and occupancy
- Comply with the threshold value of 60 µg/m^3

Mitigation:

In case of adverse effects, consult with the medical team depending on possible action

R6.1 AVOIDANCE OF THE USE OF ALLERGENIC FRAGRANCES AND PRESERVATIVES

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

R6.2 OBSERVANCE OF THE USE OF ALLERGENIC CONTACT ALLERGENS

Objective:

The objective is to reduce contact allergens that may come into contact with the skin indoors (the aim is to ensure that frequently touched components such as railings made of metal, rubber or painted wood e.g. on stairs and escalators, are allergy-friendly).

The medical perspective on the criterion:

Metals such as nickel, chromium and cobalt, as well as materials that contain rubber compounds, adhesives and paints are common contact allergens. These cause itching, scaling and cracking of the skin and often extend beyond the original area of contact. At the wrong concentrations, they may trigger chronic eczema. The decisive factor is the duration of skin contact. Particular attention should therefore be given to objects such as staircase handrails.

Evidence:

Protocol discussion between AFBA medical team and TGA planning.

- Detailed building specifications
- In some cases, components such as metal stair railings that contain a high proportion of nickel can be coated with a protective lacquer that prevents the release of nickel – this requires an individual consultation.
- Nickel release in synthetic sweat: Less than 0.5 mg/cm2/week should be released in synthetic sweat. Source: Schmidt et al: Neues zur Pathophysiologie des allergischen Kontaktekzems auf Nickel. [Novel insights into the pathophysiology of allergic contact dermatitis to nickel.] Allergo J 20, 74-80 (2011)

Mitigation:

Consultation depending on possible action.

R6.2 OBSERVANCE OF THE USE OF ALLERGENIC CONTACT ALLERGENS

Description of compliance: *to be completed by the ECARF consultant*, with signature/stamp*

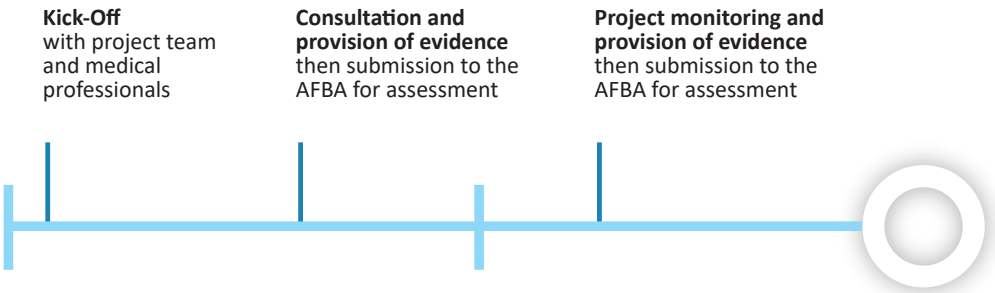
List of supporting documents: *as an appendix (studies, measurement results, photos, etc.)*

Medical findings: *with signature/stamp*

Additional pages should be inserted if more space is required to provide the evidence.
Submitted documents should include the completed criteria catalogue as well as supporting documents of evidence.

ECARF certification process

The objective is process-oriented certification. The certificate is tailored to the construction process in Germany and can be seamlessly integrated into the building process. The added value, apart from the medical advice, is the consistent tracking of substances relevant to allergy/asthma sufferers.



Project registration

Registration by email to info@afba.de

The size of the project, the choice of housing complexes/buildings, the location and the project timetable must be specified.

Preliminary certificate

A preliminary certificate is awarded on presentation of a completed and signed handbook including supporting documents.

The preliminary certificate is valid until completion of the construction or pending results for the full certificate

ECARF certificate

Award of the ECARF seal with unrestricted validity (when use is unchanged).

Project listed on the AFBA homepage

Registration

The application for a project is initially submitted to the AFBA by email. After consultation with the ECARF consultant and project manager, the first steps are discussed.
The AFBA and the ECARF consultant assess the planning status of the overall project according to the ECARF criteria. The results are summarised by the AFBA in a "pre-check" form. The description of the results takes into account (as far as possible) all individual requirements within the criteria of the ECARF criteria. Assumptions or estimates shall be agreed upon with the client or shall be justified in an appropriate manner. Requirements that have already been fulfilled and those that cannot be fulfilled on account of planning or use are depicted in a clearly recognisable way.

Preliminary certificate

If the client agrees to comply with the AFBA recommendations formulated in the initial report in writing, and to apply them to the planning and building phase, the ECARF Quality Seal for Allergy-Friendly Construction may be provisionally awarded together with the international ECARF certificate. This means that the client can officially communicate the granting of the preliminary certificate in its corporate communications. The AFBA, the ECARF Foundation and Prof. Dr. Dr. Zuberbier are then also available for press activities/press events.

Certificate

The definitive award of the seal will follow confirmation of the quality standards. The plaque and the AFBA ring are produced by a design studio in consultation with the client and awarded together with the certificate as part of a high-profile event. The project/ property of the partner/client is also communicated on the ECARF and AFBA website.

Am Tacheles - Berlin © pwr development GmbH

Am Tacheles - Berlin © pwr development GmbH

Go West - Berlin © DIE WOHNKOMPANIE Berlin GmbH & Co. KG

First Time Application
District and building:
GoWest I Berlin

First Time Application
District and building::
Am Tacheles I Berlin

ECARF construction consultant

The status of ECARF construction consultant is awarded by the European Centre for Allergy Research Foundation (ECARF) after successful completion of a training course organised by the AFBA or ECARF.

The designation *ECARF construction consultant* may be used in correspondence, email signatures, business cards, etc.

One prerequisite for participation in the further training event is familiarity with certification processes in construction, which is generally attested by the *DGNB Consultant* or *DGNB Auditor* status.

The *ECARF construction consultant* status may be withdrawn on grounds of gross violation of the code of conduct or for making false statements.

The scope of services provided by the *ECARF construction consultant* only applies to the construction sector, which means that the ECARF Foundation is solely responsible for consultations and certifying building materials in accordance with ECARF.

The *ECARF construction consultant* are listed on the AFBA website (www. afba.de), along with successfully certified projects.

The following code of conduct shall be signed by each *ECARF construction consultant* and shall remain at the AFBA.

ECARF code of conduct

The code of conduct is a collection of good practices and consulting ethics that should be implemented in the context of ECARF certification.

The objective is low-allergy buildings and housing complexes
There are no allergy-free buildings and housing complexes; a "low-allergy" designation is aimed for.

Medical advice is provided by allergy physicians
Each ECARF project involves an allergy physicians to represent the medical concerns

Spaces occupied for longer periods of time are given specific consideration
Focus on living and working spaces with higher occupancy times

Permit grey areas
Agreements on project specifics are possible, if structurally and medically justifiable

Occupational health and safety and compliance with applicable standards
Occupational health and safety must be observed at all times, particularly with regard to site inspections

Environmental protection
The environmental friendliness of measures needs to be assessed.

Allergy friendliness does not have to be expensive
Cost-effective and resource-efficient solutions are preferable

Providing honest advice and evidence
The advice as well as the evidence is given to the best of our knowledge and in good faith.

Mutual respect and appreciation
Physicians and construction experts work as a team – mutual respect is expected

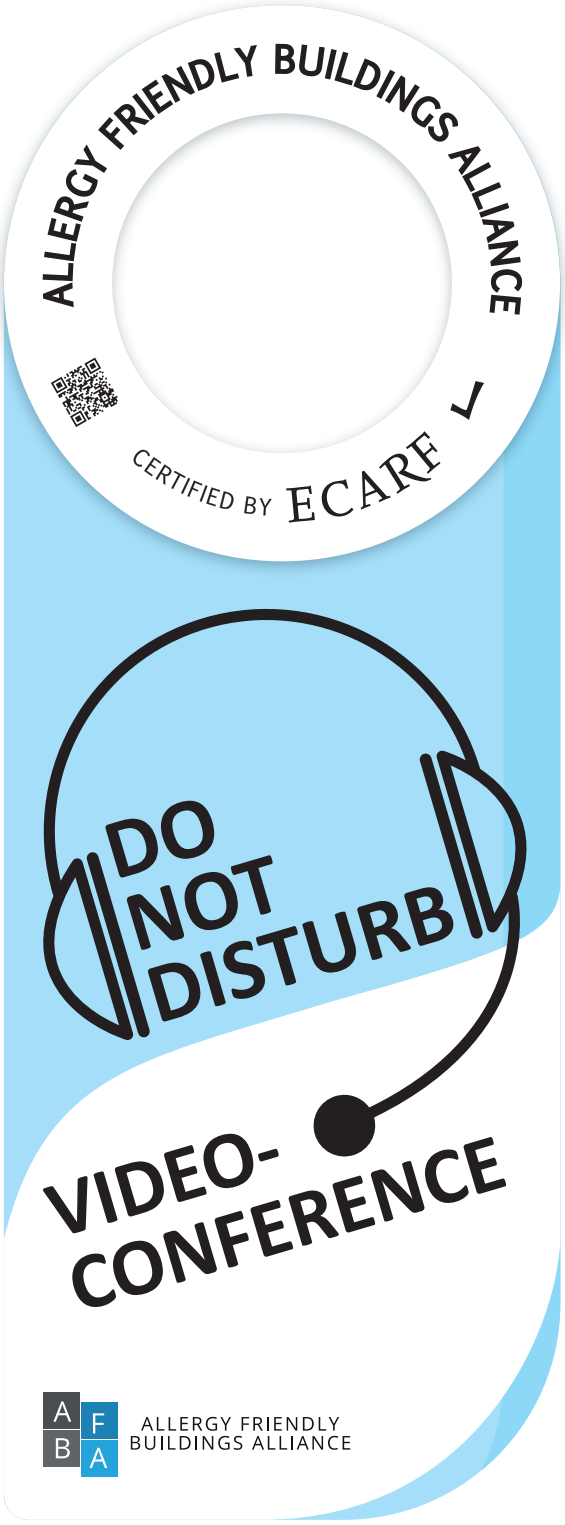
Where necessary, the AFBA or the ECARF foundation may also be contacted.

I hereby confirm compliance with the points listed above:

....

Place, date Name

The ECARF doorhanger – *Video conference*



The ECARF doorhanger – *Office*

The ECARF doorhanger – *Home*

Appendix – Plant exclusion list – Outdoors

Category 1: As regards allergies, new plantings which include these types of plants should be avoided as a matter of priority due to their high allergenic potential. The handling of existing Category 1 plants must be coordinated with the AFBA.

Category 2: Where possible, do not introduce new plantings which include these types of plants. These plants should not be re-introduced if at all possible. They exhibit a lower but non-negligible allergenic potential.

Outdoor plants

Latin name	English name	Category
Betula	**Birch**	**1**
Betula pendula	**Silver birch or European white birch**	**1**
Corylus colurna	**Turkish hazel**	**1**
Corylus avellana	**Common hazel**	**1**
Cupressus	**Cypress**	**1**
Oliva	**Olive tree**	**1**
Alnus	**Alder**	**1**
Carpinus betulus „Fastigiata“	Pyramidal hornbeam	2
Carpinus betulus	European hornbeam	2
Fraxinus	Ash	2
Fraxinus excelsior	Common ash	2
Fraxinus excelsior „Atlas“	Atlas ash	2
Platanus × acerifolia	Hybrid plane	2
Platanus × hispanica	London planetree	2
Quercus	Oak	2
Quercus petraea	Sessile oak	2
Quercus robur	Common oak	2
Quercus robur „Fastigiata“	Upright English oak	2
Quercus rubra	Northern red oak	2
Salix	Willow	2
Salix alba	White willow	2
Ailanthus altissima	Tree of heaven	2
Castanea	Chestnut tree	2
Populus	Poplar	2

Appendix – Plant exclusion list – Indoors

Category 1: As regards allergies, new plantings which include these types of plants should be avoided as a matter of priority due to their high allergenic potential. The handling of existing Category 1 plants must be coordinated with the AFBA.

Category 2: Where possible, do not introduce new plantings which include these types of plants. These plants should not be re-introduced if at all possible. They exhibit a lower but non-negligible allergenic potential.

Indoor plants

Latin name	English name	Category
Ficus benjamina	**Weeping fig**	**1**
Ficus elastika	**Rubber plant**	**1**
Euphorbia	**Spurge**	**1**
Aster	Asters	2
Leucanthemum	Daisies	2
Helianthus annuus	Sunflowers	2
Hyacinthus	Hyacinths	2
Tulipa	Tulips	2
Alstroemeria	Lily-of-the-Incas	2
Primula	Primroses	2

Appendix – Plant exclusion list – Grasses

Category 1: As regards allergies, new plantings which include these types of plants should be avoided as a matter of priority due to their high allergenic potential. The handling of existing Category 1 plants must be coordinated with the AFBA.

Category 2: Where possible, do not introduce new plantings which include these types of plants. These plants should not be re-introduced if at all possible. They exhibit a lower but non-negligible allergenic potential.

Grasses (indoors and outdoors)

Latin name	English name	Category
Anthoxanthum odoratum	**Sweet vernal grass**	**1**
Dactylis glomerata	**Cocksfoot**	**1**
Lolium	**Ryegrass**	**1**
Phleum pratense	**Timothy-grass**	**1**
Poa pratensis	**Smooth meadow-grass**	**1**
Artemisia vulgaris	**Common mugwort**	**1**
Ambrosia artemisiifolia	**Common ragweed**	**1**
Secale cereale	**Rye**	**1**
Holcus lanatus	Tufted grass	2
Avena fatua	Common wild oat	2
Arrhenatherum elatius	Bulbous oat grass	2
Lolium multiflorum o. perenne	Perennial ryegrass	2
Festuca pratensis	Meadow fescue	2
Alopecurus pratensis	Meadow foxtail	2
Agrostis stolonifera	Bentgrass	2
Rumex acetosella	Sorrel	2
Plantago species	Ribwort plantain	2

ALLERGY FRIENDLY
BUILDINGS ALLIANCE

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