It crackles, it warms and enchants us: fire. Hardly any other element captivates us so much. On a small scale, it provides us with light and warmth. But when it grows uncontrollably, heat and smoke quickly become a danger and, in the worst case, end fatally for people. At SMV, we care about the safety of you and your customers. With this brochure, we would like to give you an insight into the topic of fire protection and what to look out for when using furniture.
When the spark is ignited...

... there is not always reason for joy. Because once a fire has spread, it is often difficult to escape from the building. On the following pages, we will introduce you to the most important terms relating to fire protection, shed light on the different fire protection standards and show you why furniture made by SMV meets the fire protection requirements for public facilities.

A matter of definition: not all flame retardant is the same!

If you are concerned with fire protection, you will come across the following terms again and again:

Highly flammable

Highly flammable materials burn rapidly. They can be ignited by even small ignition sources and continue to burn at an increasing rate. Therefore, they pose a great fire risk.

Flame retardant

Materials defined as flame-retardant are those that can be ignited by ignition sources and are combustible, but they must extinguish independently after the fire has gone out. Building materials are classified according to DIN 4102 B1, upholstery compounds according to DIN 66084 P-a.

Restrains the flames

If a material extinguishes by itself after removal of the stopped ignition source, it is classified as restrains to flames. It belongs to the flame-retardant materials.

Fire-resistant

Materials can only be described as fire-resistant if they can withstand temperatures of up to 1500°C. In the furniture sector, this temperature can hardly be maintained, so this term should not be used, but is erroneously used colloquially.

Normal flammable

Substances classified as normally flammable can be ignited by ignition sources and continue to burn on their own, but more slowly than highly flammable materials.
Playing with fire

Prevention is better than cure

Wherever there is a lot of public traffic, the reduction of sources of danger and thus prevention is the best means of preventing a fire. Therefore, both in the selection of building materials, in architecture and in the interior design of public and social facilities, strict attention should be paid to the regulations and, ideally, they should even be exceeded. But in order to achieve this, it is important to have a good knowledge of the fire protection properties of the selected materials and products already during the planning of the furniture.

Make arrangements

Short and well-designated escape routes, sprinkler systems and sprinkler systems and self-extinguishing or flame-retardant furniture are good precautions to take in case of fire. Fire certified upholstered furniture helps to keep the building fire load free and prevents the fire from spreading through the furniture.
Fire protection from A to C

Why B1 is not valid for furniture

It is not uncommon for public tenders and other building projects to carry a required B1 fire class certification interior. But what is well-intentioned is unfortunately poorly planned. Because B1 is not applicable to furniture and can have serious consequences.

B1 - standard for building materials

Building materials that have been certified according to DIN 4102 B1 are considered „flame-retardant“. This standard regulates exactly how the material used must be used later. For example, a distance of at least 40 mm from the next material must be maintained - a point that is impossible with furniture. Although the individual materials of an upholstered piece of furniture can be tested with B1, they always lie close together (frame, foam, cover). Thus, despite a good B1 result, devastating interactions between the materials can occur.

To prevent these reactions between the individual materials, the German Institute for Standardisation has developed special guidelines and test procedures for upholstery composites. It should be noted, however, that there are different test procedures and guidelines worldwide. We will present these to you in more detail later.

DIN 66084 - Standard for upholstery compounds

There is a separate DIN standard for upholstered furniture, which is divided into three classes, namely P-a, P-b and P-c. It regulates what the fire behaviour of upholstered furniture must be so that it can be used in public buildings and places of assembly. This is the only way to contain fires and save lives!
Different standards and test methods

The flammability of seating furniture is an important factor when selecting upholstered furniture for places of assembly, banks or hotels. Where large numbers of people gather, special fire safety requirements apply to the building materials, floor and wall coverings and furnishings. These increasingly stringent requirements help save lives. Building owners, architects and operators are regularly confronted with new challenges as a result. On the following pages you will find an overview of the standards in the European Union (EU) and Germany as well as other countries. In addition, we will explain which test procedures are valid for obtaining fire certification are valid.

The different standards are subject to different areas of validity. European standards, for example, are valid in all EU countries, whereas national standards, such as the Deutsche Industrie Norm (DIN), e.g. DIN 66084 for upholstery compounds, are only valid within Germany.
Current standards for fire protection

Fire behaviour of building materials and components

In Germany, DIN 4102 applies to all building materials and building elements that are firmly attached to a building structure. It distinguishes between non-combustible building materials A and combustible building materials B. Both classes are additionally subdivided into several categories, such as B1 flame-retardant, B2 normal flammability and B3 highly flammable. The material is tested as a flat test specimen, which is tested for its flammability in a fire shaft. Furniture is already ruled out here due to its format and the material composite.

In the EU, EN 13501 is used to classify the fire behaviour of construction products and types of construction. It does not apply to contract furniture either.

Assessment of flammability of upholstered furniture

Throughout the European Union, the EU standard EN 1021 (part 1 or 2) applies to furniture. It examines the reaction of a fabric to a burning cigarette (part 1) and a butane flame (part 2, simulation of a match).

In Germany, the burning behaviour of upholstery composites is classified by DIN 66084. For this purpose, the test procedures of EN 1021 are used, which is supplemented by the German paper cushion test according to DIN 54341. Depending on their fire protection properties, they are divided into the categories P-a (high), P-b (medium) and P-c (low). The three test methods are presented on the following pages.

Good fire protection planning saves lives

In connection with fire protection, there are many test standards and fire protection test procedures that play a role. In Germany and the European Union, there are various standards that overlap or complement each other in terms of content.
Fire protection in the laboratory test

Current test procedures for cushioning compounds in Germany and the EU

Status: 2017

How quickly it happens, a cigarette falls on the sofa in the smokers' lounge or vandals leave a burning newspaper on the cinema seat. In order to reduce the risk of fire, upholstered furniture in Germany is tested for its fire behaviour in three different procedures. The cigarette test, the match test and the paper pillow test are used. In all three procedures, the material is exposed to a controlled fire source. Depending on the reaction of the materials, the upholstery composite is classified.

The cigarette test

EN 1021 Teil 1 as test standard
DIN 66084 P-c as classification standard

Simulated situation:
A burning cigarette falls onto the seat.

The test procedure:
A burning cigarette is placed on the seat of the test furniture or a similarly constructed model seat. If the upholstery composite neither ignites nor smoulders continuously within 60 minutes, the cigarette test according to DIN EN 1021-1 is passed. The upholstery composite receives the classification P-c (low) in this specified composition.

The match / gas flame test

EN 1021 Part 2 as test standard
DIN 66084 P-b as classification standard

Simulated situation:
A lighted match or lighter falls on the seat.

The test procedure:
A 35 mm gas flame is held against the seat of the test furniture or a similarly constructed model seat for 15 seconds. It simulates the open flame of the match. The test is only passed if the burning upholstery composite extinguishes itself at the latest 2 minutes after the end of the flame and the smouldering does not reach the edges of the upholstery. The composite receives the classification P-b (medium).

The paper cushion test

DIN 54341 as test standard
DIN 66084 P-a classification standard

Simulated situation:
A burning newspaper is placed on the seat.

The test procedure:
A standardised 100 g paper cushion is placed on the seat of the test furniture or a similarly constructed model seat. This is filled with crumpled special paper and is ignited. If the flame does not exceed the height of the backrest by more than 45 cm, the armrests are not reached and the upholstery composite extinguishes itself after 15 minutes at the latest, the test is passed. The upholstery composite receives the classification P-a (high).
Standards in the United Kingdom

In the United Kingdom, the BS 5852 Crib 5 standard, among others, is used. It places higher demands on fire protection than EN 1021 Parts 1+2 and is therefore used as a supplement. A burning object on an upholstered seat is simulated by a crib-shaped stack of wood (Crib 5). If all flames go out within 10 minutes, the test is passed. In addition, 60 minutes after ignition, smouldering or smoke development must have ceased and the weight loss of the model incl. cot must not exceed 60 g. Foams, not composites, that meet these requirements are referred to as CMHR (Combustion Modified High Resilience) foams.

In the United States, additional standards must be followed. Please check with relevant projects on site!

Standards in Europe and the United Kingdom

Like Germany with the paper cushion test, the other EU countries and the UK have their own test procedures that complement the European standards. If you are involved in a project outside of Germany, be sure to find out what needs to be observed locally!

France, Belgium, Portugal & Spain

With an electric burner, the test according to NF P 92-503 first heats the material before a flame is stopped. Flame duration, droplet formation and the spread of damage are tested.

An additional flame spread test (NF P 92-504) completes the procedure. The flame is repeatedly held to the end of a horizontal sample to test the after-burning duration and the formation of burning droplets. Another addition is the droplet test according to NF P 92-505, where the risk of burning droplets is investigated with the help of a fan heater and a cotton collection tray.

The tests according to NF P are building material tests that are not to be applied to cushion composites.

Global standards jungle

In summary, the following applies: For every project, inform yourself in detail about the applicable fire protection standards for upholstered furniture. Check tenders for new projects for the required fire protection regulations and do not shy away from correcting faulty B1 requirements and pointing out the actual applicable fire protection guidelines in your application. Our fire protection experts will be happy to support you in selecting the right fire protection-certified seating furniture. We will show you what these look like and what makes our furniture so safe on the following pages.
Burning for your safety

Fire protection at its best

You now know what to look for when choosing upholstered furniture. Our fire protection-certified lounge and seating furniture is available in the three fire protection classifications depending on your requirements. You don’t have to sacrifice comfort or function. We have seating furniture in classic, modern or futuristic design for every ambience.
Furnitures from SMV is well equipped

The fire protection equipment of our upholstered furniture is always up to date with the latest research and development. It is important to us that it is no secret to you why our furniture is so safe. That is why we are happy to show you the construction of our flame-retardant seating furniture.

This special construction and the combination of foam, flame-retardant interlining and flame-retardant upholstery makes the high fire protection classification according to DIN 66084 P-a possible. This means that our fire-protection furniture is self-extinguishing and avoids the risk of further spreading of an incipient fire. You can find out whether the furniture you have chosen can be supplied with the required fire protection certification in the OFML planning data available online and, of course, in a personal discussion.

Please contact us if you have any questions. We will be happy to help you!

Current research

Your safety is important to us. That is why the continuous improvement of the fire protection properties of our products is one of our most important goals. In addition, we attach great importance to an appealing design, high comfort and perfect use.
**How can we help you?**

**Individual consultation**
Our in-house fire protection experts will advise you on requirements, product selection and compliance with applicable fire protection standards from the initial concept to delivery.

**Customised examinations**
Whatever project you are planning - we will support you by checking the furniture you want and pointing out optimisation options if necessary.

**Contact with decision makers**
Whether fire protection officer or civil engineer: we contact your planners and decision-makers and clarify the fire protection requirements for your project with the experts.

**Certified safety**
Because we don’t play with your safety, our furniture is consistently tested for fire protection and safety by independent laboratories.

**Acoustics & fire protection**
Safe furniture should also be beautiful and useful. That’s why our acoustically effective furniture can almost all be equipped with flame-retardant features without losing their sound-absorbing properties.

**Fire protection seminar**
Would you like to experience the topic of fire protection first-hand? Our one-day fire protection seminar will familiarise you with all the standards. In a live demonstration, you will experience how different composites react to fire and why fire protection-certified furniture can save lives.

**Without noise and smoke**

**Brennend interessiert an Ihren Fragen**
Wir brennen dafür, Sie zubegeistern und Ihnen ein sicheres Gefühl zu geben. Deshalb stehen wir Ihnen jederzeit für alle Fragen rund um den Brandschutz durch Polstermöbel zur Verfügung. Besuchen Sie unsere Ausstellung, nehmen Sie an einem unserer Brandschutz-Seminare teil oder laden Sie uns zu einem Gespräch bei Ihnen vor Ort ein. Wir unterstützen Sie gerne!
End of the seating order