Fire protection requirements in buildings - solutions from Profim

profim

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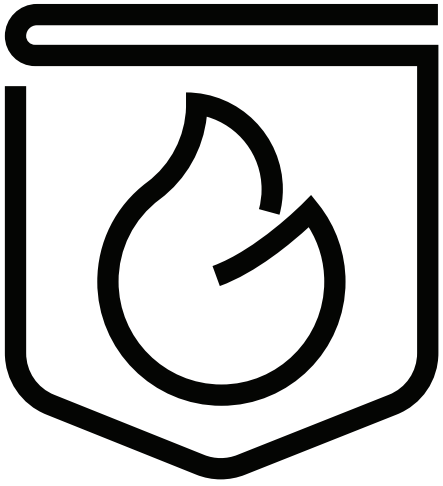


Fire protection as a key requirement in the property sector.

Fire protection plays a central role in public and social facilities. Safety precautions concern not only the construction method and materials used, but also the interior fittings - especially the furniture.

Contract furniture must meet strict fire protection requirements in order to be used in such sensitive environments. This is because, in an emergency, the furniture can have a significant influence on fire behavior and smoke gas development and therefore make a decisive contribution to user safety.

As a manufacturer of high-quality contract furniture, we are aware of this responsibility. That is why we not only pay attention to sophisticated design, but above all to compliance with the relevant fire protection regulations. Our products not only comply with statutory building regulations, but also with specific standards that are specifically geared towards the fire behavior of furniture.

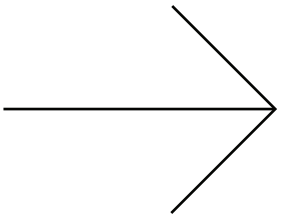
This brochure gives you an overview of the key fire protection criteria and shows how Profim products meet these requirements.

Terminology in the context of fire protection.

A fire incident can lead to life-threatening situations within a very short space of time. The rapid spread of fire and smoke in particular makes evacuating buildings considerably more difficult.

On the following pages, we explain key terms relating to fire safety, present relevant fire safety standards and show why Profim furniture meets the specific requirements for use in public and social facilities.

You will regularly encounter these terms in connection with fire protection.



Highly flammable

Materials that are classified as highly flammable have the property of igniting extremely quickly and burning with increasing speed. Even minor ignition sources are sufficient to ignite them and the fire spreads rapidly. For this reason, they pose a considerable risk of fire.

Normally flammable

Materials that are classified as normally flammable are susceptible to ignition sources. Although they burn spontaneously, they burn more slowly than highly flammable materials.

Flame resistant

Although materials classified as flame-retardant can be ignited by ignition sources and are combustible, they have the property of self-extinguishing once the fire has gone out. Building materials are classified according to DIN 4102 B1, while upholstery composites are classified according to DIN 66084 P-a.

Flame retardant

Materials that self-extinguish after the ignition source has been removed are considered flame-retardant and are classified as flame-retardant materials.

Fireproof

If materials can withstand temperatures of up to 1,500 degrees, they are referred to as fireproof. This temperature can hardly be reached with furniture, so the use of this term should be avoided, although it is occasionally used in colloquial language.

Why DIN 4102 B1 does not apply to furniture.

The applicable building regulations for general building construction require compliance with DIN 4102 B1. For this reason, tenders for contract furniture often require proof of flame retardancy in accordance with DIN 4102 B1 for seating and tables. This standard regulates the requirements for building materials and components, including the fire behavior of walls, corridors, runners, roofs, wall cladding and more.

Contract furniture consists of various materials that have different fire properties and influence each other. Many of the materials we use in our products, such as steel, aluminum, wood, upholstery fabrics and lacquers, are either individually tested in accordance with DIN 4102 or generally classified.

The DIN 4102 test requires a flat test specimen that is tested for its flame resistance in a fire shaft. Due to these factors, it is not possible to apply the standard directly to contract furniture. In addition to the building regulations, seating and tables must therefore be tested and classified for their fire behavior in accordance with other standards.

An important standard for contract furniture is **DIN 66084**, which deals with the classification of the burning behavior of upholstery composites. The highest possible classification, P-a (high), in accordance with **DIN 66084** is achieved when composites pass the paper cushion test in accordance with **DIN 54341**.

To give you a better understanding, we have summarized the most important standards of various countries on the following pages.

Current protection standards.

EN 1021-1/-2 - Assessment of the flammability of upholstered furniture

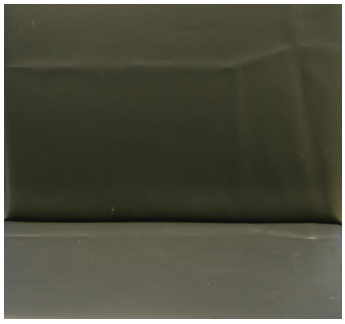
This standard is relevant throughout Europe in the area of upholstered furniture. It is used to test the flammability of material combinations such as cover fabrics and upholstery fillings. It is important to note that this test does not test the complete piece of furniture, but a model structure. The standard comprises two parts in which the reaction of an upholstered furniture replica to ignition by a burning cigarette (Part 1) and a butane gas flame (Part 2) is examined.

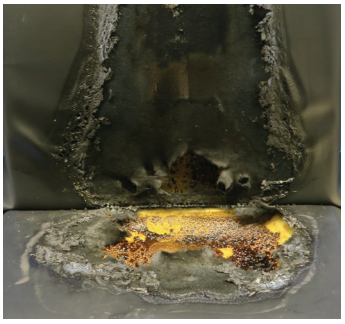
Cigarette test according to EN 1021 (Part 1)

In the first part, a lit cigarette is placed in the angle between the backrest and the seat of a model armchair with fabric cover and foam. The cigarette must burn out completely without the fabric and foam still smoldering or burning after 60 minutes.

Match test according to EN 1021 (Part 2)

In the second part of the test procedure, a butane gas flame is directed into the seat angle to simulate ignition. This produces a 35 millimeter high flame that burns for 15 seconds, similar to a match. The model must not catch fire either while the flame is burning or for up to two minutes after it has gone out.





Crib 5

In the UK, the BS 5852 Crib 5 standard is used, among others. This standard places stricter requirements on fire protection compared to EN 1021 Part 1+2 and is therefore also used. In this test, a burning object is simulated on an upholstered seat using a crib-shaped stack of wood (Crib 5). The test is passed if all flames are extinguished within 10 minutes. After 60 minutes, there must be no embers or smoke, and the weight loss of the model including the crib must not exceed 60 g. Foams that meet these requirements are referred to as CMHR (Combustion Modified High Resilience) foams.

DIN 66084 - Classification of the fire behavior of upholstery composites

Upholstered furniture must meet high fire protection standards, especially in public areas such as meeting places or corridors. DIN 66084, also known as the paper cushion test, offers a standard-compliant way of assessing the fire behavior of upholstered furniture. This standard classifies upholstery composites into three categories: P-a (high), P-b (medium) and P-c (low).

Classification is based on various test procedures:

P-a (high): This highest category includes upholstered composites that have successfully passed the paper cushion test in accordance with DIN 54341. This test sets strict requirements for seating furniture and requires special fire protection equipment. A paper cushion on the test specimen may self-extinguish within 15 minutes of burning without exceeding the backrest or reaching the side edges. Furniture that has passed the paper cushion test has similar fire properties to building materials that have been tested as "flame-retardant" in accordance with DIN 4102. This furniture is generally suitable for use in B1 areas, but binding approval by the local fire protection authority may be required.

P-b (medium): Class P-b comprises upholstery composites that have successfully passed the match test in accordance with EN 1021 Part 2. This test simulates a flame that ignites a match. The flames must be extinguished within two minutes of removing the ignition source.

P-c (low): Upholstery composites in this category meet the requirements of the cigarette test in accordance with EN 1021 Part 1. During a 60-minute test period, a smoldering cigarette must neither ignite nor smolder progressively.

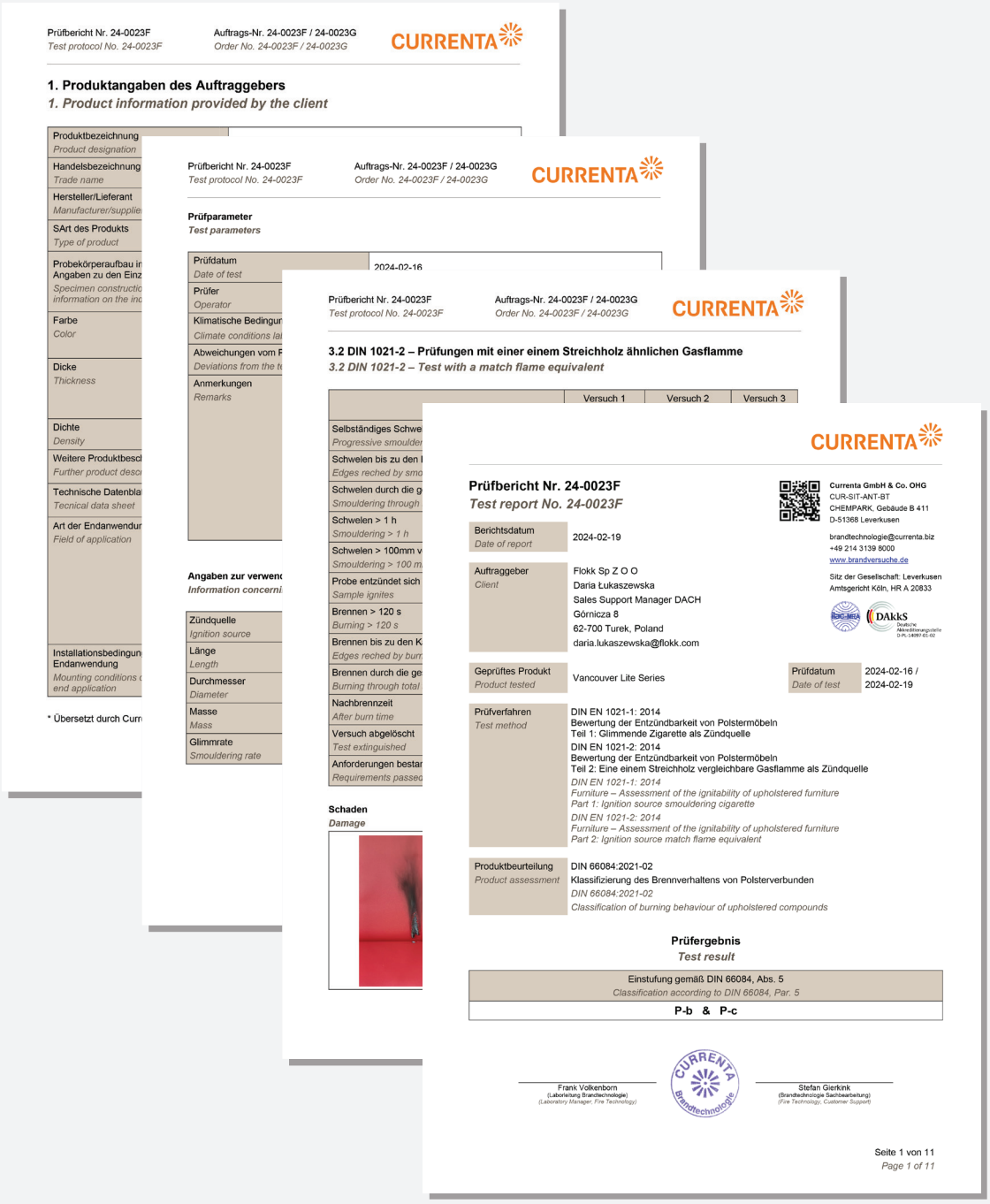
Fire protection furniture from Profim.

We place particularly high demands on the selection of upholstery foams (cut or molded foam).

All Profim products are equipped with foam as standard according to EN 1021-1 and 1021-2.

The majority of our standard upholstery fabrics in the upholstery composite also meet the requirements of EN 1021-1 and EN 1021-2 as well as DIN 66084 P-a.

In addition, all Profim products can be equipped with a CHMR (Combustion Modified High Resilence) foam in accordance with BS 5852 Crib 5.



Prüfbericht Nr. 24-0023F
Test protocol No. 24-0023F

Auftrags-Nr. 24-0023F / 24-0023G
Order No. 24-0023F / 24-0023G

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1. Produktangaben des Auftraggebers
1. Product information provided by the client

Produktbezeichnung *Product designation*	
Handelsbezeichnung *Trade name*	
Hersteller/Lieferant *Manufacturer/supplie*	
SArt des Produkts *Type of product*	
Probekörperaufbau in Angaben zu den Einz *Specimen constructio information on the ind*	
Farbe *Color*	
Dicke *Thickness*	
Dichte *Density*	
Weitere Produktbesch *Further product desc*	
Technische Datenbla *Tecnical data sheet*	
Art der Endanwendur *Field of application*	
Installationsbedingun Endanwendung *Mounting conditions end application*	

* Übersetzt durch Curr

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Prüfparameter
Test parameters

Prüfdatum *Date of test*	2024-02-16
Prüfer *Operator*	
Klimatische Bedingur *Climate conditions la*	
Abweichungen vom F *Deviations from the t*	
Anmerkungen *Remarks*	

Angaben zur verwend
Information concerni

Zündquelle *Ignition source*	
Länge *Length*	
Durchmesser *Diameter*	
Masse *Mass*	
Glimmrate *Smouldering rate*	

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3.2 DIN 1021-2 – Prüfungen mit einer einem Streichholz ähnlichen Gasflamme
3.2 DIN 1021-2 – Test with a match flame equivalent

	Versuch 1	Versuch 2	Versuch 3
Selbständiges Schwe *Progressive smoulder*			
Schwelen bis zu den *Edges reched by smo*			
Schwelen durch die g *Smouldering through*			
Schwelen > 1 h *Smouldering > 1 h*			
Schwelen > 100mm v *Smouldering > 100 m*			
Probe entzündet sich *Sample ignites*			
Brennen > 120 s *Burning > 120 s*			
Brennen bis zu den K *Edges reched by burn*			
Brennen durch die ge *Burning through total*			
Nachbrennzeit *After burn time*			
Versuch abgelöscht *Test extinguished*			
Anforderungen bestar *Requirements passed*			

Schaden
Damage

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Test report No. 24-0023F

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Sitz der Gesellschaft: Leverkusen
Amtsgericht Köln, HR A 20833

Berichtsdatum *Date of report*	2024-02-19
Auftraggeber *Client*	Flokk Sp Z O O Daria Łukaszewska Sales Support Manager DACH Górnicza 8 62-700 Turek, Poland daria.lukaszewska@flokk.com
Geprüftes Produkt *Product tested*	Vancouver Lite Series
Prüfdatum *Date of test*	2024-02-16 / 2024-02-19
Prüfverfahren *Test method*	DIN EN 1021-1: 2014 Bewertung der Entzündbarkeit von Polstermöbeln Teil 1: Glimmende Zigarette als Zündquelle DIN EN 1021-2: 2014 Bewertung der Entzündbarkeit von Polstermöbeln Teil 2: Eine einem Streichholz vergleichbare Gasflamme als Zündquelle *DIN EN 1021-1: 2014* *Furniture – Assessment of the ignitability of upholstered furniture* *Part 1: Ignition source smouldering cigarette* *DIN EN 1021-2: 2014* *Furniture – Assessment of the ignitability of upholstered furniture* *Part 2: Ignition source match flame equivalent*
Produktbeurteilung *Product assessment*	DIN 66084:2021-02 Klassifizierung des Brennverhaltens von Polsterverbunden *DIN 66084:2021-02* *Classification of burning behaviour of upholstered compounds*

Prüfergebnis
Test result

Einstufung gemäß DIN 66084, Abs. 5 *Classification according to DIN 66084, Par. 5*
P-b & P-c

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(Laboratory Manager, Fire Technology)

CURRENTA Brandtechnologie

Stefan Gierkink
(Brandtechnische Sachbearbeitung)
(Fire Technology, Customer Support)

Talk to us.

The required fire protection design should be determined in consultation with the responsible fire protection officer on site.

Much of our seating furniture has been tested and classified in compliance with the relevant standards. We will be happy to help you find the right solution for your project - tailored to your individual requirements and the relevant fire safety specifications.

We are always available to provide you with further information or a concrete offer. Contact us - we will be happy to advise you and provide you with expert support during the implementation of your project.

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1 – 09/2025