



# Safety and security

Steel profile systems –  
for all-round safety solutions

**JANSEN**

*“ We bring security and safety into harmony with design and aesthetics. ”*



# Security and safety – is about providing all-round reliability

At times of increasing overcrowding in our cities, growing environmental problems and greater mobility, many people are feeling a greater desire for reliable security and safety. Because security and safety are topics that affect us all, statutory legislation specifies minimum safety standards that must be observed. On top of these, subjective or perceived security is becoming ever more important.

## **Meeting statutory requirements**

There are in the construction industry a number of standards and regulations that we take into account during the development of our products – long before those products come to market. These include tests conducted by independent institutions to certify that our doors, windows, façades, partition walls and sliding units meet the required safety standards. Each safety standard is defined by a test standard and a classification. The test standard specifies the parameters for performing the test. The classification standard indicates how the product can be classified if it successfully passes the test under the specified parameters.

## **Meeting personal requirements**

In addition to the statutory requirements, every single one of us has the ability to seek out better security, health and wellbeing in our personal environment. Rooms that are bathed in light raise the spirits, tight-fitting windows and doors prevent drafts, protect us against heat loss and keep disagreeable odours and noise out. The result – comfortable rooms that fully meet the basic human need for safety and a sense of security.



[jansen.com/security](https://jansen.com/security)

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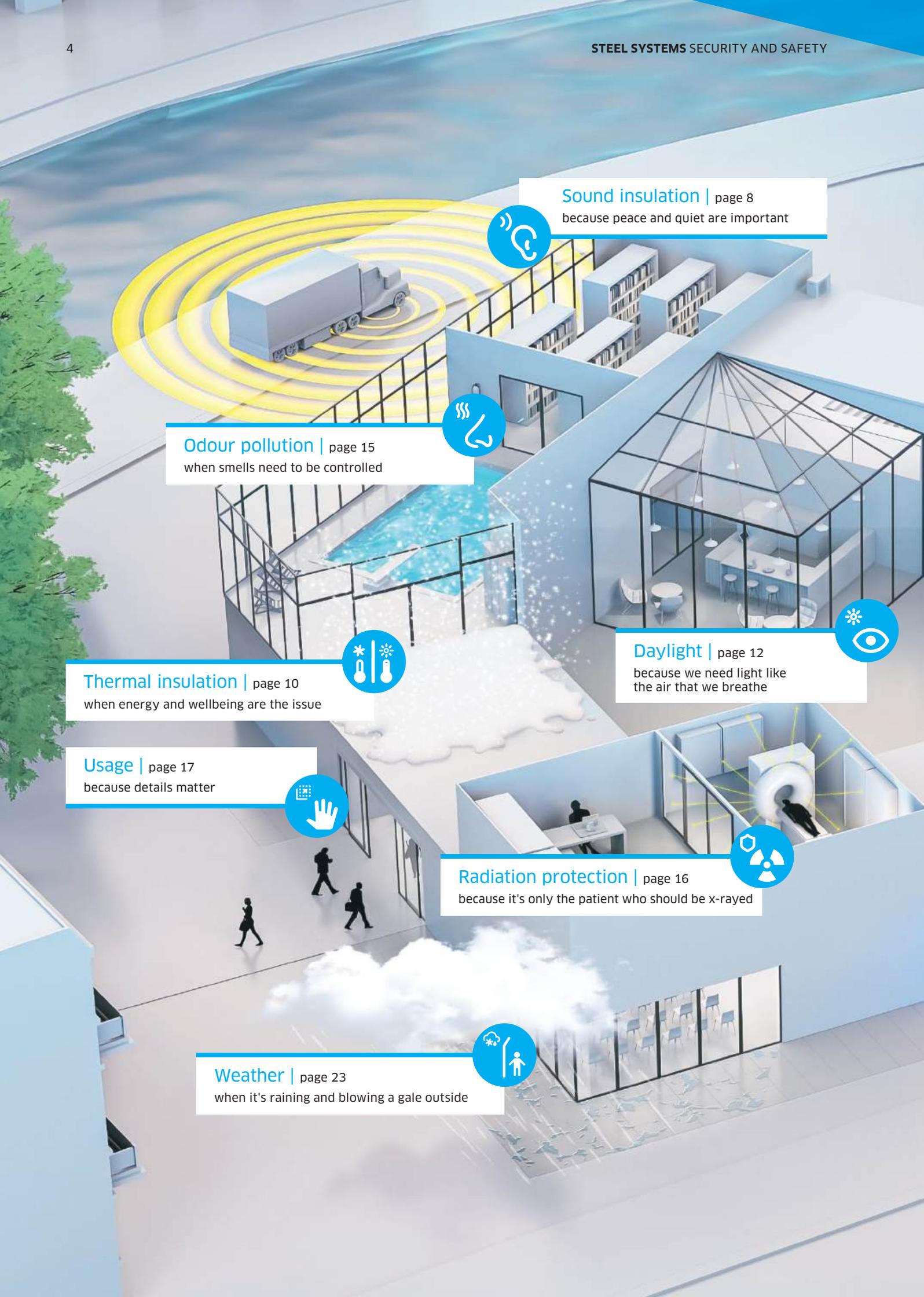
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# Health and wellbeing

## Greater safety, a greater sense of security

The range of systems from Jansen puts people and their wellbeing centre stage: Efficient heat and sound insulation, reliable fire and smoke protection and effective protection against break-ins, bullets and explosions provide a natural foundation for the aesthetic design of bright and inviting homes, workplaces and leisure spaces in which we feel safe and secure.

*“ For us, security is not just a necessity, but a prerequisite for being able to use buildings for the purpose for which they are built: living, working and enjoying life. For us, security is not just a standard or a number. Our façades, partition walls, windows and doors are not merely a way to separate the inside from the outside. Our products help to ensure that you can feel comfortable and at ease. ”*



# Sound insulation – because peace and quiet are important

There's no doubt about it, noise can make you unwell. Urban canyons and the noise from recreational activities can affect your wellbeing and harm your health.

Not all noise pollution comes from outside, though, so we specify the sound insulation levels for all our products. Because security doors, such as those in the long corridors of official buildings, have to keep out not only fire and smoke but also noise.

The Janisol 2 EI30 fire protection doors, for example, are tested to 43 dB and can therefore be used as both inner and outer doors. They ensure that an air hammer at a distance of about 10 m would cause no more disturbance than a conversation held at normal volume.



[jansen.com/soundinsulation](https://jansen.com/soundinsulation)



Noise levels are quoted in dB (A). Because perceptions of noise vary subjectively, what is measured is the sound pressure, which is quoted as a sound pressure level in decibels (dB). Frequency is also measured because very high and very low tones are perceived subjectively to be quieter than mid-range tones; in the construction industry the usual approach is what is known as the A analysis. DIN 4109 provides recommendations for the level of sound insulation required against specific forms of noise pollution – there are no statutory specifications.

	dB	
	160	Firecracker
Air bag deployment	150	
	140	
	130	
	120	Jet aircraft
Waterfall	110	
	100	Circular saw, discotheque
Air hammer	90	
	80	Storm, lawnmower
Motorbike	70	
	60	Normal street traffic
Normal conversation	50	
	40	Light rain
Light street traffic	30	
	20	Sound of breathing
Ticking of a clock	10	
	0	



# Thermal insulation – when energy and wellbeing are the issue

A comfortable room climate makes a key contribution to our wellbeing. Thermally insulated windows, doors and façades help to keep valuable warmth indoors: the greater the thermal protection, the lower the energy loss through the building shell.

With our wide range of steel profile systems for windows and doors, façades and fixed glazing, all the statutory requirements at a European level can be met – very frequently, the classification goes even further than this. So your building will remain compliant with the increasing statutory requirements and will continuously diminish your energy expenditures.

## Energy

From an energy point of view it is essential that daylight be used to the full in buildings. Daylight not only saves electricity but is also a freely available source of light. Because of this, the guiding principles in architecture have changed in recent years. From closed-in, artificial and entirely air-conditioned interiors, there has been a growing move towards buildings that, without compromising on comfort, require very little energy whilst meeting the demand for greater openness and transparency.

Jansen's VISS Fire EI30 opens up the possibility of using large areas of the façade to admit large quantities of light while simultaneously ensuring fire protection to EI30 standard.



[jansen.com/thermalinsulation](https://jansen.com/thermalinsulation)



The basis for calculation of heat insulation and heat loss is provided by DIN EN ISO 10077-1 with due reference to DIN EN ISO 10077-2. Heat loss is quoted using the thermal transmittance value (the U value). What this measures is how much heat escapes to the outside per square metre if the outside temperature is 1 °C lower than inside. This value can be stated either for individual components of the element or for the entire element. The letter shown as a subscript after the U indicates which value has been measured: for example, an 'f' stands for frame and hence indicates the value contributed by Jansen, from which the overall value can reliably be calculated.



# Daylight – because we need light like the air that we breathe

Sunlight cheers us up – that, surely, is something we have all experienced for ourselves. But even without the sun itself, natural daylight makes a noticeable difference to our wellbeing. Scientific studies show that human health is affected by light to a far greater extent than was previously known or suspected. Light is an elixir of life. But as with so many things in life, it's a question of getting the right amount. Solar protective glass and shading systems provide protection from the negative consequences of too much exposure to the sun.

## Light

Artificial lighting in the workplace is one of the most common causes of what is known as 'sick building syndrome'; natural daylight, on the other hand, has a positive effect on wellbeing, even when it brings with it less desirable aspects such as additional heat and glare.

Because of these health-promoting effects, admission of daylight needs to be given greater consideration in all aspects of planning in the future than it has been in the past. Steel profile systems help to optimise this, as the minimal area occupied by the frame maximises the area of glass. For bright and inviting rooms that promote health and wellbeing. Jansen provides steel profile systems that enable the manufacturing of light structures. With CE labelling to EN 14351-1, the same degree of safety can be provided for windows with a special geometry, such as bay windows or studio windows.

## Sun shading

Rooms that admit a large amount of daylight run the risk of suffering from glare, and of overheating in the summer. Exterior sun shading systems minimise unwanted heating of the indoor space and thus ensure temperatures that are beneficial to health. At the same time, they also reduce energy consumption for air conditioning. They need to be designed in such a way, however, that they do not appreciably reduce the amount of sunlight that is admitted, and do not interfere with the view out.

Jansen takes these matters into account and tests the window and façade elements in combination with glazing options from reputable manufacturers. The range includes a special anchor for attaching exterior sun shading systems, which allows currently available systems to be secured safely and attractively to the steel profile.





Since 2019, DIN EN 17037 has provided building designers with assistance on **daylight** planning. A rule of thumb suggests that the window area should correspond to roughly 20–25% of the area of the room in which it is installed. DIN 4108-2 describes a simplified method of calculating the permissible solar transmittance value (S). The g value (total energy transmittance of the glass) and the reduction factor for **sun shading systems** (Fc) need to be taken into account. These may be affected by the use of solar protective glass or solar shading louvres. DIN EN 13363 Parts 1 and 2 show methods of calculating the values.



Photo: Hof Souburg, Albiasserdam, Netherlands

# Odour pollution – when smells need to be controlled

We are exposed to all kinds of smells, all the time and everywhere. Some of them we experience as pleasant, others as pollution. Whatever the case, however, we react to them, because smells are closely bound up with memories and emotions. A particular smell can often reawaken long-forgotten situations and the feelings that went with them. Agreeable smells stimulate and improve one's sense of life, while unpleasant and repellent smells lead to bad moods, aggression and nervousness.

On top of this comes concern about their effects on health, especially as our increasing awareness of pollutants in the environment raises the attention we pay to odours.

Tight-fitting windows and doors protect us from unpleasant odours coming from outside. Within the building, glass sections of wall (compliant with DIN 4103, non-loadbearing internal partition walls) offer a solution that is as helpful in containing smells and noise as it is elegant, and that does not restrict visibility.



[jansen.com/odour](https://jansen.com/odour)

# Radiation protection – because it's only the patient who should be x-rayed

Wherever shielding from harmful radiation is at issue, there is no room for compromises. This is why doors within hospitals and doctors' surgeries – the doors behind which X-ray diagnosis is being performed – are subject to special requirements.

Due to its material properties, steel is ideal for the manufacture of high-quality, durable radiation protection doors.

Steel profile systems by Jansen also make it possible to seamlessly integrate other required elements such as sound insulation and fire and smoke protection. In collaboration with reputable glass manufacturers, Jansen has tested various different types of glass that guarantee effective protection from radiation, and these are used for the production of radiation protection doors that have glass elements in them.



DIN 6834 sets out specifications for the construction of such doors with regard to their radiation protection properties; it applies to radiation protection doors made of steel, wood or wood-based materials. In terms of dimensions, this standard is based on DIN 4172, in which single- and double-sash revolving doors as well as sliding doors are specified. Radiation protection doors are very heavy. The frame, door sash and, of course, the door hinges and fittings all have to withstand this substantial load. More information can be found in national guidance leaflets.



[jansen.com/radiationprotection](https://jansen.com/radiationprotection)

## Usage – because details matter

Many people have become accustomed to the convenience offered by automatic doors. Sliding and revolving doors open as if by magic as soon as you approach them. Thanks to sophisticated door seals, problematic thresholds can be dispensed with. This is something that not only has come to be valued by those with restricted mobility but also makes life easier for users of prams, wheeled suitcases and trolleys. For greater safety and convenience in use.



### Contact-free opening

In the medical world they form part of the basic facilities. In other fields – shopping centres, railway stations, airports and even in sophisticated residences – it is hard to imagine life without them. Automatic doors.

Contact-free access is not only convenient but also reduces the transfer of harmful bacteria via the door handle – a valuable contribution to the protection of health.

### Protection for the fingers

Anti-finger-trap doors protect these sensitive parts of the body from accidental injury. This is a safety issue not only in kindergartens and schools but also in frequently visited, publicly accessible buildings.

Anti-finger-trap doors from Jansen meet this requirement with additional accessory components that reduce the gap to maximum 8 mm as required under the standard. These elegantly shield the movement mechanism on the side of the door. Additional requirements such as fire and smoke protection can also be integrated.

### Barrier glazing

Floor-to-ceiling windows in the home meet the desire for rooms flooded with light, while in commercial buildings the trend towards all-glass façades continues unabated. Barrier glazing protects users from accidents that could arise when accidentally hitting the element. The user is protected against fall-through and people underneath are protected against splintered glass chips.

Highly stress-resistant steel profile systems from Jansen enable the creation of maximum-sized, impact-resistant structures. The fixings for the barrier glazing equipment blend in unobtrusively.

### Differential climate properties

Differential climate properties describe how materials deform. The extent to which windows and doors are distorted when subjected to heat and/or humidity has a significant impact on their correct functionality. In addition, gaps develop, allowing uncomfortably cold air to be drawn in – a draught. Depending on the location of the building, the difference between the indoor and outdoor temperatures can be substantial.

Jansen goes one step further with a range that includes doors tested to class 3 (e), meaning that they can withstand a temperature differential of up to 55 °C.



The safety of doors in use is governed by DIN 18650-1 and -2, and by DIN EN 16005. DIN EN 16005 explicitly states that “power operated doors must have protection against the risk of trapped fingers”.

The assessment of glass building elements that **serve as barriers** is governed by DIN 18008 Part 4, which is concerned with the impact resistance of the glass and with the load-bearing characteristics of the remaining glass if it is broken.

DIN EN 1121 specifies the testing procedure for the **differential climate properties** of windows and doors, which are classified according to DIN EN 12219. This specifies the requirements regarding the test climate in order from a to e; class d, for example, is based on a temperature differential of 40 °C. Doors in class 3 (d), however, suffer a maximum distortion in length and width of 4 mm, even under these extreme conditions.



*“ Having a place where you feel comfortable, where you know that the whole thing can stand up to anything – to me, that’s security. ”*

*Mario Lühinger, Test centre manager*



[jansen.com/usage](https://jansen.com/usage)



### Building for accessibility

Automatic doors, entrances without thresholds, daylit rooms: building for accessibility has many different aspects. They are all intended to allow people of any age group to use their apartments, houses and public spaces without outside assistance and without any form of restriction. Jansen meets the requirements of DIN 18040 with door systems that dispense with the need for thresholds.

### Operating force

The term operating force describes the force that is required to open or close a window or a door. Both steel and glass are heavy materials, and the higher the safety requirements on the building element, the heavier the structures get. In spite of this, windows and doors made from steel profile systems must also be easy to operate.

It is the job of the designer to determine the requirements that are applicable, required or indeed desirable for the building. Additional requirements regarding accessibility are imposed by DIN 18040-1 and DIN 18040-2.

The Janisol 1 window system is tested and authorised to class 1 under DIN EN 13115. The steel profile systems for doors are classified as class 2 under DIN EN 12217. In case of necessity doors might be automated to be used for accessible buildings.

### Escape routes

Escape routes ensure that in case of danger, people can escape from a building.

Alongside the requirements regarding emergency exit push bars and panic bolts, doors on escape routes often also need to meet fire and smoke protection requirements, or be secure against break-in. And despite all of this, they should also be visually appealing in their design, and harmonise attractively with the overall design.



The planning principles with regard to **construction** and living are represented in DIN 18040. Part 1 governs what is meant by '**accessible**' in public areas. For residential construction, on the other hand, a distinction is drawn in DIN 18040 Part 2 between 'accessible' and 'suitable for wheelchairs'.

Product standard DIN EN 14351-1 for windows and exterior doors governs the standard under which operating forces are tested and classified. The criteria for the classification can be found in DIN 18055. The classification of the operating force for windows and doors is in turn governed by two different standards. For windows, the relevant classification standard is DIN EN 13115 (class 1 = 100 Nm, class 2 = 30 Nm), while for exterior doors it is DIN EN 12217 (class 2 = 50 Nm, class 3 = 25 Nm, class 4 = 10 Nm). For all building elements, the higher the operating class, the easier it is to operate.

Doors on **escape routes** can be designed in accordance with DIN EN 179 as emergency exit doors, or with DIN EN 1125 as panic doors. Distinguishing criteria for assessment are: the number of people in the building at any one time, the length of the escape routes and the likelihood that panic may break out among users in a dangerous situation.

Planning attractively designed, safe escape routes is a complex task that Jansen tackles on a daily basis. Numerous tested systems are available that are a match to any requirement in terms of element size, light incidence and transparency.



*“ We take responsibility for the building shell and for escape and rescue routes, create transparent separation and facilitate architecture. That is security as Made by Jansen. ”*



# Weather – when it's raining and blowing a gale outside

Weather refers to all the influences that make up the weather at a specific place at a specific time: sun, wind and water, as rain or snow, light and air. If the roofs and walls are to provide reliable protection, then the windows and doors need to shut tightly. Only then will none of the bad weather outside manage to get in, and it will remain comfortably warm inside.



[jansen.com/weather](https://jansen.com/weather)

*“ I am proud to be able to make the world a whole lot safer with Jansen products. ”*

*Michaela Hanesch, Marketing Manager*



### Wind load

Windows and doors have to be able to withstand the force of the wind, even in stormy weather. The wind load that can be expected depends first and foremost on the location of the building – experience has shown that it is stormier near the coast than inland. However, wind load is also a factor that needs to be considered when designing especially tall buildings.

### Resistance to water/driving rain

Windows, doors and façades must be watertight – regardless of whether it is just lightly drizzling or whether a storm is driving the rain at full force against the façade.

### Air permeability

Unsealed gaps in windows and doors will be felt not only when it is windy, but during the winter even when the air is still. Due to the natural interaction between cold and warm air, there develops a flow of air – a draught. Such draughts are inextricably linked with the loss of precious heat, which escapes through the gaps.

Jansen façade systems – VISS, VISS Basic and VISS SG – have been given the 'AE' classification, the highest possible rating; door and window systems for exterior applications are in the highest class (class 4).

At the company's own test centre in the Swiss town of Oberriet we can test for the parameters of resistance to wind load, resistance to water/driving rain and air permeability. This enables us to ensure in advance that the selected construction satisfies the requirements imposed on it.



The **resistance** of windows and doors to wind load is tested according to DIN EN 12211 and classified into classes 1 (not tested) to 5 (high resistance) according to DIN EN 12210. The resistance of curtain walls to wind load is defined in DIN EN 13116, which specifies the requirements for both fixed-glazed and movable elements of curtain walls.

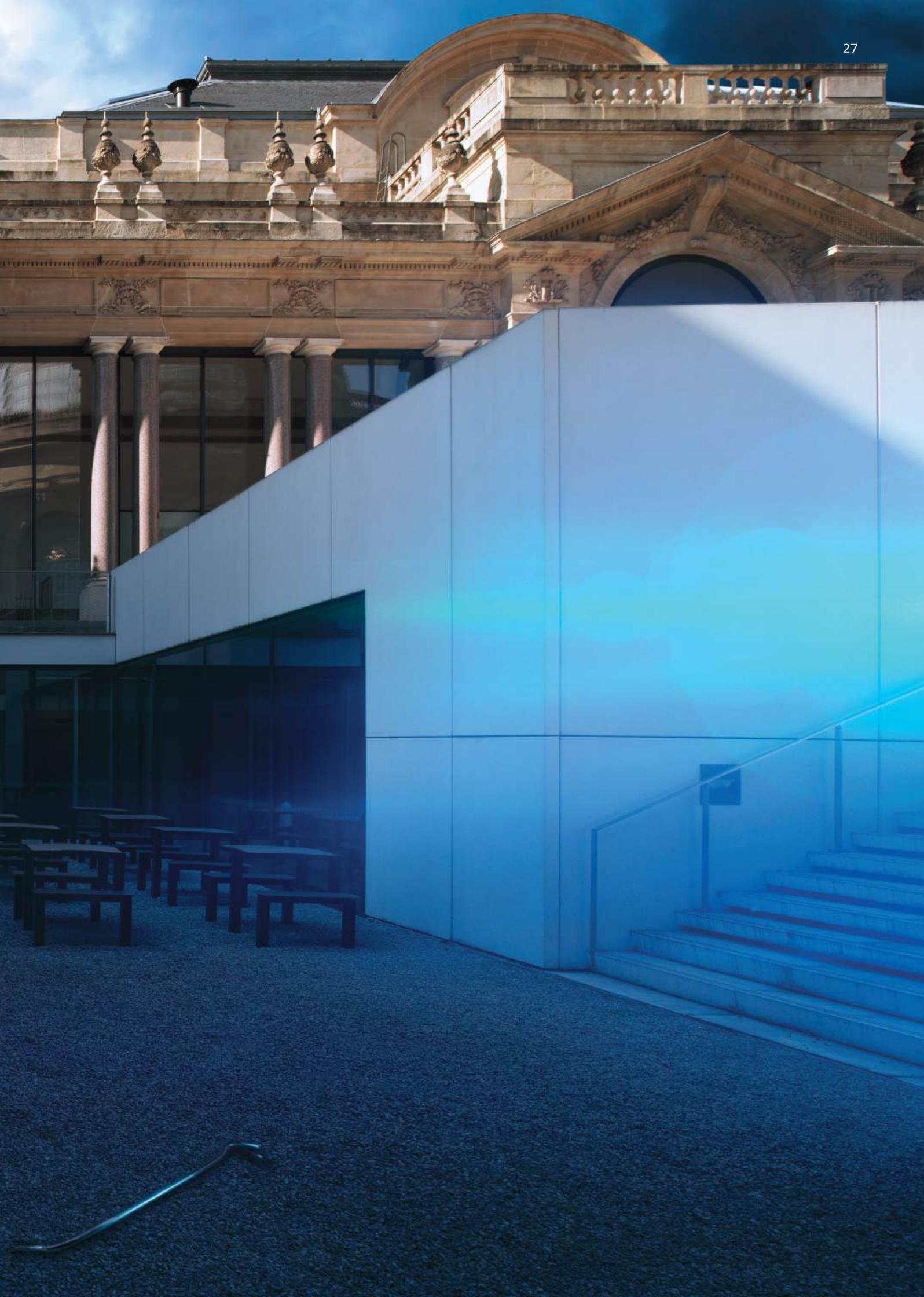
Only **tightly closing windows and doors** ensure consistent heat insulation, which makes the Q value described in DIN EN 12207 an important thermal insulation value for the requirements of the (German) Building Energy Act (GEG 2020). As with the U value described previously, the lower the Q value, the better. Façades are classified according to DIN EN 12145.

The tightness of windows and doors against **driving rain** is classified according to DIN EN 12208 and tested according to DIN EN 1027. There are two different methods for the test: Method A is used for doors and windows that are fully exposed to the weather, while Method B is used for building elements that are protected from the rain by canopies or balconies. The tightness of profile curtain walls against driving rain is classified according to DIN EN 12154.

# Effects of external forces Protection from life-threatening events

With our steel systems for windows, doors, partition walls and façades, we are not simply the face of the building, exposed to all risks, internal and external. We have to be able to withstand both the dangers of which we are aware and those that we cannot yet imagine. Through the use of tests in our own technology centre and at independent institutes, we ensure that you can bring safety into harmony with design and aesthetics, with certified systems.

*“ Cities grow. Chiefly upwards, to the left, to the right. They get more and more crowded, and the more people there are in one place, the more important safety becomes. In public buildings, the demand for safety is especially high. ”*



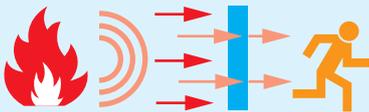
# Fire protection – because every minute counts

Fire is fascinating – but only providing we have it under control. By contrast, if a fire breaks out, all we can do is to flee from the flames and from the danger to life and limb. In a building, it is the role of the escape and rescue routes to enable such flight to take place safely.

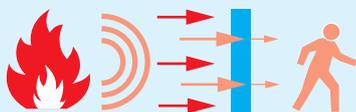
Structural fire protection is intended to keep the potential for fire as low as possible, through the use of appropriate building materials. To this end, those materials are categorised into classes according to their behaviour in a fire (combustible/

non-combustible). The fire resistance class indicates how long a component or fire barrier can be relied upon to prevent fire from spreading.

To guarantee comprehensive protection against heat and fire, our doors meet even EI90, which means 90 minutes' protection from continuous heat and fire. Our façade has even been successfully tested in combination with inserted elements and roof glazing.



*Performance criterion E 'Integrity': the spread of fire is prevented, but not the transmission of heat.*



*Performance criterion EW 'Integrity and reduced radiation': The spread of fire is prevented. The transmission of heat is also restricted to 15 kW/m<sup>2</sup>.*



*Performance criterion EI 'Integrity and insulation': The spread of fire and the transmission of heat are prevented. The rise in temperature on the side of the element facing away from the fire must not exceed 180°C or an average of 140°C.*

**Fire protection standard** DIN EN 16034 governs the requirements of windows, doors and gates to the outside. Data from DIN EN 16034 has to be supplemented with further information depending on whether the element in question is an outside door (DIN EN 14351-1), an automatic door (DIN EN 16361) or a gate (DIN EN 13241). Fire protection requirements for façades, including curtain walls, are governed by DIN EN 13830. The test standard for fire protection elements is DIN EN 1634.

It is always the entire element that is tested, including glass, hinges, fittings and other accessories. This ensures that the building element as a whole, with all of its component parts, meets the requirements. Elements that do meet the requirements are marked with the CE marking or a nationally regulated marking. The performance criteria are qualified by the duration of exposure in minutes. Thus E30 means that an element will resist fire for 30 minutes. Other levels are 60, 90 and 120 minutes.

This system yields the following possible fire resistance classes: E30, E60, E90 and E120; EW30, EW60, EW90 and EW120; and EI30, EI60, EI90 and EI120.





DIN 18095 and DIN 1634-3 detail the requirements for smoke control doors and these are classified according to DIN EN 13501-2. Like the fire protection doors, smoke control doors are subjected to a long-term functionality test as per DIN EN 1191, in which they are opened and closed 200,000 times using the doors' own closing system (door closers). Door closers that meet DIN 18263 are required. Smoke control doors are never completely smoke-tight. The permissible amount of leakage, however, is limited – either in relation to the length of the gap or to the element as a whole.



# Smoke protection – because fresh air saves lives



Fire always produces not only flames but also smoke. Smoke is less readily identifiable than flames but the consequences of smoke inhalation are far more life-threatening than those of fire, because just a few breaths of the odourless gases carbon monoxide or carbon dioxide are fatal to humans and animals. Smoke control doors are therefore a legal requirement in public buildings; but in private areas, too, they can provide protection from poisoning through smoke inhalation.

Smoke control doors must be tested with regard to their performance properties and in several countries they must even be marked with a non-flammable sign.

In order to meet European smoke protection requirements, Jansen has had both non-insulated and insulated door systems tested for smoke protection. Anti-finger-trap doors provide protection in another field of application.



[jansen.com/smokeprotection](https://jansen.com/smokeprotection)

# Burglar resistance – when uninvited guests need to be kept out

Spectacular raids such as the theft of incalculably valuable jewellery from the Green Vault of the palace in Dresden grab the headlines. On the other hand, countless burglaries take place every day from homes and apartments in which the thieves not only clear out anything that they can turn into money, but often leave a scene of devastation in their wake. What remains is the unpleasant sense of having become a victim of arbitrary force. Burglar-resistant windows, doors and façades can offer protection from such unhappy experiences.

Burglar-resistant door, gate, window and façade systems are to be found in government buildings, museums and galleries, just as they are at courtrooms, banks and police stations. In sophisticated residential developments, too, glazed burglar-resistant structures can bridge the design gap between the sometimes mutually contradictory desire for more transparency and openness, on the one hand, and protection from break-ins and vandalism on the other. Jansen offers burglar protection for all systems in a wide range of categories. Precise details can be found in the table on pages 40–43.

DIN EN 1627	Time of resistance	Type of burglar / Type of burglar behaviour
RC1N*	3 Min.	Low level protection, chiefly against vandalism and the simplest burglary tools.
RC2 RC2N*	3 Min.	The opportunistic burglar using additional simple tools (screwdrivers, pliers and simple wedges).
RC3	5 Min.	The purposeful burglar using in addition a second screwdriver and a crowbar, along with a simple drill.
RC4	10 Min.	The experienced burglar using saws and striking tools such as a pickaxe, pry bar, hammer and chisel, as well as an electric drill.
RC5	15 Min.	The experienced burglar using additional power tools, e.g. a 650 W drill, a keyhole or sabre saw and an angle grinder.
RC6	20 Min.	The experienced burglar using additional high-power tools, e.g. a 1050 W drill, a keyhole or sabre saw and an angle grinder.

Burglar resistance (RC = resistance class) is classified according to DIN EN 1627. This standard tests the resistance of various components, in terms of type of opening, into classes 1 to 6.

For private properties, RC2 is the minimum recommended requirement. If a higher level is required, windows and doors in resistance class RC3 offer reliable protection: experience shows that burglars increasingly abandon their attempts, the longer the building element resists the attack. RC4 to RC6 are resistance classes that are used for still greater protection requirements, mostly in public and commercial buildings.

\* The N suffix imposes no special requirements on glazing; for use in locations with difficult access, e.g. 3 metres above ground or balcony level.





[jansen.com/burglarresistance](https://jansen.com/burglarresistance)



# Bullet resistance – when resistance ensures survival

In many countries of the world, possession of firearms is subject to special restriction. Nonetheless, in terrorist attacks and other crimes, weapons continue to be used and they have the potential to represent a significant risk. In both the military and the civil sector, in public, commercial and even privately used buildings that are at particular risk, bullet-resistant glass can be used to provide protection against the threat of armed force.

Windows, doors and façades from Jansen's steel profile systems are tested and authorised from FB4 to FB6. As with burglar protection, the entire building element (frame, glass, hinges and fittings) is subjected to testing and classified as a whole. This is calculable protection even against large calibre weapons.



[jansen.com/bulletresistance](https://jansen.com/bulletresistance)



DIN EN 1522 deals with bullet resistance for doors, windows, shutters, transfer trays and other bullet-resistant elements. There are seven bullet-resistance classes, FB1 to FB7, with FB7 providing the highest level of protection. DIN EN 1523 specifies the parameters for the test. It also notes whether the shot scatters material or glass shards on the far side of the test specimen. This is indicated in the test results with the suffix NS (non-splintering) or S (splintering).

Resistance class	Weapon type	Calibre
FB1		22LR
FB2		9 mm Luger
FB3		357 Magnum
FB4		44 Remington 357 Magnum
FB5		5.56 x 45
FB6		5.56 x 45 7.62 x 51

# Explosion protection – if the worst happens

Large-scale glass façades have become an indispensable feature of modern architecture. They protect the building from the weather, heat loss and solar radiation. Unfortunately, however, buildings are increasingly also becoming targets of explosions resulting from terrorist attacks. Because the pressure caused by an explosion is many times greater than that of normal wind load, the building's support structure is of critical importance.

Heavy-duty steel profile systems are ideal for withstanding the direct dynamic force of an explosion. Thanks to our wide-ranging experience with government buildings and airport terminals, not to mention banks and places of worship, we are in a position to design windows, doors, and façades according to individual requirements, even in combination with protection against other risks – always in close consultation with the customer. Absolute confidentiality is a given, of course.



[jansen.com/explosionprotection](https://jansen.com/explosionprotection)

# Technical security – because reliability matters

There is a set of rules relating to technical security for almost every field of application within the building industry. These rules focus on the way the product is used. But technical security is about far more than that – ideally, it covers all life cycle phases of a product: from planning and design, through manufacture and use, to demolition and disposal. Technical security is an indicator of quality to which Jansen pays the highest attention.

*“ Yes, I’m proud to be involved in developing and testing these products, and I’m proud of our system through which we can help people to feel safe. ”*

*Othmar Eberle, Product manager*



### Load capacity of safety devices

This somewhat cumbersome phrase refers to the requirement that all parts used to keep a door leaf or window sash open (for example stays and detents) must be designed in such a way that they protect the user from all potential hazards. Falling through the gap between the leaf/sash and the frame, body parts being crushed or severed, the leaf/sash unexpectedly closing during cleaning, even a window sash falling out – all of these need to be reliably prevented. The requirements for and testing of these aspects are described in product standard DIN EN 14351-1 and must also be taken into consideration as an 'essential feature' during CE certification.

### Long-term functionality

In order to determine their long-term functionality, windows and doors are opened and closed thousands of times. If a component has several functions, e.g. rotation and tilting, each function is tested individually.

Four of the seven door systems by Jansen have achieved the highest class (class 8).

Windows are categorised into classes 0 to 3 (20,000 cycles) under the standard. The Janisol HI single-sash rotating window system has been shown to withstand 20,000 cycles, which is two and a half times as many as required under the standard.



[jansen.com/technicalsecurity](https://jansen.com/technicalsecurity)

### Serviceability

Fire and smoke protection, mitigation of burglaries, bullets and explosions – doors in structures where safety is an issue must function reliably in all situations even after many years of use. They are therefore subjected to a wide variety of stress tests. Steel-frame doors by Jansen have achieved the highest class (class 4) thanks solely to their material properties and without any additional measures being required.



The **strength requirements for doors** in terms of vertical load-bearing capacity, static torsion and soft, hard or heavy impacts are classified in DIN EN 1192.

Doors are classified into eight classes according to DIN EN 12400. These classes range from '**light/occasional**' use (5000 opening cycles) to '**very frequent**' use of **special structures** (one million opening cycles).

**Barrier glazing** is described in DIN 18008-4. Both the mounting and the configuration of the panes are crucial.

**Impact resistance vs. barrier glazing**

The difference is a small but important one: impact resistance is the ability of a door to hold the glass in place in the event of an impact, i.e. the glass must not break. Barrier glazing is intended to prevent people from falling to a lower level if they collide with it. Furthermore, this lower level must not be at risk from falling shards of glass. For this reason, Jansen tests all systems always in combination with suitable glazing.

**VOC - volatile organic compounds**

Paints and lacquers as well as adhesives and sealants can release volatile organic compounds. Since the only guarantee of an impeccable room climate is the use of environment-friendly products that do not release harmful substances, Jansen only ever uses seals and coatings that comply with DIN EN ISO 16000 'Indoor air pollutants'. In this way, we ensure that everything is just right, from the whole down to the individual parts.



# Systems – for all possibilities

			Windows				
			Arte 2.0	Arte 66	Art'System	Janisol	Janisol 1
Wellbeing & health	Weather	Wind load resistance	●	●	●	●	C4
		Water tightness	●	●	●	●	8A
		Air permeability	●	●	●	●	4
	Sound insulation (dB)		45	45	43	45	43
	Heat/cold	Thermal insulation (U <sub>f</sub> ... W/m <sup>2</sup> K)	over 1.9	over 1.6	over 5.2	over 2.0	over 2.5
		Daylight	Element size/openness**	nf	nf	nf	●
	Sun shading		○	○	○	○	-
	Partition walls		●	●	●	●	-
	Usage	Protection for the fingers	-	-	-	-	-
		Barrier glazing	●	●	-	●	-
		Contact-free opening	Motor	Motor	Motor	Motor	-
		Building for accessibility	-	-	-	-	-
		Differential climate properties	-	-	-	-	-
		Door thresholds (accessible)	-	-	-	-	-
Operating forces		1	1	1	1	1	
Escape doors/Ability to release/ Absence of constraints		-	-	-	-	-	
External forces	Fire		-	-	-	-	E30/E45*
	Smoke		-	-	-	-	-
	Burglary		RC2	-	-	up to RC3	-
	Gunfire		-	-	-	FB4-FB6	-
	Explosion		-	-	-	-	-
Safety in use, technology, product quality	Serviceability		4	-	-	-	-
	Durability		4	4	4	-	-
	Impact resistance		4	4	-	-	-
	VOC		●	●	-	●	-
	Load capacity of safety devices		●	●	-	-	●
Sustainability (certicate)			-	-	-	-	-



# Systems – for all possibilities

			Façade		
			VISS	VISS Basic	VISS SG Semi SG
Wellbeing & health	Weather	Wind load resistance	2 kN/m <sup>2</sup>	2 kN/m <sup>2</sup>	2 kN/m <sup>2</sup>
		Water tightness	RE 1200	RE 1200	RE 1200
		Air permeability	AE	AE	AE
	Sound insulation (dB)		47	kA	-
	Heat/cold	Thermal insulation (U <sub>f</sub> ... W/m <sup>2</sup> K)	>0.65	>0.51	>0.84
	Daylight	Element size/openness**	-	-	-
		Sun shading	●	●	-
		Partition walls	-	-	-
	Usage	Protection for the fingers	-	-	-
		Barrier glazing	TRAV-A	18008-4/A	TRAV-A
		Contact-free opening	-	-	-
		Building for accessibility	-	-	-
		Differential climate properties	-	-	-
		Door thresholds (accessible)	-	-	-
Operating forces		-	-	-	
Escape doors/Ability to release/ Absence of constraints	-	-	-		
External forces	Fire		E30/EW30- E90-EW90 and EI30-EI60	Class E	-
	Smoke		-	-	-
	Burglary		RC2, 3, 4	RC2, 3, 4	-
	Gunfire		FB4 NS	-	-
	Explosion		-	-	-
Safety in use, technology, product quality	Serviceability		-	-	-
	Durability		-	-	-
	Impact resistance		E5/I5	E5/I5	E5/I5
	VOC		-	-	-
	Load capacity of safety devices		-	-	-
Sustainability (certi cate)			Passive house	-	-



If there are any differences between this document and the current German version (Jansen Item number K1209049), the latest version of the original German text in the Jansen Docu Center shall prevail.

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