

# Security Guidelines for Shops and Businesses



# Security Guidelines for Shops and Businesses

## **Content**

### **Introduction**

### **1 Walls, Floors, Ceilings and Roofs**

- 1.1 General
- 1.2 Resistance of Walls, Floors, Ceilings and Roofs

### **2 Doors**

- 2.1 General
- 2.2 Weak Points of Doors
- 2.3 Door Leafs
- 2.4 Door Frames
- 2.5 Door Security Components
- 2.6 Burglar-Resistant Doors

### **3 Gates**

- 3.1 Sliding gates
- 3.2 Rolling Gates
- 3.3. Multi-Panelled Gates, Latch Gates

### **4 Windows**

- 4.1 General
- 4.2 Weak Points of Windows
- 4.3 Window Friezes
- 4.4 Security Components for Windows
- 4.5 Glazings
- 4.6 Burglar-Resistant Windows
- 4.7 Cellar Windows and Skylights
- 4.8 Blinds
- 4.9 Grills and Roller Blinds

### **5 Safes**

- 5.1 General
- 5.2 Secure Storage Unit Monitoring
- 5.3 Tips for Choosing the Right Safe
- 5.4 Classically Styled Secure Storage Rooms

### **6 Intrusion and Hold-Up Alarm Systems (IAS, HUAS)**

- 6.1 General
- 6.2 Class A Intrusion Alarm Systems
- 6.3 Class B Intrusion Alarm Systems
- 6.4 Class C Intrusion Alarm Systems
- 6.5 Installation
- 6.6 Testing and Approval
- 6.7 Setting/Unsetting

### **7 Robbery**

- 7.1 Risks
- 7.2 Protective Measures
- 7.3 Robbery in Transport

### **8 Requirements**

- 8.1 Risk Class SG 1
- 8.2 Risk Class SG 2
- 8.3 Risk Class SG 3
- 8.4 Risk Class SG 4
- 8.5 Risk Class SG 5
- 8.6 Risk Class SG 6

## Introduction

Burglary can only be combated by taking the adequate preventive measures. Most often, this means the use of mechanical or electronic protective devices. For objects in general view, adequate protective measures can be a precondition for burglary and vandalism insurance.

For this reason, security guidelines for burglary insurance were established. They give the user tips as to which security requirements should be applied to an object. At the same time, questions of the respective risk and the profitability of such measures are also taken into consideration. As a result, 6 non-binding risk classes for commercial premises (SG 1 - SG 6) have been created. The safeguarding of banks, savings banks and other financial institutions (SG 5) represents a special case that is described in detail in the "Security Guidelines for Banks, Savings Banks and Other Financial Institutions", [VdS 2472](#).

It is recommended that a high-risk object is protected and monitored using both mechanical and electronic protective devices. Of importance here is that the measures complement one another and form a security chain that allows the policyholder to insure his valuables without any further support. The security guidelines take up this concept and provide tips as to how this type of security chain can be established in the non-binding risk classes. The user should therefore always assess individual measures as to whether they strengthen or weaken the security chain.

The security measures described apply to walls, floors and ceilings surrounding insured premises, and for corresponding openings such as doors, gates or windows. Openings generally require a mechanical protective device for burglary if they are less than 4 m above the ground or can be reached with existing installations from the outside, e.g. via annexes, canopy roofs, balconies, fire ladders, exterior gratings, etc.

It is recommended that only approved or certified products are used, and a professional installation company engaged, for these security measures to be fully effective. These products are tested and certified i.a. by the VdS Schadenverhütung GmbH.

The measures in the security guidelines can only constitute non-obligatory suggestions. In

individual cases, e.g. with objects in general view (high value, high-risk location, etc.), additional measures may be necessary in order to achieve effective protection against the risk of burglary or vandalism.

If certified and approved burglar-resistant components are employed (e.g. burglar-resistant doors, professionally installed retrofit installations on windows, etc.), all parties can be assured that the products have seen intensive testing and that they have excellent protection against burglary. For example, a burglar-resistant door with a VdS certificate has to force the criminal to spend a minimum amount of time on entry, even when equipped with tools. Burglary protection products are regularly divided into classes. Studies by the police have confirmed that many attempted burglaries fail in the face of high-quality security systems, because the burglar does not have the necessary time to carry out the burglary.

The following security guidelines can already be used as a guide in planning for risk management. Experience has shown that the use of approved burglar-resistant elements during installation of the object provides the best protection. Retrofitting does not often achieve the same degree of protection. The user should also pay particular attention to which element of the security chain is the weakest.

**Important note: During planning, installation and implementation of the security measures, the local regulations for escape and rescue routes must be observed.**

This applies in particular if fire-resistant closures, e.g. fire doors or fire flaps, are used simultaneously for burglary protection. Modifications to these products are only permitted with a building authority permit (cf. notifications of the DIBt in "Modifications to Fire-resistant closures", version June 1995, see Annex A). When installing security systems in escape routes, the responsible building authorities must be consulted.

**The following security guidelines represent a summary of the accumulated experience of the insurance industry and the police. Since this experience is also subject to constant change, the security guidelines are non-binding in character. Overviews, tables and**

**classifications only serve for the systematic organisation and presentation of problem areas and to indicate different circumstances. Classifications and limitations only relate to the internal system employed in this publication.**

## 1 Walls, Floors, Ceilings and Roofs

### 1.1 General

Mechanical resistance to forced entry depends on the type of material, its strength, the thickness and the craftsmanship or installation.

When examining the resistance, particular attention should be paid to the following:

- \_ Walls, floors, ceilings
- \_ Roofs of single-storey buildings, in particular halls without intermediate ceilings
- \_ Roofs, insofar as they can be reached without great difficulty or with simple aids (e.g. with ladders, via annexes, canopy roofs, balconies, fire ladders, outside gratings)

#### 1.1 Resistance of Walls, Floors, Ceilings and Roofs

The materials of walls, floors, ceilings and roofs can be classified according to their resistance to forced entry as shown in Table 1.01. Plaster, insulation and panellings do not increase the resistance.

## 2 Doors

### 2.1 General

Physical conditions, flow of persons and goods and costs determine the types of door that can be implemented, e.g.

- \_ standard doors,
- \_ sliding doors,
- \_ swing doors or
- \_ revolving doors.

These security guidelines deal predominantly with standard doors, but other types can be secured in a comparable manner.

Door resistance depends on the material used, the door construction and the installation. Doors must be sturdy enough that they offer a minimum resistance to physical attack, such as kicking, jumping against the door, blows with the shoulder, and the use of simple tools.

For all doors in walls that border the insured rooms or the exterior, it is important that the door leaf and door frame as well as door hinges, door lock, fittings, striker plate and, where applicable, additional security devices are matched with respect to their burglar-resistant effect.

Construction/Resistance	Materials:
Light construction Low resistance	<ul style="list-style-type: none"> <li>_ light construction panels, e.g. made of plasterboard</li> <li>_ wood products, wood (boards, sheets)</li> <li>_ sandwich plates</li> <li>_ gas concrete</li> <li>_ plastics</li> <li>_ profiled panels, corrugated panels</li> <li>_ clay (in half-timbered design)</li> <li>_ glass blocks, profiled construction glass</li> <li>_ cavity blocks</li> <li>_ stone, also in half-timbered design, under 120 mm thick</li> </ul>
Solid construction Sufficient resistance (adequate to SG 4)	<ul style="list-style-type: none"> <li>_ gypsum/steel composite components for mechanical reinforcement of light construction panels;)</li> <li>_ stone (e.g. brick, chalk sandstone), also in half-timbered design, 120 mm thick and up</li> <li>_ concrete</li> </ul>
Exceptionally solid construction Increased resistance (adequate to SG 6)	<ul style="list-style-type: none"> <li>_ stone (e.g. brick, chalk sandstone), 240 mm thick and up</li> <li>_ concrete, 200 mm thick and up</li> </ul>

**Table 1.01:** Resistance classification of construction methods and materials

Therefore, all security-relevant parts of a door must be evaluated in order to identify and remedy any mechanical weaknesses.

The resistance of existing doors to burglary can be increased by the replacement or installation of additional locks, sturdy door hinges, high-quality locks and lock cylinders, burglar-resistant door plates, burglar-resistant striker plates, reverse hooks and burglar-resistant fillings.

## 2.2 Weak Points of Doors

Doors without burglar-resistant features – these include the vast majority of doors – can be overcome without the use of any special tools.

**Door leafs** (or door fillings) can, if they are not sturdy enough, be easily kicked in. The door leaf can break away totally or partially, leaving an opening big enough to walk through. All-glass door leafs as well as honeycomb-core and tubular particle board doors (also known as plywood doors) are particularly at risk here.

Weak door leaves such as these cannot be adequately secured even with high-quality security products, e.g. with cross bars, as they do not have the necessary fundamental stability.

**Striker plates** can become deformed under heavy strain and expose the lock bolt. If incorrectly installed, striker plates can be completely torn out of the frame.

A common burglary method is to break open the door using simple levering tools. The use of crowbars is normally not even necessary; quite average screwdrivers are often all that are required to destroy the striker plate.

**Mortise locks** can deform completely under pressure, releasing the bolt. Again, the normal burglary method is levering using the simplest of tools (a screwdriver). If the bolts of the door lock are not sufficiently sturdy, they bend at the slightest shoulder blow or slip out of the striker plate.

**Lock cylinders** can be easily broken off if they protrude by more than 3 mm from the door plate on the exterior. Often a simple wrench is all that

is required. In addition, there are special tools that make breaking off the lock cylinder even easier.

Cylinders that are not equipped with a special pull protector can also be overcome by pulling the cylinder core (the turning part of the cylinder into which the key is inserted) out of the lock. Special tools are used here that can exert very high pulling forces.

**Door plates** can be bent or torn out of the door leaf if the mounting or the material of the plate is not sturdy enough. Weak door plates can be prised off the door leaf without great effort using a small screwdriver or a wedge. As soon as the lock cylinder is exposed, entering takes just a matter of seconds. The cylinder can then be simply broken off, e.g. as described above.

**Hinges** are often made of cheap and not very sturdy materials. Furthermore, the hinges are often only slotted into the door leaf or door frame. These "spigot hinges" can be easily pulled out of their mounting when pressure is applied to the door (shoulder blow, prising off using a screwdriver).

## 2.3 Door Leafs

Door leafs can consist of various materials, such as glass, wood, metal, plastic or a combination of these.

Especially weak door leafs must be doubled up to achieve the fundamental stability necessary for a security upgrade. If the door's load capacity or the door hinges are not adequate for doubling, then an effective security upgrade is not possible.

When a door is not required as a through access, there is the possibility of permanently sealing the door opening; for example, by masking the door and door frame with a steel panel or a sturdy wood panel anchored into the wall.

### 2.3.1 Honeycomb-Core and Tubular Particle Board Doors

Honeycomb-core and tubular particle board doors are the most popular door leafs. They are used mainly for interior or entry doors and bear a low mechanical resistance due to their thin top layer and their weak wood frames, despite having a door leaf thickness of approx. 40 mm. In the construction of door leafs, a differentiation is made between middle layers of

- \_ synthetic honeycomb,
- \_ cardboard or paper honeycomb,
- \_ plywood or hard masonite strips,
- \_ tube core pressboard or
- \_ pressed straw.

For better protection against sound, fire, radiation, heat or smoke, door leafs should be thickened and the middle layers reinforced. Door leafs reinforced with middle layers of joined, solid wood rods are frequently confused with solid wood door leafs. These middle layers do not increase the door's effectiveness against burglars.

Glass fillings are often used. In this case, an opening for the glass filling is cut out of the door leaf. A glass pane is mounted into the cutout with both sides fixed by window trim.

Neither burglar-resistant glazing nor fencing can provide such a door leaf with adequate burglar resistance.

### 2.3.2 Panelled Door Leafs (Akimbo)

Panelled door leafs consist of wood frames containing glass fillings, solid wood or other materials, e.g. plywood or particle board.

The burglar-resistant effect of these door leafs is dependent on the stability of the wood frames, the fillings and the fastening of the fillings in the wood frames.

Panelled door leafs are often too weak to enable adequate burglar resistance. Weak door leafs must be doubled up for stability.

Glass fillings are normally laid into a notch and fixed on the opposite side by trim or, more simply, only puttied.

Security-relevant fastening is only adequate when the trim is mounted and screwed from the inside and not removable from the outside.

Fillings of "normal" glass (i.e. not burglar-resistant glass), also including insulated and wired glass, are not secure. This type of glazing needs to be secured with steel fencing (not removable from outside) or be replaced by a burglar-resistant glazing.

### **2.3.3 Double Door Leafs (Solid Wood)**

Double door leafs consist of a single frame encased on both sides with solid wood. High-resistance materials can also be used between the interior and exterior casing, e.g. steel sheets.

Locks, door hinges and other fittings can be especially stable when fixed to double doors. This is owing to the construction of double doors, and allows a high level of protection against intrusion.

### **2.3.4 Metal Frame Door Leafs**

Metal frame door leafs mostly consist of a metal-clad frame with glass fillings.

Fillings of "normal" glass (i.e. not burglar-resistant glass), also including insulated and wired glass, are not secure. For secure protection against intrusion, it is necessary that this type of glazing is secured with steel fencing (not removable from outside) or replaced by a burglar-resistant glazing (attached fencing is not suitable).

The filling trims must be mounted from inside, firmly screwed in place and in no way removable from outside.

### **2.3.5 Synthetic Door Leafs**

Synthetic door leafs consist, on the whole, of a single running frame made of metal or synthetic cladding. The cladding is glued to both sides of the synthetic panels. Since the doors are mostly constructed of PVC or a similar material, the door's stability must be reinforced with an inner steel frame.

Fillings of "normal" glass (i.e. not burglar-resistant glass), including insulated and wired glass, are not secure.

Therefore, it is necessary that this type of glazing is secured with steel fencing (not removable from outside) or replaced by a burglar-resistant glazing (attached fencing is not suitable).

### 2.3.6 Steel Door Leafs

Steel door leafs are mostly double-walled. Yet in most cases, this is still not adequate resistance to intrusion.

Steel door leafs with glass fillings can also be moulded into special shapes. These fillings weaken the door's burglar resistance. In order to increase protection against intrusion, this type of glazing can be secured with steel fencing (not removable from outside) or be replaced by a burglar-resistant glazing.

The filling trims must be mounted from inside, firmly screwed in place and in no way removable from outside.

When possible, VdS-approved mortise locks should always be used (see section 2.5.6). The use of additional bolts is advisable if the door's construction only permits a small cylinder housing that closes on just one turn (e.g. double bolt lock, mortise lock with a swing bolt or a hook bolt, see section 2.5.8).

Steel door leafs are often used as **fire doors**. One must be careful that subsequent changes do not sacrifice the fire door's approval. But a wide range of changes are permissible with door frames (e.g. installation of an additional bolt lock in or on a door leaf). In this case, it is important that legal specifications regarding the modification of fire-resistant closures are observed.

VdS also offers testing and approval of fire doors' burglar-resistant features.

### 2.3.7 All-Glass Door Leafs

All-glass door leafs are mostly manufactured from pre-stressed single-pane safety glass (SPSG). The term "security glazing" refers here exclusively to industrial safety and not protection against intrusion. It is important to note that SPSG offers no protection against intrusion.

Special locks must be used with all-glass door leafs (see section 2.5.16).

## 2.4 Door Frames

It is particularly important that the door frames be adequately fastened at the hinges and the striker plate. Door frames must be fastened firmly to the wall in at least six places. Please observe the manufacturer-provided fastening specifications for burglar-resistant doors.

A connection with the floor (metal sill, metal base) increases the door frame's stability.

## 2.5 Door Security Components

### 2.5.2 Door Hinges

The selection of door hinges is dependent on the construction and material of the door frame and door leaf. According to the method of fastening used for the door frame and the door leaf, there is a choice of screw-on, mortise, drill-in or weld-on hinges. Simpler hinges, e.g. drill-in hinges, are often not effective against intrusion.

Doors with high security requirements in regards to intrusion must have three stable interior hinges.

With hollow-core doors, the hinges must be installed with reinforcing plates or special fastening nuts. The bearing surface must be large enough, otherwise the door may split.

This is similarly true for special hinges designed for chipboard door frames. The suspension bolts are additionally secured against tampering by screwing a fastening plate to the outside of the frame. Hinges of this kind cannot be retrofitted.

Weld-on hinges fasten securely to metal doors, providing a strong resistance to intrusion. Although weld-on hinges are very stable, steel doors not designed as fire doors do not offer defined resistance to burglary. In this instance, hinge bolts are not intended to provide protection against intrusion, but simply to prevent excessive buckling in case of fire.

As a rule, it is recommended to fit door hinges to the interior of the door. But do not avoid concerns relating to exterior door hinges: the hinge pins (bolts) must be secured and the hinges themselves protected against being knocked or sawed off.

Additional protection of weak door hinges is recommended, e.g. securing the hinge sides (see section 2.5.2).

### 2.5.2 Securing the Hinge Sides

Door hinges are often only fastened with one bolt in the door leaf and one in the frame. These hinges can break or crack very easily. Doors with weak hinges must be protected by additionally securing the hinge sides. This is especially true if the hinges are mounted on the outside of the door.

The hinge bolts can offer additional stability if their striker plates are anchored to the masonry using special plugs.

### 2.5.3 Striker Plates

In order to be able to securely bolt a door, high quality striker plates and stable striker bolts are required at the mortise locks. Typical problems with striker plates include

- \_ weak material,
- \_ inadequate fastening or
- \_ inadequate length.

As long as a VdS-approval is lacking, the following minimum requirements should be observed:

- \_ The striker plate (steel) thickness should be at least 3 mm.
- \_ The striker plate length should be a minimum of 300 mm, preferably 500 mm.
- \_ The fastening of the striker plate must be adequately stable and correspond to the various materials used, as well as the construction of the door frame itself (e.g. anchored and glued to the masonry).

**Striker plates that are bolted at various points** must be stable and of an adequate length as well. Striker plates that are bolted at various points must be mounted "in one piece", so that burglars are not able to easily crack them out. Here as well, the mounting must specifically match the type of door frame. This increases stability and makes it more difficult for possible intruders to prise the striker plate off.

**Latch and bolt recesses in metal frames** can be reinforced with multiple screwed or welded solid steel plates. These are used to prevent the frame from cracking out under force.

The level of burglar resistance offered by weaker metal frames can be raised by installing additional locks, e.g. double bolt locks.

#### 2.5.4 Locks

Locks are differentiated by their type (e.g. mortise lock), the locking mechanism (e.g. cylinder or Chubb lock), the type of bolt (e.g. slide or hook bolt) and the application (e.g. all-glass door lock).

With all locks, it is important to pay attention that the cylinder housing is sealed all around, and that bolt penetration is at least 20 mm.

If the bolt penetration is less, it is not guaranteed that the bolt will engage properly with the striker plate. In this case, the lock has to be replaced.

Other problems common to locks are:

- \_ latch or bolt are not made of adequately strong material (e.g. plastic or die cast),
- \_ the bolt is too short (when in locked position, a part of the bolt remains in the cylinder housing; if this length is too short, then the bolt will easily break loose under force).

#### 2.5.5 Mortise Locks

A mortise lock is slotted into the mortise on a door leaf. It is important that the door leaf is adequately stable, so that the lock cannot be broken with simple physical force. Burglar-resistant door plates significantly reinforce the stability of mortise locks.

Better than simple mortise locks are **multipoint locking devices**. Here as well, it is important to observe the minimum bolt penetration of 20 mm.

Multipoint locking devices have the advantage that with a single touch, the door is bolted at various points simultaneously. This greatly increases resistance against intrusion on the lock side.

Products equipped with slide bolts, simple hook bolts or round pins often do not fully engage with the striker plate when closed.

Lock varieties equipped with hook bolts should be used to achieve adequate resistance against intrusion.

### 2.5.6 Cylinder Locks (Cylinder Mortise Locks)

These locks are designed for use with locking cylinders. The locking cylinder is inserted into the cylinder housing and fastened with a screw.

Cylinder mortise locks are tested and approved by VdS and are graded into the following classes in accordance with their performance:

Class	Performance
A	burglar-resistant
B	increased burglar-resistance

### 2.5.7 Slide Bolt Locks (Mortise Locks for Tubular Frame Doors)

Slide bolt locks can be used as cylinder or Chubb locks.

Secure bolting is not possible when slide bolt locks are used in hollow-core doors offering a bolt penetration of only 10-12 mm. However, special locks can offer the minimum required bolt penetration of 20 mm.

### 2.5.8 Swing Bolt Locks (Mortise Locks for Tubular Frame Doors)

Swing bolt locks are cylinder or Chubb locks designed for installation in hollow-core doors. In open position, the hook bolt sits upright in the cylinder housing; the bolt length is not, as with slide bolts, limited by the narrow depth of the cylinder housing. Upon locking, the bolt pivots approx. 30 mm out of the lock.

Swing bolt locks can also be installed in swing doors. Since a few millimetres of the bolt are viewable in the closed position, the lock must be able to withstand a high degree of force. The bolt, often manufactured in a so-called sandwich style, must be especially safeguarded against sawing. Furthermore, the bolt must be protected from forceful kickback in the locked position.

Swing bolt locks with hook bolts are mainly used in sliding doors. With these locks, the hook-shaped bolt snaps into the striker plate, preventing the door from sliding.

Swing bolt locks with hook bolts are recommended for use with turning doors and swing doors, as hook bolts markedly increase a door's resistance against intrusion.

## 2.5.9 Locking Cylinders

### 2.5.9.1 Mechanical Locking Cylinders

Locking cylinders are very important for the security of a door. However they can only offer safety in conjunction with the lock and the door plate. Profile cylinders are commonly used in Germany. Round and oval cylinders are quite rare.

When breaking and entering, criminal offenders attack locking cylinders in a variety of ways. They must therefore afford protection against any methods available to burglars:

- \_ breaking
- \_ drilling
- \_ picking
- \_ pulling

These methods of attack are effectively made more difficult by VdS-approved locking cylinders.

Locking cylinders are differentiated between those with and without an integrated pull protector. Door plates which offer no special protection against extraction tools are often employed. In such cases, only integrated pull protectors can offer adequate burglar resistance (see section 2.5.18).

Special requirements are provided for master key systems and associated locking cylinders. The following list provides the various profile cylinders approved by VdS for use in master key systems.

Locking cylinders are not only used in mortise locks, but also in double bolt locks, all-glass door locks, retrofit products and lockable window catches.

Profile cylinders are tested and approved by VdS and are graded into the following classes in accordance with their performance:

Class	Performance
A	burglar-resistant
B	increased burglar-resistance

### 2.5.9.2 Electronic Locking Cylinders

Conventional locking cylinders process the locking code mechanically. Joining these mechanical solutions are a growing number of locking cylinders that decipher and process the code by means of electronic components and

information, either exclusively or in addition to a mechanical reading.

Products that offer both technologies are described as mechatronic. In addition to the mechanically functioning cylinder pins, mechatronic cylinders are capable of triggering one or more further locking points in the cylinder. Mechatronic cylinders offer a key of typical size and shape, yet expanded by means of electronic components. These components may be visible or invisible, e.g. a chip.

Exclusively electronic locking cylinders do not have a conventionally shaped key. The key often consists of only a single chip, which can be produced in a variety of shapes. An all-electronic key may come as a chip card or equally as a key chain pendant the size of a penny. The shape is completely up to the imagination of the manufacturer.

The operation of a mechatronic cylinder is similar to mechanical cylinders. Upon contact, additional information is exchanged between the key and the cylinder. With all-electronic cylinders, the information can be exchanged without any contact at all. In this case, the locking code is transmitted by radio signal.

A marked advantage of electronic/mechatronic products is exhibited in use with master key systems. There is always the risk that one or more keys may get lost with master key systems. This may require changing over the entire system. Electronic keys have the advantage that entry authorisations can generally be changed at any time. An electronic key can also be declared "invalid".

This programmability offers a range of possibilities in the design and adjustment of master key systems. Time restrictions are – depending on the product – easy to incorporate (e.g. an office worker's key functions between 8:00 and 18:00, a custodian's key only functions between 8:00 and 10:00). Furthermore, it may be important to cancel authorisation for keys of retired employees or missing keys. The allocation of entry authorisation can also be limited to certain days and rooms, e.g. if some workmen need access to a specified area.

The changeover from mechanical to electronic locking cylinders is often possible without any complications, as electronic products do not differ in size and shape from conventional products and fit perfectly in cylinder locks.

For all locking cylinders – mechanical, electronic, mechatronic – the VdS requirements are equally valid, e.g. resistance against so-called intelligent opening methods.

#### **2.5.10 Chubb locks**

The security of Chubb locks against forced opening and picking is essentially dependent on the number and condition of the pins/levers. The quantity and arrangement of a lock's pins/levers are intended to determine the shape of a key's teeth (symmetric or asymmetric). The number of pins/levers is equivalent to the number of notches, less one for bolt movement. Chubb locks should have at least seven symmetrically or five asymmetrically arranged pins/levers.

Chubb locks with asymmetric double-bit keys can have an even greater number of pins/levers and thereby offer a higher level of security.

#### **2.5.11 Locking Systems**

A locking system locks any part of a façade which can be opened, e.g. a closed door. These elements can only be unlocked with a key or code. A locking system essentially consists of an authorisation control device with an input unit, interlocking device and protective measures.

It is also possible to implement electronic solutions alongside more conventional mechanical locking systems. In these cases, the traditional key can be replaced by other data transfer devices, e.g. a chip card.

Mechanical keys can also be combined with electronic storage or processing media. For example, a conventional key can be equipped with a transponder that delivers additional or alternative information via radio signal. Research is currently underway to include the identification of biometric data, such as fingerprints and iris recognition.

Installation of additional security mechanisms requires special care, particularly with weak doors. They should be professionally installed by experienced handymen. Figure 2.27 illustrates the installation of a **rim lock** with locking bar, operated from inside by a knob and from outside by a locking cylinder.

Locking systems should be tested and approved and graded into the following classes in accordance with their performance:

Class	Performance
A	basic burglar resistance
B	medium burglar resistance
C	advanced burglar resistance

### 2.5.12 Warded locks

Only a few locking methods are possible for warded locks. They have only one locking pin and are easily opened with simple tools.

For this reason, warded locks should only be used for interior doors not requiring burglar-resistance.

### 2.5.13 Cylinder Protectors, Key-Hole Locks

The subsequent installation of a cylinder protector or a key-hole lock only slightly hampers the use of lock picking tools on a warded lock. Warded locks, retrofitted as such, do not offer protection against intrusion.

### 2.5.14 Additional Protection

A variety of additional protection measures are capable of increasing the level of a door's burglar-resistance. Additional locks, capable of access from the outside, should be equipped with locking cylinders protected against attacks.

*Note: Locks can normally be equipped with locking cylinders that lock simultaneously. This means that no additional keys are required for the extra locks.*

Please consider personal protection as well. Use a stable locking bar at all entry doors. When a locking bar is closed, the door can only be opened a crack. This offers a certain degree of protection against any unknown visitors.

**Double bolt locks** offer better protection. They stabilise the door leaf along its entire width and enable simultaneous bolting of the door on both sides. The bolts enter stable lock cases, anchoring the door into the masonry. Many double bolt locks additionally offer a locking bar.

Doors that are seldom used, and where design is not of the utmost importance, can also be secured by means of simple crossbars. It is important to observe that the weight-carrying components are stably mounted and the crossbars well-secured. Crossbars can be especially well-secured with padlocks (not shown in Figure 2.29).

A specialist will be able to provide a customised solution.

### **2.5.15 Multipoint Locks**

Multipoint locks make use of massive bolts which lock the door from above, below and the sides. The bolt must be secured to an adequate depth in well-anchored pulley blocks or stone sockets, both above and below.

When properly installed, multipoint locks offer a high degree of mechanical resistance to intrusion due to their staggered locking points. They can be mounted on the door leaf or integrated into the door leaf, depending on their make. They are particularly well-suited for locking double doors. Multipoint locks must be lockable because they are accessible from the attack side when closed.

Multipoint locks are also available as retrofit products with VdS approval.

### 2.5.16 All-Glass Door Locks

All-glass doors must have special locks mounted onto the glass panes. It is advisable to install a lock on each door leaf. The bolts ought to shut by at least 20 mm above and below. Locking cylinders are protected with rosettes.

### 2.5.17 Switch Locks

Switch locks are used to activate electronic doors, gates and roller blinds, or to control motor locks. They are generally designed for use with profile cylinders; please note that the profile cylinder must not protrude more than 3 mm. Exterior switch locks must rest in armoured casing. This hinders any unauthorised attempts at activation. A steel plate, accessible only by key, could enable such protection of the interior contacts and connections. Some switch locks will not accept such fittings, important for protecting the profile cylinder against extraction tools. In such instances, profile cylinders with integrated pull protectors must be used.

Leads to switch locks must be protected from attack. At best, they lay buried and run into the switch lock from behind. Switch locks are not to be confused with ancillary control equipment for setting intruder alarm systems. Due to their particular importance, ancillary control equipment must fulfil expansive requirements that are not necessary for common switch locks.

### 2.5.18 Door Plates

Protruding locking cylinders, or door plates removable from outside, are practically open invitations to burglars. Weak door plates endanger not only the locking cylinder, but the entire area around the lock.

A tested and approved burglar-resistant door plate makes it more difficult to

- \_ twist/break,
- \_ extract and
- \_ penetrate

the locking cylinder, and in addition, reinforces the door leaf in the region of the lock recess.

The door plate must

- \_ tightly cover the locking cylinder,
- \_ hamper access to the locking cylinder,
- \_ hamper the use of tools,
- \_ be firmly screwed from inside,
- \_ be manufactured of steel, at least 10 mm thick (class B and C) and

\_ protect the mortise lock in the region of the pins.

By exception, rosettes may be used in place of burglar-resistant door plates when the latter cannot be installed.

*Note: Small door plates for metal or plastic hollow-core doors are available.*

Door plates should be tested and approved and graded into the following classes in accordance with their performance:

Class	Performance	
A	basic burglary protection	as N, with a burglary tech
B	medium burglary protection	as A, with a burglary tech
C	advanced burglary protection	as B, with a operated too
	C	

## 2.6 Burglar-Resistant Doors

New construction, renovation, or additions, or simply the exchange of old or damaged house and entry doors, offers a prime opportunity for the installation of tested burglar-resistant doors. The security features of burglar-resistant doors are not outwardly recognizable. They are offered in all commonly available materials, such as wood, plastic, metal, as well as in a variety of makes, e.g. with or without inset window. Burglar-resistant doors can hinder intrusion by means of tools and/or physical force. At the same time, additional requirements may be fulfilled, such as fireproofing or sound insulation.

Even doors of Class N are much stronger than conventional doors.

The fundamental characteristics of tested and approved burglar-resistant doors are:

- \_ securely mounted door leaf
- \_ high quality hinges, and additional securing of the hinges where required (i.e. exterior hinges)
- \_ high quality locking device (normally a multipoint locking device)
- \_ burglar-resistant door plate
- \_ locking cylinder protected against picking, drilling, and extraction
- \_ any infills (e.g. glazings) are as sturdy as other parts of the door
- \_ professional installation according to manufacturer specifications

At best, choose a burglar-resistant door that offers a locking bar and a peep-hole. Approved burglar-resistant doors often come prepared for connection to an intruder alarm system. The purchase of a tested and approved burglar-resistant door is especially recommended, as all parts are perfectly matched, guaranteeing intrusion protection as defined by its class.

Burglar-resistant should be tested, approved and graded into the following classes in accordance with their performance:

Class	Performance
N	limited basic protection

## 3 Gates

Gates are just as important to secure as doors; the preceding commentary on doors is, in turn, valid for gates. However, the various types of gates mentioned below demand a separate treatment.

### 3.1 Sliding gates

Sliding gates consist mostly of wood or metal. Rollers, which run on a track, are often mounted above the gate. Appropriate measures must be taken to hinder the levering of the gate, e.g. by a second track above the rollers. Sliding gates often rest on another track positioned on the ground, holding the gate in position.

A lock with a hook bolt can be used as the locking mechanism (see section 2.5.8). If the gate need not be lockable from the outside, the use of multipoint locks or a lockable bar on the inside is recommended.

### 3.2 Rolling Gates

Rolling gates are mostly electronically-activated, due to their size. The control must be switchable, e.g. via the central shutoff of current from an interior switch lock. If it is not possible to install a switch lock on the inside, then it must be armoured (see section 2.5.17).

Rolling gates must be additionally secured with lockable bolts, if possible a hook bolt lock (see section 2.5.8) with additional sideways-running multipoint locks. Locking a hook bolt is at times difficult, as when the striker plate is soiled.

An additional lockable bolt is not required if an interior drive mechanism is wired and capable of locking the rolling gate under high pressure. The use of a sliding barrier is optional (it protects the drive shaft).

The rolling gates must be mounted in adequately stable tracks. If the track is form-fitting, the gate must be engaged by a minimum depth of 20 mm. If the track is not form-fitting, then a minimum depth of 50 mm is suggested.

Depending on the application, burglar-resistant roller blinds (see section 4.9.4) can be used instead of rolling gates.

### 3.3 Multi-Panel Gates, Latch Gates

Multi-panel gates (latch or sectional gates) come with and without fillings, e.g. glazings. They can also be fitted with a slip door. An adequate locking mechanism is defined by the following characteristics:

- \_ the fixed panel bar is lockable and sits at an adequate depth in the pulley blocks or stone sockets, above and below
- \_ the outer-lying hinges are well-mounted and the pins locked into position
- \_ a lock with a hook bolt is used

Large, heavy latch gates, moveable only by electric drive, can be secured with an interior switch lock. If the gate is equipped with a slip door, it must be secured just as normal doors (see section 2).

Fillings must be of burglar-resistant glass or equally strong material. Also, they must not be removable from the outside (i.e. by stripping the rubber seal). The window trim must be screwed in from the interior. Fillings may also be secured by interior fencing, given that they are not removable from outside, e.g. welded to the door leaf.

## **4 Windows**

### **4.1 General**

The present guidelines deal with the most common types of windows, such as vent windows, bottom hung windows, and glass doors; other types of windows are equally important to secure.

### **4.2 Weak Points of Windows**

Windows without burglar-resistant characteristics, including the vast majority of windows, can be easily entered.

Even with the simplest of tools, these windows can be levered open in a matter of seconds. And visible damage hardly ever occurs, in contrast with levering doors.

Preferred burglary methods when breaking and entering through windows are:

1. Levering open a window sash with tools.
2. Entering through cracked windows.
3. Opening the window catch (breaking window near to catch, see Fig. 4.02).

Windows and glass doors, as entry doors, are weak points of any structure.

Windows differ in the way they open. As such, they may be categorised as follows:

- \_ vent window
- \_ bottom hung window
- \_ tilt and turn window
- \_ skylight
- \_ pivot window
- \_ top hung window,
- \_ sliding window or
- \_ fixed window

Please observe:

- \_ Standard fit, lockable window catches offer no protection against a burglar's main means of breaking and entering: levering open a window sash with tools.
- \_ Open and cracked windows invite burglars right in.
- \_ Along with the catch side, the hinge side of a window must be secured.
- \_ Multiple glazings, primarily used for heat insulation, have no effect on the mechanical security of a window. It is unimportant to a criminal whether he breaks a single or multiple glazing window. Also, a multiple glazing window does not necessarily shatter at a higher decibel than a single glazing window.

*Note: There is no vacuum between panes. This explains the lack of implosion when the window is shattered.*

- \_ Glazing with a built-in metal mesh or so-called safety glass is also lacking in any effective protection against intrusion. The term "safety glass" refers here exclusively to industrial safety and not protection against intrusion.

### 4.3 Window Friezes

Window friezes should be fastened securely to the masonry on each side, e.g. window clamps or wall anchors. The notch area lying between the frame and the frieze should also be fitted so as to hamper any attacks with tools (e.g. levering tools).

### 4.4 Security Components for Windows

There are also many effective security components available for retrofit: to protect windows against levering, breaking and unlocking. They vary in respect to their installation, functionality and stability. Security components may be mounted visibly or invisibly, depending on their individual design.

#### 4.4.1 Fittings

The locking mechanisms (fittings/hinges) integrated into the window pane and window frame are often too weak. A lockable window catch – concerning window fittings that are not burglar-resistant – should not be viewed as a security measure.

Typical weak points in standard fittings are:

- \_ The material used for the fittings is unsuitable (e.g. shatterable zinc die casting).
- \_ The number of pins is too low, e.g. tumbler pins (length of bolt which engages striker plate is too low). Window panes and frames have a simple function: they keep the wind and rain out. They can easily be pushed out of the striker plate, eliminating any semblance of burglar-resistance.

**Window fittings with mushroom head pins** are preferable as a security technology. Due to their T-shape, the pins manage to "claw" the opposing piece.

In many cases, professionals can later install fittings with mushroom heads in order to secure windows against burglary.

#### 4.4.2 Additional Protection Devices

Windows with standard fittings can be retrofitted for additional security.

Security devices must be installed at several points in order to protect the entire window or door. They must be installed across the entire area accessible to burglars.

Retrofit products are offered for a variety of applications. All additional bolting must be able to fix the window or door in the closed position. As a general rule, retrofit products offer a solid protection against intrusion when:

- \_ tested and VdS-approved,
- \_ an adequate number of devices are implemented and,
- \_ products are mounted securely.

It is also important to secure the hinge side, as well as the catch side.

Standard **window catches** can be exchanged for special retrofit products (see Fig. 4.07). These guarantee the window is securely locked, both above and below.

*Note: When cracked, windows offer no protection against intrusion (even when secured with multipoint locks or window locks with a locking bar). Breaking and entering through cracked windows is only marginally hindered by additional security devices. The only benefit: causing more noise than a window without additional security devices. This at least alerts anybody present to the attempted break-in, and as early as possible. From the perspective of burglar protection, a cracked window is always an open window.*

Products are available that lock/unlock with a key or a simple knob. There are also additional locks which lock automatically when the window is closed. These should not be used with glass doors, as this creates the risk of accidentally locking oneself out.

Special products are offered for bay windows, as shown in Fig. 4.09.

Special products can also be used for securing the hinge sides of windows and terrace doors. An example of **securing the hinge sides** is shown in Fig. 4.10.

Sometimes the installation of normal, approved retrofit products is not possible. In some such situations, it may be possible to use telescoping bars. They must fasten on both sides into the masonry and can be used to secure the window on both hinge and catch side.

## **4.5 Glazings**

### **4.5.1 Non-Resistant Glazings**

Glazings incorporating the following types of glass offer no protection against intrusion:

- \_ crystal mirror glass/float glass
- \_ ornamental glass
- \_ multi-pane insulated glass
- \_ wired glass
- \_ single-pane safety glass, e.g. Sekurit ©
- \_ U-shaped glass
- \_ glass blocks, barring the use of any special security components

Single-pane safety glass (Sekurit), wired glass or thin composite safety glass must be used in low walls, entry doors or escape routes as they prevent accidents. They are often falsely perceived to be burglar-resistant due to their description as safety glass.

These types of glass are also not amply improved in terms of burglar resistance by the later installation of shatter-resistant window film.

### **4.5.2 Burglar-Resistant Glazings**

Burglar-resistant glazings consist of multi-pane glass connected by layers of durable, tearproof synthetic film. Depending on its make, composite safety glass (CSG) offers protection against thrown objects and breaking and entering. The glass will split upon impact, however the broken pieces cling fast to the synthetic film; forced entry is thereby considerably hindered.

Composite safety glass can also be manufactured from multi-pane insulated glass. Insulated glass can also achieve an effective level of burglar resistance when incorporated with synthetic films or plates.

Burglar-resistant glazings should be tested, approved and graded into the following classes in accordance with their performance:

EH 01 is the lowest class and EH 3 the highest class in terms of resistance against penetration.

## 4.6 Burglar-Resistant Windows

New construction, renovation, or additions, or simply the exchange of old or damaged windows or terrace doors (glass doors) offers a prime opportunity for the installation of tested **burglar-resistant windows or glass doors**.

Class	Performance
EH 01	basic <i>impact</i> resistance
EH 02	advanced <i>impact</i> resistance
EH 1	basic <i>shatter</i> resistance
EH 2	medium <i>shatter</i> resistance
EH 3	advanced <i>shatter</i> resistance

### 4.5.4 Bullet-Resistant Glazings

Bullet-resistant glazings are differentiated into eight classes of resistance according to DIN EN 1063. They may be required due to the nature of a business or for reasons of personal security

The classification is based on the type of weapon fire used, i.e. make of weapons and bullets. The use of bullet-resistant glazing is only sensible if the walls, as well as the window frames, are bullet-resistant. When installing burglar-resistant glazing, please observe that the correct side of the glazing faces the protected area. Bullet-resistant glazings are not necessarily burglar-resistant. For further information, see EN 1063.

### 4.5.5 Alarm Glasses

An alarm glass typically consists of composite safety glass with an alarm wire insert or of pre-stressed single-pane safety glass with an embossed alarm loop. With CSG, the alarm triggers when the glass is broken and the inlaid wire disrupted. With SPSSG, the glass easily shatters, simultaneously disrupting a detector located in the corner of the glazing.

Alarm glasses should be burglar-resistant.

### 4.5.5 Window Joints

Window joints should be avoided in the design of glazings. Otherwise, the joints must be protected against attack. Elastic sealing can be covered from the outside by nonremovable aluminium or steel. Attacks on window joints can also be hindered by the use of glass cement.

Burglar-resistant windows can hinder intrusion by means of tools and/or physical force.

Burglar-resistant windows are categorised according to their resistance into classes N, A, B and C. Even windows of Class N are much stronger than conventional windows. Burglar-resistant windows are offered in all commonly available materials (wood, plastic, metal) and are not visibly different from normal windows.

The fundamental characteristics of tested and approved burglar-resistant doors are:

- \_ sturdy assembly of window panel and window frames
- \_ resistant glazing
- \_ proper fastening of the glazing into the window panel
- \_ high quality hinges
- \_ high quality locking device
- \_ professional installation according to manufacture specifications

Tested and approved burglar-resistant windows often come ready for connection with an intruder alarm system.

The purchase of a tested and approved window is especially recommended as all parts are perfectly matched, guaranteeing intrusion protection as defined by its class.

Burglar-resistant windows are classified according to their performance characteristics as follows:

<b>Class</b>	<b>Performance</b>
N	limited basic protection
A	as N, with additional protection against professional burglary techniques
B	as A, with additional protection against non-destructive burglary techniques
C	as B, with additional protection against electrically operated tools

Cellar windows must be secured as all other easily accessible windows.

Typical weak points for cellar windows and light shafts are:

- \_ weak rodent-proof screens
- \_ vulnerable, ineffective locking mechanisms
- \_ inadequate fastening to masonry
- \_ unfastened window grates

In cases where a cellar window is accessible from a light shaft, the window itself can be secured or access to the window can be obstructed.

One recommendation is a covering with steel-reinforced glass blocks. It blends in with the sidewalk and offers the option of air ventilation. When completely closed over, it provides heat insulation and weatherproofing. It can be secured against removal from inside the shaft. A further possibility is the construction of an emergency exit.

## 4.7 Cellar Windows and Skylights

### 4.7.1 Cellar Windows and Light Shaft Safety

When light shafts are covered with a conventional grill, one must observe that it is

- \_stably and close meshed and
- \_snugly secured against removal.

Any existing rodent-proof screens, that cannot be removed, should be additionally reinforced with flat steel cutouts anchored to the ledge or the window recess.

Grills must always be anchored into concrete or masonry. Mounting into the wall of a plastic light shaft is not sufficient. In this case, the grill must be fastened to the cellar wall.

It is especially important to observe that the highly vulnerable corners on split grills are properly secured.

Rolling bars function particularly well in grills (see section 4.9.1).

#### **4.7.2 Skylights**

Special glass used for skylights normally fulfils the requirements for accident prevention. This does not imply they are burglar-resistant.

It is therefore recommended to install a grill into the recess, such as is only removable from the inside, or a lock. Rim locks can also hinder entering from outside.

#### **4.7.3 Dome Lights**

**Dome light safety** includes two basic options:

- \_installing a grill or
- \_use of burglar-resistant glass, if the dome light is not for ventilation

The dome light should be fastened so as to be nonremovable from outside.

Building permits and approvals must always be heeded, e.g. dome lights function as smoke outlet or escape route.

### **4.8 Panels/Screens**

#### **4.8.1 Rodent-Proof Screens**

Rodent-proof screens offer protection against smaller intruders, but are no guarantee against criminal intrusion. Windows with rodent-proof screens must be treated as unsecured windows.

Please observe the following safety measures:

- \_secure any accompanying light shaft, see section 4.7.1
- \_secure windows with a grill, see section 4.9.1

#### 4.8.2 Interior Panels

Interior panels are removable panels of solid wood or wood material of a comparable sturdiness. Interior panels offering protection against intrusion are defined by the following characteristics:

- \_ the material is adequately thick
- \_ the panels are not removable from the exterior.

Additional security can be achieved with interior steel sheeting, as well as crossbars with padlocks.

#### 4.8.3 Precast Masonry and Concrete Parts

Occasionally it is a good idea to wall over a cellar window, either completely or partially. Another option is installing a precast concrete unit over the cellar window.

#### 4.9 Grills and Rolling Shutters

Grills and rolling bars can be used to secure windows as well as doors. Fixed grills can be implemented to permanently secure a window. If windows need to be accessible, or securing a door is of interest, then rolling grills or sliding gates may be considered.

Burglar-resistant grills and rolling shutters should be tested, approved and graded into the following classes in accordance with their performance:

Class	Performance
N	limited basic protection
A	as N, with additional protection against professional burglary techniques
B	as A, with additional protection against non-destructive burglary techniques
C	as B, with additional protection against electrically operated tools

#### 4.9.1 Fixed Grills

Firmly anchored grills can significantly impede a criminal from entering.

Grills may be installed according to a tested and approved design, or a custom-tailored solution provided by the installer.

In the latter case, the grill opening should not exceed 10 x 20 cm (max. 12 x 25 cm).

Grills can be fastened to the following:

- \_ wall
- \_ recess
- \_ directly to the window or door

When mounting to the wall, the minimum distance between anchoring and recess should be 10 cm. The screws must be secured against unscrewing.

Approved products are also available in the realm of welded grills. These grills may be customised to the dimensions of the window in question. In this scenario, the individual elements of the grill (screws and sockets) are welded together, as the entire unit is fastened to the window frame, wall, or recess.

Tested and approved grills may have grill bars with reduced profiles, offering special protection against metal saws. Grills which are not approved must offer square bars with a minimum thickness of 16 x 16 mm, or round bars with a minimum diameter of 18 mm. The grill bars must be anchored in the masonry.

Another possibility is the use of rolling bars. Rolling bars offer a high protection against saws, consisting of an outer pipe, and a pivoting inner bar. When a criminal attempts to saw through the grill, the interior bar rolls with the saw, making his work more difficult. The outer pipe should be a tough steel (e.g. ST 50). A hardened and tempered material (e.g. manganese steel) is suitable for the interior rolling bar.

If the wrong materials are used, the rolling bar can be easily smashed with a few hammer blows, joining it to the exterior bar and rendering it completely ineffective. Furthermore, it is important that the exterior pipe is welded to the frame. This hinders the deformation of the pipe and secures the free rotation of the inner bar.

Rolling bar grills are especially well-suited for use with light shafts.

As a general rule, please observe that the grills are anchored so as to be nonremovable from the exterior.

#### 4.9.2 Rolling Shutters

Rolling shutters are mainly used to secure display windows and storefront doors. Secure rolling shutters are defined by the following characteristics:

- \_ the grill is constructed out of highly-resistant material
- \_ small distance between bars (mesh width)
- \_ minimum depth in guiding tracks is 30 mm on both sides
- \_ when more than 2.5 m in width, grill removal by constructive measures is effectively hindered
- \_ an effective locking mechanism

A variety of locking mechanisms are possible:

- \_ an inner-lying rim lock with hook bolt, profile cylinder and rosette
- \_ a multipoint lock with locking cylinder and rosette
- \_ a drive mechanism with hand crank, by which the gear unit locks a built-in profile cylinder
- \_ a switch lock (armoured when located outside) for electrically-driven rolling grills, capable of locking the grill with high pressure

*Note: If the drive unit serves as the locking mechanism, it should be tested as to whether the grill may not also be forced open by a free-standing unit and thus comprise security.*

#### 4.9.3 Sliding Gates

Sliding gates are mainly used to secure display windows and storefront doors.

Secure sliding gates are defined by the following characteristics:

- \_ the grill is composed of steel bars, minimum thickness 20 x 20 mm
- \_ distance between bars (mesh width) does not exceed 120 mm
- \_ the gate is of adequate strength
- \_ minimum depth in guiding tracks is 30 mm on both sides
- \_ when more than 2.5 m in width, grill removal by constructive measures is effectively hindered
- \_ the tracks are constructed of at least 3 mm thick steel
- \_ the tracks are adequately fastened (e.g. with wall anchors)
- \_ an effective locking mechanism e.g. approved lock with hook bolt, approved profile cylinder and approved door plate or rosette
- \_ the bolts on the attack side are not accessible without additional tools

#### 4.9.4 Burglar-Resistant Rolling Shutters

This type of security can be achieved with the aid of VdS-approved products. However, it must be clear that rolling shutters are only secure when closed. Furthermore, a potential criminal can easily surmise when rolling shutters have been closed for long periods (e.g. during vacation). In order to avoid any undesirable attention, rolling shutters can be automatically activated during these periods, e.g. via electromotive guidance.

Burglar-resistant rolling shutters may also be used as rolling gates (see section 3.2).

Simply securing rolling shutters from being raised does not suffice as protection against intrusion. Due to their design, conventionally sold shutters can be easily torn out.

Rolling shutters' resistance is dependent both on the material used and on a professional installation according to manufacturer specifications. They can be further secured through the use of approved products.

## 5 Safes

### 5.1 General

Police experience shows that cash and valuables are exceptionally easy to transport. They are also favourable when it comes to disposing of the loot. This makes them highly coveted targets for any criminal. For this reason, cash and valuables are protected in containers offering a variety of mechanical security features. The existence of such a container can also be a security risk. When choosing a container, please consider whether it will be used outside of business hours.

Containers with additional security features are described as **storage units**, including safes and strongrooms. A storage unit's mechanical resistance is important in drawing out the criminals' time as they attempt to remove the valuables.

For this reason, storage units are offered with a variety of mechanical resistances and a high resistance against removal (via anchoring). The following description is intended to ease the selection of a suitable container and to clarify their different applications.

Tested and approved safes may be recognized by the insignia on the door's interior.

Safes are differentiated according to their design as follows:

**Freestanding safes** offer their full range of security characteristics directly upon delivery (notwithstanding any previous use).

**Wall safes** acquire their full security value only after installation into a wall or floor opening and subsequent grouting of the opening (e.g. setting in concrete).

Safes are classified according to their mechanical resistance against intrusion by degrees of resistance, ranging from N ("0" according to EN 1143-1) to X. The use of safes which offer protection against core drills is highly recommended. At present, core drill protection is notated with the letters "CD" for core drill (previously "KB"). Safes can additionally offer a defined protection against explosives. These are notated with the letters "EX".

One should also consider the diverse number of aged, but still operational containers with additional security characteristics (with or without quality verification). An overview of classically styled safes is available in section 5.4.

Important security measures concerning containers are:

- \_ use of approved containers
- \_ use of time locks/time locking devices for protection against burglary and robbery
- \_ adequate anchoring of safes
- \_ monitoring class-designated risks via IAS

Freestanding safes are directly at risk of burglary via removal and subsequent breaking of the container. VdS-approved freestanding safes with a mass of under 1000 kg (empty weight) may be anchored. Classically styled containers do not often have this option.

## 5.2 Secure Storage Unit Monitoring

The monitoring of secure storage units must follow the guidelines for the planning and installation of intruder alarm systems, [VdS 2311](#), Appendix E.

The following measures must be observed:

- \_ monitoring of all safe doors during locking, unlocking and handling
- \_ monitoring personnel during handling
- \_ monitoring the complete safe during removal (according to its equipping)

Monitoring of handling can be achieved with a seismic detector or an electric field sensor, e.g. by integrating a penetration detector into the safe.

Electric field monitors do not enable the monitoring of opening, closing or removal. In this case, the additional use of motion detectors (e.g. seismic detectors) is required so as to

immediately detect anything approaching the monitored safe.

*Note: If additional motion detectors are being used in a room with a safe, then all windows must be monitored for locking. However, a complete shell protection is not required.*

Approved safes from resistance degree III and up are either already equipped for IAS monitoring (i.e. they contain all safe-relevant monitoring measures) or at least prepared for the installation of such measures.

Specifications for strongrooms are available in the security guidelines for banks, savings banks and other financial institutions, [VdS 2472](#).

## 5.3 Tips for Choosing the Right Safe

The collected experience of the police and the insurance industry is invaluable when considering the storage of cash and small valuables in locked safes. Their findings concerning the selection of containers is showcased in table 5.01.

## 5.4 Classically Styled Secure Storage Units

Secure storage units are highly durable. For this reason, older units are described in section 5.3 alongside safes which meet current VdS guidelines. Of course these older units relate to a different set of rules. Declaring the construction and security value of these older models is normally only possible after referencing the industry archives or by drafting an expert's report.

Wardrobes, rooms and doors were developed and classified solely by the manufacturing industry until the mid 50's. In 1958, obligatory building standards were set for the construction of heavy safes. Those safes known today as "armoured safes" were also certified as resistant to fire, shock, penetration, explosion, melting and oxyacetylene torch.

Storage in locked safes 1)2)  Degree of Resistance EN 1143-1	Sum		For classically styled safes, the insurer must decide whether, and to what value, the safe will be covered. 1)2)  Security level under VDMA 4) (obsolete standards) 3)	mounting instructions Freestanding safes with a mass under 1000 kg offer the possibility of anchoring, thereby hindering removal. Classically styled containers do <i>not</i> often have this option. 2) Approved safes are retrofitted, from resistance degree III and up, for the later installation of IAS components. An IAS of at least class B is assumed, where applicable. However, insurance holders should first clarify the individually required degree of protection with their insurer. Furthermore, it is assumed that the safe is being monitored from all sides for penetration, and that the door is being monitored for opening and closing. The Guidelines for Planning and Installation of IAS specify the security devices to be used, provided that in individual cases an increased risk will raise the security requirements. VDMA: Verband Deutscher Maschinen- und Anlagenbau e. V. Frankfurt/Main (German Institute for Quality Assurance and Labelling, Frankfurt) 4) CD stands for core drill. The international synonym "CD" replaces "KB" for core drill and core drill protection. 5) Safes of resistance degree V to X are also offered with certified protection against explosives (EX protection).  Resistance degrees N ("0") to III can refer to freestanding or built-in safes. The minimum weight requirements do not apply to built-in safes.  <i>Note: Strongboxes (S1/S2) (under prEN 14 450) are considered, in view of their low resistance times.</i>
	without IAS up to €	with IAS up to €		
N ("0" under EN 1143-1)	10,000	20,000	multiple-walled steel cabinet	
I	20,000	40,000	strongbox CT (F)	
II	50,000	100,000	strongbox C2 (F) armoured safe ATM safe GE I	
III	100,000	200,000	armoured safe D10 safe armoured safe D1 ATM safe GE II	Guidelines for choosing the correct
IV	150,000	300,000	armoured safe D20 other armoured safe D2	<i>Note: Specifications for strongrooms are available in the security guidelines for banks, savings banks and other financial institutions.</i>
IV CD 5) V (EX) 6)	250,000	500,000		The guidelines were registered by the Committee for Supply Conditions (RAL) as the required grounds for classification. At the end of the 60's, in-depth and authoritative building standards were compiled for armoured safes and strongroom doors. Security grades for armoured safes included D 1 (RAL-RG 626/1), D 2 and E (RAL-RG 621); for strongroom doors, LT 0 (RAL-RG 622), T 1 (RAL-RG 623) and T 2 (RAL-RG 624).
V CD 5) (EX) 6) VI (EX) 6)	375,000	750,000	armoured safe E10 armoured safe E	
VI CD 5) (EX) 6) VII (EX) 6)	500,000	1,000,000		All products built according to these requirements and documented for quality assurance, bear a test certificate on the inside of the door.
VII CD 5) (EX) 6) VIII (EX) 6)	500,000	upon further inquiry		Strongroom walls, ceilings and floors (small strongrooms, rooms of security grades LT 0, T 1 or T2) not properly documented for quality assurance, do not bear a test certificate. To this end, the Research and Testing Association for Safes and Strongrooms provided developers with the "Recommendations for the building of strongrooms".
IX (EX) 6)	500,000	upon further inquiry		
X (EX) 6)	500,000	upon further inquiry		
1) To fulfil insurance requirements, freestanding safes must generally have a minimum mass of 300 kg. Safes under 300 kg may be accepted by the insurer if the safe is anchored according to the manufacturer's testing regulations:  These building standards were superseded by testing regulations:				

\_ **steel cabinets** of security grades C 1 (F) and C 2 (F) following RAL-RG 626/2. These have been certified as strongboxes of security grades C1 (F) or C2 (F) since 1989.

\_ **ATM safes** following RAL-RG 626/3. A second, lower security level was defined as GE I in 1988. The previous security level is now classified as GE II.

\_ **armoured safes** of security grade D 10 following RAL-RG 626/10, security grade D 20 (RAL-LRG 621/20) and security grade E 10 (RAL-RG 621/10).

\_ **strongroom walls and doors** of security grade LT 1 following RAL-RG 622/1, T 10 following RAL-RG 623/10 and T 20 following RAL-RG 624/20.

\_ **armoured room walls and doors** following RAL-RG 625/5 as well as **strongroom walls and doors** following RAL-RG 625/4.

Intruder alarm systems (IAS) starting from VdS class B should be used for commercial premises. According to circumstances, the use of hold-up alarm systems (HUAS) may be suggested. An IAS monitors valuables and signals an alarm in case of forced entry. In case of hold-up or the threat of a dangerous situation, a HUAS is able to relay the situation to the intervention team.

The older guidelines were withdrawn after the newer testing regulations were introduced. Previously awarded quality assurances were removed from products after a reasonable transition period.

## 6 Intrusion and Hold-Up Alarm Systems (IAS, HUAS)

Intrusion alarm systems (IAS) are primarily designed so as to recognize intrusion/intrusion attempts and signal an alarm as early as possible. Physical security devices and the IAS monitoring must be perfectly synchronized, considering the anticipated intervention time, so as to enable the intervention team to arrive as early as possible and before the criminals have entered (see Fig. 6.01). Cooperation between the electronic and mechanical elements must be designed so as to reduce any chances of a false alarm.

### 6.1 General

### 6.2 Class A Intrusion Alarm Systems

Class A intrusion alarm systems offer basic protection against break-in attempts in the set and unset state; the alarm features an average responsive sensitivity. Application: households with few valuables.

### **6.3 Class B Intrusion Alarm Systems**

Class B intrusion alarm systems offer average protection against break-in attempts in the set and unset state; the alarm features an average responsive sensitivity.

Application: households with serious valuables, low-risk and medium-risk public premises, e.g. schools or supermarkets.

### **6.4 Class C Intrusion Alarm Systems**

Class C intrusion alarm systems offer advanced protection against break-in attempts in the set and unset state; the alarm features an advanced responsive sensitivity. A further overview of security-related functions is available.

Application: high-risk commercial premises, e.g. jewellery, fur or carpet stores.

### **6.5 Installation**

System installation must be performed by an approved installer according to the relevant guidelines for planning and installation of IAS. IAS and HUAS can be combined or installed as independent systems. System planning and installation must be performed by an approved IAS installer.

### **6.6 Testing and Approval**

All IAS should be tested and approved by the national authority having jurisdiction.

### **6.7 Setting/Unsetting**

An input device must be used for the setting/unsetting of the IAS. Such a device must have a physical identification feature (e.g. mechanical or preferably electronic key or chip card). According to its classification, it may additionally require a mental identification device (e.g. PIN, digit, character or letter combination).

A time control may be used as an alternative, or in addition, to an input device with a mental identification feature. This feature unsets the IAS only at certain preprogrammable times.

Due to organisational factors such as visitor use of rooms, entering rooms by other means, differing working hours, maintenance work, multi-

purpose rooms, it may be necessary to split the IAS into various security zones that can separately set/unset.

Infrequently used areas should be designed so as to remain in the set state until the time of use.

## **7 Robbery**

European investigations show that robbery ranks among the fastest growing property crimes. According to police findings, this trend increases in connection with the improvement of security systems. In addition to this, successful hold-ups often result in imitation crimes.

The danger of robbery exists for nearly all businesses and services when cash and/or expensive or easily transportable goods are present; this is particularly valid for jewellers, banks, gas stations, amusement arcades and department stores.

Even when an entry demands a high degree of skill, all that is needed is the appropriate degree of determination.

Normally, criminals only threaten the use of force. But the victim must always consider that the criminal may use a weapon, and that the situation could escalate.

As for all security measures: the higher the risk, the greater the need for risk management. Naturally personal protection is the primary objective, in addition to the guarding of valuables.

Security measures and suggestions are developed together with the police to minimise the risk of robbery.

The following factors are to the benefit of criminals:

- \_ targets of a hold-up are open to the public and often unsecured during opening times
- \_ planning and preparation for the crime is relatively easy
- \_ in action, crimes simply require speed and agility
- \_ a risk/benefit analysis often favours the crime

### **7.1 Risks**

The risk to businesses and services is influenced by a variety of factors. However the following modes of robbery are found in nearly all businesses and services:

- \_ hold-ups during opening hours (typical hold-up)
- \_ trapping employees upon entering or exiting (atypical hold-up)
- \_ robbery of a transport vehicle carrying ingoing or outgoing money or valuables

### **7.2 Protective Measures**

The following measures (as shown) must be coordinated for optimal protection against typical and atypical hold-ups.

#### **7.2.1 Organisational Measures**

Easy access to cash and other coveted goods should be eliminated, e.g. through:

- \_ displays in separate rooms, possibly with access control and time lock
- \_ locking especially valuable goods in secure storage containers with a time lock
- \_ limiting the display of expensive goods in shop windows
- \_ limiting the storage of coveted goods in open displays, or displays with simple locks

Further suggestions:

- \_ keys to separate rooms, storage containers and showcases should be kept safe and apart from their corresponding locks
- \_ personnel should be regularly advised as to general security measures and trained for correct behaviour in case of hold-up
- \_ certain conditions may call for hiring security personnel (or doormen)
- \_ a signal ought to be used, whereby the first employee of the day can alert co-workers to any potential danger (an "all clear" signal)
- \_ cash in the register should be regularly sorted and thinned
- \_ it should be evident that cash/valuables are under time lock and video monitoring (e.g. stickers, visible cameras)

### **7.2.2 Construction-Based/Mechanical Measures**

Access to cash and coveted goods can be successfully hindered by means of construction-based/mechanical measures. These measures include:

- \_ showcases with tested burglar-resistance qualities, and possibly a time lock (burglar-resistant glazing often has a green tint; be wary of clear glass designated as burglar-resistant)
- \_ polycarbonate window panes behind the window display, to block access to the contents from inside
- \_ secure storage containers with time lock systems and input units with access lock
- \_ use of money-counting rooms, preferably without a window and out of sight
- \_ securing articles (e.g. fastening with wire grommets)
- \_ secure, closed cash control systems
- \_ turnstiles are occasionally recommended

### **7.2.3 Electronic Measures**

The previous examples of construction-based/mechanical measures can be effectively reinforced by electronic measures. These include:

- \_ VdS-approved intrusion and hold-up alarm systems

- \_ electronic keys, possibly combined with the function of activating a hold-up alarm, e.g. by pressing an alarm

- \_ hold-up alarm in adjoining rooms/money counting room

*Note: A hold-up alarm should never activate an external alarm (e.g. a siren).*

- \_ video monitoring of the business premises from adjoining rooms or via hidden cameras

- \_ combination of hold-up alarm system and videotaping

- \_ relaying of video images directly to the police or security company in instance of alarm

- \_ dyeing system

- \_ access control system with electric locking/unlocking of doors

- \_ tracking system, e.g. for transport containers

### **7.3 Robbery in Transit**

The transportation of major valuables should only be performed by specialised, professional transportation companies. In cases where valuables must be transported by employees, the following measures should be observed.

In order to guarantee the highest possible security for persons and goods in transport, special measures are provided in the insurance requirements and/or the applicable specifications of the workers' compensation board. These include:

- \_ number and age limit on the personnel involved in transport

- \_ alternating the personnel involved in transport

- \_ alternating route of transport, vehicles and times

- \_ avoiding unknown terrain

- \_ avoiding recognition of the transport as such (e.g. use of neutral clothing and neutral transport containers)

- \_ use of tracking system (GSM or GPS) and/or transport containers which offer a dyeing system that activates automatically upon wrongful access

## 8 Requirements

Security measures should always be adapted to the individual situation. Conversely, case-specific security measures should not be formulated as all-inclusive requirements.

*Note on the layout of the following tables: When the "Requirement" column does not contain a security measure, the retrofit measures should be used in its place. This enables the highest possible level of protection.*

### 8.1 Security Class SG 1

Security Element	Requirements	Retrofit Measures	Additional Information
<b>Walls</b> , bordering the insured rooms (section 1)	<input type="checkbox"/> Solid construction	<input type="checkbox"/> With thin walls, raising the level of resistance is suggested, e.g. by reinforcing with gypsum/steel composite components <input type="checkbox"/> Alternatively, the walls can be monitored with a Class B IAS	Depending on the risk level, the "solid construction" requirement may be ignored.
<b>Floors</b> , bordering the insured rooms (section 1)	<input type="checkbox"/> Solid construction	<input type="checkbox"/> With light construction, monitoring with a Class B IAS is suggested	
<b>Ceilings or Roofs</b> , bordering the insured rooms (section 1)	<input type="checkbox"/> Solid construction		
<b>Doors</b> (section 1)	<input type="checkbox"/> Class N burglar-resistant door (section 2.6)		
Door leaves, door leaf infills (section 2.3)		<input type="checkbox"/> With weak infills, exchange for glazings of Class EH 01 or <input type="checkbox"/> Doubling with material of comparable stability, e.g. with 0.5 mm thick steel sheet or <input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics	Trims for infills or glazings must be screwed on the interior.  Rolling shutters and grills must be secured against raising.  When grills or rolling shutters with burglar-resistant characteristics are being used, requirements for door security do not apply.
Fixed panels, in two-panelled doors (section 2.5.15)		<input type="checkbox"/> Vertical door bar with bolt penetration above and below or <input type="checkbox"/> Multipoint locks mounted on the door leaf	Vertical door bars which do not insert into notches must be lockable.

Security Class SG 1 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
Locking mechanisms (Section 2.5.3)		<input type="checkbox"/> Class A lock and <input type="checkbox"/> Class A locking cylinder and <input type="checkbox"/> Class A door plate and <input type="checkbox"/> High quality striker plate or <input type="checkbox"/> Class A locking system or <input type="checkbox"/> Double bolt	Striker plates, hinge fasteners and door frames must be anchored into the adjoining wall.  With infrequent use, the door can be secured with an interior slide bolt and pad locks or an interior crossbar.
Hinges (Section 2.5.1)	<input type="checkbox"/> Sturdy interior hinges	<input type="checkbox"/> Hinge fasteners	
Doors with switch locks (section 2.5.17)		Required for exterior switch locks: - Armoured mounting - Class A locking cylinder	
Doors with all-glass door leaf (section 2.3.7)	<input type="checkbox"/> Special locks (section 2.5.16)	Lock with <input type="checkbox"/> Class A locking cylinder and <input type="checkbox"/> Rosettes not removable from outside and <input type="checkbox"/> Additional lock or <input type="checkbox"/> Class A locking cylinder and <input type="checkbox"/> Additional lock (*) Can be required as an additional measure:  <input type="checkbox"/> Grilling	
<b>Gates</b> (rolling, sliding and multi-panelled gates) (section 3)		<input type="checkbox"/> Doubled wood gate leaf or double-layered steel gate leaf, e.g. gate leaf of steel sheets, at least 0.5 mm thick and <input type="checkbox"/> Guiding tracks are not removable from outside, e.g. with covered upper wheel track  <input type="checkbox"/> Class A mortise lock with class A locking cylinder or class A locking system or Chubb lock, each with hook bolt and <input type="checkbox"/> Striker plate with burglar-resistant characteristics or <input type="checkbox"/> Electric drive with neutral stop block and switch lock <input type="checkbox"/> With exterior switch lock: <input type="checkbox"/> armoured mounting	With infrequent use, the gate can be secured with an interior slide bolt or an interior crossbar with padlocks.  Slip doors and windows are treated the same as other doors and windows.

		<input type="checkbox"/> Class A locking cylinder	
--	--	---	--

(\*) Required for serious valuables and/or high risk situations (e.g. isolated location).

Security Class SG 1 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
With infills (section 3.3)		<input type="checkbox"/> With weak infills, exchange for glazings of Class EH 01 or <input type="checkbox"/> Doubling with material of comparable stability, e.g. with 0.5 mm thick steel sheet or <input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics	Trims for infills or glazings must be screwed on the interior.  Rolling shutters and grills must be secured against raising.  When grills or rolling shutters with burglar-resistant characteristics are being used, requirements for gate or slip door security do not apply.
<b>Windows/ Glass doors</b> (section 4)	<input type="checkbox"/> Class N burglar-resistant window (section 4.6)	<input type="checkbox"/> Exchange of glazing, according to risk, for glazing of class EH 01. <input type="checkbox"/> Exchange of fittings for those following DIN 18 104-2 and <input type="checkbox"/> Lockable window catch with Class A locking cylinder or <input type="checkbox"/> Installation of at least two retrofit products on windows with a width and/or height of up to 150 cm; with bigger windows, other retrofit products should be used or <input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics	Trims for infills or glazings must be screwed on the interior.  The exchange of fittings is intricate and requires professional knowledge.  Rolling shutters and grills must be secured against raising.
<b>Fixed windows (display windows)</b> (section 4)	<input type="checkbox"/> Class N burglar-resistant window (section 4.6)	<input type="checkbox"/> Exchange of glazing for glazing of class EH 01 or <input type="checkbox"/> Interior second pane of class EH 01 or <input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics	If grills are to be moved, then the locking mechanism must meet the requirements for doors.  Rolling shutters and grills must be secured against raising.
<b>Cellar windows</b> (section 4.7)	<input type="checkbox"/> Class N burglar-resistant window (section 4.6)	<input type="checkbox"/> Grills with burglar-resistant characteristics or Precast masonry or concrete parts or if the window is accessible via a concrete	Retrofitting as "Windows" is also possible.

		<input type="checkbox"/> Securing the light shaft with nonremovable rolling grill	
--	--	---	--

Security Class SG 1 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
<b>Window joints</b> (section 4.5.5)		<input type="checkbox"/> Securing with metal profiles, not removable from exterior or <input type="checkbox"/> Securing with glass cement	Window joints are to be avoided.
<b>Skylights</b> (section 4.7.2)		<input type="checkbox"/> Additional lock	
<b>Dome lights</b> (section 4.7.3)		<input type="checkbox"/> Dome lights are secured against unscrewing from the exterior or <input type="checkbox"/> Grill or rolling grill, interior, with burglar-resistant characteristics	When dome lights are used as smoke outlets, the use of grills in the outlet channel must first be tested as to whether the bars will block the free flow of air.
<b>Fanlights</b> (Section 4)	The securing must follow "Windows" or "Fixed windows" depending on layout.		
<b>Other openings</b>	The securing must follow "Doors" or "Windows" depending on layout.		
<b>Individual elements</b>	Securing must be individualized according to the dangers present, e.g. mechanical fastening to prevent theft, IAS monitoring.		
<b>Cash, stocks, etc.</b> (section 5)	Depending on the value of the goods, storage containers with security features corresponding to insurer specifications.		
<b>Monitoring</b> (section 6)	Individualized according to risks.		

## 8.2 Security Class SG 2

Security Element	Requirements	Retrofit Measures	Additional Information
<b>Walls</b> , bordering the insured rooms (section 1)	<input type="checkbox"/> Solid construction	<input type="checkbox"/> With thin walls, raising the resistance level is suggested, e.g. by reinforcing with gypsum/steel composite components <input type="checkbox"/> Alternatively, the walls can be monitored with a Class B IAS	Depending on the risk level, the "solid construction" requirement may be ignored.
<b>Floors</b> , bordering the insured rooms (section 1)	<input type="checkbox"/> Solid construction	<input type="checkbox"/> If the construction is not solid, class B IAS monitoring is suggested	
<b>Ceilings or Roofs</b> , bordering the insured rooms (section 1)	<input type="checkbox"/> Solid construction		
<b>Doors</b> (section 2)	<input type="checkbox"/> Class N burglar-resistant door (section 2.6)		
Door leaves, door leaf infills (section 2.3)		<input type="checkbox"/> With weak infills, exchange for glazings of Class EH 01 or <input type="checkbox"/> Doubling with material of comparable stability, e.g. with 0.5 mm thick steel sheet or <input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics	<p>Trims for infills or glazings must be screwed on the interior.</p> <p>Rolling shutters and grills must be secured against raising.</p> <p>When grills or rolling shutters with burglar-resistant characteristics are being used, requirements for door security do not apply.</p>
Fixed panels, in two-panelled doors (section 2.5.15)		<input type="checkbox"/> Vertical door bar with bolt penetration above and below or <input type="checkbox"/> Multipoint locks mounted on the door leaf	Vertical door bars which do not insert into notches must be lockable.

Security Class SG 2 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
Locks (section 2.5.3)		<input type="checkbox"/> Class A lock and <input type="checkbox"/> Class A locking cylinder and <input type="checkbox"/> Class A door plate and <input type="checkbox"/> High quality striker plate <input type="checkbox"/> Additional lock or <input type="checkbox"/> Multipoint locking device and <input type="checkbox"/> Class A locking cylinder and <input type="checkbox"/> Class A door plate and <input type="checkbox"/> High quality striker plate or <input type="checkbox"/> Class A locking system and <input type="checkbox"/> Additional lock or <input type="checkbox"/> Double bolt	Double bolts are recommended when securing with retrofit products.  Striker plates, hinge fasteners and door frames must be anchored in the adjoining wall.  With infrequent use, the door can be secured with an interior slide bolt and padlocks or an interior crossbar.
Hinges (section 2.5.1)	<input type="checkbox"/> Sturdy interior hinges	<input type="checkbox"/> Hinge fasteners or <input type="checkbox"/> Double bolt	
Doors with switch locks (section 2.5.17)		Required for exterior switch locks: <input type="checkbox"/> Armoured mounting with <input type="checkbox"/> Class A locking cylinder	
Doors with all-glass door leaf (section 2.3.7)	<input type="checkbox"/> Special locks (section 2.5.16)	<input type="checkbox"/> Lock with <input type="checkbox"/> Class A locking cylinder and <input type="checkbox"/> Rosettes not removable from outside and <input type="checkbox"/> Additional lock or <input type="checkbox"/> Class A locking system and <input type="checkbox"/> Additional lock (*) Can be required as an additional measure: <input type="checkbox"/> Grilling	(*) Required for serious valuables and/or high risk situations (e.g. isolated location).

Security Class SG 2 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
<p><b>Gates</b> (rolling, sliding and multi-panelled gates) (section 3)</p>		<ul style="list-style-type: none"> <li><input type="checkbox"/> Doubled gate leaf or double-layered steel gate leaf, e.g. gate leaf of steel sheets, at least 1 mm thick and</li> <li><input type="checkbox"/> Guiding tracks are not removable from outside, e.g. with covered upper wheel track</li> <li><input type="checkbox"/> Class A mortise lock with class A locking cylinder or class A locking system or Chubb lock, each with hook bolt and</li> <li><input type="checkbox"/> Striker plate with burglar-resistant characteristics or</li> <li><input type="checkbox"/> Electric drive with neutral stop block and switch lock</li> <li><input type="checkbox"/> With exterior switch lock:</li> <li><input type="checkbox"/> Armoured mounting with</li> <li><input type="checkbox"/> Class A locking cylinder</li> </ul>	<p>With infrequent use, the gate can be secured with an interior slide bolts or an interior crossbar with padlocks.</p> <p>Slip doors and windows are treated the same as other doors and windows.</p>
<p>With infills (section 3.3)</p>		<ul style="list-style-type: none"> <li><input type="checkbox"/> With weak infills, exchange for glazings of Class EH 01</li> <li><input type="checkbox"/> Doubling with material of comparable stability, e.g. with 0.5 mm thick steel sheet</li> <li>or</li> <li><input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics</li> </ul>	<p>Trims for infills or glazings must be screwed on the interior.</p> <p>Rolling shutters and grills must be secured against raising.</p> <p>When grills or rolling shutters with burglar-resistant characteristics are being used, requirements for gate or slip door security do not apply.</p>
<p><b>Windows/ Glass doors</b> (section 4)</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Class N burglar-resistant window (section 4.6)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Exchange of glazing for glazing of class EH 01, depending on risks</li> <li><input type="checkbox"/> Exchange of fittings for those following DIN 18 104-2 and</li> <li><input type="checkbox"/> Lockable window catch with Class A locking cylinder</li> <li>or</li> <li><input type="checkbox"/> Installation of at least two retrofit products on windows with a width and/or height of up to 120 cm; with bigger windows, other retrofit products should be used</li> <li>or</li> <li><input type="checkbox"/> Swinging, sliding, rolling</li> </ul>	<p>Trims for infills or glazings must be screwed on the interior.</p> <p>The exchange of fittings is intricate and requires professional knowledge.</p> <p>Rolling shutters and grills must be secured against raising.</p>

		or fixed grills or rolling shutters with burglar-resistant characteristics	
--	--	--	--

Security Class SG 2 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
<b>Fixed windows (display windows)</b> (section 4)	<input type="checkbox"/> Class N burglar-resistant window (section 4.6)	<input type="checkbox"/> Exchange of glazing for glazing of class EH 01 <input type="checkbox"/> interior second pane of class EH 01 or <input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics	If grills are to be moved, then the locking mechanism must meet the requirements for doors.  Rolling shutters and grills must be secured against raising.
<b>Cellar windows</b> (section 4.7)	<input type="checkbox"/> Class N burglar-resistant window (section 4.6)	<input type="checkbox"/> Grills with burglar-resistant characteristics or <input type="checkbox"/> Precast masonry or concrete parts or if the window is accessible via a concrete light shaft <input type="checkbox"/> Securing the light shaft with nonremovable rolling grill	Retrofitting as "Windows" is also possible.
<b>Window joints</b> (section 4.5.5)		<input type="checkbox"/> Securing with metal profiles, not removable from exterior or <input type="checkbox"/> Securing with glass cement	Window joints are to be avoided.
<b>Skylights</b> (section 4.7.2)		<input type="checkbox"/> Additional lock and <input type="checkbox"/> Glazing of class EH 01 or <input type="checkbox"/> Grills with burglar-resistant characteristics	
<b>Dome lights</b> (section 4.7.3)		<input type="checkbox"/> Dome lights are secured against unscrewing from outside the exterior or <input type="checkbox"/> Grill or rolling grill, interior, with burglar-resistant characteristics	When dome lights are used as smoke outlets, the use of grills in the outlet channel must first be tested as to whether the bars will block the free flow of air.
<b>Fanlights</b> (section 4)	The securing must follow "Windows" or "Fixed windows" depending on layout.		
<b>Other openings</b>	The securing must follow "Doors" or "Windows" depending on layout.		
<b>Individual elements</b>	Securing must be individualized according to the dangers present, e.g. mechanical fastening to prevent theft, IAS monitoring.		
<b>Cash, stocks, etc.</b> (section 5)	Depending on the value of the goods, storage containers with security features which correspond to insurer specifications.		
<b>Monitoring</b> (section 6)	Class B IAS equipment and supplies		For serious valuables.



### 8.3 Security Class SG 3

Security Element	Requirements	Retrofit Measures	Additional Information
<b>Walls</b> , bordering the insured rooms (section 1)	<input type="checkbox"/> Solid construction	<input type="checkbox"/> With thin walls, raising the resistance level is suggested, e.g. by reinforcing with gypsum/steel composite components	Electronic monitoring alone is not adequate.
<b>Floors</b> , bordering the insured rooms (section 1)	Solid construction	Retrofitting is to be determined according to the risks and individual circumstances.	
<b>Ceilings or Roofs</b> , bordering the insured rooms (section 1)	Solid construction		
<b>Doors</b> (section 2)	<input type="checkbox"/> Class N burglar-resistant door (section 2.6)		
Door leaves, door leaf infills (section 2.3)		<input type="checkbox"/> Exchange of infills for glazings of class EH 01 or EH 02 or <input type="checkbox"/> Doubling with compressed wood (at least 10 mm thick) or steel sheets (at least 1 mm thick) or <input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics	Trims for infills or glazings must be screwed on the interior.  Rolling shutters and grills must be secured against raising.  When grills or rolling shutters with burglar-resistant characteristics are being used, requirements for door security do not apply.
Fixed panels, in two-panelled doors (section 2.5.15)		<input type="checkbox"/> Vertical door bar with bolt penetration above and below or <input type="checkbox"/> Multipoint locks mounted on the door leaf	Vertical door bars which do not insert into notches must be lockable.

Security Class SG 3 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
Locks (section 2.5.3)	<input type="checkbox"/> Class B lock and <input type="checkbox"/> Class B locking cylinder and <input type="checkbox"/> Class B door plate and <input type="checkbox"/> high quality striker plate <input type="checkbox"/> Two additional locks or <input type="checkbox"/> Multipoint locking device with at least three bolting points and <input type="checkbox"/> Class B locking cylinder and <input type="checkbox"/> Class B door plate and <input type="checkbox"/> High quality striker plate or <input type="checkbox"/> Class A locking system and <input type="checkbox"/> Additional lock or <input type="checkbox"/> Double bolt and <input type="checkbox"/> Additional lock		Double bolts are recommended when securing with retrofit products.  Striker plates, hinge fasteners and door frames must be anchored in the adjoining wall.
Hinges (section 2.5.1)	<input type="checkbox"/> Sturdy interior hinges	Hinge fasteners or <input type="checkbox"/> Double bolt	
Doors with switch locks (section 2.5.17)		Required for exterior switch locks: <input type="checkbox"/> Armoured mounting with <input type="checkbox"/> Class B locking cylinder	
Doors with all-glass door leafs (section 2.3.7)	<input type="checkbox"/> Special locks (section 2.5.16)	Lock with <input type="checkbox"/> Class B locking cylinder and <input type="checkbox"/> Rosettes not removable from outside and <input type="checkbox"/> Additional lock and <input type="checkbox"/> Grilling or <input type="checkbox"/> Class B locking system and <input type="checkbox"/> Additional lock and <input type="checkbox"/> Grilling	

Security Class SG 3 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
<p><b>Gates</b> (rolling, sliding and multi-panelled gates) (section 3)</p>		<ul style="list-style-type: none"> <li><input type="checkbox"/> Double wood gate leaf (doubled thickness of at least 10 mm) or double-layered steel gate leaf, e.g. gate leaf of steel sheets at least 1 mm and</li> <li><input type="checkbox"/> Guiding tracks are not removable from outside, e.g. with covered upper wheel track</li> <li><input type="checkbox"/> Class B mortise lock with class B locking cylinder or class B locking system or Chubb lock, each with hook bolt and</li> <li><input type="checkbox"/> Striker plate with burglar-resistant characteristics</li> <li>or</li> <li><input type="checkbox"/> Electric drive with neutral stop block and switch lock</li> <li><input type="checkbox"/> With exterior switch lock:</li> <li><input type="checkbox"/> Armoured mounting with</li> <li><input type="checkbox"/> Class B locking cylinder</li> </ul>	<p>With infrequent use, the gate can be secured with an interior slide bolts or an interior crossbar with padlocks.</p> <p>Slip doors and windows are treated the same as other doors and windows.</p>
<p>With infills (section 3.3)</p>		<ul style="list-style-type: none"> <li><input type="checkbox"/> Exchange of infills for glazings of class EH 01 or EH 02</li> <li>or</li> <li><input type="checkbox"/> Doubling with compressed wood (at least 10 mm thick) or steel sheets (at least 1 mm</li> <li>or</li> <li><input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics</li> </ul>	<p>Trims for infills or glazings must be screwed on the interior.</p> <p>Rolling shutters and grills must be secured against raising.</p> <p>When grills or rolling shutters with burglar-resistant characteristics are being used, requirements for gate or slip door security do not apply.</p>
<p><b>Windows/ Glass doors</b> (section 4)</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Class A burglar-resistant window (section 4.6)</li> </ul>	<p>Exchange of glazing for glazing of class EH 01 or EH 02, depending on risks</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Exchange of fittings for those following DIN 18 104-2 and</li> <li><input type="checkbox"/> Lockable window catch with Class A locking cylinder</li> <li>or</li> <li><input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics</li> </ul>	<p>Trims for infills or glazings must be screwed on the interior.</p> <p>The exchange of fittings is intricate and requires professional knowledge.</p> <p>Rolling shutters and grills must be secured against raising.</p>

Security Class SG 3 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
<b>Fixed windows (display windows)</b> (section 4)	<input type="checkbox"/> Class A burglar-resistant window (section 4.6)	<input type="checkbox"/> Exchange for glazings of class EH 01 or EH 02 or <input type="checkbox"/> Interior second pane of class EH 01 or <input type="checkbox"/> (*) Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics	<p>If grills are to be moved, then the locking mechanism must meet the requirements for doors.</p> <p>Rolling shutters and grills must be secured against raising.</p> <p>(*) If there is a risk that an intruder can simply reach inside, then securing the grill with an interior second pane of class EH 01 is required.</p>
<b>Cellar windows</b> (section 4.7)	<input type="checkbox"/> Class A burglar-resistant window (section 4.6)	<input type="checkbox"/> Grills with burglar-resistant characteristics or Precast masonry or concrete parts or if the window is accessible via a concrete light shaft <input type="checkbox"/> Securing the light shaft with nonremovable rolling grill	Retrofitting as "Windows" is also possible.
<b>Window joints</b> (section 4.5.5)		<input type="checkbox"/> Securing with metal profiles, not removable from exterior or <input type="checkbox"/> Securing with glass cement	Window joints are to be avoided.
<b>Skylights</b> (section 4.7.2)		<input type="checkbox"/> Grills with burglar-resistant characteristics	
<b>Dome lights</b> (section 4.7.3)		<input type="checkbox"/> Dome lights are secured against unscrewing from the exterior or <input type="checkbox"/> Exchange of infills for glazings of class EH 01 or EH 02 or <input type="checkbox"/> Grill or rolling grill, interior, with burglar-resistant characteristics	When dome lights are used as smoke outlets, the use of grills in the outlet channel must first be tested as to whether the bars will block the free flow of air.
<b>Fanlights</b> (section 4)	The securing must follow "Windows" or "Fixed windows" depending on layout.		
<b>Other openings</b>	The securing must follow "Doors" or "Windows" depending on layout.		
<b>Individual elements</b>	Securing must be individualized according to the dangers present, e.g. mechanical fastening to prevent theft, IAS monitoring.		
<b>Cash, stocks, etc.</b>	Depending on the value of the goods, storage containers		

(section 5)	with security features which correspond to insurer specifications.	
<b>Monitoring</b> (section 6)	Class C IAS equipment and supplies for serious valuables	

#### **8.4 Security Class SG 4**

The security measures of security class SG 2 are to be followed. However, storehouses and departments with an especially high-risk assortment of goods should secure these target areas with mechanical security devices and electronic monitoring measures following security class SG 3.

Especially high-risk goods are:

- Antiques/art pieces
- Glasses, optical products
- Electronic equipment/devices
- Film and photography equipment
- Consumer electronics devices, e.g. televisions, radios, VCRs
- IT technology, e.g. computers, notebooks, electronic organizers
- Jewellery
- Communication devices/telephones/mobile telephones
- Leather clothing and goods
- Persian rugs
- Perfumes/cosmetics
- Fur goods
- Spirits
- Sporting goods
- Tobacco and smoking utensils
- Weapons

With accessories where required

#### **8.5 Security Class SG 5**

Requirements for security class SG 5 are described in the security guidelines for banks, savings banks and other financial institutions (under preparation).

## 8.6 Security Class SG 6

Security Element	Requirements	Retrofit Measures	Additional Information
<b>Walls</b> , bordering the insured rooms (section 1)	<input type="checkbox"/> Exceptionally solid construction	<input type="checkbox"/> With thin walls or even strong walls, raising the resistance level is required <input type="checkbox"/> Depending on the associated risks, the resistance level can be raised through reinforcing with gypsum/steel composite components	Electronic monitoring alone is not adequate.
<b>Floors</b> , bordering the insured rooms (section 1)	<input type="checkbox"/> Exceptionally solid construction	<input type="checkbox"/> Retrofitting is to be determined according to the risks and individual circumstances	
<b>Ceilings or Roofs</b> , bordering the insured rooms (section 1)	<input type="checkbox"/> Exceptionally solid construction		
<b>Doors</b> (section 2)	<input type="checkbox"/> Class B burglar-resistant door (section 2.6)		Depending on the risks, a class C burglar-resistant door may be required.
Door leaves, door leaf infills (section 2.3)		<input type="checkbox"/> Doubling with compressed wood (at least 10 mm thick) or steel sheets (at least 1 mm thick) or <input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics	Trims for infills or glazings must be screwed on the interior.  Rolling shutters and grills must be secured against raising.  When grills or rolling shutters with burglar-resistant characteristics are being used, requirements for door security do not apply.
Fixed panels, in two-panelled doors (section 2.5.15)		<input type="checkbox"/> Vertical door bar with bolt penetration above and below or <input type="checkbox"/> Multipoint locks mounted on the door leaf	Vertical door bars which do not insert into notches must be lockable.

Security Class SG 6 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
Locks (section 2.5.3)		<input type="checkbox"/> Class B lock and <input type="checkbox"/> Class B locking cylinder and <input type="checkbox"/> Class C door plate and <input type="checkbox"/> Pull protector and <input type="checkbox"/> High quality striker plate and <input type="checkbox"/> Two additional locks or <input type="checkbox"/> Multipoint locking device with at least three bolting points and <input type="checkbox"/> Class B locking cylinder and <input type="checkbox"/> Class C door plate and <input type="checkbox"/> Pull protector and <input type="checkbox"/> High quality striker plate or <input type="checkbox"/> Class B locking system and <input type="checkbox"/> Two additional locks or <input type="checkbox"/> Two double bolts	Double bolts are recommended when securing with retrofit products.  Striker plates, hinge fasteners and door frames must be anchored in the adjoining wall.
Hinges (section 2.5.1)	<input type="checkbox"/> Sturdy interior hinges	Hinge fasteners or <input type="checkbox"/> Double bolt	
Doors with switch locks (section 2.5.17)		Required for exterior switch locks: <input type="checkbox"/> Armoured mounting with <input type="checkbox"/> Class B locking cylinder	
Doors with all-glass door leafs (section 2.3.7)	<input type="checkbox"/> Special locks (section 2.5.16)	<input type="checkbox"/> Lock with <input type="checkbox"/> Class B locking cylinder and <input type="checkbox"/> Rosettes not removable from outside and <input type="checkbox"/> Additional lock and <input type="checkbox"/> Grilling or <input type="checkbox"/> Class B locking system and <input type="checkbox"/> Additional lock and <input type="checkbox"/> Grilling	

Security Class SG 6 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
<p><b>Gates</b> (rolling, sliding and multi-panelled gates) (section 3)</p>		<ul style="list-style-type: none"> <li><input type="checkbox"/> Double wood gate leaf (doubled thickness of at least 10 mm) or double-layered steel gate leaf, e.g. gate leaf of steel sheets at least 1.5 mm thick and</li> <li><input type="checkbox"/> Guiding tracks are not removable from outside, e.g. with covered upper wheel track</li> <li><input type="checkbox"/> Class B mortise lock with class B locking cylinder or class B locking system or Chubb lock, each with hook bolt and</li> <li><input type="checkbox"/> Striker plate with burglar-resistant characteristics</li> <li>or</li> <li><input type="checkbox"/> Electric drive with neutral stop block and switch lock</li> <li><input type="checkbox"/> With exterior switch lock:</li> <li><input type="checkbox"/> Armoured mounting with</li> <li><input type="checkbox"/> Class B locking cylinder</li> </ul>	<p>With infrequent use, the gate can be secured with an interior slide bolts or an interior crossbar with padlocks.</p> <p>Slip doors and windows are treated the same as other doors and windows.</p>
<p>With infills (section 3.3)</p>		<ul style="list-style-type: none"> <li><input type="checkbox"/> Exchange of glazing for glazing of class EH 1</li> <li>or</li> <li><input type="checkbox"/> Doubling with compressed wood (at least 25 mm thick) or steel sheets (at least 2 mm thick)</li> <li>or</li> <li><input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics</li> </ul>	<p>Trims for infills or glazings must be screwed on the interior.</p> <p>Rolling shutters and grills must be secured against raising.</p> <p>When grills or rolling shutters with burglar-resistant characteristics are being used, requirements for gate or slip door security do not apply.</p>

Security Class SG 6 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
<p><b>Windows/ Glass doors</b> (section 4)</p>	<p><input type="checkbox"/> Class B burglar-resistant window (section 4.6)</p>	<p><input type="checkbox"/> Exchange of glazing for glazing of class EH 1, EH 2, or in certain cases EH 3, depending on risks and</p> <p><input type="checkbox"/> Exchange of fittings for those following DIN 18 104-2 and</p> <p><input type="checkbox"/> Lockable window catch with Class A locking cylinder</p> <p>or</p> <p><input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics</p>	<p>Depending on risks, a class C burglar-resistant window or the exchange of current glazing for that of class EH 3 or a combination of EH glazing and grill may be required.</p> <p>An exchange of current glazing for that of class EH 2. and particularly for EH 3, is only possible for highly stable, static elements.</p> <p>Trims for infills or glazings must be screwed on the interior.</p> <p>The exchange of fittings is intricate and requires professional knowledge.</p> <p>Rolling shutters and grills must be secured against raising.</p>
<p><b>Fixed windows (display windows)</b> (section 4)</p>	<p><input type="checkbox"/> Class B burglar-resistant window (section 4.6)</p>	<p><input type="checkbox"/> Exchange of glazing for glazing of class EH 1 or EH 2 or for display windows</p> <p><input type="checkbox"/> Exchange of glazing for glazing of class EH 2 or EH 3</p> <p>or</p> <p><input type="checkbox"/> Interior second pane of class EH 2 or EH 3</p> <p>or</p> <p><input type="checkbox"/> Exchange of glazing for glazing of class EH 1 or EH 2</p> <p>and</p> <p><input type="checkbox"/> Swinging, sliding, rolling or fixed grills or rolling shutters with burglar-resistant characteristics</p>	<p>Depending on the risks, a class C burglar-resistant door may be required.</p> <p>If grills are to be moved, then the locking mechanism must meet the requirements for doors in class SG 6.</p> <p>Rolling shutters and grills must be secured against raising.</p>
<p><b>Cellar windows</b> (section 4.7)</p>	<p><input type="checkbox"/> Class B burglar-resistant window (section 4.6)</p>	<p><input type="checkbox"/> Grills with burglar-resistant characteristics</p> <p>or</p> <p><input type="checkbox"/> Precast masonry or concrete parts or if the window is accessible from a concrete light shaft</p> <p><input type="checkbox"/> Securing the light shaft with nonremovable rolling grill</p>	<p>Depending on the risks, a class C burglar-resistant door may be required.</p> <p>Retrofitting as "Windows" is also possible.</p>
<p><b>Window joints</b> (section</p>		<p><input type="checkbox"/> Securing with metal</p>	<p>Window joints are to be</p>

4.5.5)		profiles, not removable from exterior	avoided.
<b>Skylights</b> (section 4.7.2)		<input type="checkbox"/> Grills with burglar-resistant characteristics	

Security Class SG 6 Continued

Security Element	Requirements	Retrofit Measures	Additional Information
<b>Dome lights</b> (section 4.7.3)		<input type="checkbox"/> Burglar-resistant glazing of class EH 1 or <input type="checkbox"/> Grill or rolling grill, interior, with burglar-resistant characteristics	When dome lights are used as smoke outlets, the use of grills in the outlet channel must first be tested as to whether the bars will block the free flow of air.
<b>Fanlights</b> (section 4)	The securing must follow "Windows" or "Fixed windows" depending on layout.		
<b>Other openings</b>	The securing must follow "Doors" or "Windows" depending on layout.		
<b>Individual elements</b>	Securing must be individualized according to the dangers present, e.g. mechanical fastening to prevent theft, class C IAS monitoring.		
<b>Cash, stocks, etc.</b> (section 5)	Depending on the value of the goods, storage containers with security features which correspond to insurer specifications.		
<b>Monitoring</b> (section 6)	Class C IAS with complete shell protection, and hold-up alarm.		