

Allgemeine bauaufsichtliche Zulassung

Zulassungsstelle für Bauprodukte und Bauarten

Bautechnisches Prüfamt

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Applicant:

sedak GmbH & Co. KG

Einsteinring 1

86368 Gersthofen

GERMANY

Subject of approval:

Glascobond® laminated safety glass with shear interaction

The subject of approval named above is herewith granted a national technical approval (*allgemeine bauaufsichtliche Zulassung*).

This national technical approval (*allgemeine bauaufsichtliche Zulassung*) has twelve pages.

This national technical approval replaces national technical approval no. Z-70.3-175 of

11 January 2012. The subject was first granted a national technical approval on 11 January 2012.

Translation authorised by DIBt

DIBt

I GENERAL PROVISIONS

- 1 With the national technical approval (*allgemeine bauaufsichtliche Zulassung*) the fitness for use and the applicability of the subject of approval in accordance with the Building Codes of the federal states (*Landesbauordnungen*) have been verified.
- 2 If the national technical approval (*allgemeine bauaufsichtliche Zulassung*) contains requirements concerning the special expertise and experience of persons entrusted with the manufacture of construction products and construction techniques in accordance with the provisions of the relevant federal state following Section 17, Sub-section 5 of the Model Building Code (*Musterbauordnung*), it shall be noted that this expertise and experience can also be proven by equivalent verifications from other Member States of the European Union. This also applies to equivalent verifications presented within the framework of the Agreement on the European Economic Area (EEA) or other bilateral agreements, where applicable.
- 3 The national technical approval (*allgemeine bauaufsichtliche Zulassung*) does not replace the permits, approvals and certificates prescribed by law for carrying out building projects.
- 4 The national technical approval (*allgemeine bauaufsichtliche Zulassung*) is granted without prejudice to the rights of third parties, in particular private property rights.
- 5 Notwithstanding further provisions in the 'Special Provisions', manufacturers and distributors of the subject of approval shall make copies of the national technical approval (*allgemeine bauaufsichtliche Zulassung*) available to the user and point out that the national technical approval (*allgemeine bauaufsichtliche Zulassung*) must be available at the place of use. Upon request, copies of the national technical approval (*allgemeine bauaufsichtliche Zulassung*) shall be placed at the disposal of the authorities involved.
- 6 The national technical approval (*allgemeine bauaufsichtliche Zulassung*) may be reproduced in full only. Partial publication requires the consent of Deutsches Institut für Bautechnik. Texts and drawings in promotional materials shall not contradict the national technical approval (*allgemeine bauaufsichtliche Zulassung*). In the event of a discrepancy between the German original of the national technical approval (*allgemeine bauaufsichtliche Zulassung*) and this authorised translation, the German version shall prevail.
- 7 The national technical approval (*allgemeine bauaufsichtliche Zulassung*) is granted until revoked. The provisions of the national technical approval (*allgemeine bauaufsichtliche Zulassung*) can subsequently be supplemented and amended, in particular if this is required by new technical findings.

II SPECIAL PROVISIONS

1 Subject of approval and field of application

1.1 Subject of approval

The subject of approval is the product 'Glascobond[®] laminated safety glass with shear interaction' (Glascobond[®] -S) from the company sedak GmbH & Co. KG. It comprises at least two flat glass panes made from float glass, thermally toughened soda lime silicate safety glass (ESG), heat soaked thermally toughened soda lime silicate safety glass (ESG-H) or heat strengthened soda lime silicate glass (TVG) and the interlayer SentryGlas[®] SGP 5000.

If coated glass is to be used, the coating shall be on the side not facing the interlayer. Only in the case of enamelled glass with ESG, ESG-H or TVG shall the enamelled side be permitted to face the interlayer.

1.2 Field of application

Glascobond[®] -S shall be permitted for use as laminated safety glass (VSG) in accordance with standard series DIN 18008¹ as well as the 'Technical rules for the use of linearly supported glazing (TRLV)², the 'Technical rules for the use of safety barrier glass (TRAV)³ and the 'Technical rules for the design of point fixed glazing (TRPV)⁴.

By way of derogation from standard series DIN 18008¹ as well as TRLV, TRAV and TRPV, the shear interaction between the individual panes may be considered for verification of the load-bearing capacity of vertically oriented Glascobond[®] -S glass under wind loads or horizontal line loads. The shear interaction between the individual panes may also be considered for verification of the load-bearing capacity of horizontally oriented Glascobond[®] -S glass under snow and wind loads⁵.

With regard to the maximum allowable glass dimensions, the provisions set out in standard series DIN 18008¹ or the above-mentioned technical rules shall apply in all cases with the exception of overhead glass in which case the dimensions shall not exceed 6000 mm x 3210 mm.

This national technical approval (*allgemeine bauaufsichtliche Zulassung*) is based on analysis of German climate data and therefore only applies to the prevailing weather conditions in Germany.

¹ DIN 18008 Glass in building – Design and construction rules

² *Technische Regeln für die Verwendung von linienförmig gelagerten Verglasungen (TRLV)*, version 08/2006, published in the DIBt Official Bulletin (*Amtliche Mitteilungen*), issue 3/2007, 11 June 2007

³ *Technische Regeln für die Verwendung von absturzsichernden Verglasungen (TRAV)*, version 01/2003, published in the DIBt Official Bulletin (*Amtliche Mitteilungen*), issue 2/2003

⁴ *Technische Regeln für die Bemessung und Ausführung punktförmig gelagerter Verglasungen (TRPV)*, version 08/2006; published in the DIBt Official Bulletin (*Amtliche Mitteilungen*), issue 3/2007, 11 June 2007

2 Provisions for the construction product

2.1 Characteristics and composition

2.1.1 Glass panes

The following glass products shall be permitted for use:

- float glass (soda lime silicate glass) in accordance with DIN EN 572-9⁵,
- ESG in accordance with DIN EN 12150-2⁶,
- Heat-soaked thermally toughened soda lime silicate safety glass in accordance with DIN EN 14179-2⁷,
- Heat-soaked soda lime silicate safety glass (ESG-H),
- TVG in accordance with DIN EN 1863-2⁸ or with the provisions of a national technical approval (*allgemeine bauaufsichtliche Zulassung*),
- coated glass in accordance with DIN EN 1096-4⁹.

The construction products shall be fit for use within the meaning of the Building Codes of the federal states (*Landesbauordnungen*).

For the lamination of enamelled glass to form laminated safety glass, the enamelled glass surface may face the SentryGlas[®] SGP 5000 interlayer.

If coated glass panes are used, the coating shall face away from the interlayer. Only coatings with properties at least equivalent to black enamelled glass in terms of absorption performance and the resultant interlayer temperature shall be permitted for use.

2.1.2 SentryGlas[®] SGP 5000 interlayer

For the manufacture of 'Glascobond[®] laminated safety glass with shear interaction' use of a SentryGlas[®] SGP 5000 interlayer with a total nominal thickness of 0.89 mm to 3.04 mm shall be used. The product information provided by the manufacturer and information pertaining to the interlayer composition are deposited with Deutsches Institut für Bautechnik.

2.1.3 Glascobond[®] laminated safety glass with shear interaction

Glascobond[®] -S shall be manufactured from at least two flat glass panes as described in Section 2.1.1 and the SentryGlas[®] SGP 5000 interlayer as described in Section 2.1.2 in accordance with the specifications deposited with DIBt.

For the displacement between individual panes the dimensional limits specified in Section 3.2.3 of DIN EN ISO 12543-5¹⁰ shall apply.

5	DIN EN 572-9	Glass in building - Basic soda lime silicate glass products – Part 9: Evaluation of conformity
6	DIN EN 12150-2:2004	Glass in building - Thermally toughened soda lime silicate safety glass
7	DIN EN 14179-2:2005	Glass in building - Heat soaked thermally toughened soda lime silicate safety glass
8	DIN EN 1863-2:2004	Glass in building - Heat strengthened soda lime silicate glass
9	DIN EN 1096-4:2005-01	Glass in building - Coated glass – Part 4: Evaluation of conformity/Product standard
10	DIN EN ISO 12543-5:1998-08	Glass in building – Laminated glass and laminated safety glass – Part 5: Dimensions and edge finishing

2.2 Manufacture, transport, storage and marking

2.2.1 Manufacture, transport and storage

The Glascobond® laminated safety glass with shear interaction shall be manufactured in an autoclave process from at least two glass panels as described in Section 2.1.1 and at least one SentryGlas® SGP 5000 interlayer as described in Section 2.1.2 in compliance with the specifications deposited with Deutsches Institut für Bautechnik.

The glass elements shall be transported only with appropriate material handling equipment that protects the glass edges from damage. For temporary storage at the construction site, appropriate padding shall be provided to protect the glass edges.

2.2.2 Marking

The Glascobond® laminated safety glass with shear interaction or the delivery note or the packaging shall be marked by the manufacturer with the national conformity mark (*Ü-Zeichen*) in accordance with the Conformity Marking Ordinances (*Übereinstimmungszeichen-Verordnungen*) of the federal states. The mark shall only be affixed if the requirements given in Section 2.3 are met.

The national conformity mark shall include the short description 'Glascobond® Verbundsicherheitsglas mit Schubverbund nach Z-70.3-153'.

2.3 Attestation of conformity

2.3.1 General

The attestation of conformity of the Glascobond® laminated safety glass with shear interaction with the provisions of this national technical approval (*allgemeine bauaufsichtliche Zulassung*) shall be issued for every manufacturing plant in the form of a certificate of conformity based on factory production control and regular external surveillance, including initial type-testing of the construction product, in accordance with the following provisions.

To issue the certificate of conformity and for external surveillance, including the associated product testing to be carried out in the process, the manufacturer of the construction product shall use an appropriately recognised certification body and an appropriately recognised inspection body. The declaration that a certificate of conformity has been granted shall be given by the manufacturer through marking of the construction products with the national conformity mark (*Ü-Zeichen*) including statement of the intended use.

The certification body shall send a copy of the certificate of conformity issued by it to Deutsches Institut für Bautechnik. A copy of the initial type-testing report shall also be sent to Deutsches Institut für Bautechnik.

2.3.2 Factory production control

2.3.2.1 A factory production control system shall be set up and implemented at each manufacturing plant in which the SentryGlas® SGP 5000 interlayer and/or the Glascobond® laminated safety glass with shear interaction is manufactured. Factory production control is understood to be continuous surveillance of production by the manufacturer to ensure that the manufactured construction products satisfy the provisions of this national technical approval.

The results of the factory production control shall be recorded and evaluated. The records shall at least include the following information:

- designation of the construction product or the starting material and the components,
- type of check or test,
- date of manufacture and testing of the construction product or the starting material or the components,
- results of the checks and tests as well as (if applicable) comparison with requirements,
- address of the installation location (if unknown, purchaser of the glass),
- signature of the person responsible for factory production control.

The factory production control shall at least include the following measures:

a) manufacturer of the SentryGlas® SGP 5000 interlayer as described in Section 2.1.2

- description and verification of the starting material,
- verification of the chemical composition,
- verification of compliance with the requirements described in Section 2.1.2,
- documentation of relevant production parameters used in the manufacture of the SentryGlas® SGP 5000 interlayer. The production parameters shall correspond to the specifications deposited with Deutsches Institut für Bautechnik.
- moisture content measurements performed on the sheet, once a day, max. moisture content: 0.15%,
- pummel test performed on the laminate: once a day (2.1-mm-thick float glass),
- thickness check every 12 hours.

Compliance with the above requirements shall be verified by the manufacturer of the interlayer by issuing of a declaration of compliance with the order (type 2.1) in accordance with DIN EN 10204¹¹.

b) Manufacturer of Glascobond® laminated safety glass with shear interaction as described in Section 2.1.3

- description and verification of starting material (e.g. interlayer thickness) and comparison with requirements,
- documentation of storage conditions for SentryGlas® SGP 5000 with packaging opened
- check of the declaration of compliance with the order (type 2.1) in accordance with DIN EN 10204¹¹ for the SentryGlas® SGP 5000 interlayer and comparison with requirements,
- check of CE or Ü marks on the glass used in accordance with Section 2.1.1,
- verification of compliance with requirements described in Section 2.1.3,
- documentation of relevant production parameters used in the manufacturing process as described in Section 2.2.1 (e.g., temperature and pressure control in the autoclave); production parameters shall correspond to the specifications deposited with Deutsches Institut für Bautechnik,
- regular visual inspection of Glascobond® -S as per DIN EN ISO 12543-6¹²,
- high-temperature test in accordance with Section 4.1 of DIN EN ISO 12543-2¹³ on specimens composed of 3 mm float glass / 1.52 mm SentryGlas® SGP 5000 / 3 mm float glass at least once a month,
- ball drop test as per DIN 52338¹⁴ from a height of 4 m on at least five test specimens composed of 3 mm float glass / 0.89 mm SentryGlas® SGP 5000 / 3 mm float glass at least once a month,

11	DIN EN 10204:2005-01	Metallic products - Types of inspection documents
12	DIN EN ISO 12543-6:1998-08	Glass in building – Laminated glass and laminated safety glass – Part 6: Appearance
13	DIN EN ISO 12543-2:2006-03	Glass in building – Laminated glass and laminated safety glass – Part 2: Laminated safety glass
14	DIN 52338:1985-09	Test methods for flat glass in building - Ball drop test for laminated glass

- pummel test in accordance with the work instructions deposited with Deutsches Institut für Bautechnik,
- manufacture of samples which will be retained for testing within the framework of external surveillance (retained samples).

The records shall be kept for at least ten years and submitted to the inspection body used for external surveillance. They shall be presented to Deutsches Institut für Bautechnik and the competent supreme building authority upon request.

If the test result is unsatisfactory, the manufacturer shall immediately take the necessary measures to remedy the defect. Construction products which do not meet the requirements shall be handled in such a manner that they cannot be confused with compliant products. After the defect has been remedied, the relevant test shall be repeated immediately - where technically feasible and necessary to show that the defect has been eliminated.

2.3.3 Initial type-testing of Glascobond[®] laminated safety glass with shear interaction

The following checks and tests shall be performed within the framework of initial type-testing of Glascobond[®] -S:

- visual inspection of Glascobond[®] -S in accordance with DIN EN ISO 12543-6¹²,
- high-temperature test in accordance with Section 4.1 of DIN EN ISO 12543-211 on specimens composed of 3 mm float glass / 1.52 mm SentryGlas[®] SGP 5000 / 3 mm float glass,
- ball drop test as per DIN 52338¹⁴ from a height of 4 m on at least five test specimens composed of 3 mm float glass / 0.89 mm SentryGlas[®] SGP 5000 / 3 mm float glass,
- pummel test in accordance with the work instructions deposited with Deutsches Institut für Bautechnik,
- tensile test on small specimens in accordance with the specifications deposited with Deutsches Institut für Bautechnik. The results shall lie within the range of values deposited with Deutsches Institut für Bautechnik.

2.3.4 External surveillance

The factory production control system used at the manufacturing plant for the Glascobond[®] laminated safety glass with shear interaction shall be checked regularly at least twice a year by means of external surveillance. Within the framework of the external surveillance audit, initial type-testing of Glascobond[®] -S shall be carried out as described in Section 2.3.3. In addition to the verification of compliance with the requirements described in Section 2.1.3, the following checks shall be made:

- check of the results of factory production control as described in Section 2.3.2,
- pummel test in accordance with the work instructions deposited with Deutsches Institut für Bautechnik,
- tensile test on small specimens in accordance with the specifications deposited with Deutsches Institut für Bautechnik. The results shall lie within the range of values deposited with Deutsches Institut für Bautechnik and serve to determine the allowable range of values for the specimens used in factory production control. Upon request, a copy of the test report shall be presented to Deutsches Institut für Bautechnik.

Within the framework of the external surveillance audit, pummel tests and tensile tests shall be carried out for the purposes on retained samples to verify shear interaction. Information on sampling frequency and storage conditions for the retained samples is deposited with Deutsches Institut für Bautechnik. The results shall comply with the minimum values upon which the approval process is based and which have been confirmed in the initial type-testing process. Upon request, a copy of the test report shall be presented to Deutsches Institut für Bautechnik.

The certification and external surveillance results shall be kept for at least ten years. The certification body or inspection body shall present them to Deutsches Institut für Bautechnik and the competent supreme building authority upon request.

3 Provisions for design and dimensioning

3.2 Dimensioning in accordance with TRLV, TRAV and TRPV

Linearly supported Glascobond[®] -S shall be dimensioned in accordance with the provisions of the 'Technical rules for the use of linearly supported glazing (TRLV)²'. For overhead use, Glascobond[®] -S shall be supported linearly on all sides with a support width of more than 1.20 m.

For point fixed glazing the 'Technical rules for the design of point fixed glazing (TRPV)⁴' shall be observed.

If the Glascobond[®] -S glass is used as a barrier against falling, the 'Technical rules for the use of safety barrier glass (TRAV)³' shall be observed. The less stringent verification requirements given there for laminated safety glass with PVB film, such as those described in Section 6.3 ('Glass with verified impact resistance'), shall also apply to the Glascobond[®] -S glass described in this national technical approval (*allgemeine bauaufsichtliche Zulassung*).

For verification of the load-bearing capacity under wind loads and horizontal line loads in accordance with the provisions of TRLV² and TRAV³, a linear elastic behaviour of the SentryGlas[®] SGP 5000 interlayer may be assumed to factor in the shear interaction between the individual panes of vertically oriented glass by derogation from the provisions of TRLV² and TRAV³ provided that the conditions listed below are met. A shear interaction between individual panes may also be considered for verification within the scope of TRPV⁴.

The shear modulus values given in Table 1 for the respective load cases and a Poisson's ratio of $\mu = 0.49$ may be used as linear elastic characteristic values of the SentryGlas[®] SGP 5000 interlayer for single-pane glazing. The allowable stresses for float glass-based Glascobond[®] laminated safety glass with shear interaction are given in Table 1. The characteristic values for verification of the 'horizontal line loads' in the interior area apply to a film temperature of up to 30 °C and a maximum load duration of one hour.

Table 1: Characteristic values applicable to single-pane glazing

Load case		Shear modulus G [N/mm ²]	σ allowable, Glascobond® -S made from float glass [N/mm ²]
Vertical glazing/Facades	Glass without fall protection function		
	Load case: wind	100	18
	Glass with fall protection function		
	Load case: horizontal line loads ¹⁵	4	18
	Load case: wind and horizontal line loads	65	18
Vertical glazing / interiors	Glass without fall protection function		
	Load case: wind	100	18
	Glass with fall protection function		
	Load case: horizontal line loads	65	18
	Load case: wind and horizontal line loads	65	18
Horizontal glazing	Load case: snow	60	12
	Load case: dead weight	0	12

For Glascobond® laminated safety glass with shear interaction made from ESG' ESG-H, TVG and enamelled ESG or enamelled TVG as described in Section 2.1.1 the allowable stresses specified in TRLV² or the corresponding national technical approval (*allgemeine bauaufsichtliche Zulassung*) for HSG shall apply.

By derogation from these specifications for verification of the load case 'horizontal line loads' for facades, a temperature calculation shall be allowed for the determination of the film temperature in accordance with the specifications given in DIN EN 13363-2¹⁶ for the respective glass design and the expected use conditions (location, orientation, inclination). In the absence of available data, the following conditions may be assumed for steady-state calculations for vertical glazing:

Outside: temperature 30 °C, heat transfer coefficient 12 W/m²K, solar radiation exposure 850 W/m²; Inside: temperature 26 °C, heat transfer coefficient 8 W/m²K.

The shear modulus values for load duration of one hour shall be taken from Table 2 for the respective interlayer temperatures. Linear interpolation shall be allowed for values between the given values.

¹⁵ Applicable for a maximum temperature of 50 °C, a load duration of one hour and under the following additional conditions for use of Glascobond® laminated safety glass with shear interaction:

- either as single pane or room-facing pane in insulating glass units made from two panes of clear glass or glass with a low iron oxide content, with or without a neutral thermal insulation coating
- or as exterior pane in insulating glass units made from uncoated or unprinted Glascobond® -S.

¹⁶ DIN EN 13363-2 Solar protection devices combined with glazing – Calculation of total solar energy transmittance and light transmittance - Part 2: Detailed calculation method

Table 2: Values of shear modulus for different interlayer temperatures

Interlayer temperature T [°C]	30	35	40	45	50	55	60
Shear modulus G [N/mm ²]	65	30	9	7	4	3	2

Interlayer temperatures higher than those given in Table 2 are not covered by this national technical approval (*allgemeine bauaufsichtliche Zulassung*).

For the determination of stresses arising from climatic conditions (temperature, atmospheric pressure, altitude) for verification of insulating glass with Glascobond® -S, the method specified in Section 5.1.2 of TRLV² shall be used. For the determination of stresses arising from wind and horizontal line loads the characteristics given in Section 3.1 shall apply. The stresses arising from climatic conditions and the stresses from wind and horizontal line loads determined using the values given in Section 3.1 shall be completely superimposed.

3.2 Dimensioning in accordance with DIN 18008

The Glascobond® -S laminated safety glass shall be dimensioned in accordance with the provisions of DIN 18008¹. For verification of the load-bearing capacity of vertical glazing under wind and horizontal line loads or of horizontal glazing under snow and wind loads, a linear elastic behaviour of the SentryGlas® SGP 5000 interlayer may be assumed, by derogation of DIN 18008, to factor in the shear interaction between the individual panes provided that the conditions listed below are met.

The shear modulus values given in Table 3 for the respective load cases and a Poisson's ratio of $\mu = 0.49$ may be used as linear elastic characteristics of the SentryGlas® SGP 5000 interlayer for single-pane glazing. The characteristic values for verification of the 'horizontal line loads' in interiors apply to a interlayer temperature of up to 30 °C and a maximum load duration of one hour.

Table 3: Characteristic values applicable to single-pane glazing

Load case		Shear modulus G [N/mm ²]	k_{VSG}^{17}	k_{mod}
Vertical glazing for facades	Glass without fall protection function			
	Load case: wind	100	1	0.7
	Glass with fall protection function			
	Load case: horizontal line loads ¹⁸	4	1	0.7
	Load case: wind and horizontal line loads	65	1	0.7
Vertical glazing / interiors	Glass without fall protection function			
	Load case: wind	100	1	0.7
	Glass with fall protection function			
	Load case: horizontal line loads	65	1	0.7
	Load case: wind and horizontal line loads	65	1	0.7
Horizontal glazing	Load case: snow	60	1	0.4
	Load case: wind and snow	60	1	0.7
	Load case: dead weight	0	1.1	0.25

By derogation from the specifications in Table 3, the temperature may be calculated in accordance with Section 3.1 in combination with Table 2 for verifying the load case 'horizontal line loads' for facades.

The calculations can be geometrically linear or non-linear. The following sequence shall be observed for verification purposes:

- 1) Load case combinations in accordance with DIN EN 1990¹⁹ including the associated partial safety factors and combination coefficients shall be formed.
- 2) The main tensile stresses in the laminated safety glass shall be calculated separately for each load component (γ -, ψ -fold load) of the relevant load case combination. The following system assumptions shall be taken into account:
 - For wind, horizontal line and snow loads, a partial shear interaction in accordance with Table 3 may be used for the calculation.

¹⁷ k_{VSG} Factor for laminated glass and laminated safety glass, see DIN 18008-1, Section 8.3.9

¹⁸ Applicable for a maximum temperature of 50 °C, a load duration of one hour and under the following additional definitions:

SentryGlas laminates consisting of two panes of clear float glass or float glass with low iron oxide content, with or without a neutral thermal insulation coating, can be used without limitations as a single pane or room-facing pane in insulating glass units.

¹⁹ Clear SentryGlas laminates without coating or printing can also be used as an exterior pane in insulating glass.
DIN EN 1990 Eurocode: Basis of structural design

- For climate loads (temperature, atmospheric pressure, difference in altitude), the method specified in Section 7.2 of DIN 18008-1 shall be used; The extreme cases 'without shear interaction' and 'full shear interaction' shall be considered. The most critical case shall be taken.
 - No shear interaction shall be considered for the calculation of the other loads (e.g. dead weight).
- 3) Then, the main tensile stresses shall be added up for each load component for the load case combination considered.
- 4) The load-bearing capacity shall be verified in accordance with DIN 18008-1 for the relevant load case combination in consideration of the k_{mod} and k_{VSG} coefficients in accordance with Table 3.

4 Provisions for execution

For the installation of linearly supported Glascobond[®] laminated safety glass with shear interaction the provisions of TRLV² shall apply. If Glascobond[®] -S is used as a barrier against falling, the provisions of TRAV³ shall apply. For the installation of point fixed Glascobond[®] -S, the provisions of TRPV⁴ shall be observed.

For execution in accordance with DIN 18008¹, the specifications given therein shall be observed.

It shall be ensured that the glass or interlayer edges are only in contact with adjacent materials which are long-term compatible with the SentryGlas[®] SGP 5000 interlayer used. The relevant instructions provided by sedak GmbH shall be observed.

Fire protection

The Glascobond[®] laminated safety glass with shear interaction meets the reaction-to-fire performance requirements for construction products corresponding to class E in accordance with DIN EN 13501-1²⁰. (Class E meets the national regulatory requirement *normalentflammbar* ('normally flammable').)

6 Provisions for use, maintenance and repair

Damaged panes shall be replaced immediately. Hazardous areas shall be sealed off immediately. When replacing the panes, it shall be ensured that solely construction products in accordance with this national technical approval (*allgemeine bauaufsichtliche Zulassung*) are used.

Andreas Schult
Head of Section

Drawn up by